global environmental solutions

CNX Gas Company LLC

Oxford 11 Well Pad

New Milton, West Virginia

Rule 13 Permit Modification Application

SLR Ref: 116.00894.00057

February 2017

Oxford 11 Well Pad

Rule 13 Permit Modification Application

Prepared for:

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

This document has been prepared by SLR International Corporation. The material and data in this permit application were prepared under the supervision and direction of the undersigned.

Chris Boggess
Associate Engineer

Jesse Hanshaw, P.E.
Principal Engineer

CONTENTS

ATTACHMENTS

Notes:
ATTACHMENT C – Installation Schedule – This after the fact application addresses equipment removal and a tail off in liquids production
ATTACHMENT H – SDS Sheets, no change in material processed and stored at the site
ATTACHMENT Q - No information contained within this application is claimed confidential
ATTACHMENT R - No delegation of authority
ATTACHMENT S - Not a Major Source, No Title V Permit Revision Necessary

APPLICATION FOR PERMIT

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

APPLICATION FOR NSR PERMIT AND TITLE V PERMIT REVISION (OPTIONAL)

PLEASE CHECK ALL THAT APPLY TO **NSR (45CSR13)** (IF KNOWN):

☐ **CONSTRUCTION** ☒ **MODIFICATION** ☐ **RELOCATION**
☐ **CLASS I ADMINISTRATIVE UPDATE** ☐ **TEMPORARY**
☐ **CLASS II ADMINISTRATIVE UPDATE** ☒ **AFTER-THE-FACT**

PLEASE CHECK TYPE OF **45CSR30 (TITLE V)** REVISION (IF ANY):

☐ **ADMINISTRATIVE AMENDMENT** ☐ **MINOR MODIFICATION**
☐ **SIGNIFICANT MODIFICATION**

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS **ATTACHMENT S** TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
CNX Gas Company LLC

2. Federal Employer ID No. ***(FEIN):***
31-1782401

3. Name of facility *(if different from above):*
Oxford 11 Well Pad

4. The applicant is the:
☐ **OWNER** ☐ **OPERATOR** ☒ **BOTH**

5A. Applicant's mailing address:
1000 Consol Energy Drive
Canonsburg, PA 15317

5B. Facility's present physical address:
Access road off S. Fork of Hughes River (See Coordinates)

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? ☒ **YES** ☐ **NO**

- If **YES,** provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**
- If **NO,** provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

7. If applicant is a subsidiary corporation, please provide the name of parent corporation:

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site?* ☒ **YES** ☐ **NO**

- If **YES,** please explain: **The applicant leases the site.**
- If **NO,** you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.): **Natural Gas Well Pad**

10. North American Industry Classification System **(NAICS)** code for the facility:
212111

11A. DAQ Plant ID No. (for existing facilities only):
017-00148

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R13-3237B

12A.

- For **Modifications, Administrative Updates** or **Temporary permits** at an existing facility, please provide directions to the *present location* of the facility from the nearest state road;
- For **Construction** or **Relocation permits,** please provide directions to the *proposed new site location* from the nearest state road. Include a **MAP** as **Attachment B**.

From the intersection of WV-Hwy. 18 and Co. Rte. 25 near New Milton, WV, travel south on WV-Hwy. 18 for 3 miles. Turn right on Porto Rico Rd. for 0.7 miles, then continue straight onto Toms Fork Road for another 0.7 miles. Take slight right onto Co. Rte. 54/1 for 2.5 miles, then turns right and becomes Cain Run for 0.3 miles. Then take sharp left onto S. Fork of Hughes River for 1.0 mile. Take access road to left and to the top of the hill and stay to the left to arrive at site

12B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
N/A	New Milton	Doddridge
12.E. UTM Northing (KM): 4335.746	12F. UTM Easting (KM): 520.430	12G. UTM Zone: 17N

13. Briefly describe the proposed change(s) at the facility:

This Permit Modification is proposed to reflect the removal of flash gas and vapor recovery compressors. The reduced demand for gas recovery compression is a direct result of reductions in the site's condensate production. Therefore, the site is also requested to adjust the site's potential to emit to more accurately reflect current production volumes. The Capstone 30kW micro turbine will also be removed from the facility's permit.

14A. Provide the date of anticipated installation or change: **After the fact** – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: Gradual decline in liquids production	14B. Date of anticipated Start-Up if a permit is granted: **NA**

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved). No new equipment installed, change in emergency flare demand resulting from reduced condensate production

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

16. Is demolition or physical renovation at an existing facility involved? ☐ **YES** ☒ **NO**

17**. Risk Management Plans.** If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your **Risk Management Plan (RMP)** to U. S. EPA Region III.

18**. Regulatory Discussion.** List all Federal and State air pollution control regulations that you believe are applicable to the proposed process *(if known).* A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance *(if known).* Provide this information as **Attachment D.**

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13). See attached check for $1,000 which covers the Permit Modification fee

20. Include a **Table of Contents** as the first page of your application package.

21. Provide a **Plot Plan,** e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as **Attachment E** (Refer to ***Plot Plan Guidance***) **.**

– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

22. Provide a **Detailed Process Flow Diagram(s)** showing each proposed or modified emissions unit, emission point and control device as **Attachment F.**

23. Provide a **Process Description** as **Attachment G.**

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H.**

– For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I.**

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J.**

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K.**

28. Check all applicable **Emissions Unit Data Sheets** listed below:

☒ Bulk Liquid Transfer Operations	☐ Haul Road Emissions	☐ Quarry
☐ Chemical Processes	☐ Hot Mix Asphalt Plant	☐ Solid Materials Sizing, Handling and Storage Facilities
☐ Concrete Batch Plant	☐ Incinerator	☒ Storage Tanks
☐ Grey Iron and Steel Foundry	☐ Indirect Heat Exchanger	

☐ General Emission Unit, specify:

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L.**

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

☐ Absorption Systems	☐ Baghouse	☒ Flare
☐ Adsorption Systems	☐ Condenser	☐ Mechanical Collector
☐ Afterburner	☐ Electrostatic Precipitator	☐ Wet Collecting System

☐ Other Collectors, specify -

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M.**

30. Provide all **Supporting Emissions Calculations** as **Attachment N,** or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O.**

➢ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and ***Example Legal Advertisement*** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33**. Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

☐ **YES** ☒ **NO**

➢ If **YES,** identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's ***"Precautionary Notice – Claims of Confidentiality"*** guidance found in the ***General Instructions*** as **Attachment Q.**

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

☐ Authority of Corporation or Other Business Entity	☐ Authority of Partnership
☐ Authority of Governmental Agency	☐ Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R.**

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned ☒ **Responsible Official** / ☐ **Authorized Representative,** hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE Craig Neal *(Please use blue ink)* DATE: 2/8/2017 *(Please use blue ink)*

35B. Printed name of signee: Craig Neal		35C. Title: Vice President Gas Operations
35D. E-mail: craigneal@consolenergy.com	36E. Phone: 724-485-4000	36F. FAX
36A. Printed name of contact person (if different from above): Patrick Flynn		36B. Title: Engineer Air Permitting and Compliance
36C. E-mail: PatrickFlynn@consolenergy.com	36D. Phone: 724-485-3156	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- ☒ **Attachment A: Business Certificate**
- ☒ **Attachment B: Map(s)**
- ☐ **Attachment C: Installation and Start Up Schedule**
- ☒ **Attachment D: Regulatory Discussion**
- ☒ **Attachment E: Plot Plan**
- ☒ **Attachment F: Detailed Process Flow Diagram(s)**
- ☒ **Attachment G: Process Description**
- ☐ **Attachment H: Material Safety Data Sheets (MSDS)**
- ☒ **Attachment I: Emission Units Table**
- ☒ **Attachment J: Emission Points Data Summary Sheet**
- ☒ **Attachment K: Fugitive Emissions Data Summary Sheet**
- ☒ **Attachment L: Emissions Unit Data Sheet(s)**
- ☒ **Attachment M: Air Pollution Control Device Sheet(s)**
- ☒ **Attachment N: Supporting Emissions Calculations**
- ☒ **Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans**
- ☒ **Attachment P: Public Notice**
- ☐ **Attachment Q: Business Confidential Claims**
- ☐ **Attachment R: Authority Forms**
- ☐ **Attachment S: Title V Permit Revision Information**
- ☒ **Application Fee**

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:

- ☐ ***Forward 1 copy of the application to the Title V Permitting Group and:***
- ☐ ***For Title V Administrative Amendments:***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit,***
- ☐ ***For Title V Minor Modifications:***
  - ☐ ***Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,***
  - ☐ ***NSR permit writer should notify Title V permit writer of draft permit.***
- ☐ ***For Title V Significant Modifications processed in parallel with NSR Permit revision:***
  - ☐ ***NSR permit writer should notify a Title V permit writer of draft permit,***
  - ☐ ***Public notice should reference both 45CSR13 and Title V permits,***
  - ☐ ***EPA has 45 day review period of a draft permit.***

ATTACHMENT A

BUSINESS CERTIFICATE

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Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

State of West Virginia

Certificate

I, Natalie E. Tennant, Secretary of State of the State of West Virginia, hereby certify that

CNX GAS COMPANY LLC

was duly authorized under the laws of this state to transact business in West Virginia as a foreign limited liability company on June 29, 2001.

The company is filed as a term company, for the term ending June 29, 2026.

I further certify that the company's most recent annual report, as required by West Virginia Code §31B-2-211, has been filed with our office and that a certificate of cancellation has not been filed.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORIZATION

Given under my hand and the Great Seal of the State of West Virginia on this day of October 28, 2011

Natalie E. Tennant

Secretary of State

ATTACHMENT B

MAP

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

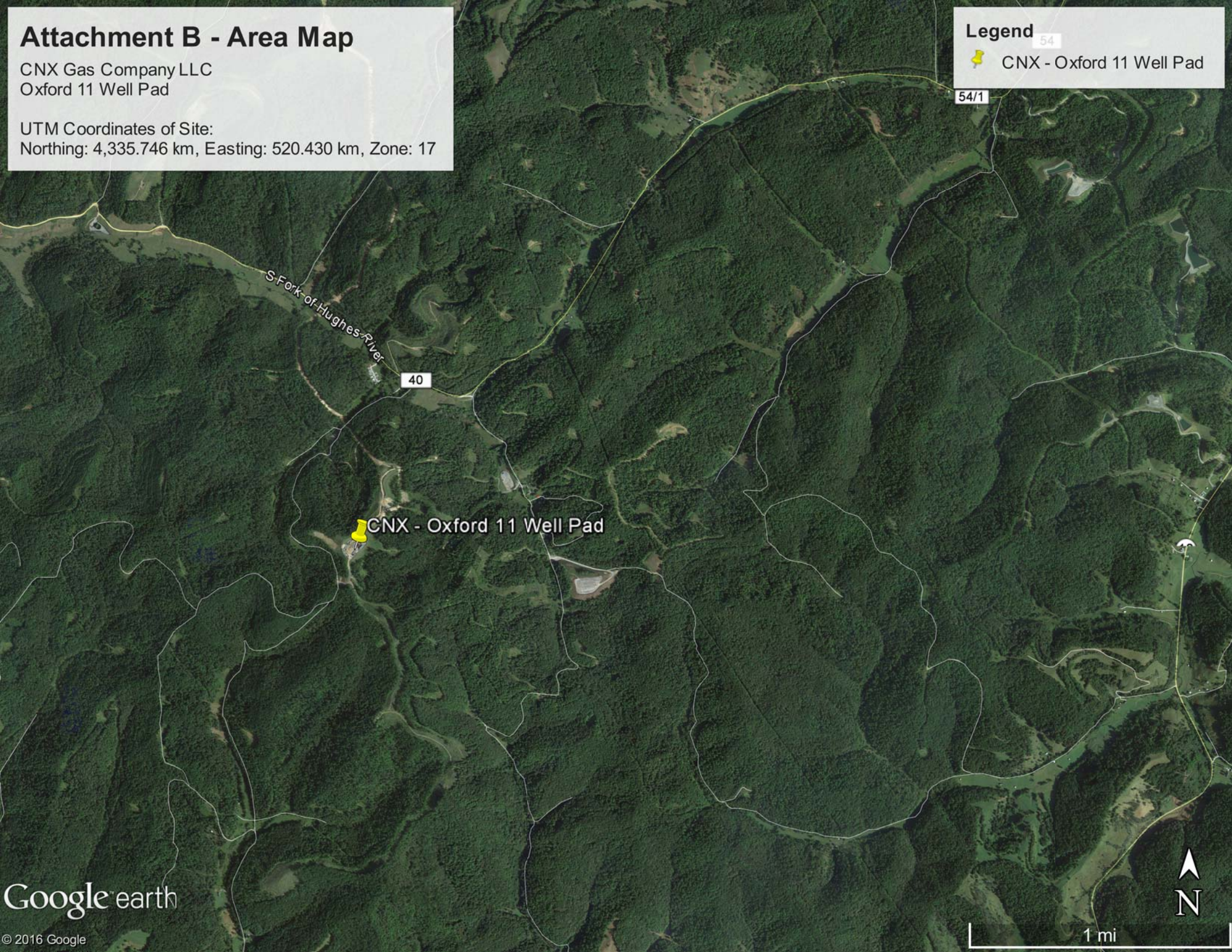
CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

Attachment B - Area Map

CNX Gas Company LLC
Oxford 11 Well Pad

UTM Coordinates of Site:
Northing: 4,335.746 km, Easting: 520.430 km, Zone: 17



ATTACHMENT C

NOT APPLICABLE (SEE NOTE)

Note: After the fact permit application addresses production decreases and removal of equipment

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ATTACHMENT D

REGULATORY DISCUSSION

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

REGULATORY DISCUSSION

CNX Gas Company LLC (CNX Gas) is applying for coverage under 45CSR13, for a Modification to Permit Number R13-3237B for the removal of compression equipment. These changes which also reflect a reduction in the site's permitted production rates were evaluated with respect to the following rules and regulations:

Federal and State:

45 CSR 13 – *Permits for Construction, Modification, Relocation, and Operation of Stationary Source of Air Pollutants*

The emission changes associated with the requested equipment removal and production rate decline with respect to liquid handling decreases the facility's emissions of NOx by 12.90 tpy, CO by 53.25 tpy, and VOC's by 83.35 tpy.

Even though emissions are being reduced by reflecting the proposed changes CNX Gas would like for the new permit to be modified to remove all synthetic limitations related to the elevated flare. This is in an effort to change the site's synthetic minor status and eliminate quarterly waste gas analysis and continuous flow monitoring requirements.

Additionally, all other sources within ¼ mile were evaluated with respect to the facility. It is noted that the well pad will share a graded pad with CONE Midstream Partners LP's (CONE) proposed Cain Run (Laverne) Station, however due to each source operating under different SIC codes, CNX Gas feels strongly that they are a distinctly separate facility. CNX Gas operates under SIC 1221 as authorized under R13-3237B and CONE's compressor station operates under SIC 4922.

Additionally in order to help alleviate any concerns related to the sites being adjacent, each site's emissions were evaluated to conservatively show the totals would remain below Title V thresholds, even if combined. As a result of the differences described above, CNX Gas is requesting their well pad be considered a unique facility.

Lastly, a $1,000 application fee has been supplied with this application to satisfy processing cost in accordance with Rule 13 and 22. As a result of the gas recovery compressors being removed from the permit there are no NSPS or NESHAP affected units located at this site

ATTACHMENT E

PLOT PLAN

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

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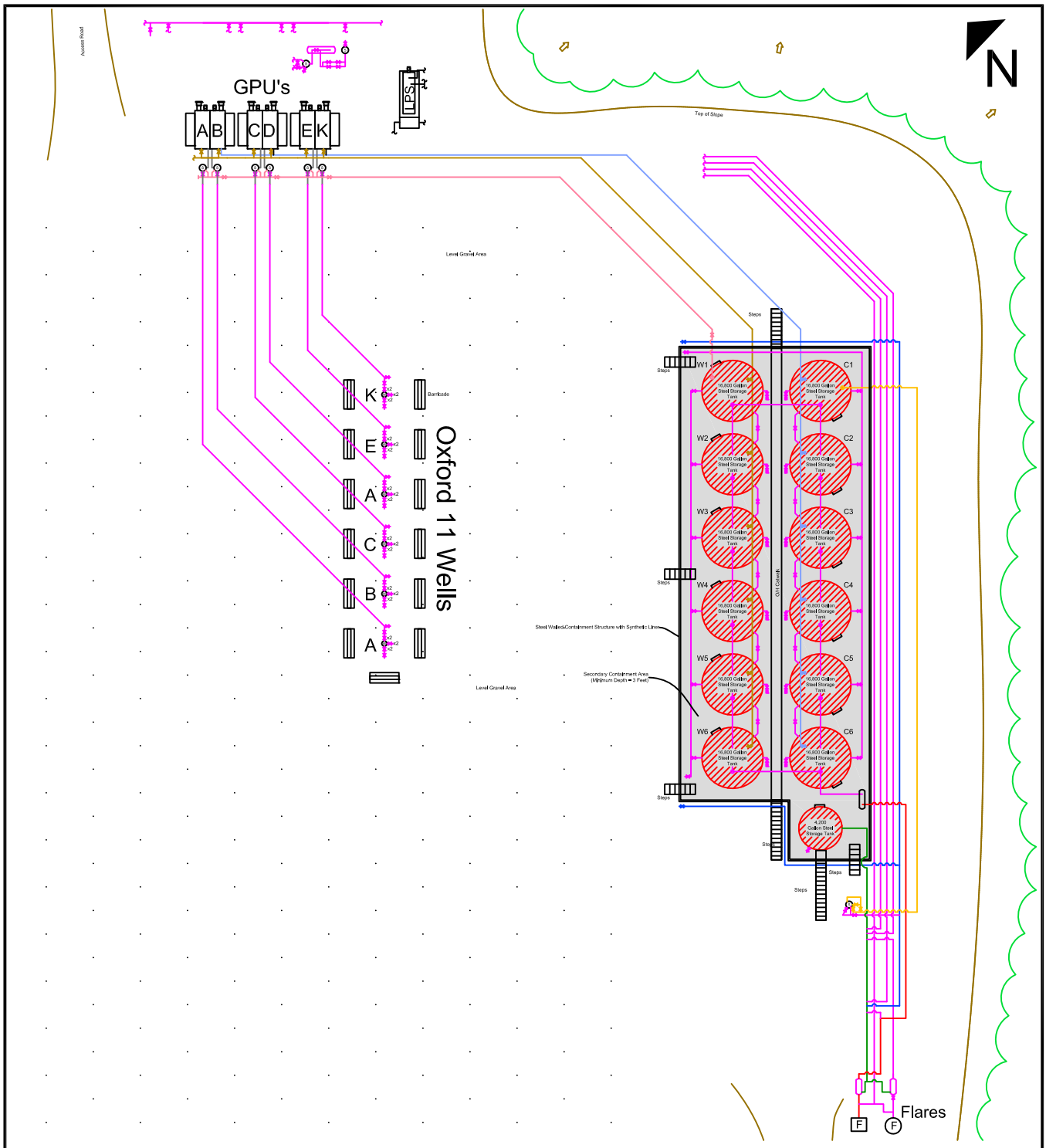

DRAWING LEGEND

- O/H Electric Line
- Utility Pole
- Piping (above ground)
- Piping (under ground)
- Valve
- Plug
- Tree/Brush line
- Crushed Stone Pad
- Storage Tank
- Secondary Containment Area
- Direction of Surface Runoff
- (W) Well Head
- (M) Meter
- (S) Separator
- (D) Drain
- (C) Compressor
- (RM) Residential Meter
- (DRIP) Drip Tank

SLR

CNX Gas Company LLC

1000 Consol Energy Drive
Canonsburg, PA 15317

Report:
Rule 13 Permit Modification Application
Oxford 11 Well Pad

Drawing	Drawn By:
Plot Plan	CLB

Date: December 2016	ATTACHMENT E
	Project #: 116.00894.00057

ATTACHMENT F

PROCESS FLOW DIAGRAM

Rule 13 Permit Modification Application

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New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

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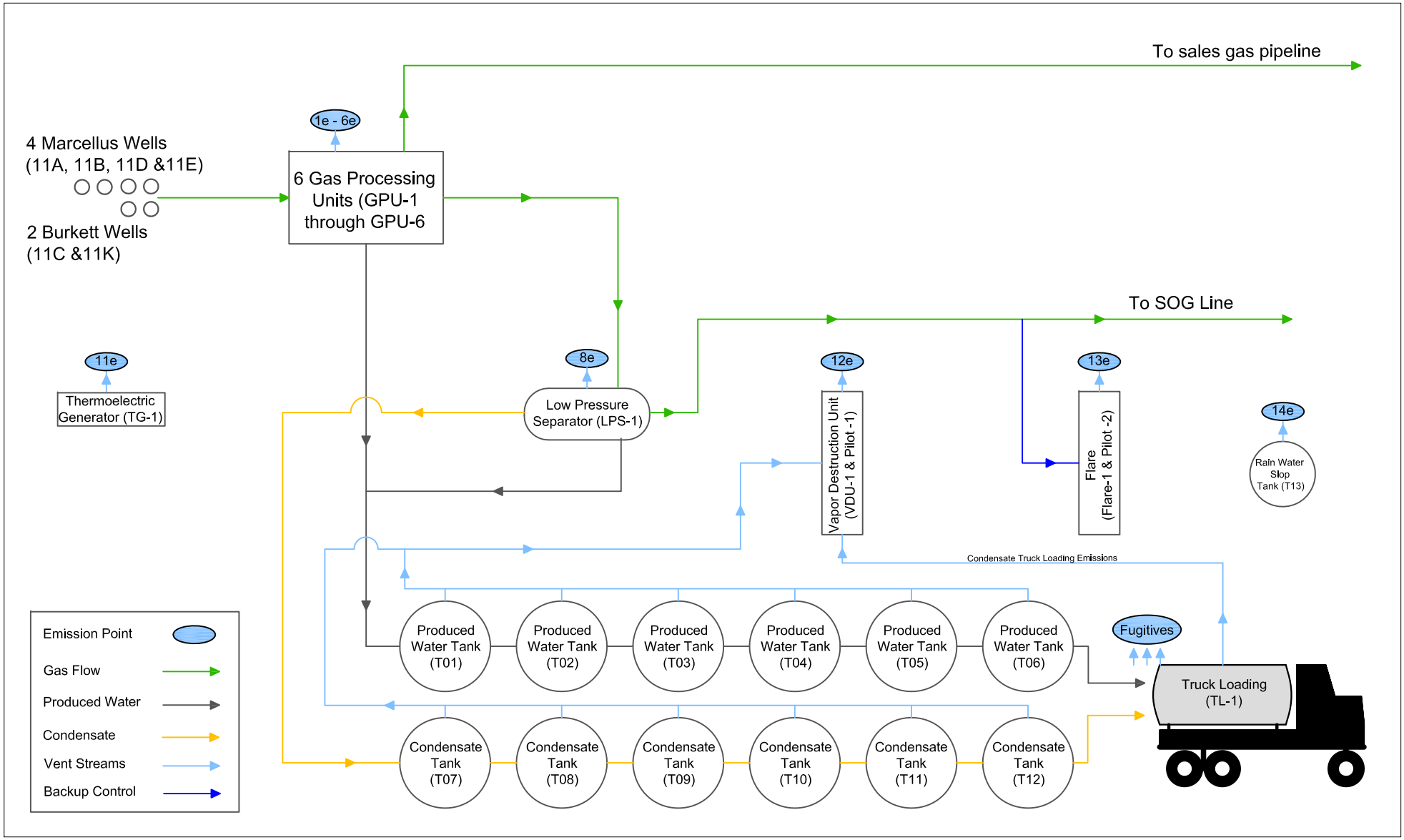

SLR

CNX Gas Company LLC

Attachment F - Process Flow Diagram

Oxford 11 Well Pad

Dec 2016

ATTACHMENT G

PROCESS DESCRIPTION

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

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PROCESS DESCRIPTION

CNX Gas Company LLC is applying for coverage under 45CSR13, for a Modification to Permit Number R13-3237B for the removal of compression equipment. These equipment changes will also reflect a reduction in permitted production rates. As a result, this permit revision also seeks to remove the site's synthetic minor status.

DESCRIPTION OF PROCESS CHANGE

The proposed equipment removal reflects a reduction in condensate production and the ability to send flash gas from the site's low pressure separator (LPS) directly to a low pressure sales line. The site has removed all engines originally permitted for VRU and flash gas compression at the site. Additionally, due to reduced condensate production the gas produced by the LPS has been reduced and thus the amount of bypass gas diverted to the elevated flare. Therefore, overall combustion capacity of the flare has significantly been reduced based on the LPS's potential.

The facilities maximum overall liquid production rates are now reflected as 100 bbls/d of condensate and 400 bbls/d of water.

The facility's overall decrease in emissions is as follows:

Pollutant	Tons/yr
NOx	12.90
CO	53.25
VOC	83.35

ATTACHMENT H

SAFETY DATA SHEETS-NOT APPLICABLE (SEE NOTE)

Note: No material changes related to this modification.

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ATTACHMENT I

EMISSION UNITS TABLE

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CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

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Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
GPU-1	1e	Gas Processing unit	2015	1.0 MMBtu/hr		None
GPU-2	2e	Gas Processing unit	2015	1.0 MMBtu/hr		None
GPU-3	3e	Gas Processing unit	2015	1.0 MMBtu/hr		None
GPU-4	4e	Gas Processing unit	2015	1.0 MMBtu/hr		None
GPU-5	5e	Gas Processing unit	2015	1.0 MMBtu/hr		None
GPU-6	6e	Gas Processing unit	2015	1.0 MMBtu/hr		None
LH-1	7e	Line Heater	2015	2.5 MMBtu/hr	Removal / 2017	None
LPS-1	8e	Low Pressure Separator	2015	0.5 MMBtu/hr		None
CE-1	9e	Vapor Recovery Unit Compressor Engine	2015	68 HP	Removal / 2017	None
CE-2	10e	Flash Gas Compressor Engine	2015	690 HP	Removal / 2017	None
TG-1	11e	Thermoelectric Generator	2015	0.013MMBtu/hr		None
VDU-1	12e	Vapor Destruction Unit	2015	18.06 MMBtu/hr		None
Flare-1	13e	Emergency/Maintenance Flare	2015	0.63 MMBtu/hr	Modification / 2017	None
TL-1	Fugitives	Truck Loading	2015	182,500 BBL/yr	Modification / 2017	VDU-1
T01-T06	None	Produced Water Tanks	2015	400 BBL each	Modification / 2017	VDU-1
T07-T12	None	Condensate Tanks	2015	400 BBL each	Modification / 2017	VDU-1
MT-1	15e	30 kW MicroTurbine Generator	2015	30 kW	Removal / 2017	None
T13	14e	Compressor Rain Water Slop Tank	2015	100 bbl		None

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

ATTACHMENT J

EMISSION POINTS DATA SUMMARY SHEET

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Oxford 11 Well Pad
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CNX Gas Company LLC
1000 Consol Energy Drive
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Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]	Emission Concentration[7] (ppmv or mg/m^4)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
12e	Vertical Stack	VDU-1 w/ Pilot 1	Vapor Destruction Unit	NA	NA	NA	NA	NO_X CO VOC SO_2 CO2e	1.23 5.60 2.53 0.40 2,104	5.38 24.52 11.07 0.18 9,215	--	--	Gas/ Vapor	EE	Can Supply Upon Request
13e	Open	Flare-1 w / Pilot-2	Emergency / Maintenance Flare	NA	NA	NA	NA	NO_X CO VOC SO_2 CO2e	0.04 0.20 0.25 0.02 71.71	0.19 0.86 1.08 0.01 314.1	--	--	Gas/ Vapor	EE	Can Supply Upon Request
-	None	T01-T06	Produced Water Tanks	VDU-1	Vapor Destruction Unit	NA	NA	VOC	2.00	8.75	0.04	0.18	Gas/ Vapor	EE	Can Supply Upon Request
-	None	T07-T12	Condensate Tanks	VDU-1	Vapor Destruction Unit	NA	NA	VOC	14.55	63.73	0.29	1.28	Gas/ Vapor	EE	Can Supply Upon Request
Fugitives	Loading Fugitives	TL-1	Truck Loading	VDU-1	Vapor Destruction Unit	NA	NA	VOC	1.28	5.60	0.40	1.76	Gas/ Vapor	EE	Can Supply Upon Request

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (^{o}F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
12e	4	1650	642.46	0.85	1335	20	4,335.746	520.430
13e	0.5	1650	27.24	2.31	1335	26.33	4,335.746	520.430

[1] Give at operating conditions. Include inerts.
[2] Release height of emissions above ground level.

ATTACHMENT K

FUGITIVE EMISSIONS DATA SHEET

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☐ Yes ☒ No ☐ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☒ Yes ☐ No ☐ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☒ Yes ☐ No ☐ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET. Note: Component count and emission totals are included within site calculations. No monitoring or LDAR required at this site.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered “NO” to all of the items above, it is not necessary to complete the following table, “Fugitive Emissions Summary.”

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	-	-	-	-	-	EE
Unpaved Haul Roads	-	-	-	-	-	EE
Storage Pile Emissions	-	-	-	-	-	EE
Loading/Unloading Operations	VOC	1.28	5.60	0.40	1.76	EE
Wastewater Treatment Evaporation & Operations	-	-	-	-	-	EE
Equipment Leaks	VOC	4.99	21.87	-	-	EE
General Clean-up VOC Emissions	-	-	-	-	-	EE
Other	-	-	-	-	-	EE

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

ATTACHMENT L

EMISSION UNIT DATA SHEET

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for ***each*** new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water . (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

☒ Composition of the representative sample used for the simulation
☒ For each stream that contributes to flashing emissions:
- ☒ Temperature and pressure (inlet and outlet from separator(s))
- ☒ Simulation-predicted composition
- ☒ Molecular weight
- ☒ Flow rate

☒ Resulting flash emission factor or flashing emissions from simulation
☒ Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION

1. Bulk Storage Area Name Oxford 11 Well Pad	2. Tank Name Condensate Tank(s)
3. Emission Unit ID number T07 – T12	4. Emission Point ID number 12e
5. Date Installed , Modified or Relocated *(for existing tanks)* 2015 Was the tank manufactured after August 23, 2011? ☒ Yes ☐ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* **Decrease throughput**	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☐ Yes ☒ No PROMAX MODEL SIMULATION REPORT RAN (SEE CALCULATIONS) ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. 400 bbl / 16,800 gal	
9A. Tank Internal Diameter (ft.) 12	9B. Tank Internal Height (ft.) 20
10A. Maximum Liquid Height (ft.) 20	10B. Average Liquid Height (ft.) 10
11A. Maximum Vapor Space Height (ft.) 20	11B. Average Vapor Space Height (ft.) 10
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume". 400 bbl / 16,800 gal	
13A. Maximum annual throughput (gal/yr) 255,500 per tank	13B. Maximum daily throughput (gal/day) 700 per tank
14. Number of tank turnovers per year 15 per tank	15. Maximum tank fill rate (gal/min) 50 per tank
16. Tank fill method ☒ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No	

If yes, (A) What is the volume expansion capacity of the system (gal)?
(B) What are the number of transfers into the system per year?

18. Type of tank (check all that apply):

☒ Fixed Roof ☒ vertical ☐ horizontal ☒ flat roof ☐ cone roof ☐ dome roof ☐ other (describe)

☐ External Floating Roof ☐ pontoon roof ☐ double deck roof
☐ Domed External (or Covered) Floating Roof
☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting
☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm
☐ Pressurized ☐ spherical ☐ cylindrical
☐ Other (describe)

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]
☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)
☐ Conservation Vent (psig) ☐ Condenser[1]
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)
Vacuum Setting Pressure Setting
☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application). SEE PROMAX MODEL SIMULATION REPORT IN CALCULATIONS

Material Name	**Flashing Loss**		**Working/Breathing Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
VOCs	--	--	--	--	--	--	Promax

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION

21. Tank Shell Construction:

☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)

21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:

22. Shell Condition (if metal and unlined):

☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig):

Must be listed for tanks using VRUs with closed vent system.

24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No

25F. Describe deck fittings:

26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No			
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based: Elkins, WV			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):	
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary. SEE PROMAX MODEL SIMULATION REPORT IN CALCULATIONS			
41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for ***each*** new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water . (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

☒ Composition of the representative sample used for the simulation
☒ For each stream that contributes to flashing emissions:
- ☒ Temperature and pressure (inlet and outlet from separator(s))
- ☒ Simulation-predicted composition
- ☒ Molecular weight
- ☒ Flow rate

☒ Resulting flash emission factor or flashing emissions from simulation
☒ Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION

1. Bulk Storage Area Name Oxford 11 Well Pad	2. Tank Name Produced Water Tank(s)
3. Emission Unit ID number T01 – T06	4. Emission Point ID number 12e
5. Date Installed , Modified or Relocated *(for existing tanks)* 2015 Was the tank manufactured after August 23, 2011? ☒ Yes ☐ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* **Decrease throughput**	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☐ Yes ☒ No PROMAX MODEL SIMULATION REPORT RAN (SEE CALCULATIONS) ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. 400 bbl / 16,800 gal	
9A. Tank Internal Diameter (ft.) 12	9B. Tank Internal Height (ft.) 20
10A. Maximum Liquid Height (ft.) 20	10B. Average Liquid Height (ft.) 10
11A. Maximum Vapor Space Height (ft.) 20	11B. Average Vapor Space Height (ft.) 10
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume". 400 bbl / 16,800 gal	
13A. Maximum annual throughput (gal/yr) 1,022,000 per tank	13B. Maximum daily throughput (gal/day) 2,800 per tank
14. Number of tank turnovers per year 61 per tank	15. Maximum tank fill rate (gal/min) 50 per tank
16. Tank fill method ☒ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No	

If yes, (A) What is the volume expansion capacity of the system (gal)?
(B) What are the number of transfers into the system per year?

18. Type of tank (check all that apply):

☒ Fixed Roof ☒ vertical ☐ horizontal ☒ flat roof ☐ cone roof ☐ dome roof ☐ other (describe)

☐ External Floating Roof ☐ pontoon roof ☐ double deck roof
☐ Domed External (or Covered) Floating Roof
☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting
☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm
☐ Pressurized ☐ spherical ☐ cylindrical
☐ Other (describe)

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]
☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)
☐ Conservation Vent (psig) ☐ Condenser[1]
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)
Vacuum Setting Pressure Setting
☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application). SEE PROMAX MODEL SIMULATION REPORT IN CALCULATIONS

Material Name	**Flashing Loss**		**Working/Breathing Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
VOCs	--	--	--	--	--	--	Promax

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION

21. Tank Shell Construction:

☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)

21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:

22. Shell Condition (if metal and unlined):

☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig):

Must be listed for tanks using VRUs with closed vent system.

24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No

25F. Describe deck fittings:

26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No			
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based: Elkins, WV			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):	
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary. SEE PROMAX MODEL SIMULATION REPORT IN CALCULATIONS			
41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

TANKER TRUCK LOADING DATA SHEET

Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.

Truck Loadout Collection Efficiencies

The following applicable capture efficiencies of a truck loadout are allowed:

- For tanker trucks passing the MACT level annual leak test – 99.2%
- For tanker trucks passing the NSPS level annual leak test – 98.7%
- For tanker trucks not passing one of the annual leak tests listed above – 70%

Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for ***every*** truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. These additional requirements must be noted in the Registration Application and will be noted on the issued G35-C Registration.

Emission Unit ID#: TL-1	Emission Point ID#: Fugitives	Year Installed/Modified: 2015/2017
Emission Unit Description: Emissions from Truck Loading		
Loading Area Data		
Number of Pumps: 1 / On Truck	Number of Liquids Loaded: 1	Max number of trucks loading at one (1) time: 1
Are tanker trucks pressure tested for leaks at this or any other location? ☐ Yes ☐ No ☒ Not Required If Yes, Please describe:		
Provide description of closed vent system and any bypasses.		
Are any of the following truck loadout systems utilized? ☐ Closed System to tanker truck passing a MACT level annual leak test? ☐ Closed System to tanker truck passing a NSPS level annual leak test? ☐ Closed System to tanker truck not passing an annual leak test and has vapor return?		

Projected Maximum Operating Schedule (for rack or transfer point as a whole)

Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	24	24	24	24
Days/week	7	7	7	7

Bulk Liquid Data (use extra pages as necessary)

Liquid Name	Produced Water	Condensate	
Max. Daily Throughput (1000 gal/day)	16.8	4.2	
Max. Annual Throughput (1000 gal/yr)	6,132	1,533	
Loading Method[1]	SUB	SUB	
Max. Fill Rate (gal/min)	11.7	2.9	
Average Fill Time (min/loading)	60	60	
Max. Bulk Liquid Temperature (^{o}F)	60.4	60	
True Vapor Pressure[2]	0.15	4.40	

Cargo Vessel Condition[3]		C	C	
Control Equipment or Method[4]		None	ECD	
Max. Collection Efficiency (%)		0	70	
Max. Control Efficiency (%)		0	70	
Max.VOC Emission Rate	Loading (lb/hr)	0.03	0.38	
	Annual (ton/yr)	0.12	1.64	
Max.HAP Emission Rate	Loading (lb/hr)	--	--	
	Annual (ton/yr)	--	--	
Estimation Method[5]		TM	TM	

1 BF Bottom Fill SP Splash Fill SUB Submerged Fill

2 At maximum bulk liquid temperature

3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)
O Other (describe)

4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)
ECD Enclosed Combustion Device F Flare
TO Thermal Oxidization or Incineration

5 EPA EPA Emission Factor in AP-42 MB Material Balance
TM Test Measurement based upon test data submittal O Other (describe)

ATTACHMENT M

AIR POLLUTION CONTROL DEVICE

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

AIR POLLUTION CONTROL DEVICE
Vapor Combustion Control Device Sheet

Complete this vapor combustion control device sheet for each enclosed combustion device, flare, thermal oxidizer, or completion combustion device that is located at the natural gas production pad for the purpose of thermally destructing waste gas to control emissions of regulated pollutants to the atmosphere.

IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.

General Information

1. Control Device ID#: Flare-1	2. Installation Date: 2015 ☐ New	
3. Maximum Rated Total Flow Capacity: 409 scf/hr 9,816 scf/d	4. Maximum Design Heat Input: 0.63 MMBtu/hr	5. Design Heat Content: 1,501 BTU/scf

Control Device Information

6. Select the type of vapor combustion control device being used: ☐ Enclosed Combustion Device

☒ Elevated Flare ☐ Ground Flare ☐ Thermal Oxidizer ☐ Completion Combustion Device

7. Manufacturer: National Oilwell Varco (NOV) Model No.: PGF 3000	8. Hours of operation per year: 8,760 hours – Worst case scenario where LPS diverts all gas to the Flare

9. List the emission units whose emissions are controlled by this vapor combustion control device: (Emission Point ID#: 13e)

10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
LPS-1	Low Pressure Separator		

If this vapor combustor controls emissions from more than six emission units, please attach additional pages.

11. Assist Type	12. Flare Height	13. Tip Diameter	14. Was the design per §60.18?
☐ Steam - ☐ Air - ☐ Pressure - ☒ Non -	26.33 ft	To Be Determined	☒Yes ☐No

Waste Gas Information

15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft3)	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (ft/s)
6.8	1,501	1400-1650	<400

19. Provide an attachment with the characteristics of the waste gas stream to be burned.

Pilot Information

20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Fuel Gas	1	13.5	1,197	☒ Yes ☐ No

25. If automatic re-ignition will be used, describe the method: Electronic re-ignition will be installed and monitored for proof of pilot flame through flame ionization, auto relight.

26. Describe the method of controlling flame: NA

27. Is pilot flame equipped with a monitor to detect the presence of the flame? ☒ Yes ☐ No	28. If yes, what type? ☐ Thermocouple ☐ Infra-Red ☐ Ultra Violet ☐ Camera with monitoring control room ☒ Other, describe: Ionization rod which sends a signal to controller as long as it is in contact with the flame.

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
VOC	100	98

32. Has the control device been tested by the manufacturer and certified? No

33. Describe all operating ranges and maintenance procedures required by the manufacturer to maintain warranty: Available Upon request

34. Additional Information Attached? ☒ **YES** ☐ **NO**

Please attach a copy of manufacturer's data sheet.
Please attach a copy of manufacturer's drawing.
Please attach a copy of the manufacturer's performance testing.

If any of the requested information is not available, please contact the manufacturer.

INSTRUCTIONS:
Vapor Combustion Control Device

This form assumes one vapor combustion control device emissions are being released from the emission point identification number (including the waste gas emissions and pilot emissions). If multiple vapor combustion control devices are being used at the oil and natural gas production facility, a vapor control device sheet must be completed for each device. The same form is being used for all types of vapor combustion control devices.

General Information

1. Enter the control device ID#(s) that has been assigned to this control device. A unique control device identification number should identify each control device located at the affected facility.
2. Enter the date that the control device was installed at the affected facility. Include the month, day, and year. If this is a new control device that has yet to be installed, check the "NEW" box.
3. Enter the maximum rated total flow rate of the vapor combustion device. This includes the flow rate of all materials to be burned including the pilot fuel and the waste gas.
4. Enter the maximum rated design heat input capacity of the vapor combustion device in terms of million British thermal units per hour (MMBtu/hr).
5. Enter the total design heat content of the pilot in terms of million British thermal units per hour (MMBtu/hr).

Control Device Information

6. Indicate the type of vapor combustion device that applies.
7. Enter the manufacturer and model number of the control device.
8. Enter the hours of operation that the control device is planned to be used. This should be the same basis as the emissions calculations.
9. Enter the emission point identification number.
10. Enter ALL of the emission units whose emissions will be controlled and then emitted from the control device.
11. Select whether the flare is steam-assisted, air-assisted, pressure-assisted, or non-assisted.
12. Enter the height of the stack in terms of feet.
13. Enter the tip diameter (in feet) of the top of the stack where the emissions are discharged.
14. Is the applicant having the combustion device designed per §60.18? Only flares required by an NSPS standard are required to be designed and operated in accordance with §60.18.

Waste Gas Information

The waste gas is the vapor emissions that are being controlled.

15. Enter the waste gas flow rate in cubic feet per minute that is being consumed.
16. Enter the heat content of the waste gas being combusted in units of BTU per cubic feet.
17. Enter the minimum temperature of the emissions stream (°F).
18. Enter the velocity in feet per second of the gas as it discharges from the top of the stack.
19. Provide the characterization of the waste gas stream that is being controlled. This could be a certificate of analysis of the natural gas from this facility or from a similar facility. This is the basis of the emissions calculations.

Pilot Information

20. Enter the type/grade(s) of fuel that will combusted in the combustion flare's pilot (examples: natural gas pipeline quality, propane, etc.).
21. How many pilot lights does the device have?
22. What is the fuel capacity for each pilot?
23. What is the heat input for each pilot?
24. Is the system designed with automatic re-ignition?
25. Describe the re-ignition method and system.
26. Describe the method of controlling the pilot flame.
27. Is the pilot flame equipped with a monitoring device?
28. What is the monitoring device for the pilot flame?

**continued next page*

Control Information

29. Enter the types of pollutants that the control equipment controls (i.e., reduces). If numerous pollutants are controlled, indicate the different pollutants controlled in line with their respective control efficiencies.
30. What is the % capture efficiency of the collection system to the control device? In other words, what is the percentage of the waste gas stream will be controlled?
31. Enter the control efficiency of the control equipment for each pollutant being controlled. The manufacturer typically provides a manufacturer's minimum guarantee control efficiency. Provide the manufacturer's data sheet that documents the minimum guarantee.
32. Please answer if the control device had a performance test conducted by the manufacturer and if it is certified.
33. Describe the manufacturer's operating and maintenance requirements that the guaranteed control efficiency is based upon.
34. Please include any additional information associated with the control device you feel should be submitted with this application. Please attach a copy of the manufacturer's data sheet. Please include the manufacturer's performance testing.

AIR POLLUTION CONTROL DEVICE
Vapor Combustion Control Device Sheet

Complete this vapor combustion control device sheet for each enclosed combustion device, flare, thermal oxidizer, or completion combustion device that is located at the natural gas production pad for the purpose of thermally destructing waste gas to control emissions of regulated pollutants to the atmosphere.

IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.

General Information

1. Control Device ID#: VDU-1	2. Installation Date: 2015 ☐ New	
3. Maximum Rated Total Flow Capacity: 9,646 scf/hr 231,500 scf/d	4. Maximum Design Heat Input: 18.06 MMBtu/hr	5. Design Heat Content: 1,866 BTU/scf

Control Device Information

6. Select the type of vapor combustion control device being used: ☒ Enclosed Combustion Device

☐ Elevated Flare ☐ Ground Flare ☐ Thermal Oxidizer ☐ Completion Combustion Device

7. Manufacturer: National Oilwell Varco (NOV) Model No.: MEVC 200DT	8. Hours of operation per year: 8,760

9. List the emission units whose emissions are controlled by this vapor combustion control device: (Emission Point ID#: 12e)

10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
T01-T06	Water Tanks		
T07-T12	Condensate Tanks		
TL-1	Condensate Truck Loading		

If this vapor combustor controls emissions from more than six emission units, please attach additional pages.

11. Assist Type	12. Flare Height	13. Tip Diameter	14. Was the design per §60.18?
☐ Steam - ☐ Air - ☐ Pressure - ☒ Non -	20 ft	Multi Tip Burner	☒ Yes ☐ No

Waste Gas Information

15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft3)	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (ft/s)
160.8	1,866	1400-1650	<400

19. Provide an attachment with the characteristics of the waste gas stream to be burned.

Pilot Information

20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Fuel Gas	1	49	1,197	☒ Yes ☐ No

25. If automatic re-ignition will be used, describe the method: Electronic re-ignition will be installed

26. Describe the method of controlling flame: Thermocouple

27. Is pilot flame equipped with a monitor to detect the presence of the flame?	28. If yes, what type? ☒ Thermocouple ☐ Infra-Red ☐ Ultra Violet ☐ Camera with monitoring control room ☒ Other, describe: Ionization rod which sends a signal to controller as long as it is in contact with the flame.
☒ Yes ☐ No	

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
VOC	99	99

32. Has the control device been tested by the manufacturer and certified? No

33. Describe all operating ranges and maintenance procedures required by the manufacturer to maintain warranty: Available Upon request

34. Additional Information Attached? ☒ **YES** ☐ **NO**

Please attach a copy of manufacturer's data sheet.
Please attach a copy of manufacturer's drawing.
Please attach a copy of the manufacturer's performance testing.

If any of the requested information is not available, please contact the manufacturer.

INSTRUCTIONS:
Vapor Combustion Control Device

This form assumes one vapor combustion control device emissions are being released from the emission point identification number (including the waste gas emissions and pilot emissions). If multiple vapor combustion control devices are being used at the oil and natural gas production facility, a vapor control device sheet must be completed for each device. The same form is being used for all types of vapor combustion control devices.

General Information

1. Enter the control device ID#(s) that has been assigned to this control device. A unique control device identification number should identify each control device located at the affected facility.
2. Enter the date that the control device was installed at the affected facility. Include the month, day, and year. If this is a new control device that has yet to be installed, check the "NEW" box.
3. Enter the maximum rated total flow rate of the vapor combustion device. This includes the flow rate of all materials to be burned including the pilot fuel and the waste gas.
4. Enter the maximum rated design heat input capacity of the vapor combustion device in terms of million British thermal units per hour (MMBtu/hr).
5. Enter the total design heat content of the pilot in terms of million British thermal units per hour (MMBtu/hr).

Control Device Information

6. Indicate the type of vapor combustion device that applies.
7. Enter the manufacturer and model number of the control device.
8. Enter the hours of operation that the control device is planned to be used. This should be the same basis as the emissions calculations.
9. Enter the emission point identification number.
10. Enter ALL of the emission units whose emissions will be controlled and then emitted from the control device.
11. Select whether the flare is steam-assisted, air-assisted, pressure-assisted, or non-assisted.
12. Enter the height of the stack in terms of feet.
13. Enter the tip diameter (in feet) of the top of the stack where the emissions are discharged.
14. Is the applicant having the combustion device designed per §60.18? Only flares required by an NSPS standard are required to be designed and operated in accordance with §60.18.

Waste Gas Information

The waste gas is the vapor emissions that are being controlled.

15. Enter the waste gas flow rate in cubic feet per minute that is being consumed.
16. Enter the heat content of the waste gas being combusted in units of BTU per cubic feet.
17. Enter the minimum temperature of the emissions stream (°F).
18. Enter the velocity in feet per second of the gas as it discharges from the top of the stack.
19. Provide the characterization of the waste gas stream that is being controlled. This could be a certificate of analysis of the natural gas from this facility or from a similar facility. This is the basis of the emissions calculations.

Pilot Information

20. Enter the type/grade(s) of fuel that will combusted in the combustion flare's pilot (examples: natural gas pipeline quality, propane, etc.).
21. How many pilot lights does the device have?
22. What is the fuel capacity for each pilot?
23. What is the heat input for each pilot?
24. Is the system designed with automatic re-ignition?
25. Describe the re-ignition method and system.
26. Describe the method of controlling the pilot flame.
27. Is the pilot flame equipped with a monitoring device?
28. What is the monitoring device for the pilot flame?

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Control Information

29. Enter the types of pollutants that the control equipment controls (i.e., reduces). If numerous pollutants are controlled, indicate the different pollutants controlled in line with their respective control efficiencies.
30. What is the % capture efficiency of the collection system to the control device? In other words, what is the percentage of the waste gas stream will be controlled?
31. Enter the control efficiency of the control equipment for each pollutant being controlled. The manufacturer typically provides a manufacturer's minimum guarantee control efficiency. Provide the manufacturer's data sheet that documents the minimum guarantee.
32. Please answer if the control device had a performance test conducted by the manufacturer and if it is certified.
33. Describe the manufacturer's operating and maintenance requirements that the guaranteed control efficiency is based upon.
34. Please include any additional information associated with the control device you feel should be submitted with this application. Please attach a copy of the manufacturer's data sheet. Please include the manufacturer's performance testing.

ATTACHMENT N

SUPPORTING EMISSIONS CALCULATIONS

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

Table 1. Annual Potential To Emit (PTE)
CNX Gas Company LLC - Oxford 11

Proposed Emissions R13-3237C

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC[(1)]	CO2e
Tanks with VDU 98% DRE (ton/yr)	--	--	--	--	--	--	1.450	-
Gas Processing Units (ton/yr)	0.196	0.196	0.196	0.015	2.576	2.164	0.142	3075.020
Low Pressure Separator (ton/yr)	0.016	0.016	0.016	0.001	0.215	0.180	0.012	256.252
Vapor Destruction Unit (VDU) (tons/yr)	-	-	-	0.181	5.378	24.519	11.073	9215.319
Process Flare (ton/yr)	-	-	-	0.011	0.188	0.855	1.077	314.101
Thermoelectic Burner (ton/yr)					0.005	0.002		
Truck Loading (ton/yr)	-	-	-	-	-	-	1.763	-
Piping Fugitives (ton/yr)	-	-	-	-	-	-	21.865	238.979
Total Point Source Emissions (ton/yr)	0.21	0.21	0.21	0.21	8.36	27.72	14.07	13099.67
Total Point Source Emissions (lb/hr)	0.05	0.05	0.05	0.05	1.91	6.33	3.21	2990.79

(1) Total Point Source Emissions for VOCs from the Tanks are accounted for within the VDU maximum design rate

Current Emissions R13-3237B

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Tanks with VDU 98% DRE (ton/yr)	--	--	--	--	--	--	11.884	-
Salt Tank Uncontrolled Brine (ton/yr)							0.032	
Gas Processing Units (ton/yr)	0.196	0.196	0.196	0.015	2.576	2.164	0.142	3075.020
Line heaters (ton/yr)	0.082	0.082	0.082	0.006	1.074	0.902	0.059	1281.258
Low Pressure Separator (ton/yr)	0.016	0.016	0.016	0.001	0.215	0.180	0.012	256.252
Engines (ton/yr)	0.026	0.026	0.026	0.016	4.645	4.040	1.692	4281.283
Vapor Destruction Unit (VDU) (tons/yr)	-	-	-	0.158	5.475	29.791	11.272	9385.892
Process Flare (ton/yr)	-	-	-	2.557	8.505	46.278	65.776	14611.250
MicroTurbine (ton/yr)					0.084	0.237	0.030	222.066
Thermoelectic Burner (ton/yr)					0.005	0.002		
Truck Loading (ton/yr)	-	-	-	-	-	-	17.817	-
Piping Fugitives (ton/yr)	-	-	-	-	-	-	32.384	352.339
Total Emissions (ton/yr)	0.319	0.319	0.319	2.755	21.266	80.968	97.412	33465.359
Total Emissions (lb/hr)	0.073	0.073	0.073	0.629	4.855	18.486	22.240	7640.493

Change in Permitted Emissions

	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Total Emissions (ton/yr)	-0.107	-0.107	-0.107	-2.546	-12.903	-53.246	-83.345	-20365.689
Total Emissions (lb/hr)	-0.024	-0.024	-0.024	-0.581	-2.946	-12.157	-19.028	-4649.701

External emission sources within 1/4 mile radius of Oxford 11 Well Pad (CONE - Cain Run (Laverne) Station)

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Slop/Brine Tank (tons/yr)	--	--	--	--	--	--	0.00	--
Dehy Reboiler Burner (tons/yr)	0.01	0.01	0.01	0.00	0.16	0.14	0.01	192
Dehydration/Ground Flare (ton/yr)	--	--	--	0.04	0.60	2.72	1.23	1,024
MicroTurbine (ton/yr)	--	--	--	--	0.08	0.24	0.03	222
Compressor Engine (tons/yr)	0.45	0.45	0.45	0.03	13.33	26.65	9.33	6,947
Compressor Blowdowns (tons/yr)	--	--	--	--	--	--	1.19	158
Pigging Blowdown Emissions (tons/yr)	--	--	--	--	--	--	0.80	106
Desiccant Dehy Blowdown Emissions (tons/yr)	--	--	--	--	--	--	2.29	305
Truck Loading (ton/yr)	--	--	--	--	--	--	0.00	--
Piping Fugitives (ton/yr)	--	--	--	--	--	--	1.74	29
Total Point Source Emissions (ton/yr)	0.46	0.46	0.46	0.06	14.17	29.75	14.88	8955.42
Total Point Source Emissions (lb/hr)	0.10	0.10	0.10	0.01	3.23	6.79	3.40	2044.62

Table 2. Tank Emissions
CNX Gas Company LLC - Oxford 11

Emission Unit	Tank Contents	Tank Throughput (bbls/day)	Uncontrolled VOC Emissions (lb/hr)	Uncontrolled VOC Emissions (ton/yr)	98 %VDU Control VOC (lb/hr)	98 %VDU Control VOC (ton/yr)
T01-T06	Produced Water	400.00	2.00	8.746	0.040	0.175
T07-T12	Condensate	100.00	14.55	63.732	0.291	1.275
Total			16.55	72.477	**0.331**	**1.450**

Notes:
Emissions are taken from ProMax 4.0. and are the combination of the flashing and working/ breathing losses determinted from representative site sampling at Oxford 11

Total HAPs when controlled are less than 0.01 lb/hr

ProMax Results Summary (Complete results located in Attachment I)

Condensate Tanks Vented Emissions

Pollutant	lb/hr
Methane	1.08352
Ethane	6.50535
Propane	6.20302
i-Butane	1.45713
n-Butane	2.62071
2,2-Dimethylpropane	0.0564769
i-Pentane	1.01147
n-Pentane	0.854447
Neohexane	0.0596239
Cyclopentane	0
2,3-Dimethylbutane	0.0847523
Isohexane	0.400366
3-Methylpentane	0.238878
Hexane	0.436972
Methylcyclopentane	0.0583383
Benzene	0.0133580
Cyclohexane	0.0616772
2-Methylhexane	0.121345
3-Methylhexane	0.127749
2,2,4-Trimethylpentane	0
2,3-Dimethylpentane	0.0581052
n-Heptane	0.160786
Methylcyclohexane	0.135203
Toluene	0.0293897
2-Methylheptane	0.0484900
n-Octane	0.0480898
Ethylbenzene	0.00591628
m-Xylene	0.0134920
o-Xylene	0.00694642
2,2-Dimethylheptane	0.00941530
n-Nonane	0.0108333
2-Methylnonane	0.000710394
n-Decane	0.00253221
Undecane	0
C07s Others	0.0575268
C08s Others	0.118143
C09s Others	0.0267014
C10s Others	0.00888358
C11s	0.00262310
C12s	0.000551537
VOC Total Uncontrolled	**14.55**
Total HAPs	0.50

Water Tanks Vented Emissions

Pollutant	lb/hr
Methane	1.56774
Ethane	0.804105
Propane	0.471753
i-Butane	0.147227
n-Butane	0.319506
2,2-Dimethylpropane	0.00788134
i-Pentane	0.187970
n-Pentane	0.176552
Neohexane	0.0142370
Cyclopentane	0
2,3-Dimethylbutane	0.0217702
Isohexane	0.105141
3-Methylpentane	0.0639659
Hexane	0.120779
Methylcyclopentane	0.0166357
Benzene	0.00397177
Cyclohexane	0.0183134
2-Methylhexane	0.0457748
3-Methylhexane	0.0388352
2,2,4-Trimethylpentane	0
2,3-Dimethylpentane	0.0175699
n-Heptane	0.0499408
Methylcyclohexane	0.0418685
Toluene	0.00950297
2-Methylheptane	0.0154344
n-Octane	0.0154461
Ethylbenzene	0.00198200
m-Xylene	0.00428302
o-Xylene	0.00240120
2,2-Dimethylheptane	0.00301180
n-Nonane	0.00353920
2-Methylnonane	0.000227120
n-Decane	0.000831877
Undecane	0
C07s Others	0.0181777
C08s Others	0.0390907
C09s Others	0.00898178
C10s Others	0.00300853
C11s	0.000891236
C12s	0.000188204
VOC Total Uncontrolled	**2.00**
Total HAPs	0.14

Table 3. Gas Processing Unit (GPU) Rates and Emissions
CNX Gas Company LLC - Oxford 11

Pollutant	Emission Factor			Emissions (lbs/hr)	Emissions (tons/yr)	Emissions x 6 (lbs/hr)	Emissions x 6 (tons/yr)
Criteria Pollutants							
PM/PM10/PM2.5	7.6	lb/MMcf	(1)	0.0075	0.0326	0.04	0.20
SO_2	0.6	lb/MMcf	(1)	0.0006	0.0026	0.00	0.02
NOx	100	lb/MMcf	(2)	0.0980	0.4294	0.59	2.58
CO	84	lb/MMcf	(2)	0.0824	0.3607	0.49	2.16
VOC	5.5	lb/MMcf	(1)	0.0054	0.0236	0.03	0.14
Hazardous Air Pollutants							
Arsenic	2.0E-04	lb/MMcf	(3)	1.96E-7	8.59E-7	1.18E-6	5.15E-6
Benzene	2.1E-03	lb/MMcf	(4)	2.06E-6	9.02E-6	1.24E-5	5.41E-5
Beryllium	1.2E-05	lb/MMcf	(3)	1.18E-8	5.15E-8	7.06E-8	3.09E-7
Cadmium	1.1E-03	lb/MMcf	(3)	1.08E-6	4.72E-6	6.47E-6	2.83E-5
Chromium	1.4E-03	lb/MMcf	(3)	1.37E-6	6.01E-6	8.24E-6	3.61E-5
Cobalt	8.4E-05	lb/MMcf	(3)	8.24E-8	3.61E-7	4.94E-7	2.16E-6
Dichlorobenzene	1.2E-03	lb/MMcf	(4)	1.18E-6	5.15E-6	7.06E-6	3.09E-5
Formaldehyde	7.5E-02	lb/MMcf	(4)	7.35E-5	3.22E-4	4.41E-4	1.93E-3
Hexane	1.8E+00	lb/MMcf	(4)	1.76E-3	7.73E-3	1.06E-2	4.64E-2
Lead	5.0E-04	lb/MMcf	(3)	4.90E-7	2.15E-6	2.94E-6	1.29E-5
Manganese	3.8E-04	lb/MMcf	(3)	3.73E-7	1.63E-6	2.24E-6	9.79E-6
Mercury	2.6E-04	lb/MMcf	(3)	2.55E-7	1.12E-6	1.53E-6	6.70E-6
Naphthalene	6.1E-04	lb/MMcf	(4)	5.98E-7	2.62E-6	3.59E-6	1.57E-5
Nickel	2.1E-03	lb/MMcf	(3)	2.06E-6	9.02E-6	1.24E-5	5.41E-5
PAH/POM	1.3E-03	lb/MMcf	(4)	1.26E-6	5.53E-6	7.58E-6	3.32E-5
Selenium	2.4E-05	lb/MMcf	(3)	2.35E-8	1.03E-7	1.41E-7	6.18E-7
Toluene	3.4E-03	lb/MMcf	(4)	3.33E-6	1.46E-5	2.00E-5	8.76E-5
Total HAP	**1.9E+00**	**lb/MMCF**		1.85E-3	8.11E-3	1.11E-2	4.87E-2
Greenhouse Gas Emissions							
CO_2	116.89	lb/MMBtu	(5)	1.17E+2	5.12E+2	7.01E+2	3.07E+3
CH_4	2.2E-03	lb/MMBtu	(5)	2.20E-3	9.66E-3	1.32E-2	5.79E-2
N_2O	0.0	lb/MMBtu	(5)	2.20E-4	9.66E-4	1.32E-3	5.79E-3
CO_2e[(b)]	-	-		117.010	512.503	702.059	3,075.020

Calculations:

(a) Annual emissions (tons/yr) = [Annual Usage (MMBtu/yr or MMCF/yr)]x [Number of Identical Heaters]x [Emission Factor (lb/MMBtu or lb/MMCF)] / [2,000 lb/ton]

Number of GPUs	6	
Fuel Use (MMBtu/hr) =	1	
Hours of Operation (hr/yr)=	8760	
PTE Fuel Use (MMcf/yr) =	8.6	(7)

(b) CO_2 equivalent = [(CO_2 emissions)*(GWP_{CO2})]+[(CH_4 emissions)*(GWP_{CH4})]+[(N_2O emissions)*(GWP_{N2O})]

Global Warming Potential (GWP)

CO_2	1	(6)
CH_4	25	(6)
N_2O	298	(6)

Notes:

(1) AP-42, Chapter 1.4, Table 1.4-2. Emission Factors For Criteria Pollutants and Greenhouse Gases From Natural Gas Combustion, July 1998.

(2) AP-42, Chapter 1.4, Table 1.4-1. Emission Factors For Nitrogen Oxides (Nox) and Carbon Monoxide(CO) From Natural Gas Combustion, July 1998.

(3) AP-42, Chapter 1.4, Table 1.4-4. Emission Factors For Metals From Natural Gas Combustion, July 1998.

(4) AP-42, Chapter 1.4, Table 1.4-3. Emission Factors for Speciated Organic Compounds from Natural Gas Combustion, July 1998.

(5) Emission factors are from 40 CFR 98, Subpart C, Table C-1 and C-2.

(6) Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1

(7) MMBtu to MMcf conversion factor is 1020. AP-42, Chapter 1.4

Table 4. Low Pressure Separator (LPS-1) Rates and Emissions
CNX Gas Company LLC - Oxford 11

Pollutant	Emission Factor			Emissions (lbs/hr)	Emissions (tons/yr)
Criteria Pollutants					
PM/PM10/PM2.5	7.6	lb/MMcf	(1)	0.00	0.02
SO_2	0.6	lb/MMcf	(1)	0.00	0.00
NOx	100	lb/MMcf	(2)	0.05	0.21
CO	84	lb/MMcf	(2)	0.04	0.18
VOC	5.5	lb/MMcf	(1)	0.00	0.01
Hazardous Air Pollutants					
Arsenic	2.0E-04	lb/MMcf	(3)	9.80E-8	4.29E-7
Benzene	2.1E-03	lb/MMcf	(4)	1.03E-6	4.51E-6
Beryllium	1.2E-05	lb/MMcf	(3)	5.88E-9	2.58E-8
Cadmium	1.1E-03	lb/MMcf	(3)	5.39E-7	2.36E-6
Chromium	1.4E-03	lb/MMcf	(3)	6.86E-7	3.01E-6
Cobalt	8.4E-05	lb/MMcf	(3)	4.12E-8	1.80E-7
Dichlorobenzene	1.2E-03	lb/MMcf	(4)	5.88E-7	2.58E-6
Formaldehyde	7.5E-02	lb/MMcf	(4)	3.68E-5	1.61E-4
Hexane	1.8E+00	lb/MMcf	(4)	8.82E-4	3.86E-3
Lead	5.0E-04	lb/MMcf	(3)	2.45E-7	1.07E-6
Manganese	3.8E-04	lb/MMcf	(3)	1.86E-7	8.16E-7
Mercury	2.6E-04	lb/MMcf	(3)	1.27E-7	5.58E-7
Naphthalene	6.1E-04	lb/MMcf	(4)	2.99E-7	1.31E-6
Nickel	2.1E-03	lb/MMcf	(3)	1.03E-6	4.51E-6
PAH/POM	1.3E-03	lb/MMcf	(4)	6.31E-7	2.77E-6
Selenium	2.4E-05	lb/MMcf	(3)	1.18E-8	5.15E-8
Toluene	3.4E-03	lb/MMcf	(4)	1.67E-6	7.30E-6
Total HAP	**1.9E+00**	**lb/MMCF**		9.26E-4	4.06E-3
Greenhouse Gas Emissions					
CO_2	116.89	lb/MMBtu	(5)	58.44	255.99
CH_4	2.2E-03	lb/MMBtu	(5)	1.10E-3	4.83E-3
N_2O	0.0	lb/MMBtu	(5)	1.10E-4	4.83E-4
CO_2e[(b)]	-	-		58.50	256.25

Calculations:

(a) Annual emissions (tons/yr) = [Annual Usage (MMBtu/yr or MMCF/yr)]x [Number of Identical Heaters] x [Emission Factor (lb/MMBtu or lb/MMCF)] / [2,000 lb/ton]

Number of Line Heaters=	1	
Fuel Use (MMBtu/hr) =	0.5	
Hours of Operation (hr/yr)=	8760	
PTE Fuel Use (MMcf/yr) =	4.3	(7)

(b) CO_2 equivalent = [(CO_2 emissions)*(GWP_{CO2})]+[(CH_4 emissions)*(GWP_{CH4})]+[(N_2O emissions)*(GWP_{N2O})]
Global Warming Potential (GWP)

CO_2	1	(6)
CH_4	25	(6)
N_2O	298	(6)

Notes:

(1) AP-42, Chapter 1.4, Table 1.4-2. Emission Factors For Criteria Pollutants and Greenhouse Gases From Natural Gas Combustion, July 1998.
(2) AP-42, Chapter 1.4, Table 1.4-1. Emission Factors For Nitrogen Oxides (Nox) and Carbon Monoxide(CO) From Natural Gas Combustion, July 1998.
(3) AP-42, Chapter 1.4, Table 1.4-4. Emission Factors For Metals From Natural Gas Combustion, July 1998.
(4) AP-42, Chapter 1.4, Table 1.4-3. Emission Factors for Speciated Organic Compounds from Natural Gas Combustion, July 1998.
(5) Emission factors are from 40 CFR 98, Subpart C, Table C-1 and C-2.
(6) Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1
(7) MMBtu to MMcf conversion factor is 1020. AP-42, Chapter 1.4

Table 5. Thermoelectric Generator Emissions (TG-1) Emissions
CNX Gas Company LLC - Oxford 11

Pollutant	Emission Factor (lb/MMscf)	Volume (scf/hr)		(MMscf/ 1000000scf)	Emissions (lbs/hr)	Emissions (ton/yr)
CO	40	13		(1/1,000,000)	0.0005	0.0023
NOx	94	13		(1/1,000,000)	0.0012	0.0054

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = emission\,factor\left(\frac{lb}{MMBtu}\right) \times Volume\left(\frac{scf}{hr}\right) \times gas\,heat\,value\left(\frac{Btu}{scf}\right) \times \frac{MMBtu}{1{,}000{,}000\,Btu} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

Emission Factor = AP-42 Table 1.4-1 emission factor for residential heaters
Volume = 13 scf/hr (from Model 1120 Thermoelectric Generators spec sheeet
Gas Heat Value = 1000 Btu/scf

Table 6. Vapor Destruction Unit (VDU-1) Emissions
CNX Gas Company LLC - Oxford 11

Pollutant	Emission Factor (lb/MMBtu)	Volume (scf/hr)	Gas Heat Value (Btu/scf)	(MMBtu/ 1000000Btu)	Emissions (lbs/hr)	Emissions (ton/yr)
CO	0.31	9,646	1,866	(1/1,000,000)	5.58	24.44
NOx	0.068	9,646	1,866	(1/1,000,000)	1.22	5.36
VOC[a]	0.14	9,646	1,866	(1/1,000,000)	2.52	11.04
CO2e	116.89	9,646	1,866	(1/1,000,000)	2103.95	9215.32

[a] - Measured as methane equivalent, assumed worst case

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = emission\,factor\left(\frac{lb}{MMBtu}\right) \times Volume\left(\frac{scf}{hr}\right) \times gas\,heat\,value\left(\frac{Btu}{scf}\right) \times \frac{MMBtu}{1{,}000{,}000\,Btu} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

Emission Factor = AP-42 Tables 13.5-1 and 2 emission factor for specific pollutant
Volume = 9646 scf/hr which was set based on 18 MMBtu/hr VDU rating
Hours of operation calculated at 8760
Gas Heat Value = 1866 Btu/scf taken from tank header sample taken 6-10-16

Pollutant	Volume (scf/hr)	grain H2S/ 100 scf	Mol Fraction	Mol weight (g/mol)	(lb-mol /scf)	Emissions (lbs/hr)	Emissions (ton/yr)
SO2	9,646	15.26	0.0002423	64.00	1/379.4	0.3943	0.1727

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = Volume\left(\frac{scf}{hr}\right) \times mol\,fraction\left(\frac{H2S}{100\,scf} \times 0.00001588\right) \times molecular\,weight \times \frac{lb\text{-}mol}{scf} \times \frac{876\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

$$\frac{1\,grain\,H2S}{100\,scf} = 15.26\,ppm\,of\,H2S$$

H2S conversion taken from supporting Sulfur Measurement Handbook
grain H2S/100 scf = 15.26
Volume = 9648 scf/hr
Hours of operation calculated at 8760
1 lb mol = 379.4 cubic feet

For Pilot Light

Pollutant	Emission Factor (lb/MMBtu)	Volume (scf/hr)	Gas Heat Value (Btu/scf)	(MMBtu/ 1000000Btu)	Emissions (lbs/hr)	Emissions (ton/yr)
CO	0.31	49	1,197	(1/1,000,000)	0.0182	0.0796
NOx	0.068	49	1,197	(1/1,000,000)	0.0040	0.0175
VOC[a]	0.14	49	1,197	(1/1,000,000)	0.0082	0.0360

0.0587

[a] - Measured as methane equivalent, assumed worst case

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = emission\,factor\left(\frac{lb}{MMBtu}\right) \times Volume\left(\frac{scf}{hr}\right) \times gas\,heat\,value\left(\frac{Btu}{scf}\right) \times \frac{MMBtu}{1{,}000{,}000\,Btu} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

Emission Factor = AP-42 Tables 13.5-1 and 2 emission factor for specific pollutant
Gas Heat Value = 1197 Btu/scf average of two sales gas samples taken 6-10-16

Pollutant	Volume (scf/hr)	grain H2S/ 100 scf	Mol Fraction	Mol weight (g/mol)	(lb-mol /scf)	Emissions (lbs/hr)	Emissions (ton/yr)
SO2	49.00	15.26	0.0002423	64.00	1/379.4	0.0020	0.0088

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = Volume\left(\frac{scf}{hr}\right) \times mol\,fraction\left(\frac{H2S}{100\,scf} \times 0.00001588\right) \times molecular\,weight \times \frac{lb\text{-}mol}{scf} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

$$\frac{1\,grain\,H2S}{100\,scf} = 15.26\,ppm\,of\,H2S$$

H2S conversion taken from supporting Sulfur Measurement Handbook
grain H2S/100 scf = 15.26

1 lb mol = 379.4 cubic feet

VDU and Pilot Combined		
Pollutant	lb/hr	ton/yr
CO	**5.598**	**24.519**
Nox	**1.228**	**5.378**
VOC	**2.528**	**11.073**
SO2	**0.396**	**0.181**

Note: VOC totals were calculated using Promax uncontrolled
lb/hr VOCs reduced by 98 % DRE and resulted in 1.45 tpy, See Tanks Table
The VOC rate is based on 100 bbl/d Condensate & 400 bbl/d
water throughputs.
This VOC estimate was replaced by that of AP-42 since it resulted in worst case
nameplate capacity of 18 MMBtu/hr plus pilot to gives 11.07 tpy VOCs by AP-42

Table 7. Flare (Flare-1) Emissions
CNX Gas Company LLC - Oxford 11

Pollutant	Emission Factor (lb/MMBtu)	Volume (scf/hr)	Gas Heat Value (Btu/scf)	(MMBtu/ 1000000Btu)	Emissions (lbs/hr)	Emissions (ton/yr)
CO	0.31	409	1,501	(1/1,000,000)	0.19	0.83
NOx	0.068	409	1,501	(1/1,000,000)	0.04	0.18
VOC[a]	0.14	409	1,501	(1/1,000,000)	0.24	1.07
CO2	116.89	409	1,501	(1/1,000,000)	71.71	314.10

VOC by AP-42 lb/hr 0.086

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = emission\,factor\left(\frac{lb}{MMBtu}\right) \times Volume\left(\frac{scf}{hr}\right) \times gas\,heat\,value\left(\frac{Btu}{scf}\right) \times \frac{MMBtu}{1{,}000{,}000\,Btu} \times \frac{659\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

Emission Factor = AP-42 Tables 13.5-1 and 2 emission factor for specific pollutant
[a] - 98% DRE for VOCs from ProMax simulated unconrolled emissions

Hours of operation calculated at 8760 hrs/yr for worst case
Gas Heat Value = 1501 Btu/scf from low pressure separator ProMax Estimate

Pollutant	Volume (scf/hr)	grain H2S/ 100 scf	Mol Fraction	Mol weight (g/mol)	(lb-mol /scf)	Emissions (lbs/hr)	Emissions (ton/yr)
SO2	409	15.26	0.0002423	64.00	1/379.4	0.0167	0.0084

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = Volume\left(\frac{scf}{hr}\right) \times mol\,fraction\left(\frac{H2S}{100\,scf} \times 0.00001588\right) \times molecular\,weight \times \frac{lb\text{-}mol}{scf} \times \frac{659\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

$$\frac{1\,grain\,H2S}{100\,scf} = 15.26\,ppm\,of\,H2S$$

H2S conversion taken from supporting Sulfur Measurement Handbook
grain H2S/100 scf = 15.26
1 lb mol = 379.4 cubic feet

For Pilot Light

Pollutant	Emission Factor (lb/MMBtu)	Volume (scf/hr)	Gas Heat Value (Btu/scf)	(MMBtu/ 1000000Btu)	Emissions (lbs/hr)	Emissions (ton/yr)
CO	0.31	13.5	1,197	(1/1,000,000)	0.0050	0.0219
NOx	0.068	13.5	1,197	(1/1,000,000)	0.0011	0.0048
VOC[a]	0.14	13.5	1,197	(1/1,000,000)	0.0023	0.0099

[a] - Measured as methane equivalent, assumed worst case

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = emission\,factor\left(\frac{lb}{MMBtu}\right) \times Volume\left(\frac{scf}{hr}\right) \times gas\,heat\,value\left(\frac{Btu}{scf}\right) \times \frac{MMBtu}{1{,}000{,}000\,Btu} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

Emission Factor = AP-42 Tables 13.5-1 and 2 emission factor for specific pollutant
Gas Heat Value = 1197 Btu/scf average of two sales gas samples taken 6-10-16

Pollutant	Volume (scf/hr)	grain H2S/ 100 scf	Mol Fraction	Mol weight (g/mol)	(lb-mol /scf)	Emissions (lbs/hr)	Emissions (ton/yr)
SO2	13.5	15.26	0.0002423	64.00	1/379.4	0.0006	0.0024

Example Formula:

$$emissions\left(\frac{ton}{yr}\right) = Volume\left(\frac{scf}{hr}\right) \times mol\,fraction\left(\frac{H2S}{100\,scf} \times 0.00001588\right) \times molecular\,weight \times \frac{lb\text{-}mol}{scf} \times \frac{8760\,hrs}{1\,yr} \times \frac{1\,ton}{2{,}000\,lbs}$$

$$\frac{1\,grain\,H2S}{100\,scf} = 15.26\,ppm\,of\,H2S$$

H2S conversion taken from supporting Sulfur Measurement Handbook
grain H2S/100 scf = 15.26
1 lb mol = 379.4 cubic feet

Promax LPS Stream to Compressor	
Components	lb/hr VOC
Methane	8.69344
Ethane	9.13399
Propane	5.57328
i-Butane	1.16856
n-Butane	2.04008
2,2-Dimethylpropane	0.0441685
i-Pentane	0.780575
n-Pentane	0.661908
Neohexane	0.0459365
Cyclopentane	0
2,3-Dimethylbutane	0.0658059
Isohexane	0.312834
3-Methylpentane	0.186789
Hexane	0.342156
Methylcyclopentane	0.0469268
Benzene	0.0115871
Cyclohexane	0.0505676
2-Methylhexane	0.122416
3-Methylhexane	0.103553
2,2,4-Trimethylpentane	0
2,3-Dimethylpentane	0.0469577
n-Heptane	0.132672
Methylcyclohexane	0.110239
Toluene	0.0261179
2-Methylheptane	0.0408625
n-Octane	0.0412897
Ethylbenzene	0.00539151
m-Xylene	0.0115891
o-Xylene	0.00656708
2,2-Dimethylheptane	0.00804397
n-Nonane	0.00966440
2-Methylnonane	0.000648967
n-Decane	0.00237747
Undecane	0
C07s Others	0.0480460
C08s Others	0.103110
C09s Others	0.0243834
C10s Others	0.00849271
C11s	0.00262078
C12s	0.000575922
Uncontrolled lb/hr	12.18680
Controlled lb/hr	0.243735952
Controlled ton/yr	1.06756347

Promax at 80F and 30 psig LPS Operating Parameters			
MMscfd	scf/d	scf/hr	
0.00980962	9809.62	409	
		1501	Btu/scf
		613510	Btu/hr
		0.61	MMBtu/hr

Flare and Pilot Combined		
Pollutant	**lb/hr**	**ton/yr**
CO	**0.20**	**0.85**
Nox	**0.04**	**0.19**
VOC	**0.25**	**1.08**
SO2	**0.02**	**0.01**

Table 8. Truck Loading (TL-1) VOC Emissions
CNX Gas Company LLC - Oxford 11

Contents	Volume Transferred	Loading Loss [(a)] (lb VOC/1000gal)	PTE VOC Emissions (lb/hr)	PTE VOC Emissions (ton/yr) [(b)]	PTE VOC Emissions 70% Controlled (lb/hr)	PTE VOC Emissions 70% Controlled (ton/yr)
Water	6,132,000 gal/yr	0.039	0.027	0.119	0.027	0.119
Condensate	1,533,000 gal/yr	7.148	1.251	5.479	0.375	1.644
Total			**1.278**	**5.598**	**0.403**	**1.763**

Calculations:

(a) Loading Loss (lbs/1000 gal) = 12.46x[Saturation Factor] x [True Vapor Pressure of Liquid Loaded (psi)] x [Molecular Weight of Vapors(lbs/lb-mole)]/ [Temperature of Bulk Liquid Loaded(°R)]

(b) Annual Emissions(tons/yr) = [Loading Loss (lb VOC/ 1000 gal)]*[Volume Transferred(gal/yr)]/1000/2000

	Water	Condensate	
Saturation factor	0.60	0.60	Note [(1)]
Condensate Pvap (psi)	0.15	4.40	Note [(2)]
Molecular Weight (lb/lb-mol)	18.06	113.00	Note [(2)]
Bulk Liquid Tempurature (F)	60.40	60.00	Note [(2)]

Notes:

(1) AP-42 Section 5.2

(2) ProMax Oxford 11 - 100 BBLs of condensate per day and 400 bbl/d of produced water

Table 9. Fugitive Leak Emissions
CNX Gas Company LLC - Oxford 11

Fugitive emissions from valves and fittings are calculated using the major equipment default component count approach from 40 CFR Part 98 because site-specific component counts have not been collected.

Pollutant	Emission Factor		PTE[(a) Gas Service] (tons/yr)
Valves	9.9E-03 lb/hr/source	(1)	43.45
Low Bleed Pneumatic Valves	9.9E-03 lb/hr/source	(1)	8.69
Flanges	8.6E-04 lb/hr/source	(1)	15.07
Connectors	4.4E-04 lb/hr/source	(1)	7.73
Other Points in Gas Service	1.9E-02 lb/hr/source	(1)	37.46
Total Gas Released	- -		112.39
Total VOC Released (gas service)		(b)	**14.21**
Calculations:	**Total CO2e**	(c) (4)	238.98

(a) Annual emissions (tons/yr) = [Emission Factor (lb/hr/source)] x [Number of Sources] x [Hours of Operation per Year] x [0.0005 tons/ lb]

(b) Inlet Gas Composition used for wt % VOC at 12.64% from FESCO Sample 6-10-16

(c) Methane wt % taken as 67.29% from gas inlet composition, FESCO Sample 6-10-16

Number of Components in Gas Service

Valves=	1,000	(2)
Low Bleed Pneumatic Valves=	200	(2)
Connectors=	4,000	(2)
Other Points in Gas Service =	200	(2)
Maximum Hour of Operation =	8,760	

Pollutant	Emission Factor		PTE[(a) Light Liquid Service] (tons/yr)
Valves	5.5E-03 lb/hr/source	(1)	4.83
Pump Seals in Light Liq Service	2.8E-02 lb/hr/source	(1)	0.49
Flanges	2.4E-04 lb/hr/source	(1)	0.40
Connector	4.6E-04 lb/hr/source	(1)	0.75
Other Points in Light Liq Service	1.7E-02 lb/hr/source	(1)	1.19
Total VOC Release Light Liq Service		(b)	**7.66**

Calculations:

(a) Annual emissions (tons/yr) = [Emission Factor (lb/hr/source)] x [Number of Sources] x [Hours of Operation per Year] x [0.0005 tons/ lb]

(b) used 100 % VOC weight fraction for light liquid

Number of Components in Light Liquid Service

Valves=	200	(2)
Pump Seals in Light Liq Service=	4	(2)
Connectors=	372	(2)
Other Points in Gas Service =	7.5	(2)
Maximum Hour of Operation =	8,760	

Notes:

(1) Emission factors from Table 2-4. Oil and Gas Production Operations Average Emission Factors, EPA's 1995 Protocol for Equipment Leaks Emission Estimates

(2) *Default Average Component Counts for Major Onshore Natural Gas Production Equipment* from 40 CFR 98, Subpart W, Table W-1B

(4) Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1

Bryan Research & Engineering, Inc.

ProMax® 4.0

Simulation Report

Project: oxford 11 (PTE).pmx

Licensed to SLR International Corporation and Affiliates

Client Name: CONSOL
Location: OXFORD 11
Job: Potential to Emit

ProMax Filename: C:\Users\jvanhorne\Documents\work\for jesse\oxford 11 (PTE).pmx
ProMax Version: 4.0.16071.0
Simulation Initiated: 1/27/2017 2:32:04 PM

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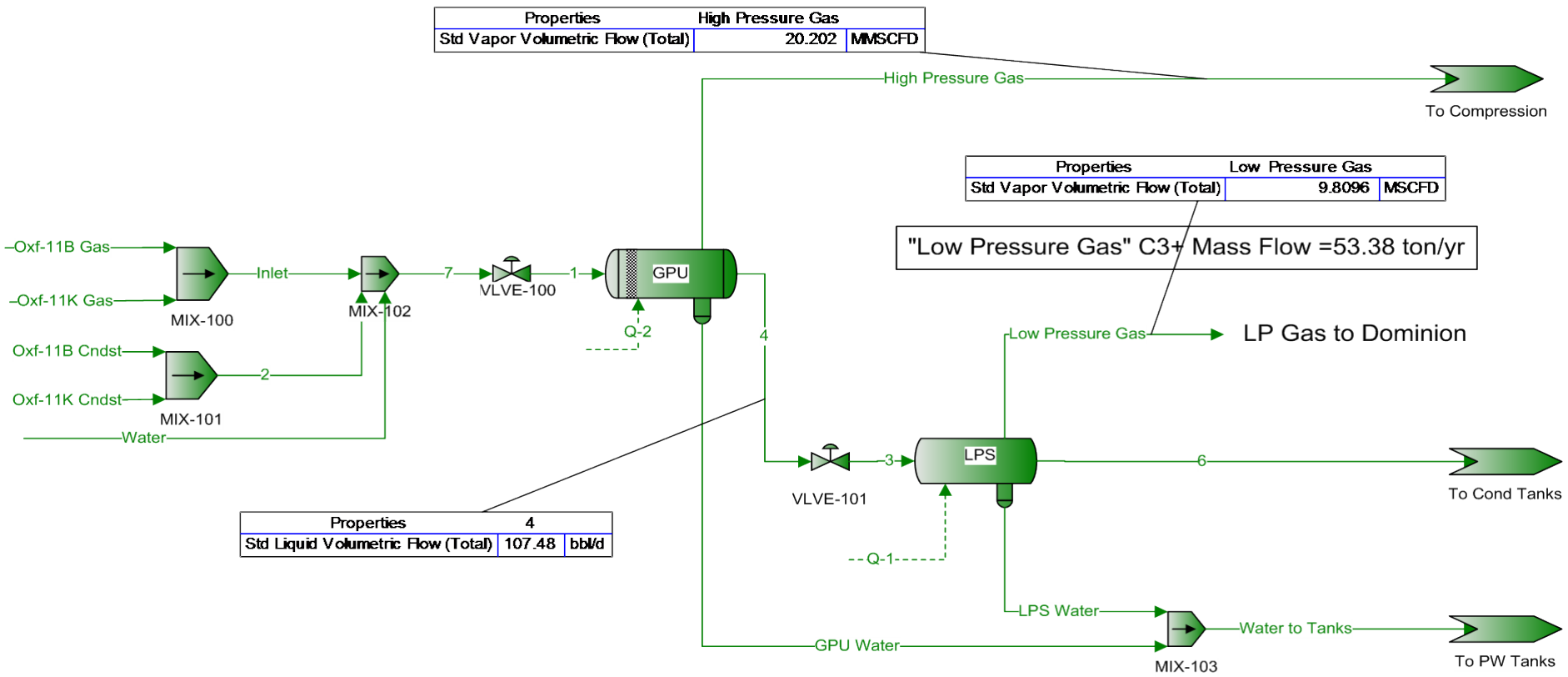
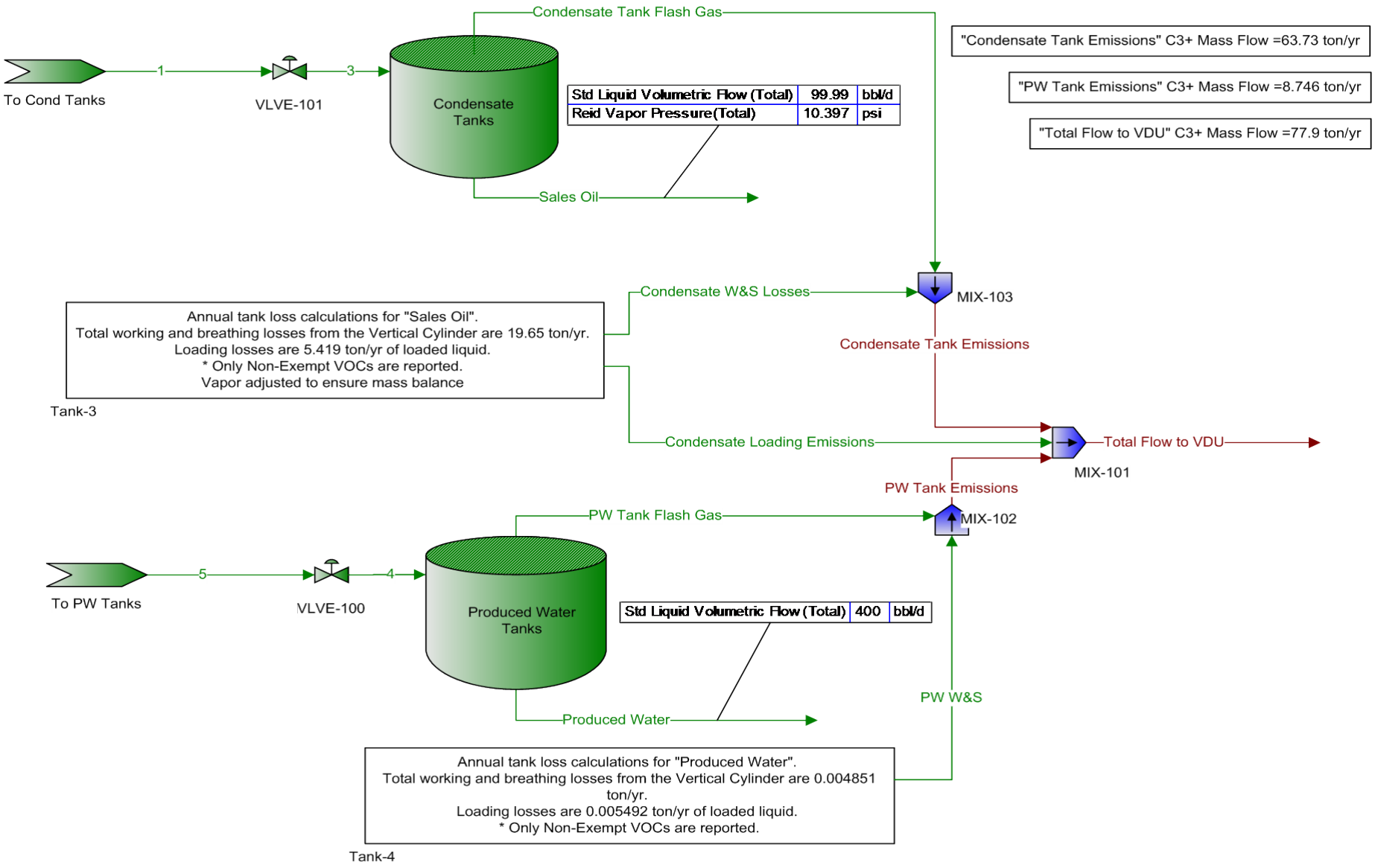
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.


Properties | High Pressure Gas
Std Vapor Volumetric Flow (Total) | 20.202 | MMSCFD
High Pressure Gas
To Compression
Properties | Low Pressure Gas
Std Vapor Volumetric Flow (Total) | 9.8096 | MSCFD
"Low Pressure Gas" C3+ Mass Flow =53.38 ton/yr
Oxf-11B Gas
Oxf-11K Gas
MIX-100
Inlet
MIX-102
7
VLVE-100
1
GPU
Q-2
4
Low Pressure Gas
LP Gas to Dominion
Oxf-11B Cndst
Oxf-11K Cndst
MIX-101
2
Water
VLVE-101
3
LPS
6
To Cond Tanks
Properties | 4
Std Liquid Volumetric Flow (Total) | 107.48 | bbl/d
Q-1
LPS Water
GPU Water
MIX-103
Water to Tanks
To PW Tanks

Process Streams		GPU Water	High Pressure Gas	Inlet	Low Pressure Gas	LPS Water	Oxf-11B Cndst	Oxf-11B Gas	Oxf-11K Cndst	Oxf-11K Gas	Water	Water to Tanks	1	2	3	4	6	7
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	GPU	GPU	MIX-100	LPS	LPS	--	--	--	--	--	MIX-103	VLVE-100	MIX-101	VLVE-101	GPU	LPS	MIX-102
	To Block:	MIX-103	To Compression	MIX-102	--	MIX-103	MIX-101	MIX-100	MIX-101	MIX-100	MIX-102	To PW Tanks	GPU	MIX-102	LPS	VLVE-101	To Cond Tanks	VLVE-100
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nitrogen		9.23084E-05	0.484975	0.488	0.106875		0.045	0.528	0.041	0.448	0*	9.23084E-05	0.421625	0.0429056	0.0111138	0.0111138	0.000499939	0.421625
Oxygen		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
CO2		0.00124125	0.177382	0.178	0.254520		0.098	0.179	0.095	0.177	0*	0.00124125	0.154494	0.0964292	0.0348265	0.0348265	0.0104764	0.154494
Methane		0.0318693	81.7323	82.0875	50.3121		24.583	82.263	24.624	81.912	0*	0.0318693	71.0740	24.6045	5.67313	5.67313	0.725464	71.0740
Ethane		0.00913646	12.2830	12.2415	28.2029		15.024	12.342	15.338	12.141	0*	0.00913646	10.6996	15.1884	5.06191	5.06191	2.49703	10.6996
Propane		0.00386635	3.13544	3.0725	11.7346		10.106	2.981	11.166	3.164	0*	0.00386635	2.74523	10.6610	4.55035	4.55035	3.75407	2.74523
i-Butane		0.00104188	0.432431	0.416	1.86665		2.373	0.382	2.945	0.45	0*	0.00104188	0.382410	2.67250	1.50964	1.50964	1.47007	0.382410
n-Butane		0.00250840	0.729290	0.694	3.25880		5.265	0.65	6.316	0.738	0*	0.00250840	0.649798	5.81530	3.67421	3.67421	3.72025	0.649798
2,2-Dimethylpropane		5.40066E-05	0.0127058	0.0125	0.0568376		0.062	0.015	0.078	0.01	0*	5.40066E-05	0.0114041	0.0703775	0.0833799	0.0833799	0.0863218	0.0114041
i-Pentane		0.00172753	0.219972	0.201	1.00447		2.852	0.171	3.817	0.231	0*	0.00172753	0.202791	3.35727	2.68572	2.68572	2.87206	0.202791
n-Pentane		0.00189381	0.184034	0.167	0.851767		2.893	0.15	3.656	0.184	0*	0.00189381	0.172877	3.29250	2.99380	2.99380	3.23121	0.172877
Neohexane		0.000176018	0.0107189	0.0105	0.0494911		0.134	0.007	0.197	0.014	0*	0.000176018	0.0105203	0.166987	0.279083	0.279083	0.304530	0.0105203
Cyclopentane		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
2,3-Dimethylbutane		0.000339540	0.0153270	0.0155	0.0708981		0.219	0.012	0.295	0.019	0*	0.000339540	0.0156372	0.258793	0.536899	0.536899	0.588549	0.0156372
Isohexane		0.00178044	0.0727757	0.071	0.337041		1.42	0.052	1.804	0.09	0*	0.00178044	0.0754283	1.62106	2.82311	2.82311	3.09866	0.0754283
3-Methylpentane		0.00118726	0.0434427	0.0425	0.201243		0.923	0.031	1.164	0.054	0*	0.00118726	0.0458384	1.04919	1.87351	1.87351	2.05885	0.0458384
Hexane		0.00276846	0.0795505	0.079	0.368632		2.082	0.06	2.468	0.098	0*	0.00276846	0.0881175	2.28411	4.40106	4.40106	4.84800	0.0881175
Methylcyclopentane		0.000383094	0.0110518	0.009	0.0517690		0.474	0.008	0.54	0.01	0*	0.000383094	0.0122049	0.508557	0.602705	0.602705	0.663769	0.0122049
Benzene		0.000217842	0.00291017	0.003	0.0137724		0.091	0.003	0.072	0.003	0*	0.000217842	0.00329663	0.0810517	0.174788	0.174788	0.192634	0.00329663
Cyclohexane		0.000565712	0.0119870	0.0115	0.0557856		0.521	0.01	0.467	0.013	0*	0.000565712	0.0142248	0.492726	0.882580	0.882580	0.974220	0.0142248
2-Methylhexane		0.00180339	0.0250245	0.024	0.113427		1.317	0.017	1.735	0.031	0*	0.00180339	0.0341139	1.53586	2.86815	2.86815	3.17347	0.0341139
3-Methylhexane		0.00168899	0.0210966	0.022	0.0959486		1.089	0.016	1.401	0.028	0*	0.00168899	0.0299146	1.25236	2.68601	2.68601	2.97309	0.0299146
2,2,4-Trimethylpentane		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
2,3-Dimethylpentane		0.000677685	0.00955593	0.015	0.0435094		0	0	0	0.03	0*	0.000677685	0.0129483	0	1.07700	1.07700	1.19155	0.0129483
n-Heptane		0.00283786	0.0272676	0.0295	0.122929		1.946	0.023	2.105	0.036	0*	0.00283786	0.0431652	2.02925	4.51595	4.51595	5.00286	0.0431652
Methylcyclohexane		0.00242249	0.0227152	0.0245	0.104241		1.788	0.02	1.692	0.029	0*	0.00242249	0.0363064	1.73773	3.84243	3.84243	4.25676	0.0363064
Toluene		0.000859887	0.00567794	0.0065	0.0263178		0.474	0.005	0.494	0.008	0*	0.000859887	0.00983676	0.484472	1.13288	1.13288	1.25553	0.00983676
2-Methylheptane		0.00169358	0.00748954	0.021	0.0332126		0	0	0	0.042	0*	0.00169358	0.0181276	0	2.69556	2.69556	2.99065	0.0181276
n-Octane		0.00245844	0.00763527	0.011	0.0335598		1.699	0.009	1.521	0.013	0*	0.00245844	0.0235021	1.60580	3.91323	3.91323	4.34324	0.0235021
Ethylbenzene		0.000398274	0.00104702	0	0.00471500		0.369	0	0.428	0	0*	0.000398274	0.00348809	0.399892	0.597495	0.597495	0.663197	0.00348809
m-Xylene		0.000914260	0.00225967	0.004	0.0101349		0.505	0.003	0.542	0.005	0*	0.000914260	0.00802675	0.524373	1.40578	1.40578	1.56047	0.00802675
o-Xylene		0.000625429	0.00127816	0	0.00574306		0.567	0	0.606	0	0*	0.000625429	0.00512382	0.587420	0.929875	0.929875	1.03230	0.00512382
2,2-Dimethylheptane		0.000585514	0.00133740	0.006	0.00582302		0	0	0	0.012	0*	0.000585514	0.00517931	0	0.932014	0.932014	1.03467	0.00517931
n-Nonane		0.00163006	0.00163162	0.0035	0.00699605		1.281	0.003	0.932	0.004	0*	0.00163006	0.0126010	1.09827	2.59472	2.59472	2.88154	0.0126010
2-Methylnonane		0.000238793	0.000101507	0.002	0.000423473		0	0	0	0.004	0*	0.000238793	0.00172644	0	0.380113	0.380113	0.422197	0.00172644
n-Decane		0.00108789	0.000376491	0.002	0.00155138		0.89	0.002	0.518	0.002	0*	0.00108789	0.00779056	0.695222	1.73172	1.73172	1.92348	0.00779056
Undecane		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
Water		99.8999	0.191630	0	0.439824		0	0	0	0	100*	99.8999	12.8059	0	0.0780957	0.0780957	0.0380028	12.8059
TEG		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
Argon		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
CO		0	0	0	0		0	0	0	0	0*	0	0	0	0	0	0	0
C07s Others		0.000860658	0.00983657	0.0095	0.0445177		0.666	0.019	0.761	0	0*	0.000860658	0.0144437	0.715742	1.36736	1.36736	1.51398	0.0144437
C08s Others		0.00490801	0.0189306	0.0135	0.0838064		4.201	0.027	4.594	0	0*	0.00490801	0.0500918	4.40677	7.80453	7.80453	8.66027	0.0500918
C09s Others		0.00313343	0.00408620	0.005	0.0176511		2.393	0.01	2.36	0	0*	0.00313343	0.0250385	2.37572	4.98550	4.98550	5.53612	0.0250385
C10s Others		0.00293831	0.00131827	0.0005	0.00554177		2.581	0.001	2.221	0	0*	0.00293831	0.0213004	2.39251	4.67645	4.67645	5.19416	0.0213004
C11s		0.00246452	0.000380903	0.0005	0.00155668		2.454	0.001	1.447	0	0*	0.00246452	0.0172377	1.92674	3.92286	3.92286	4.35748	0.0172377
C12s		0.00149278	7.90292E-05	0	0.000313917		1.627	0	0.777	0	0*	0.00149278	0.0103096	1.18194	2.37620	2.37620	2.63954	0.0103096
C13s		0.00105335	1.91003E-05	0	7.36704E-05		1.266	0	0.434	0	0*	0.00105335	0.00724295	0.830368	1.67674	1.67674	1.86257	0.00724295
C14s		0.000654290	4.00838E-06	0	1.50143E-05		0.87	0	0.192	0	0*	0.000654290	0.00449214	0.515002	1.04151	1.04151	1.15694	0.00449214
C15s		0.000437831	9.03753E-07	0	3.28565E-06		0.623	0	0.091	0	0*	0.000437831	0.00300446	0.344447	0.696946	0.696946	0.774193	0.00300446
C16s		0.000286038	2.03248E-07	0	7.15339E-07		0.436	0	0.033	0	0*	0.000286038	0.00196250	0.224991	0.455319	0.455319	0.505786	0.00196250
C17s		0.000211805	5.12027E-08	0	1.74611E-07		0.331	0	0.017	0	0*	0.000211805	0.00145310	0.166591	0.337154	0.337154	0.374523	0.00145310
C18s		0.000177349	1.46306E-08	0	4.81846E-08		0.284	0	0.008	0	0*	0.000177349	0.00121669	0.139488	0.282307	0.282307	0.313597	0.00121669
C19s		0.000138950	4.04461E-09	0	1.28618E-08		0.225	0	0.004	0	0*	0.000138950	0.000953249	0.109285	0.221182	0.221182	0.245698	0.000953249
C20s		0.000104244	1.05967E-09	0	3.25230E-09		0.171	0	0.001	0	0*	0.000104244	0.000715152	0.0819887	0.165937	0.165937	0.184329	0.000715152
C21s		8.00152E-05	2.86104E-10	0	8.47626E-10		0.131	0	0.001	0	0*	8.00152E-05	0.000548934	0.0629325	0.127370	0.127370	0.141487	0.000548934
C22s		6.97180E-05	9.74110E-11	0	2.78824E-10		0.114	0	0.001	0	0*	6.97180E-05	0.000478291	0.0548337	0.110978	0.110978	0.123279	0.000478291
C23s		5.69378E-05	3.13423E-11	0	8.66827E-11		0.094	0	0	0	0*	5.69378E-05	0.000390614	0.0447820	0.0906345	0.0906345	0.100680	0.000390614
C24s		4.84577E-05	1.08056E-11	0	2.88306E-11		0.08	0	0	0	0*	4.84577E-05	0.000332438	0.0381123	0.0771358	0.0771358	0.0856853	0.000332438
C25s		3.14975E-05	2.94773E-12	0	7.59133E-12		0.052	0	0	0	0*	3.14975E-05	0.000216084	0.0247730	0.0501383	0.0501383	0.0556954	0.000216084
C26s		3.14975E-05	1.28317E-12	0	3.19204E-12		0.052	0	0	0	0*	3.14975E-05	0.000216084	0.0247730	0.0501383	0.0501383	0.0556954	0.000216084
C27s		3.21033E-05	5.91119E-13	0	1.42180E-12		0.053	0	0	0	0*	3.21033E-05	0.000220240	0.0252494	0.0511025	0.0511025	0.0567665	0.000220240
C28s		1.81717E-05	1.54484E-13	0	3.58297E-13		0.03	0	0	0	0*	1.81717E-05	0.000124664	0.0142921	0.0289259	0.0289259	0.0321320	0.000124664
C29s		1.87774E-05	7.63451E-14	0	1.70862E-13		0.031	0	0	0	0*	1.87774E-05	0.000128820	0.0147685	0.0298901	0.0298901	0.0332031	0.000128820
C30s		1.45373E-05	2.92806E-14	0	6.32900E-14		0.024	0	0	0	0*	1.45373E-05	9.97313E-05	0.0114337	0.0231407	0.0231407	0.0257056	9.97313E-05
C31s		7.39581E-05	2.59293E-13	0	6.36095E-13		0.121	0	0.001	0	0*	7.39581E-05	0.000507379	0.0581685	0.117728	0.117728	0.130776	0.000507379

Process Streams		GPU Water	High Pressure Gas	Inlet	Low Pressure Gas	LPS Water	Oxf-11B Cndst	Oxf-11B Gas	Oxf-11K Cndst	Oxf-11K Gas	Water	Water to Tanks	1	2	3	4	6	7
Properties	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total	**From Block:**	GPU	GPU	MIX-100	LPS	LPS	--	--	--	--	--	MIX-103	VLVE-100	MIX-101	VLVE-101	GPU	LPS	MIX-102
	To Block:	MIX-103	To Compression	MIX-102	--	MIX-103	MIX-101	MIX-100	MIX-101	MIX-100	MIX-102	To PW Tanks	GPU	MIX-102	LPS	VLVE-101	To Cond Tanks	VLVE-100
Property	**Units**																	
Temperature	°F	72	72*	44.9973	80*	80	45*	45	45*	45*	45*	72	-71.5036	44.9407	65.9109	72	80	45.4017
Pressure	psig	200	200	2800	30	30	2800*	2800	2800*	2800*	2800*	200	200*	2800	30*	200	30	2800
Mole Fraction Vapor	%	0	100	100	100	0	0	100	0	100	0	0	80.0826	0	9.11265	0	0	87.1672
Mole Fraction Light Liquid	%	0.0628213	0	0	0		100	0	100	0	100	0.0628213	7.06879	100	90.8873	100	100	12.8328
Mole Fraction Heavy Liquid	%	99.9372	0	0	0		0	0	0	0	0	99.9372	12.8486	0	0	0	0	0
Molecular Weight	lb/lbmol	18.0694	19.8016	19.7595	28.0877		70.1223	19.6149	60.4098	19.9041	18.0153	18.0694	19.9310	65.0369	102.204	102.204	110.419	19.9310
Mass Density	lb/ft^3	62.1577	0.783628	15.3499	0.221241		42.3012	15.1707	40.0911	15.5291	62.6234	62.1577	1.43340	41.2056	7.57812	44.3938	44.7228	17.3574
Mass Flow	lb/h	5833.57	43922.7	43524.9	30.2526	0	743.565	21603.2	704.030	21921.7	5887.01	5833.57	50859.5	1447.59	1103.26	1103.26	1073.01	50859.5
Std Vapor Volumetric Flow	MMSCFD	2.94033	20.2019	20.0617	0.00980962	0	0.0965756	10.0308*	0.106142	10.0308*	2.97617	2.94033	23.2406	0.202718	0.0983145	0.0983145	0.0885048	23.2406
Std Liquid Volumetric Flow	sgpm	11.6886	263.084	261.331	0.153120	0	2.40399*	130.317	2.40399*	131.013	11.7686*	11.6886	277.907	4.80797	3.13490	3.13490	2.98178	277.907
Net Ideal Gas Heating Value	Btu/ft^3	3.63485	1084.79	1084.55	1500.87		3566.07	1076.73	3095.51	1092.36	0	3.63485	965.156	3319.69	5139.88	5139.88	5543.21	965.156
Gross Ideal Gas Heating Value	Btu/ft^3	54.1751	1197.62	1197.34	1643.43		3842.64	1188.94	3343.60	1205.73	50.3101	54.1751	1071.24	3581.35	5520.75	5520.75	5950.51	1071.24
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Nitrogen		0.00834831	301.352	301.126	0.0322470	0	0.133672	162.904	0.133855	138.222	0*	0.00834831	301.394	0.267527	0.0336080	0.0336080	0.00136096	301.394
Oxygen		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
CO2		0.176359	173.159	172.556	0.120647	0	0.457336	86.7626	0.487252	85.7932	0*	0.176359	173.500	0.944587	0.165451	0.165451	0.0448042	173.500
Methane		1.65057	29083.9	29007.6	8.69344	0	41.8185	14534.8	46.0376	14472.8	0*	1.65057	29095.4	87.8561	9.82440	9.82440	1.13097	29095.4
Ethane		0.886928	8192.40	8108.07	9.13399	0	47.9036	4087.32	53.7492	4020.75	0*	0.886928	8209.72	101.653	16.4303	16.4303	7.29635	8209.72
Propane		0.550412	3066.78	2984.35	5.57328	0	47.2539	1447.74	57.3821	1536.61	0*	0.550412	3088.99	104.636	21.6597	21.6597	16.0865	3088.99
i-Butane		0.195501	557.503	532.597	1.16856	0	14.6252	244.534	19.9485	288.063	0*	0.195501	567.170	34.5737	9.47168	9.47168	8.30312	567.170
n-Butane		0.470685	940.223	888.515	2.04008	0	32.4491	416.091	42.7826	472.423	0*	0.470685	963.746	75.2318	23.0525	23.0525	21.0125	963.746
2,2-Dimethylpropane		0.0125796	20.3338	19.8656	0.0441685	0	0.474333	11.9194	0.655854	7.94625	0*	0.0125796	20.9958	1.13019	0.649386	0.649386	0.605218	20.9958
i-Pentane		0.402389	352.034	319.439	0.780575	0	21.8193	135.881	32.0948	183.558	0*	0.402389	373.353	53.9141	20.9171	20.9171	20.1366	373.353
n-Pentane		0.441120	294.521	265.405	0.661908	0	22.1330	119.194	30.7410	146.211	0*	0.441120	318.279	52.8740	23.3165	23.3165	22.6546	318.279
Neohexane		0.0489703	20.4891	19.9313	0.0459365	0	1.22448	6.64376	1.97848	13.2875	0*	0.0489703	23.1343	3.20296	2.59615	2.59615	2.55021	23.1343
Cyclopentane		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
2,3-Dimethylbutane		0.0944638	29.2974	29.4224	0.0658059	0	2.00120	11.3893	2.96271	18.0331	0*	0.0944638	34.3863	4.96390	4.99446	4.99446	4.92865	34.3863
Isohexane		0.495339	139.110	134.774	0.312834	0	12.9758	49.3537	18.1177	85.4198	0*	0.495339	165.867	31.0935	26.2618	26.2618	25.9489	165.867
3-Methylpentane		0.330310	83.0402	80.6743	0.186789	0	8.43427	29.4224	11.6901	51.2519	0*	0.330310	100.799	20.1244	17.4281	17.4281	17.2413	100.799
Hexane		0.770216	152.060	149.959	0.342156	0	19.0251	56.9466	24.7863	93.0127	0*	0.770216	193.771	43.8114	40.9405	40.9405	40.5983	193.771
Methylcyclopentane		0.104088	20.6312	16.6843	0.0469268	0	4.23004	7.41526	5.29639	9.26907	0*	0.104088	26.2108	9.52643	5.47546	5.47546	5.42853	26.2108
Benzene		0.0549350	5.04224	5.16180	0.0115871	0	0.753739	2.58090	0.655440	2.58090	0*	0.0549350	6.57098	1.40918	1.47381	1.47381	1.46222	6.57098
Cyclohexane		0.153706	22.3769	21.3189	0.0505676	0	4.64947	9.26907	4.58040	12.0498	0*	0.153706	30.5487	9.22987	8.01807	8.01807	7.96750	30.5487
2-Methylhexane		0.583388	55.6200	52.9725	0.122416	0	13.9934	18.7611	20.2609	34.2114	0*	0.583388	87.2268	34.2543	31.0235	31.0235	30.9011	87.2268
3-Methylhexane		0.546381	46.8898	48.5581	0.103553	0	11.5709	17.6575	16.3605	30.9006	0*	0.546381	76.4895	27.9314	29.0534	29.0534	28.9498	76.4895
2,2,4-Trimethylpentane		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
2,3-Dimethylpentane		0.219228	21.2392	33.1078	0.0469577	0	0	0	0	33.1078	0*	0.219228	33.1078	0	11.6494	11.6494	11.6024	33.1078
n-Heptane		0.918032	60.6053	65.1120	0.132672	0	20.6767	25.3827	24.5817	39.7294	0*	0.918032	110.370	45.2584	48.8470	48.8470	48.7144	110.370
Methylcyclohexane		0.767896	49.4715	52.9882	0.110239	0	18.6157	21.6278	19.3613	31.3603	0*	0.767896	90.9652	37.9770	40.7257	40.7257	40.6155	90.9652
Toluene		0.255784	11.6043	13.1922	0.0261179	0	4.63107	5.07392	5.30458	8.11828	0*	0.255784	23.1279	9.93565	11.2677	11.2677	11.2416	23.1279
2-Methylheptane		0.624557	18.9766	52.8393	0.0408625	0	0	0	0	52.8393	0*	0.624557	52.8393	0	33.2381	33.2381	33.1973	52.8393
n-Octane		0.906619	19.3458	27.6777	0.0412897	0	20.5793	11.3227	20.2482	16.3550	0*	0.906619	68.5052	40.8275	48.2528	48.2528	48.2115	68.5052
Ethylbenzene		0.136507	2.46561	0	0.00539151	0	4.15404	0	5.29552	0	0*	0.136507	9.44955	9.44955	6.84744	6.84744	6.84205	9.44955
m-Xylene		0.313359	5.32126	9.35415	0.0115891	0	5.68506	3.50781	6.70601	5.84634	0*	0.313359	21.7452	12.3911	16.1106	16.1106	16.0990	21.7452
o-Xylene		0.214363	3.00993	0	0.00656708	0	6.38303	0	7.49786	0	0*	0.214363	13.8809	13.8809	10.6566	10.6566	10.6500	13.8809
2,2-Dimethylheptane		0.242439	3.80475	16.9508	0.00804397	0	0	0	0	16.9508	0*	0.242439	16.9508	0	12.9036	12.9036	12.8955	16.9508
n-Nonane		0.674947	4.64175	9.88794	0.00966440	0	17.4215	4.23769	13.9307	5.65025	0*	0.674947	41.2402	31.3523	35.9235	35.9235	35.9138	41.2402
2-Methylnonane		0.109688	0.320356	6.26819	0.000648967	0	0	0	0	6.26819	0*	0.109688	6.26819	0	5.83814	5.83814	5.83749	6.26819
n-Decane		0.499717	1.18821	6.26819	0.00237747	0	13.4277	3.13409	8.58938	3.13409	0*	0.499717	28.2853	22.0171	26.5973	26.5973	26.5950	28.2853
Undecane		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
Water		5810.28	76.5762	0	0.0853429	0	0	0	0	0	5887.01*	5810.28	5887.01	0	0.151873	0.151873	0.0665301	5887.01
TEG		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
Argon		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
CO		0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0
C07s Others		0.278418	21.8629	20.9683	0.0480460	0	7.07641	20.9683	8.88678	0	0*	0.278418	36.9315	15.9632	14.7901	14.7901	14.7421	36.9315
C08s Others		1.80998	47.9655	33.9683	0.103110	0	50.8852	33.9683	61.1576	0	0*	1.80998	146.011	112.043	96.2356	96.2356	96.1325	146.011
C09s Others		1.29744	11.6247	14.1256	0.0243834	0	32.5446	14.1256	35.2752	0	0*	1.29744	81.9455	67.8199	69.0233	69.0233	68.9989	81.9455
C10s Others		1.34970	4.16048	1.56705	0.00849271	0	38.9404	1.56705	36.8283	0	0*	1.34970	77.3358	75.7687	71.8256	71.8256	71.8171	77.3358
C11s		1.24367	1.32065	1.72154	0.00262078	0	40.6744	1.72154	26.3594	0	0*	1.24367	68.7554	67.0338	66.1910	66.1910	66.1884	68.7554
C12s		0.820899	0.298591	0	0.000575922	0	29.3867	0	15.4243	0	0*	0.820899	44.8111	44.8111	43.6916	43.6916	43.6910	44.8111
C13s		0.626951	0.0781082	0	0.000146288	0	24.7494	0	9.32486	0	0*	0.626951	34.0743	34.0743	33.3692	33.3692	33.3691	34.0743
C14s		0.419060	0.0176389	0	3.20825E-05	0	18.3019	0	4.43915	0	0*	0.419060	22.7411	22.7411	22.3044	22.3044	22.3044	22.7411
C15s		0.300250	0.00425817	0	7.51716E-06	0	14.0325	0	2.25273	0	0*	0.300250	16.2853	16.2853	15.9808	15.9808	15.9807	16.2853
C16s		0.209108	0.00102087	0	1.74468E-06	0	10.4690	0	0.870868	0	0*	0.209108	11.3398	11.3398	11.1297	11.1297	11.1297	11.3398
C17s		0.164431	0.000273111	0	4.52248E-07	0	8.44011	0	0.476420	0	0*	0.164431	8.91652	8.91652	8.75182	8.75182	8.75182	8.91652
C18s		0.145713	8.25905E-05	0	1.32079E-07	0	7.66408	0	0.237275	0	0*	0.145713	7.90136	7.90136	7.75556	7.75556	7.75556	7.90136
C19s		0.120456	2.40904E-05	0	3.71988E-08	0	6.40654	0	0.125176	0	0*	0.120456	6.53171	6.53171	6.41123	6.41123	6.41123	6.53171
C20s		0.0950896	6.64124E-06	0	9.89759E-09	0	5.12330	0	0.0329287	0	0*	0.0950896	5.15622	5.15622	5.06113	5.06113	5.06113	5.15622
C21s		0.0766120	1.88212E-06	0	2.70760E-09	0	4.11971	0	0.0345634	0	0*	0.0766120	4.15428	4.15428	4.07766	4.07766	4.07766	4.15428
C22s		0.0699097	6.71117E-07	0	9.32781E-10	0	3.75465	0	0.0361980	0	0*	0.0699097	3.79084	3.79084	3.72093	3.72093	3.72093	3.79084
C23s		0.0596728	2.25685E-07	0	3.03085E-10	0	3.23575	0	0	0	0*	0.0596728	3.23575	3.23575	3.17608	3.17608	3.17608	3.23575
C24s		0.0529798	8.11699E-08	0	1.05161E-10	0	2.87282	0	0	0	0*	0.0529798	2.87282	2.87282	2.81984	2.81984	2.81984	2.87282
C25s		0.0358633	2.30599E-08	0	2.88368E-11	0	1.94468	0	0	0	0*	0.0358633	1.94468	1.94468	1.90882	1.90882	1.90882	1.94468
C26s		0.0372895	1.04374E-08	0	1.26077E-11	0	2.02202	0	0	0	0*	0.0372895	2.02202	2.02202	1.98473	1.98473	1.98473	2.02202
C27s		0.0394604	4.99212E-09	0	5.83051E-12	0	2.13974	0	0	0	0*	0.0394604	2.13974	2.13974	2.10028	2.10028	2.10028	2.13974
C28s		0.0231590	1.35271E-09	0	1.52344E-12	0	1.25579	0	0	0	0*	0.0231590	1.25579	1.25579	1.23263	1.23263	1.23263	1.25579
C29s		0.0247812	6.92254E-10	0	7.52295E-13	0	1.34376	0	0	0	0*	0.0247812	1.34376	1.34376	1.31897	1.31897	1.31897	1.34376
C30s		0.0198438	2.74610E-10	0	2.88225E-13	0	1.07602	0	0	0	0*	0.0198438	1.07602	1.07602	1.05618	1.05618	1.05618	1.07602
C31s		0.104304	2.51248E-09	0	2.99290E-12	0	5.60493	0	0.0509103	0	0*	0.104304	5.65584	5.65584	5.55154	5.55154	5.55154	5.65584


Condensate Tank Flash Gas
"Condensate Tank Emissions" C3+ Mass Flow =63.73 ton/yr
"PW Tank Emissions" C3+ Mass Flow =8.746 ton/yr
"Total Flow to VDU" C3+ Mass Flow =77.9 ton/yr
To Cond Tanks
1
VLVE-101
3
Condensate Tanks
Std Liquid Volumetric Flow (Total) 99.99 bbl/d
Reid Vapor Pressure (Total) 10.397 psi
Sales Oil
Condensate W&S Losses
MIX-103
Annual tank loss calculations for "Sales Oil".
Total working and breathing losses from the Vertical Cylinder are 19.65 ton/yr.
Loading losses are 5.419 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance
Tank-3
Condensate Tank Emissions
Condensate Loading Emissions
Total Flow to VDU
MIX-101
PW Tank Emissions
PW Tank Flash Gas
MIX-102
To PW Tanks
5
VLVE-100
4
Produced Water Tanks
Std Liquid Volumetric Flow (Total) 400 bbl/d
Produced Water
PW W&S
Annual tank loss calculations for "Produced Water".
Total working and breathing losses from the Vertical Cylinder are 0.004851 ton/yr.
Loading losses are 0.005492 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Tank-4

Process Streams		Condensate Loading Emissions	Condensate Tank Emissions	Condensate Tank Flash Gas	Condensate W&S Losses	Produced Water	PW Tank Emissions	PW Tank Flash Gas	PW W&S	Sales Oil	Total Flow to VDU	1	3	4	5
Composition	**Status:**	Solved	Unsolved	Solved	Solved	Solved	Unsolved	Solved	Solved	Solved	Unsolved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	--	MIX-103	Condensate Tanks	--	Produced Water Tanks	MIX-102	Produced Water Tanks	--	Condensate Tanks	MIX-101	To Cond Tanks	VLVE-101	VLVE-100	To PW Tanks
	To Block:	MIX-101	MIX-101	MIX-103	MIX-103	--	MIX-101	MIX-102	MIX-102	--	--	VLVE-101	Condensate Tanks	Produced Water Tanks	VLVE-100
Mole Fraction		%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nitrogen		0.000451274	0.00864478	0.0122288	0.000451274	2.31380E-06	0.174998	0.179319	0.00337524	1.94186E-05	0.0444125	0.000499939	0.000499939	9.23084E-05	9.23084E-05
Oxygen		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO2		0.114552	0.171415	0.196288	0.114552	0.000630767	1.22895	1.21704	1.70238	0.00286381	0.398507	0.0104764	0.0104764	0.00124125	0.00124125
Methane		2.80618	12.2858	16.4323	2.80618	0.00164569	58.8325	60.2230	3.60133	0.0819671	21.8587	0.725464	0.725464	0.0318693	0.0318693
Ethane		47.6235	39.3537	35.7364	47.6235	0.000872415	16.0994	16.4672	1.48780	1.13524	34.7851	2.49703	2.49703	0.00913646	0.00913646
Propane		27.9372	25.5883	24.5609	27.9372	0.000555471	6.44072	6.59759	0.210046	2.90163	21.5565	3.75407	3.75407	0.00386635	0.00386635
i-Butane		4.63244	4.56029	4.52873	4.63244	0.000257841	1.52497	1.56247	0.0352317	1.34476	3.90298	1.47007	1.47007	0.00104188	0.00104188
n-Butane		8.30008	8.20186	8.15889	8.30008	0.000807029	3.30942	3.39085	0.0753874	3.53841	7.14129	3.72025	3.72025	0.00250840	0.00250840
2,2-Dimethylpropane		0.137558	0.142389	0.144502	0.137558	2.01973E-05	0.0657637	0.0673861	0.00132042	0.0839382	0.125393	0.0863218	0.0863218	5.40066E-05	5.40066E-05
i-Pentane		2.44557	2.55012	2.59585	2.44557	0.000921401	1.56846	1.60716	0.0312870	2.88338	2.32980	2.87206	2.87206	0.00172753	0.00172753
n-Pentane		2.03389	2.15422	2.20686	2.03389	0.00113677	1.47319	1.50956	0.0283051	3.27318	1.99848	3.23121	3.23121	0.00189381	0.00189381
Neohexane		0.119012	0.125855	0.128849	0.119012	0.000124932	0.0994602	0.101916	0.00191348	0.311728	0.119687	0.304530	0.304530	0.000176018	0.000176018
Cyclopentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2,3-Dimethylbutane		0.166840	0.178897	0.184171	0.166840	0.000261457	0.152088	0.155844	0.00289345	0.605116	0.172323	0.588549	0.588549	0.000339540	0.000339540
Isohexane		0.782167	0.845101	0.872630	0.782167	0.00140341	0.734521	0.752666	0.0138141	3.18986	0.817186	3.09866	3.09866	0.00178044	0.00178044
3-Methylpentane		0.465778	0.504228	0.521047	0.465778	0.000957932	0.446869	0.457907	0.00844244	2.12186	0.489397	2.05885	2.05885	0.00118726	0.00118726
Hexane		0.863802	0.922370	0.947989	0.863802	0.00233571	0.843770	0.864605	0.0161794	5.00778	0.901691	4.84800	4.84800	0.00276846	0.00276846
Methylcyclopentane		0.107796	0.126091	0.134094	0.107796	0.000322054	0.119002	0.121947	0.00203381	0.685469	0.123438	0.663769	0.663769	0.000383094	0.000383094
Benzene		0.0209544	0.0311071	0.0355481	0.0209544	0.000202204	0.0306114	0.0313605	0.000855266	0.199070	0.0303844	0.192634	0.192634	0.000217842	0.000217842
Cyclohexane		0.110103	0.133308	0.143458	0.110103	0.000498588	0.131003	0.134246	0.00218698	1.00826	0.131401	0.974220	0.974220	0.000565712	0.000565712
2-Methylhexane		0.0656070	0.220283	0.287941	0.0656070	0.00166274	0.275021	0.281911	0.00133146	3.29169	0.222852	3.17347	3.17347	0.00180339	0.00180339
3-Methylhexane		0.206569	0.231909	0.242992	0.206569	0.00156979	0.233327	0.239094	0.00422328	3.08494	0.230684	2.97309	2.97309	0.00168899	0.00168899
2,2,4-Trimethylpentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2,3-Dimethylpentane		0.0936727	0.105481	0.110646	0.0936727	0.000623710	0.105562	0.108172	0.00189935	1.23583	0.104784	1.19155	1.19155	0.000677685	0.000677685
n-Heptane		0.252469	0.291881	0.309121	0.252469	0.00268489	0.300050	0.307473	0.00524279	5.19516	0.291276	5.00286	5.00286	0.00283786	0.00283786
Methylcyclohexane		0.219992	0.250478	0.263814	0.219992	0.00229161	0.256716	0.263063	0.00458266	4.42035	0.249992	4.25676	4.25676	0.00242249	0.00242249
Toluene		0.0387999	0.0580216	0.0664295	0.0387999	0.000828369	0.0620917	0.0636300	0.000990298	1.30424	0.0577452	1.25553	1.25553	0.000859887	0.000859887
2-Methylheptane		0.0658723	0.0772168	0.0821792	0.0658723	0.00165258	0.0813449	0.0833575	0.00140676	3.10981	0.0774300	2.99065	2.99065	0.00169358	0.00169358
n-Octane		0.0635653	0.0765797	0.0822724	0.0635653	0.00241778	0.0814067	0.0834217	0.00136715	4.51781	0.0768441	4.34324	4.34324	0.00245844	0.00245844
Ethylbenzene		0.00674442	0.00101368	0.0116207	0.00674442	0.000392690	0.0112392	0.0115183	0.000154285	0.689891	0.0101718	0.663197	0.663197	0.000398274	0.000398274
m-Xylene		0.0189311	0.0231169	0.0249478	0.0189311	0.000902222	0.0242876	0.0248884	0.000422845	1.62338	0.0231187	1.56047	1.56047	0.000914260	0.000914260
o-Xylene		0.00687388	0.0119018	0.0141012	0.00687388	0.000618736	0.0136164	0.0139552	0.000159153	1.07402	0.0119712	1.03230	1.03230	0.000625429	0.000625429
2,2-Dimethylheptane		0.0114539	0.0133535	0.0141844	0.0114539	0.000578533	0.0141373	0.0144870	0.000247396	1.07648	0.0134094	1.03467	1.03467	0.000585514	0.000585514
n-Nonane		0.0122313	0.0153645	0.0167350	0.0122313	0.00162233	0.0166129	0.0170245	0.000265937	2.99891	0.0154470	2.88154	2.88154	0.00163006	0.00163006
2-Methylnonane		0.000730927	0.000908207	0.000985753	0.000730927	0.000238418	0.000960995	0.000984788	1.59380E-05	0.439454	0.000908983	0.422197	0.422197	0.000238793	0.000238793
n-Decane		0.00238977	0.00323731	0.00360805	0.00238977	0.00108662	0.00351986	0.00360716	5.21286E-05	2.00214	0.00324760	1.92348	1.92348	0.00108789	0.00108789
Undecane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water		0.000379342	0.380807	0.547213	0.000379342	99.9487	4.87000	2.65759	92.7472	0.0171408	1.33638	0.0380028	0.0380028	99.8999	99.8999
TEG		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argon		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO		0	0	0	0	0	0	0	0	0	0	0	0	0	0
C07s Others		0.0851362	0.104431	0.112870	0.0851362	0.000804892	0.109214	0.111920	0.00175216	1.57138	0.104305	1.51398	1.51398	0.000860658	0.000860658
C08s Others		0.143842	0.188134	0.207508	0.143842	0.00480446	0.206021	0.211131	0.00308367	9.00658	0.189352	8.66027	8.66027	0.00490801	0.00490801
C09s Others		0.0270253	0.0378699	0.0426136	0.0270253	0.00311331	0.0421603	0.0432069	0.000586958	5.76119	0.0381487	5.53612	5.53612	0.00313343	0.00313343
C10s Others		0.00752618	0.0113572	0.0130330	0.00752618	0.00293323	0.0127297	0.0130461	0.000164114	5.40643	0.0114245	5.19416	5.19416	0.00293831	0.00293831
C11s		0.00187841	0.00305257	0.00356616	0.00187841	0.00246399	0.00343261	0.00351799	4.10116E-05	4.53586	0.00306433	4.35748	4.35748	0.00246452	0.00246452
C12s		0.000334018	0.000588990	0.000700520	0.000334018	0.00149319	0.000665186	0.000681749	7.29562E-06	2.74765	0.000590165	2.63954	2.63954	0.00149278	0.00149278
C13s		6.86164E-05	0.000132211	0.000160029	6.86164E-05	0.00105380	0.000149316	0.000153038	1.49892E-06	1.93887	0.000132090	1.86257	1.86257	0.00105335	0.00105335
C14s		1.23884E-05	2.58536E-05	3.17435E-05	1.23884E-05	0.000654603	2.91568E-05	2.98840E-05	2.70634E-07	1.20434	2.57585E-05	1.15694	1.15694	0.000654290	0.000654290
C15s		2.43062E-06	5.44223E-06	6.75956E-06	2.43062E-06	0.000438048	6.11685E-06	6.26951E-06	5.30996E-08	0.805911	5.40698E-06	0.774193	0.774193	0.000437831	0.000437831
C16s		4.71970E-07	1.13948E-06	1.43146E-06	4.71970E-07	0.000286181	1.27069E-06	1.30243E-06	1.03107E-08	0.526507	1.12768E-06	0.505786	0.505786	0.000286038	0.000286038
C17s		1.04697E-07	2.68295E-07	3.39855E-07	1.04697E-07	0.000211911	2.96418E-07	3.03823E-07	2.28723E-09	0.389867	2.64522E-07	0.374523	0.374523	0.000211805	0.000211805
C18s		2.64152E-08	7.14525E-08	9.11526E-08	2.64152E-08	0.000177438	7.81218E-08	8.00741E-08	5.77072E-10	0.326445	7.01800E-08	0.313597	0.313597	0.000177349	0.000177349
C19s		6.28504E-09	1.83756E-08	2.36642E-08	6.28504E-09	0.000139020	1.98590E-08	2.03555E-08	1.37304E-10	0.255764	1.79670E-08	0.245698	0.245698	0.000138950	0.000138950
C20s		1.44763E-09	4.48778E-09	5.81759E-09	1.44763E-09	0.000104296	4.78434E-09	4.90400E-09	3.16251E-11	0.191881	4.36839E-09	0.184329	0.184329	0.000104244	0.000104244
C21s		3.46741E-10	1.13116E-09	1.47427E-09	3.46741E-10	8.00554E-05	1.18763E-09	1.21734E-09	7.57498E-12	0.147283	1.09598E-09	0.141487	0.141487	8.00152E-05	8.00152E-05
C22s		9.89117E-11	3.59122E-10	4.72943E-10	9.89117E-11	6.97530E-05	3.74050E-10	3.83413E-10	2.16084E-12	0.128329	3.46625E-10	0.123279	0.123279	6.97180E-05	6.97180E-05
C23s		2.73650E-11	1.08089E-10	1.43399E-10	2.73650E-11	5.69664E-05	1.11289E-10	1.14075E-10	5.97821E-13	0.104805	1.03900E-10	0.100680	0.100680	5.69378E-05	5.69378E-05
C24s		8.02472E-12	3.48140E-11	4.65321E-11	8.02472E-12	4.84821E-05	3.54422E-11	3.63301E-11	1.75310E-13	0.0891958	3.33293E-11	0.0856853	0.0856853	4.84577E-05	4.84577E-05
C25s		1.86047E-12	8.88991E-12	1.19647E-11	1.86047E-12	3.15133E-05	8.94731E-12	9.17155E-12	4.06443E-14	0.0579772	8.47690E-12	0.0556954	0.0556954	3.14975E-05	3.14975E-05
C26s		6.88619E-13	3.63075E-12	4.91768E-12	6.88619E-13	3.15133E-05	3.61207E-12	3.70263E-12	1.50437E-14	0.0579772	3.44857E-12	0.0556954	0.0556954	3.14975E-05	3.14975E-05
C27s		2.70141E-13	1.57329E-12	2.14330E-12	2.70141E-13	3.21194E-05	1.54702E-12	1.58582E-12	5.90156E-15	0.0590922	1.48867E-12	0.0567665	0.0567665	3.21033E-05	3.21033E-05
C28s		5.88411E-14	3.85583E-13	5.28505E-13	5.88411E-14	1.81808E-05	3.74942E-13	3.84350E-13	1.28545E-15	0.0334484	3.63484E-13	0.0321320	0.0321320	1.81717E-05	1.81717E-05
C29s		2.42040E-14	1.79090E-13	2.46840E-13	2.42040E-14	1.87868E-05	1.72205E-13	1.76527E-13	5.28765E-16	0.0345634	1.68213E-13	0.0332031	0.0332031	1.87774E-05	1.87774E-05
C30s		7.72535E-15	6.47101E-14	8.96363E-14	7.72535E-15	1.45446E-05	6.15268E-14	6.30716E-14	1.68769E-16	0.0267587	6.05666E-14	0.0257056	0.0257056	1.45373E-05	1.45373E-05
C31s		1.28271E-13	6.87894E-13	9.32682E-13	1.28271E-13	7.39952E-05	6.47423E-13	6.63652E-13	2.80223E-15	0.136134	6.45194E-13	0.130776	0.130776	7.39581E-05	7.39581E-05

Process Streams		Condensate Loading Emissions	Condensate Tank Emissions	Condensate Tank Flash Gas	Condensate W&S Losses	Produced Water	PW Tank Emissions	PW Tank Flash Gas	PW W&S	Sales Oil	Total Flow to VDU	1	3	4	5
Properties	**Status:**	Solved	Unsolved	Solved	Solved	Solved	Unsolved	Solved	Solved	Solved	Unsolved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	--	MIX-103	Condensate Tanks	--	Produced Water Tanks	MIX-102	Produced Water Tanks	--	Condensate Tanks	MIX-101	To Cond Tanks	VLVE-101	VLVE-100	To PW Tanks
	To Block:	MIX-101	MIX-101	MIX-103	MIX-103	--	MIX-101	MIX-102	MIX-102	--	--	VLVE-101	Condensate Tanks	Produced Water Tanks	VLVE-100
Property	**Units**														
Temperature	°F	71.6739		75.6792	71.6739	72.4177		72.4177	71.6739	75.6792		80	75.6792	72.4199	72
Pressure	psig	4.14152	0.5	0.5*	4.14152	0.2	-14.2811	0.2*	-14.2811	0.5	-14.2811	30	0.5	5*	200
Mole Fraction Vapor	%	100		100	100	0		100	100	0		0	3.93568	0.0473779	0
Mole Fraction Light Liquid	%	0		0	0	0.0477744		0	0	100		100	96.0643	0.0492223	0.0628213
Mole Fraction Heavy Liquid	%	0		0	0	99.9522		0	0	0		0	0	99.9034	99.9372
Molecular Weight	lb/lbmol	41.6407	40.4188	39.8843	41.6407	18.0644	27.7673	27.9942	18.7555	113.308	37.7348	110.419	110.419	18.0694	18.0694
Mass Density	lb/ft^3	0.140315		0.106990	0.140315	62.1859		0.0735181	0.00136503	45.0490		44.7228	6.46183	42.3550	62.1577
Mass Flow	lb/h	1.92076	22.2202	15.2540	6.96620	5829.03	4.61231	4.53580	0.0765074	1057.76	28.7533	1073.01	1073.01	5833.57	5833.57
Std Vapor Volumetric Flow	MMSCFD	0.000420106	0.00500691	0.00348327	0.00152364	2.93885	0.00151283	0.00147568	3.71518E-05	0.0850216	0.00693985	0.0885048	0.0885048	2.94033	2.94033
Std Liquid Volumetric Flow	sgpm	0.00827120	0.0954068	0.0654088	0.0299980	11.6667	0.0221301	0.0219566	0.000173490	2.91637	0.125808	2.98178	2.98178	11.6886	11.6886
Net Ideal Gas Heating Value	Btu/ft^3	2188.17	2120.59	2091.03	2188.17	2.90964	1414.10	1447.91	70.8584	5684.65	1970.67	5543.21	5543.21	3.63485	3.63485
Gross Ideal Gas Heating Value	Btu/ft^3	2379.77	2307.35	2275.67	2379.77	53.4057	1550.59	1586.49	124.545	6101.06	2146.76	5950.51	5950.51	54.1751	54.1751
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Nitrogen		5.83123E-06	0.00133133	0.00131018	2.11487E-05	0.000209153	0.00814301	0.00813915	3.85697E-06	5.07818E-05	0.00948017	0.00136096	0.00136096	0.00834831	0.00834831
Oxygen		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO2		0.00232543	0.0414725	0.0330386	0.00843387	0.0895753	0.0898395	0.0867833	0.00305618	0.0117656	0.133637	0.0448042	0.0448042	0.176359	0.176359
Methane		0.0207654	1.08352	1.00821	0.0753120	0.0851907	1.56774	1.56538	0.00235673	0.122754	2.67203	1.13097	1.13097	1.65057	1.65057
Ethane		0.660535	6.50535	4.10972	2.39563	0.0846478	0.804105	0.802281	0.00182491	3.18663	7.96999	7.29635	7.29635	0.886928	0.886928
Propane		0.568241	6.20302	4.14212	2.06090	0.0790369	0.471753	0.471375	0.000377820	11.9443	7.24301	16.0865	16.0865	0.550412	0.550412
I-Butane		0.124196	1.45713	1.00670	0.450433	0.0483579	0.147227	0.147144	8.35316E-05	7.29642	1.72856	8.30312	8.30312	0.195501	0.195501
n-Butane		0.222525	2.62071	1.81366	0.807054	0.151358	0.319506	0.319328	0.000178738	19.1988	3.16274	21.0125	21.0125	0.470685	0.470685
2,2-Dimethylpropane		0.00457792	0.0564769	0.0398737	0.0166032	0.00470214	0.00788134	0.00787746	3.88613E-06	0.565344	0.0689362	0.605218	0.605218	0.0125796	0.0125796
I-Pentane		0.0813885	1.01147	0.716295	0.295180	0.214512	0.187970	0.187878	9.20805E-05	19.4203	1.28083	20.1366	20.1366	0.402389	0.402389
n-Pentane		0.0676878	0.854447	0.608957	0.245490	0.264651	0.176552	0.176468	8.33046E-05	22.0457	1.09869	22.6546	22.6546	0.441120	0.441120
Neohexane		0.00473071	0.0596239	0.0424665	0.0171574	0.0347400	0.0142370	0.0142302	6.72641E-06	2.50774	0.0785916	2.55021	2.55021	0.0489703	0.0489703
Cyclopentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2,3-Dimethylbutane		0.00663189	0.0847523	0.0606997	0.0240526	0.0727038	0.0217702	0.0217600	1.01713E-05	4.86795	0.113154	4.92865	4.92865	0.0944638	0.0944638
Isohexane		0.0310912	0.400366	0.287604	0.112762	0.390247	0.105141	0.105092	4.85604E-05	25.6613	0.536598	25.9489	25.9489	0.495339	0.495339
3-Methylpentane		0.0185147	0.238878	0.171729	0.0671492	0.266373	0.0639659	0.0639362	2.96775E-05	17.0696	0.321358	17.2413	17.2413	0.330310	0.330310
Hexane		0.0343362	0.436972	0.312442	0.124530	0.649493	0.120779	0.120722	5.68750E-05	40.2859	0.592087	40.5983	40.5983	0.770216	0.770216
Methylcyclopentane		0.00418466	0.0583383	0.0431613	0.0151769	0.0874590	0.0166357	0.0166288	6.98216E-06	5.38537	0.0791587	5.42853	5.42853	0.104088	0.104088
Benzene		0.000754999	0.0133580	0.0106198	0.00273823	0.0509660	0.00397177	0.00396905	2.72517E-06	1.45160	0.0180848	1.46222	1.46222	0.0549350	0.0549350
Cyclohexane		0.00427420	0.0616772	0.0461755	0.0155017	0.135400	0.0183134	0.0183056	7.50799E-06	7.92133	0.0842648	7.96750	7.96750	0.153706	0.153706
2-Methylhexane		0.00303236	0.121345	0.110347	0.0109978	0.537618	0.0457748	0.0457694	5.44227E-06	30.7907	0.170152	30.9011	30.9011	0.583388	0.583388
3-Methylhexane		0.00954765	0.127749	0.0931218	0.0346274	0.507563	0.0388352	0.0388179	1.72624E-05	28.8567	0.176132	28.9498	28.9498	0.546381	0.546381
2,2,4-Trimethylpentane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2,3-Dimethylpentane		0.00432956	0.0581052	0.0424027	0.0157024	0.201666	0.0175699	0.0175621	7.76350E-06	11.5600	0.0800046	11.6024	11.6024	0.219228	0.219228
n-Heptane		0.0116691	0.160786	0.118464	0.0423216	0.868112	0.0499408	0.0499194	2.14296E-05	48.5959	0.222396	48.7144	48.7144	0.918032	0.918032
Methylcyclohexane		0.00996346	0.135203	0.0990671	0.0361355	0.726046	0.0418685	0.0418501	1.83545E-05	40.5164	0.187035	40.6155	40.6155	0.767896	0.767896
Toluene		0.00164902	0.0293897	0.0234091	0.00598067	0.246285	0.00950297	0.00949925	3.72205E-06	11.2182	0.0405417	11.2416	11.2416	0.255784	0.255784
2-Methylheptane		0.00347082	0.0484900	0.0359020	0.0125880	0.609129	0.0154344	0.0154279	6.55497E-06	33.1614	0.0673952	33.1973	33.1973	0.624557	0.624557
n-Octane		0.00334926	0.0480898	0.0359427	0.0121471	0.891180	0.0154461	0.0154397	6.37038E-06	48.1756	0.0668852	48.2115	48.2115	0.906619	0.906619
Ethylbenzene		0.000330279	0.00591628	0.00471843	0.00119786	0.134525	0.00198200	0.00198133	6.68162E-07	6.83733	0.00822855	6.84205	6.84205	0.136507	0.136507
m-Xylene		0.000927068	0.0134920	0.0101297	0.00336229	0.309078	0.00428302	0.00428119	1.83121E-06	16.0889	0.0187021	16.0990	16.0990	0.313359	0.313359
o-Xylene		0.000336619	0.00694642	0.00572557	0.00122085	0.211963	0.00240120	0.00240051	6.89240E-07	10.6443	0.00968424	10.6500	10.6500	0.214363	0.214363
2,2-Dimethylheptane		0.000677617	0.00941530	0.00695772	0.00245758	0.239429	0.00301180	0.00301051	1.29432E-06	12.8886	0.0131047	12.8955	12.8955	0.242439	0.242439
n-Nonane		0.000723607	0.0108333	0.00820888	0.00262438	0.671409	0.00353920	0.00353781	1.39133E-06	35.9056	0.0150961	35.9138	35.9138	0.674947	0.674947
2-Methylnonane		4.79708E-05	0.000710394	0.000536413	0.000173981	0.109461	0.000227120	0.000227027	9.25037E-08	5.83696	0.000985485	5.83749	5.83749	0.109688	0.109688
n-Decane		0.000156841	0.00253221	0.00196338	0.000568830	0.498886	0.000831877	0.000831575	3.02552E-07	26.5930	0.00352092	26.5950	26.5950	0.499717	0.499717
Undecane		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water		3.15230E-06	0.0377148	0.0377033	1.14328E-05	5810.20	0.145732	0.0775739	0.0681581	0.0288268	0.183450	0.0665301	0.0665301	5810.28	5810.28
TEG		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argon		0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO		0	0	0	0	0	0	0	0	0	0	0	0	0	0
C07s Others		0.00393500	0.0575268	0.0432553	0.0142715	0.260248	0.0181777	0.0181706	7.16184E-06	14.6988	0.0796395	14.7421	14.7421	0.278418	0.278418
C08s Others		0.00757911	0.118143	0.0906552	0.0274879	1.77090	0.0390907	0.0390764	1.43688E-05	96.0419	0.164813	96.1325	96.1325	1.80998	1.80998
C09s Others		0.00159882	0.0267014	0.0209028	0.00579860	1.28846	0.00898178	0.00897871	3.07084E-06	68.9780	0.0372820	68.9989	68.9989	1.29744	1.29744
C10s Others		0.000493946	0.00888358	0.00709214	0.00179144	1.34670	0.00300853	0.00300758	9.52513E-07	71.8100	0.0123861	71.8171	71.8171	1.34970	1.34970
C11s		0.000135434	0.00262310	0.00213190	0.000491193	1.24278	0.000891236	0.000890975	2.61497E-07	66.1863	0.00364977	66.1884	66.1884	1.24367	1.24367
C12s		2.62437E-05	0.000551537	0.000456356	9.51808E-05	0.820711	0.000188204	0.000188154	5.06919E-08	43.6905	0.000765985	43.6910	43.6910	0.820899	0.820899
C13s		5.83515E-06	0.000133999	0.000112836	2.11629E-05	0.626905	4.57257E-05	4.57145E-05	1.12725E-08	33.3690	0.000185560	33.3691	33.3691	0.626951	0.626951
C14s		1.13367E-06	2.81969E-05	2.40853E-05	4.11159E-06	0.419051	9.60816E-06	9.60597E-06	2.19015E-09	22.3043	3.89387E-05	22.3044	22.3044	0.419060	0.419060
C15s		2.38154E-07	6.35517E-06	5.49144E-06	8.63736E-07	0.300248	2.15823E-06	2.15777E-06	4.60099E-10	15.9807	8.75156E-06	15.9807	15.9807	0.300250	0.300250
C16s		4.92974E-08	1.41849E-06	1.23970E-06	1.78792E-07	0.209107	4.77949E-07	4.77853E-07	9.52402E-11	11.1297	1.94574E-06	11.1297	11.1297	0.209108	0.209108
C17s		1.16131E-08	3.54678E-07	3.12560E-07	4.21182E-08	0.164431	1.18399E-07	1.18376E-07	2.24359E-11	8.75182	4.84690E-07	8.75182	8.75182	0.164431	0.164431
C18s		3.10090E-09	9.99682E-08	8.87218E-08	1.12464E-08	0.145713	3.30245E-08	3.30185E-08	5.99080E-12	7.75556	1.36094E-07	7.75556	7.75556	0.145713	0.145713
C19s		7.78468E-10	2.71259E-08	2.43026E-08	2.82335E-09	0.120456	8.85767E-09	8.85617E-09	1.50396E-12	6.41123	3.67621E-08	6.41123	6.41123	0.120456	0.120456
C20s		1.88669E-10	6.97087E-09	6.28661E-09	6.84266E-10	0.0950896	2.24542E-09	2.24506E-09	3.64500E-13	5.06113	9.40496E-09	5.06113	5.06113	0.0950896	0.0950896
C21s		4.74344E-11	1.84425E-09	1.67222E-09	1.72035E-10	0.0766120	5.85057E-10	5.84965E-10	9.16410E-14	4.07766	2.47674E-09	4.07766	4.07766	0.0766120	0.0766120
C22s		1.41711E-11	6.13210E-10	5.13958E-11	5.13958E-11	0.0699097	1.92982E-10	1.92954E-10	2.73779E-14	3.72093	8.20363E-10	3.72093	3.72093	0.0699097	0.0699097
C23s		4.09765E-12	1.92900E-10	1.78038E-10	1.48614E-11	0.0596728	6.00095E-11	6.00016E-11	7.91647E-15	3.17608	2.57007E-10	3.17608	3.17608	0.0596728	0.0596728
C24s		1.25355E-12	6.48150E-11	6.02687E-11	4.54637E-12	0.0529798	1.99371E-11	1.99347E-11	2.42180E-15	2.81984	8.60057E-11	2.81984	2.81984	0.0529798	0.0529798
C25s		3.02664E-13	1.72363E-11	1.61386E-11	1.09770E-12	0.0358633	5.24155E-12	5.24096E-12	5.84732E-16	1.90882	2.27805E-11	1.90882	1.90882	0.0358633	0.0358633
C26s		1.16480E-13	7.31948E-12	6.89703E-12	4.22451E-13	0.0372895	2.20019E-12	2.19996E-12	2.25035E-16	1.98473	9.63615E-12	1.98473	1.98473	0.0372895	0.0372895
C27s		4.74425E-14	3.29302E-12	3.12096E-12	1.72064E-13	0.0394604	9.78370E-13	9.78278E-13	9.16566E-17	2.10028	4.31883E-12	2.10028	2.10028	0.0394604	0.0394604
C28s		1.07144E-14	8.36791E-13	7.97932E-13	3.88591E-14	0.0231590	2.45858E-13	2.45837E-13	2.06998E-17	1.23263	1.09336E-12	1.23263	1.23263	0.0231590	0.0231590
C29s		4.56392E-15	4.02469E-13	3.85916E-13	1.65524E-14	0.0247812	1.16930E-13	1.16921E-13	8.81728E-18	1.31897	5.23963E-13	1.31897	1.31897	0.0247812	0.0247812
C30s		1.50668E-15	1.50413E-13	1.44949E-13	5.46443E-15	0.0198438	4.32113E-14	4.32084E-14	2.91083E-18	1.05618	1.95131E-13	1.05618	1.05618	0.0198438	0.0198438
C31s		2.58467E-14	1.65200E-12	1.55826E-12	9.37407E-14	0.104304	4.69781E-13	4.69731E-13	4.99345E-17	5.55154	2.14762E-12	5.55154	5.55154	0.104304	0.104304

June 20, 2016

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad 11-K
GPU Outlet Gas
Sampled @ 986 psig & 72 °F

Date Sampled: 06/10/16 Job Number: 62455.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Nitrogen	0.448	
Carbon Dioxide	0.177	
Methane	81.912	
Ethane	12.141	3.239
Propane	3.164	0.870
Isobutane	0.450	0.147
n-Butane	0.738	0.232
2-2 Dimethylpropane	0.010	0.004
Isopentane	0.231	0.084
n-Pentane	0.184	0.067
Hexanes	0.275	0.113
Heptanes Plus	0.270	0.120
Totals	100.000	4.875

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.563	(Air=1)
Molecular Weight	102.86	
Gross Heating Value	5421	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	0.689	(Air=1)
Compressibility (Z)	0.9968	
Molecular Weight	19.90	
Gross Heating Value		
Dry Basis	1205	BTU/CF
Saturated Basis	1185	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: (16) Campos
Analyst: RG
Processor: OA
Cylinder ID: T-2382

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	0.448		0.631
Carbon Dioxide	0.177		0.391
Methane	81.912		66.028
Ethane	12.141	3.239	18.344
Propane	3.164	0.870	7.010
Isobutane	0.450	0.147	1.314
n-Butane	0.738	0.232	2.155
2,2 Dimethylpropane	0.010	0.004	0.036
Isopentane	0.231	0.084	0.837
n-Pentane	0.184	0.067	0.667
2,2 Dimethylbutane	0.014	0.006	0.061
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.019	0.008	0.082
2 Methylpentane	0.090	0.037	0.390
3 Methylpentane	0.054	0.022	0.234
n-Hexane	0.098	0.040	0.424
Methylcyclopentane	0.010	0.003	0.042
Benzene	0.003	0.001	0.012
Cyclohexane	0.013	0.004	0.055
2-Methylhexane	0.031	0.014	0.156
3-Methylhexane	0.028	0.013	0.141
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.030	0.013	0.150
n-Heptane	0.036	0.017	0.181
Methylcyclohexane	0.029	0.012	0.143
Toluene	0.008	0.003	0.037
Other C8's	0.042	0.019	0.233
n-Octane	0.013	0.007	0.075
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.005	0.002	0.027
O-Xylene	0.000	0.000	0.000
Other C9's	0.012	0.006	0.076
n-Nonane	0.004	0.002	0.026
Other C10's	0.004	0.002	0.028
n-Decane	0.002	0.001	0.014
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	4.875	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	0.689	(Air=1)
Compressibility (Z)	0.9968	
Molecular Weight	19.90	

Gross Heating Value

Dry Basis	1205	BTU/CF
Saturated Basis	1185	BTU/CF

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Oxford Pad 11-K
GPU Outlet Gas
Sampled @ 986 psig & 72 °F

Date Sampled: 06/10/16 Job Number: 62455.001

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.177		0.391
Hydrogen Sulfide	----		----
Nitrogen	0.448		0.631
Methane	81.912		66.028
Ethane	12.141	3.239	18.344
Propane	3.164	0.870	7.010
Isobutane	0.450	0.147	1.314
n-Butane	0.748	0.236	2.191
Isopentane	0.231	0.084	0.837
n-Pentane	0.184	0.067	0.667
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.098	0.040	0.424
Cyclohexane	0.013	0.004	0.055
Other C6's	0.177	0.073	0.767
Heptanes	0.135	0.060	0.670
Methylcyclohexane	0.029	0.012	0.143
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.003	0.001	0.012
Toluene	0.008	0.003	0.037
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.005	0.002	0.027
Octanes Plus	0.077	0.038	0.452
Totals	100.000	4.875	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	4.045	(Air=1)
Molecular Weight	116.78	
Gross Heating Value	5995	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	0.689	(Air=1)
Compressibility (Z)	0.9968	
Molecular Weight	19.90	
Gross Heating Value		
Dry Basis	1205	BTU/CF
Saturated Basis	1185	BTU/CF

June 21, 2016

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad 11-K
GPU Outlet Hydrocarbon Liquid
Sampled @ 986 psig & 72 °F

Date Sampled: 06/10/16 Job Number: 62455.002

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.041	0.014	0.019
Carbon Dioxide	0.095	0.050	0.070
Methane	24.624	12.819	6.597
Ethane	15.338	12.602	7.702
Propane	11.166	9.451	8.223
Isobutane	2.945	2.961	2.859
n-Butane	6.316	6.117	6.130
2,2 Dimethylpropane	0.078	0.092	0.094
Isopentane	3.817	4.289	4.600
n-Pentane	3.656	4.071	4.405
2,2 Dimethylbutane	0.197	0.252	0.283
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.295	0.372	0.425
2 Methylpentane	1.804	2.300	2.596
3 Methylpentane	1.164	1.460	1.675
n-Hexane	2.468	3.118	3.552
Heptanes Plus	25.995	40.033	50.769
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity	0.7392	(Water=1)
°API Gravity	59.92	@ 60°F
Molecular Weight	116.9	
Vapor Volume	20.06	CF/Gal
Weight	6.16	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity	0.5829	(Water=1)
°API Gravity	111.25	@ 60°F
Molecular Weight	59.9	
Vapor Volume	30.90	CF/Gal
Weight	4.86	Lbs/Gal

Base Conditions: 14.650 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (20) Cucinotta
Analyst: XG
Processor: XGdjv
Cylinder ID: W-1417

David Dannhaus 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.095	0.050	0.070
Nitrogen	0.041	0.014	0.019
Methane	24.624	12.819	6.597
Ethane	15.338	12.602	7.702
Propane	11.166	9.451	8.223
Isobutane	2.945	2.961	2.859
n-Butane	6.394	6.209	6.225
Isopentane	3.817	4.289	4.600
n-Pentane	3.656	4.071	4.405
Other C-6's	3.460	4.384	4.979
Heptanes	7.008	9.566	11.445
Octanes	7.806	11.338	14.131
Nonanes	3.292	5.545	6.972
Decanes Plus	5.747	11.153	14.572
Benzene	0.072	0.062	0.093
Toluene	0.494	0.508	0.760
E-Benzene	0.428	0.508	0.759
Xylenes	1.148	1.354	2.035
n-Hexane	2.468	3.118	3.552
2,2,4 Trimethylpentane	0.000	0.000	0.000
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity	0.5829	(Water=1)
°API Gravity	111.25	@ 60°F
Molecular Weight	59.9	
Vapor Volume	30.90	CF/Gal
Weight	4.86	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity	0.7616	(Water=1)
Molecular Weight	151.8	

Characteristics of Atmospheric Sample:

°API Gravity	69.96	@ 60°F
Reid Vapor Pressure Equivalent (D-5191)	12.25	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	W1417*	W1013
Pressure, PSIG	986	968	964
Temperature, °F	72	72	72

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.041	0.014	0.019
Carbon Dioxide	0.095	0.050	0.070
Methane	24.624	12.819	6.597
Ethane	15.338	12.602	7.702
Propane	11.166	9.451	8.223
Isobutane	2.945	2.961	2.859
n-Butane	6.316	6.117	6.130
2,2 Dimethylpropane	0.078	0.092	0.094
Isopentane	3.817	4.289	4.600
n-Pentane	3.656	4.071	4.405
2,2 Dimethylbutane	0.197	0.252	0.283
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.295	0.372	0.425
2 Methylpentane	1.804	2.300	2.596
3 Methylpentane	1.164	1.460	1.675
n-Hexane	2.468	3.118	3.552
Methylcyclopentane	0.540	0.587	0.759
Benzene	0.072	0.062	0.093
Cyclohexane	0.467	0.488	0.656
2-Methylhexane	1.735	2.478	2.904
3-Methylhexane	1.401	1.975	2.344
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C-7's	0.761	1.054	1.260
n-Heptane	2.105	2.983	3.522
Methylcyclohexane	1.692	2.089	2.774
Toluene	0.494	0.508	0.760
Other C-8's	4.594	6.855	8.456
n-Octane	1.521	2.394	2.902
E-Benzene	0.428	0.508	0.759
M & P Xylenes	0.542	0.646	0.961
O-Xylene	0.606	0.708	1.075
Other C-9's	2.360	3.934	4.977
n-Nonane	0.932	1.611	1.996
Other C-10's	2.221	4.069	5.241
n-decane	0.518	0.976	1.230
Undecanes(11)	1.447	2.719	3.552
Dodecanes(12)	0.777	1.577	2.089
Tridecanes(13)	0.434	0.946	1.270
Tetradecanes(14)	0.192	0.448	0.610
Pentadecanes(15)	0.091	0.227	0.312
Hexadecanes(16)	0.033	0.088	0.123
Heptadecanes(17)	0.017	0.047	0.066
Octadecanes(18)	0.008	0.025	0.035
Nonadecanes(19)	0.004	0.012	0.017
Eicosanes(20)	0.001	0.004	0.006
Heneicosanes(21)	0.001	0.003	0.004
Docosanes(22)	0.001	0.002	0.003
Tricosanes(23)	0.000	0.002	0.002
Tetracosanes(24)	0.000	0.001	0.002
Pentacosanes(25)	0.000	0.001	0.001
Hexacosanes(26)	0.000	0.001	0.001
Heptacosanes(27)	0.000	0.001	0.001
Octacosanes(28)	0.000	0.001	0.001
Nonacosanes(29)	0.000	0.000	0.001
Triacontanes(30)	0.000	0.000	0.001
Hentriacontanes Plus(31+)	0.001	0.003	0.004
Total	100.000	100.000	100.000

June 15, 2016

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad II-B
GPU Outlet Gas
Gas Sampled @ 988 psig & 74 °F

Date Sampled: 06/10/2016 Job Number: 62454.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Nitrogen	0.528	
Carbon Dioxide	0.179	
Methane	82.263	
Ethane	12.342	3.292
Propane	2.981	0.819
Isobutane	0.382	0.125
n-Butane	0.650	0.204
2-2 Dimethylpropane	0.015	0.006
Isopentane	0.171	0.062
n-Pentane	0.150	0.054
Hexanes	0.162	0.067
Heptanes Plus	0.177	0.078
Totals	100.000	4.707

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.563	(Air=1)
Molecular Weight	102.89	
Gross Heating Value	5414	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	0.679	(Air=1)
Compressibility (Z)	0.9969	
Molecular Weight	19.61	
Gross Heating Value		
Dry Basis	1189	BTU/CF
Saturated Basis	1169	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: (20) Cucinotta
Analyst: MR
Processor: NG
Cylinder ID: T-3252

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	0.528		0.754
Carbon Dioxide	0.179		0.402
Methane	82.263		67.287
Ethane	12.342	3.292	18.921
Propane	2.981	0.819	6.702
Isobutane	0.382	0.125	1.132
n-Butane	0.650	0.204	1.926
2,2 Dimethylpropane	0.015	0.006	0.055
Isopentane	0.171	0.062	0.629
n-Pentane	0.150	0.054	0.552
2,2 Dimethylbutane	0.007	0.003	0.031
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.012	0.005	0.053
2 Methylpentane	0.052	0.022	0.228
3 Methylpentane	0.031	0.013	0.136
n-Hexane	0.060	0.025	0.264
Methylcyclopentane	0.008	0.003	0.034
Benzene	0.003	0.001	0.012
Cyclohexane	0.010	0.003	0.043
2-Methylhexane	0.017	0.008	0.087
3-Methylhexane	0.016	0.007	0.082
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.019	0.008	0.096
n-Heptane	0.023	0.011	0.118
Methylcyclohexane	0.020	0.008	0.100
Toluene	0.005	0.002	0.023
Other C8's	0.027	0.013	0.152
n-Octane	0.009	0.005	0.052
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.003	0.001	0.016
O-Xylene	0.000	0.000	0.000
Other C9's	0.010	0.005	0.064
n-Nonane	0.003	0.002	0.020
Other C10's	0.001	0.001	0.007
n-Decane	0.002	0.001	0.015
Undecanes (11)	0.001	0.001	0.007
Totals	100.000	4.707	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	0.679	(Air=1)
Compressibility (Z)	0.9969	
Molecular Weight	19.61	

Gross Heating Value

Dry Basis	1189	BTU/CF
Saturated Basis	1169	BTU/CF

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Oxford Pad II-B
GPU Outlet Gas
Gas Sampled @ 988 psig & 74 °F

Date Sampled: 06/10/2016 Job Number: 62454.001

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.179		0.402
Hydrogen Sulfide	----		----
Nitrogen	0.528		0.754
Methane	82.263		67.287
Ethane	12.342	3.292	18.921
Propane	2.981	0.819	6.702
Isobutane	0.382	0.125	1.132
n-Butane	0.665	0.210	1.981
Isopentane	0.171	0.062	0.629
n-Pentane	0.150	0.054	0.552
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.060	0.025	0.264
Cyclohexane	0.010	0.003	0.043
Other C6's	0.102	0.042	0.448
Heptanes	0.083	0.037	0.417
Methylcyclohexane	0.020	0.008	0.100
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.003	0.001	0.012
Toluene	0.005	0.002	0.023
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.003	0.001	0.016
Octanes Plus	0.053	0.026	0.317
Totals	100.000	4.707	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	4.067	(Air=1)
Molecular Weight	117.43	
Gross Heating Value	6056	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	0.679	(Air=1)
Compressibility (Z)	0.9969	
Molecular Weight	19.61	
Gross Heating Value		
Dry Basis	1189	BTU/CF
Saturated Basis	1169	BTU/CF

June 21, 2016

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad 11-B
GPU Outlet Hydrocarbon Liquid
Sampled @ 988 psig & 74 °F

Date Sampled: 06/10/16 Job Number: 62454.002

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.045	0.014	0.018
Carbon Dioxide	0.098	0.047	0.062
Methane	24.583	11.707	5.698
Ethane	15.024	11.292	6.527
Propane	10.106	7.825	6.439
Isobutane	2.373	2.182	1.992
n-Butane	5.265	4.665	4.421
2,2 Dimethylpropane	0.062	0.067	0.065
Isopentane	2.852	2.931	2.973
n-Pentane	2.893	2.947	3.016
2,2 Dimethylbutane	0.134	0.157	0.167
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.219	0.252	0.272
2 Methylpentane	1.420	1.656	1.768
3 Methylpentane	0.923	1.059	1.149
n-Hexane	2.082	2.406	2.592
Heptanes Plus	31.922	50.791	62.840
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity	0.7626	(Water=1)
°API Gravity	54.04	@ 60°F
Molecular Weight	136.2	
Vapor Volume	17.77	CF/Gal
Weight	6.35	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity	0.6164	(Water=1)
°API Gravity	98.06	@ 60°F
Molecular Weight	69.2	
Vapor Volume	28.27	CF/Gal
Weight	5.14	Lbs/Gal

Base Conditions: 14.650 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Sampled By: (20) Cucinotta
Analyst: XG
Processor: XGdjv
Cylinder ID: W-1015

David Dannhaus 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.098	0.047	0.062
Nitrogen	0.045	0.014	0.018
Methane	24.583	11.707	5.698
Ethane	15.024	11.292	6.527
Propane	10.106	7.825	6.439
Isobutane	2.373	2.182	1.992
n-Butane	5.327	4.732	4.486
Isopentane	2.852	2.931	2.973
n-Pentane	2.893	2.947	3.016
Other C-6's	2.695	3.124	3.356
Heptanes	6.012	7.457	8.464
Octanes	7.689	10.164	12.032
Nonanes	3.674	5.650	6.739
Decanes Plus	12.541	25.446	32.661
Benzene	0.091	0.072	0.103
Toluene	0.474	0.446	0.631
E-Benzene	0.369	0.400	0.566
Xylenes	1.072	1.157	1.645
n-Hexane	2.082	2.406	2.592
2,2,4 Trimethylpentane	0.000	0.000	0.000
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity	0.6164	(Water=1)
°API Gravity	98.06	@ 60°F
Molecular Weight	69.2	
Vapor Volume	28.27	CF/Gal
Weight	5.14	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity	0.7912	(Water=1)
Molecular Weight	180.3	

Characteristics of Atmospheric Sample:

°API Gravity	62.33	@ 60°F
Reid Vapor Pressure Equivalent (D-5191)	9.58	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	W-1015*	W-1005
Pressure, PSIG	988	972	958
Temperature, °F	74	74	74

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.045	0.014	0.018
Carbon Dioxide	0.098	0.047	0.062
Methane	24.583	11.707	5.698
Ethane	15.024	11.292	6.527
Propane	10.106	7.825	6.439
Isobutane	2.373	2.182	1.992
n-Butane	5.265	4.665	4.421
2,2 Dimethylpropane	0.062	0.067	0.065
Isopentane	2.852	2.931	2.973
n-Pentane	2.893	2.947	3.016
2,2 Dimethylbutane	0.134	0.157	0.167
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.219	0.252	0.272
2 Methylpentane	1.420	1.656	1.768
3 Methylpentane	0.923	1.059	1.149
n-Hexane	2.082	2.406	2.592
Methylcyclopentane	0.474	0.472	0.577
Benzene	0.091	0.072	0.103
Cyclohexane	0.521	0.498	0.633
2-Methylhexane	1.317	1.721	1.907
3-Methylhexane	1.089	1.405	1.576
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C-7's	0.666	0.838	0.954
n-Heptane	1.946	2.523	2.817
Methylcyclohexane	1.788	2.020	2.537
Toluene	0.474	0.446	0.631
Other C-8's	4.201	5.697	6.691
n-Octane	1.699	2.447	2.805
E-Benzene	0.369	0.400	0.566
M & P Xylenes	0.505	0.551	0.775
O-Xylene	0.567	0.606	0.870
Other C-9's	2.393	3.624	4.365
n-Nonane	1.281	2.026	2.374
Other C-10's	2.581	4.296	5.269
n-decane	0.890	1.535	1.829
Undecanes(11)	2.454	4.190	5.212
Dodecanes(12)	1.627	3.001	3.785
Tridecanes(13)	1.266	2.503	3.200
Tetradecanes(14)	0.870	1.843	2.389
Pentadecanes(15)	0.623	1.414	1.855
Hexadecanes(16)	0.436	1.057	1.398
Heptadecanes(17)	0.331	0.850	1.134
Octadecanes(18)	0.284	0.767	1.030
Nonadecanes(19)	0.225	0.632	0.854
Eicosanes(20)	0.171	0.501	0.680
Heneicosanes(21)	0.131	0.403	0.551
Docosanes(22)	0.114	0.365	0.502
Tricosanes(23)	0.094	0.314	0.434
Tetracosanes(24)	0.080	0.274	0.381
Pentacosanes(25)	0.052	0.184	0.257
Hexacosanes(26)	0.052	0.194	0.272
Heptacosanes(27)	0.053	0.202	0.284
Octacosanes(28)	0.030	0.119	0.169
Nonacosanes(29)	0.031	0.127	0.180
Triacontanes(30)	0.024	0.102	0.145
Hentriacontanes Plus(31+)	0.121	0.570	0.848
Total	100.000	100.000	100.000

June 15, 2016

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad II
Low Pressure Separator Gas
Sampled @ 45 psig & 107 °F

Date Sampled: 06/10/2016 Job Number: 62456.001

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Nitrogen	0.670	
Carbon Dioxide	0.199	
Methane	44.353	
Ethane	24.701	6.628
Propane	15.021	4.152
Isobutane	3.068	1.007
n-Butane	5.893	1.864
2-2 Dimethylpropane	0.060	0.023
Isopentane	1.920	0.705
n-Pentane	1.570	0.571
Hexanes	1.438	0.595
Heptanes Plus	1.107	0.489
Totals	100.000	16.034

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.563	(Air=1)
Molecular Weight	102.28	
Gross Heating Value	5387	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.100	(Air=1)
Compressibility (Z)	0.9910	
Molecular Weight	31.58	
Gross Heating Value		
Dry Basis	1836	BTU/CF
Saturated Basis	1805	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: (20) Cucinotta
Analyst: MR
Processor: NG
Cylinder ID: T-3207

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	0.670		0.594
Carbon Dioxide	0.199		0.277
Methane	44.353		22.531
Ethane	24.701	6.628	23.517
Propane	15.021	4.152	20.972
Isobutane	3.068	1.007	5.646
n-Butane	5.893	1.864	10.845
2,2 Dimethylpropane	0.060	0.023	0.137
Isopentane	1.920	0.705	4.386
n-Pentane	1.570	0.571	3.587
2,2 Dimethylbutane	0.074	0.031	0.202
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.106	0.044	0.289
2 Methylpentane	0.477	0.199	1.302
3 Methylpentane	0.282	0.116	0.769
n-Hexane	0.499	0.206	1.362
Methylcyclopentane	0.056	0.019	0.149
Benzene	0.016	0.004	0.040
Cyclohexane	0.070	0.024	0.186
2-Methylhexane	0.120	0.056	0.381
3-Methylhexane	0.115	0.053	0.365
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.130	0.057	0.408
n-Heptane	0.141	0.065	0.447
Methylcyclohexane	0.123	0.050	0.382
Toluene	0.030	0.010	0.088
Other C8's	0.152	0.071	0.530
n-Octane	0.042	0.022	0.152
Ethylbenzene	0.001	0.000	0.003
M & P Xylenes	0.014	0.005	0.047
O-Xylene	0.002	0.001	0.007
Other C9's	0.050	0.025	0.200
n-Nonane	0.012	0.007	0.049
Other C10's	0.021	0.012	0.094
n-Decane	0.004	0.002	0.018
Undecanes (11)	0.008	0.005	0.038
Totals	100.000	16.034	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	1.100	(Air=1)
Compressibility (Z)	0.9910	
Molecular Weight	31.58	

Gross Heating Value

Dry Basis	1836	BTU/CF
Saturated Basis	1805	BTU/CF

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Oxford Pad II
Low Pressure Separator Gas
Sampled @ 45 psig & 107 °F

Date Sampled: 06/10/2016 Job Number: 62456.001

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.199		0.277
Hydrogen Sulfide	----		----
Nitrogen	0.670		0.594
Methane	44.353		22.531
Ethane	24.701	6.628	23.517
Propane	15.021	4.152	20.972
Isobutane	3.068	1.007	5.646
n-Butane	5.953	1.887	10.982
Isopentane	1.920	0.705	4.386
n-Pentane	1.570	0.571	3.587
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.499	0.206	1.362
Cyclohexane	0.070	0.024	0.186
Other C6's	0.939	0.389	2.562
Heptanes	0.562	0.250	1.750
Methylcyclohexane	0.123	0.050	0.382
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.016	0.004	0.040
Toluene	0.030	0.010	0.088
Ethylbenzene	0.001	0.000	0.003
Xylenes	0.016	0.006	0.054
Octanes Plus	0.289	0.144	1.081
Totals	100.000	16.034	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	4.118	(Air=1)
Molecular Weight	118.19	
Gross Heating Value	6075	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	1.100	(Air=1)
Compressibility (Z)	0.9910	
Molecular Weight	31.58	
Gross Heating Value		
Dry Basis	1836	BTU/CF
Saturated Basis	1805	BTU/CF

June 15, 2016

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

For: CONSOL Energy Inc.
CNX Center
1000 CONSOL Energy Drive
Canonsburg, Pennsylvania 15317

Sample: Oxford Pad II
Tank Vent Gas Header
Gas Sampled @ <1 psig & 90 °F

Date Sampled: 06/10/2016 Job Number: 62456.011

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Nitrogen	0.603	
Carbon Dioxide	0.652	
Methane	50.135	
Ethane	14.984	4.023
Propane	14.708	4.068
Isobutane	3.739	1.228
n-Butane	7.450	2.358
2-2 Dimethylpropane	0.089	0.034
Isopentane	2.320	0.852
n-Pentane	1.819	0.662
Hexanes	1.738	0.719
Heptanes Plus	1.763	0.786
Totals	100.000	14.730

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.600	(Air=1)
Molecular Weight	103.27	
Gross Heating Value	5435	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	1.128	(Air=1)
Compressibility (Z)	0.9905	
Molecular Weight	32.36	
Gross Heating Value		
Dry Basis	1866	BTU/CF
Saturated Basis	1834	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: (20) Cucinotta
Analyst: MR
Processor: NG
Cylinder ID: T-1434

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	0.603		0.522
Carbon Dioxide	0.652		0.887
Methane	50.135		24.853
Ethane	14.984	4.023	13.922
Propane	14.708	4.068	20.041
Isobutane	3.739	1.228	6.715
n-Butane	7.450	2.358	13.380
2,2 Dimethylpropane	0.089	0.034	0.198
Isopentane	2.320	0.852	5.172
n-Pentane	1.819	0.662	4.055
2,2 Dimethylbutane	0.086	0.036	0.229
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.124	0.051	0.330
2 Methylpentane	0.565	0.235	1.505
3 Methylpentane	0.339	0.139	0.903
n-Hexane	0.624	0.258	1.662
Methylcyclopentane	0.069	0.024	0.179
Benzene	0.022	0.006	0.053
Cyclohexane	0.095	0.032	0.247
2-Methylhexane	0.181	0.084	0.560
3-Methylhexane	0.176	0.080	0.545
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.186	0.081	0.570
n-Heptane	0.231	0.107	0.715
Methylcyclohexane	0.196	0.079	0.595
Toluene	0.048	0.016	0.137
Other C8's	0.278	0.130	0.947
n-Octane	0.077	0.040	0.272
Ethylbenzene	0.003	0.001	0.010
M & P Xylenes	0.026	0.010	0.085
O-Xylene	0.004	0.002	0.013
Other C9's	0.096	0.049	0.374
n-Nonane	0.021	0.012	0.083
Other C10's	0.032	0.019	0.140
n-Decane	0.007	0.004	0.031
Undecanes (11)	0.015	0.009	0.070
Totals	100.000	14.730	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	1.128	(Air=1)
Compressibility (Z)	0.9905	
Molecular Weight	32.36	

Gross Heating Value

Dry Basis	1866	BTU/CF
Saturated Basis	1834	BTU/CF

FESCO, Ltd.
1100 Fesco Ave. - Alice, Texas 78332

Sample: Oxford Pad II
Tank Vent Gas Header
Gas Sampled @ <1 psig & 90 °F

Date Sampled: 06/10/2016 Job Number: 62456.011

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.652		0.887
Hydrogen Sulfide	----		----
Nitrogen	0.603		0.522
Methane	50.135		24.853
Ethane	14.984	4.023	13.922
Propane	14.708	4.068	20.041
Isobutane	3.739	1.228	6.715
n-Butane	7.539	2.392	13.578
Isopentane	2.320	0.852	5.172
n-Pentane	1.819	0.662	4.055
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.624	0.258	1.662
Cyclohexane	0.095	0.032	0.247
Other C6's	1.114	0.461	2.967
Heptanes	0.843	0.377	2.569
Methylcyclohexane	0.196	0.079	0.595
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.022	0.006	0.053
Toluene	0.048	0.016	0.137
Ethylbenzene	0.003	0.001	0.010
Xylenes	0.030	0.012	0.098
Octanes Plus	0.526	0.262	1.917
Totals	100.000	14.730	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	4.110	(Air=1)
Molecular Weight	117.89	
Gross Heating Value	6062	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	1.128	(Air=1)
Compressibility (Z)	0.9905	
Molecular Weight	32.36	
Gross Heating Value		
Dry Basis	1866	BTU/CF
Saturated Basis	1834	BTU/CF

ATTACHMENT O

MONITORING/RECORDKEEPING/REPORTING/ TESTING PLANS

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

Monitoring

CNX Gas will monitor pilot lights associated with each of the combustion control devices and document any time these devices are not available for abating VOC emissions. The visible emissions from these control devices will be monitored periodically.

The site will monitor the amount of condensate and produced water generated and hauled off of the well pad.

Recordkeeping

CNX Gas will maintain records of all monitoring reports specified above.

Reporting

All equipment malfunctions and/or emission limit/visible emission exceedances will be reported to the DAQ.

Testing

No testing has been deemed necessary unless at the request of the DAQ.

ATTACHMENT P

PUBLIC NOTICE

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that CNX Gas Company LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Rule 13 Permit Modification, for a natural gas well pad located off S. Fork of Hughes River. near New Milton, in Doddridge County, West Virginia. The latitude and longitude coordinates are 39.17070 and -80.76350.

The applicant estimates decreased potential to discharge of the following Regulated Air Pollutants will be:

Pollutant	Tons/yr
$PM/PM_{10}/PM_{2.5}$	-0.11
SO_2	-2.55
NO_X	-12.90
CO	-53.25
VOCs	-83.35
Formaldehyde	-0.39
Total HAPs	-7.20

Modification of operations are after the fact and are a result of reductions in the site's production. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 14 day of February, 2017.

By: CNX Gas Company LLC
Patrick Flynn
Air Quality Engineer
1000 Consol Energy Drive
Canonsburg, PA 15317

ATTACHMENT Q

NOT APPLICABLE (SEE NOTE)

Note: No information contained within this application is claimed confidential.

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

ATTACHMENT R

NOT APPLICABLE (SEE NOTE)

Note: No delegation of authority.

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

ATTACHMENT S

NOT APPLICABLE (SEE NOTE)

Note: Not a Major Source, No Title V Permit Revision Necessary

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017

ATTACHMENT T

PERMIT APPLICATION FEE

Rule 13 Permit Modification Application

Oxford 11 Well Pad
New Milton, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA

February 2017