CONSOL ENERGY

CNX Gas Company LLC

Goosepen Station

Roanoke, West Virginia

45CSR13 Permit Application

SLR Ref: 116.00894.00071

October 2017

Goosepen Station 45CSR13 Permit Application

Prepared for:

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

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 - Changes are after the fact
ATTACHMENT M - No APCD in use at facility
ATTACHMENT Q - No information contained within this application is claimed confidential
ATTACHMENT R - No delegation of authority
ATTACHMENT S - Not a Title V Permit Revision

APPLICATION FOR PERMIT

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 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):*
Goosepen Station

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:
Crooked Fork Rd.
Roanoke, WV 26447

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 Compressor Station**	10. North American Industry Classification System **(NAICS)** code for the facility: **211111**

11A. DAQ Plant ID No. (for existing facilities only):	11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):

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**.

Traveling North on I-79 N, take exit 91 for US-19 toward Roanoke. Turn right onto US-19 N and travel 0.4 miles. Turn left onto Goosepen Run Rd. and travel 1.0 mile. Take a slight right onto Crooked Fork Rd. and travel 0.14 miles. Take a slight right onto the access road, the site will be located straight ahead in 0.1 miles.

12B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
N/A	Roanoke	Lewis
12.E. UTM Northing (KM): 4,312.963	12F. UTM Easting (KM): 540.280	12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility: NSPS JJJJ Permitting of a 4SRB Zenith ZPP NA 428 (42 hp) booster engine.

14A. Provide the date of anticipated installation or change: – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: 7/2014	14B. Date of anticipated Start-Up if a permit is granted:

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).

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.**

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

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 $2,000 which covers the Application and NSPS fees

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: Internal Combustion Engine Data Sheet, Tank Loading Data Sheet

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 – Non selective catalytic reduction (NSCR)

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 W Neal *(Please use blue ink)* DATE: 10/4/2017 *(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): Jesse Hanshaw		36B. Title: Principal Engineer, SLR
36C. E-mail: jhanshaw@slrconsulting.com	36D. Phone: 304-545-8563	36E. FAX: 681-205-8969

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

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 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

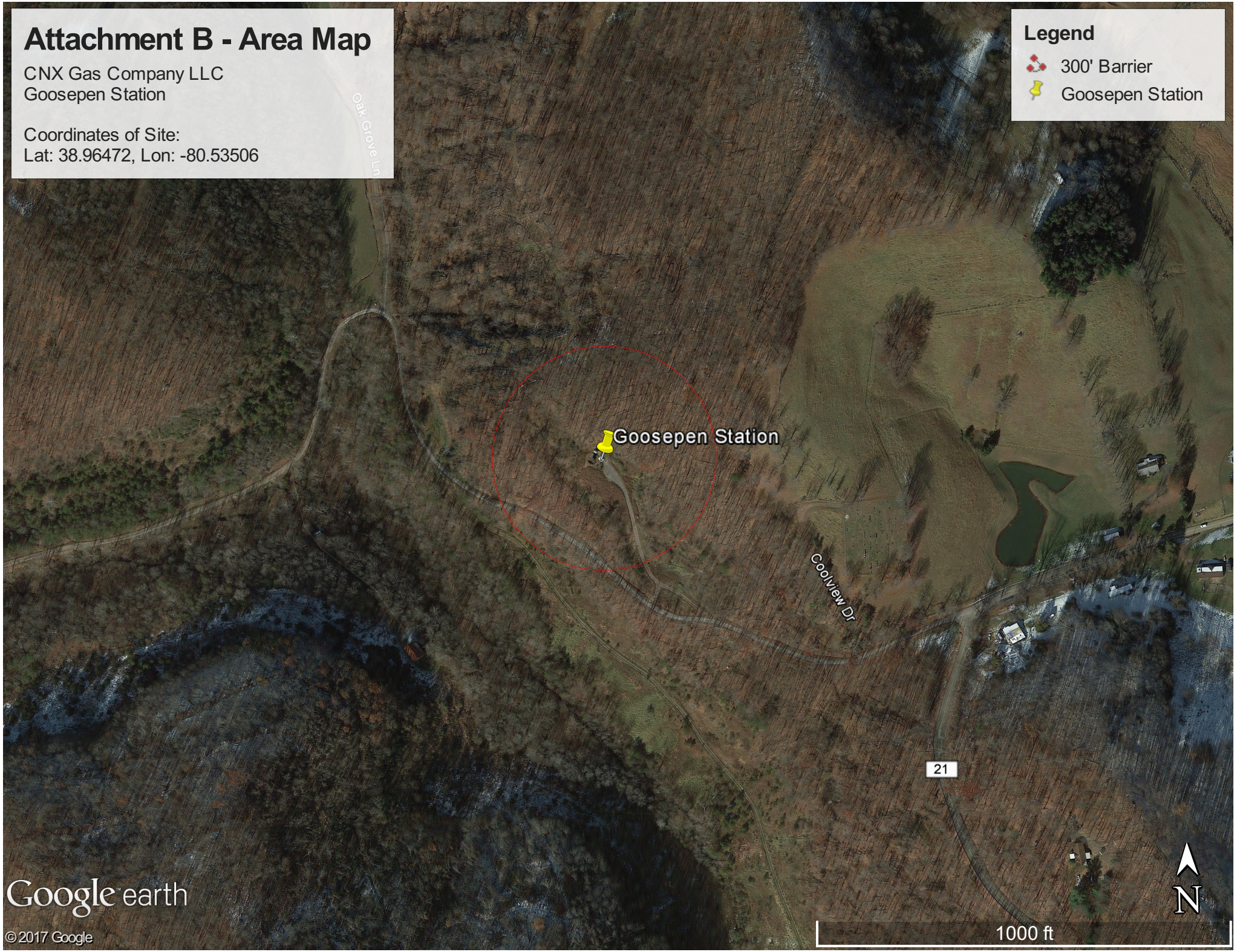
MAP

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017


Attachment B - Area Map
CNX Gas Company LLC
Goosepen Station
Coordinates of Site:
Lat: 38.96472, Lon: -80.53506
Legend
300' Barrier
Goosepen Station
Oak Grove Ln
Goosepen Station
Coolview Dr
21
Google earth
© 2017 Google
N
1000 ft

ATTACHMENT C

INSTALLATION AND START UP SCHEDULE

NOT APPLICABLE – Changes are after the fact

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

ATTACHMENT D

REGULATORY DISCUSSION

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

REGULATORY DISCUSSION

APPLICABLE REGULATIONS

The equipment at this facility is subject to the following applicable rules and regulations:

45 CSR 4 – *To Prevent and Control the Discharge of Air Pollutants into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors*

45 CSR 11 – *Prevention of Air Pollution Emergency Episodes*

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

The proposed application will address permit coverage for a previously non regulated 42 Hp., stationary RICE that was found to have a substantive requirement under 40 CFR 60, Subpart JJJJ due to the engine's manufacturer (mfg) date being after July 1, 2008.

45 CSR 17 – *To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage And Other Sources Of Particulate Matter*

Fugitive particulate emissions shall not leave the boundaries of the facility.

40 CFR 60 Subpart JJJJ – *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*

This natural gas fired RICE is considered a new unit subject to this NSPS since having been manufactured after July 1, 2008 as defined in 40CFR60.4230(4)(iii) for non-emergency units with maximum engine power less than 500 hp. However, since this engine's maximum rated engine power is less than 100 hp, this unit must comply with the emission standards for field testing found in 40CFR1048.101(c), which defines emission limits for NO_X and CO not to exceed 3.8 g/kW-hr and 6.5 g/ kW-hr, respectively.

40 CFR 63 Subpart ZZZZ – *NESHAP for Stationary Reciprocating Internal Combustion Engines*

The unit was manufactured on October 27, 2014. Therefore per the definition in 40CFR63.6590(c)(1) this unit shall comply with the requirements of Subpart ZZZZ by complying with the requirements for 40 CFR 60, Subpart JJJJ.

NON-APPLICABILITY DETERMINATIONS

The following requirements have been determined "not applicable" due to the following:

45 CSR 21 – *To Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds*

This site is located in Lewis County, which is not one of the designated VOC maintenance counties listed by the Rule as Cabell, Kanawha, Putnam, Wayne, and Wood counties.

45 CSR 27 – *To Prevent and Control the Emissions of Toxic Air Pollutants*

Natural Gas is included as a petroleum product and contains less than 5% benzene by weight. 45CSR§27-2.4 exempts equipment "used in the production and distribution of petroleum products providing that such equipment does not produce or contact materials containing more than 5% benzene by weight".

40 CFR 60 Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels*

This subpart does not apply because the storage vessel is below 75m^3 (19,813 gallons) in capacity as specified in 60.11(b).

40 CFR 60 Subpart OOOO – *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution*

The storage vessel at this site was installed in 2014 so it was evaluated and found to have emissions below 6 tpy VOCs. This is primarily a result of low liquid production rates at this site.

40 CFR 60 Subpart OOOOa – *Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced after September 18, 2015*

The GHG and VOC requirements defined by this NSPS are not applicable to this site because all affected sources commenced construction, modification, or reconstruction prior to September 18, 2015 in accordance with [40CFR§60.5365a]

ATTACHMENT E

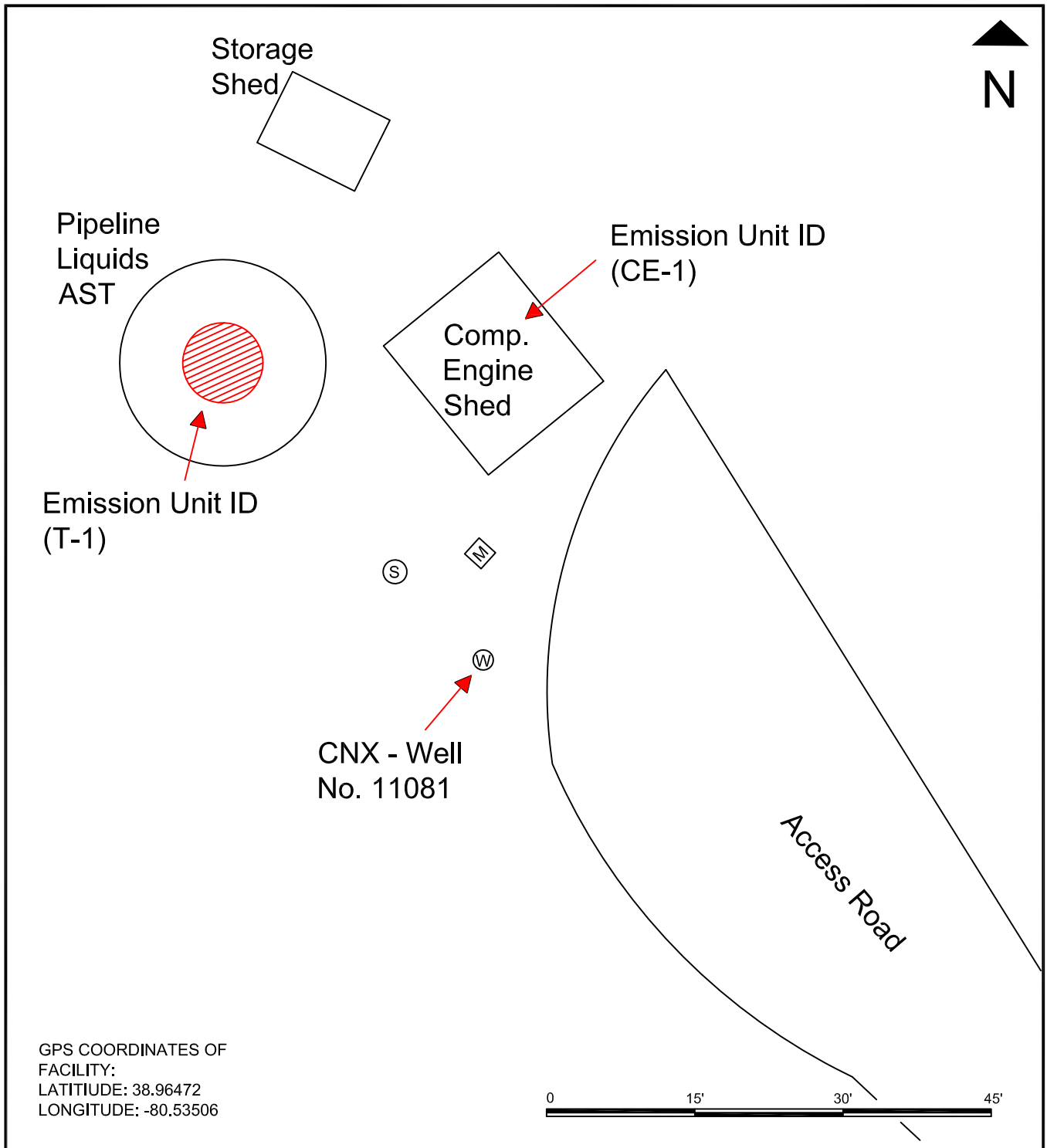
PLOT PLAN

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017



GPS COORDINATES OF FACILITY:
LATITIUDE: 38.96472
LONGITUDE: -80.53506

DRAWING LEGEND

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

SLR

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

Report:
Rule 13 Permit Application
Goosepen Station

Drawing: Plot Plan
Drawn By: CLB

Date: September 2017
ATTACHMENT E
Project #: 116.00894.00071

ATTACHMENT F

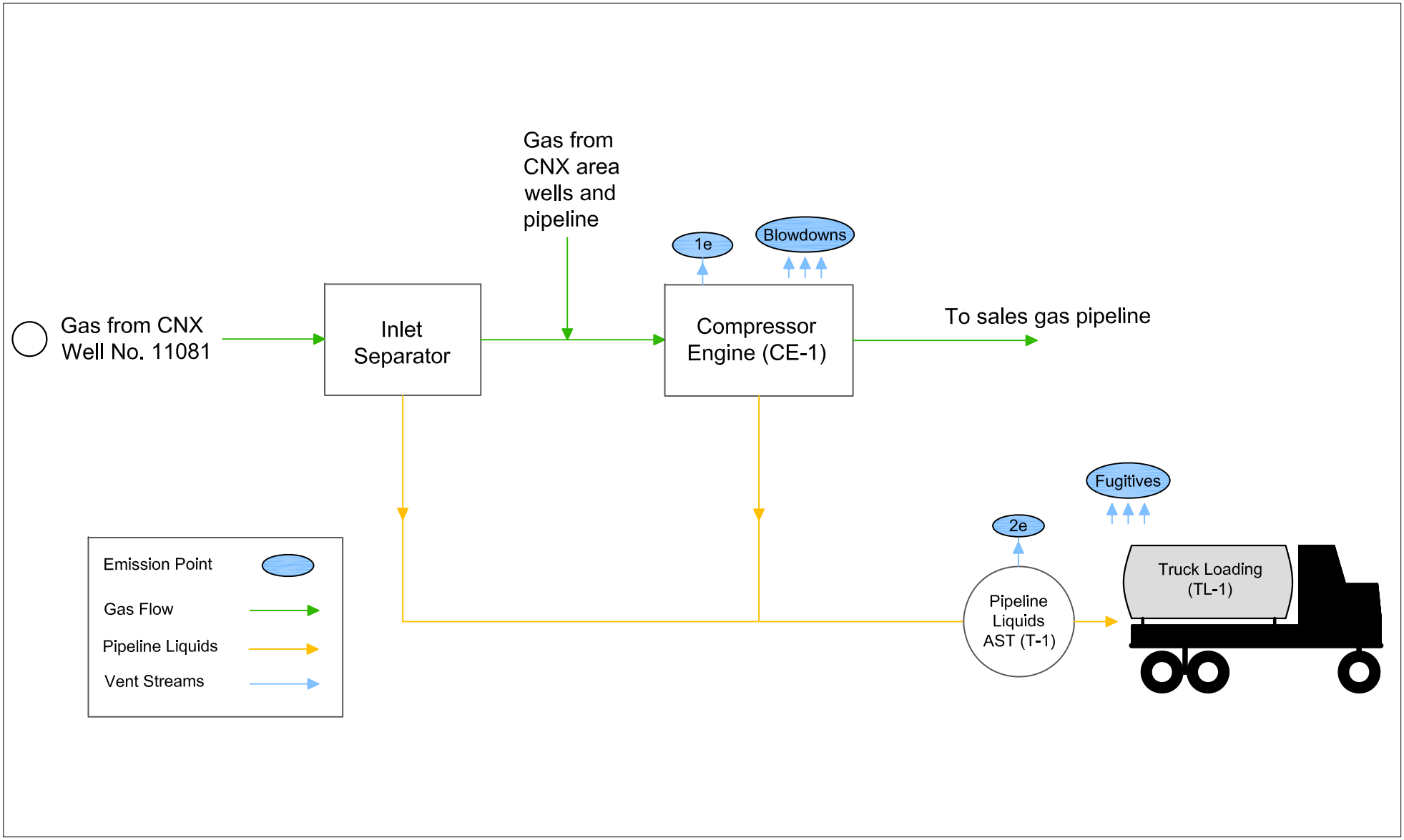
PROCESS FLOW DIAGRAM

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017



SLR

CNX Gas Company LLC

Attachment F - Process Flow Diagram

Goosepen Station | Sept 2017

ATTACHMENT G

PROCESS DESCRIPTION

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

PROCESS DESCRIPTION

The site will consist of (1) compressor, (1) 100 bbl produced liquid tank, and one conventional well. Goosepen Station collects gas from conventional wells and provides compression services. Any liquid removed in the inlet separator will be sent to the produced liquid tank prior to compression. Any liquids produced from the nearby well will be stored in the (1) 100 bbl produced liquid tank. All tank and engine emissions will be uncontrolled, at this site.

The source's storage vessel potential to emit was modeled using ProMax equation of state (EOS) software based on gas and condensate sampling taken from the Minnie Lee No.1 well pad. In accordance with DAQ guidance, emission potentials were evaluated and reported for truck loading, fugitive equipment leaks, and compressor blowdowns. The emission calculations summarized within this application show the facility's potential to emit to be no more than 1.15 tpy NOx, 1.97 tpy CO, and 1.04 tpy VOC.

PROCESS CHANGES

CNX is applying for a 45CSR13 permit to cover a NSPS JJJJ compressor, as well as emissions from an adjacent well.

ATTACHMENT H

SAFETY DATA SHEETS (SDS)

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

CONSOL ENERGY

Safety Data Sheet (SDS)

Section 1 – Identification

1(a) Product Identifier used on Label: Condensate

1(b) Other Means of Identification: Natural Gas Condensate, Produced Hydrocarbons, Drip Gas, Natural Gasoline, Petroleum Crude Oil Condensates

1(c) Recommended Use of the Chemical and Restrictions on Use: Used as a petrochemical feedstock, home heating fuel and refinery blending.

1(d) Name, Address, and Telephone Number:

CONSOL Energy Inc.
1000 CONSOL Energy Drive
Canonsburg, PA 15317

General information: (724) 485-4000

1(e) Emergency Phone Number: Chemtrec (800) 424-9300

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: Condensate is considered a hazardous material according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008] and OSHA 29 CFR 1910.1200 Hazard Communication Standard. The categories of Health Hazards as defined in "GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.

2(b) Signal Word, Hazard Statement(s), Symbol(s) and Precautionary Statement(s):

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)
	Flammable Liquid - 2	**Danger**	Highly Flammable liquid and vapor Toxic if inhaled Causes skin irritation and serious eye irritation May cause genetic defects, cancer and damage fertility or the unborn child May cause damage to central and peripheral nervous system, lungs, liver and red blood cells Causes damage to the blood, spleen, and liver through prolonged or repeat exposures May be fatal if swallowed and enters airways
	Germ Cell Mutagenicity - 1B Carcinogenicity - 1A Toxic Reproduction - 1B Specific Target Organ Toxicity (STOT) Following Single Exposure - 2 STOT following Repeated Exposure - 1 Aspiration - 1		
	Acute Toxicity Hazard - 3		
	Skin Corrosion/Irritation - 2 Eye Damage/ Irritation - 2A		

Precautionary Statement(s)

Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe dust/fume/gas/mist/ vapors/spray. If exposed, concerned or feel unwell: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.	If on skin: Wash with plenty of water If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If swallowed: Immediately call a poison center/doctor/ Do NOT induce vomiting. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. If exposed or concerned: Call a poison center or doctor. Get medical attention if you feel unwell. Store in well-ventilated place. Keep cool. Use only outdoors or in a well-ventilated area. Store locked up. Dispose of contents in accordance with federal, state and local regulations.

Section 2 – Hazard(s) Identification (continued)

2(c) Hazards not Otherwise Classified: None Known or Found

2(d) Unknown Acute Toxicity Statement (mixture): None Known or Found

Section 3 – Composition/Information on Ingredients

3(a-c) Chemical Name, Common Name (synonyms), CAS Number and Other Identifiers, and Concentration:

Chemical Name	CAS Number	EC Number	% weight
Natural Gas Condensate	64741-47-5	265-047-3	100
Natural Gas Condensate is a petroleum substance comprised of a complex mixture of hydrocarbons. Major classes of hydrocarbons contained in the substance are listed below:			
Hydrocarbons Aromatic	Mixture	Mixture	~ 5
Hydrocarbons Naphthalenes	Mixture	Mixture	~ 8
Hydrocarbons (total Paraffin and isoparaffin)	Mixture	Mixture	~ 65
Benzene	71-43-2	200-753-7	~ 0.1

EC - European Community
CAS - Chemical Abstract Service

Section 4 – First-aid Measures

4(a) Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention.

- **Inhalation:** If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor.
- **Eye Contact:** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- **Skin Contact:** If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
- **Ingestion:** If swallowed: Immediately call a poison center/doctor/ DO NOT induce vomiting.

4(b) Most Important Symptoms/Effects, Acute and Delayed (chronic):

Acute Effects:

- **Inhalation:** Aspiration hazard, May be fatal if enters airways. May cause CNS and peripheral depression and damage to liver lungs and red blood cells.
- **Eye:** Causes irritation to eyes and mucous membranes.
- **Skin:** Causes irritation to skin.
- **Ingestion:** Aspiration hazard. May be fatal if swallowed.

Delayed (chronic) Effects:

- May cause genetic defects or cancer. May damage fertility or cause damage to the unborn child. Causes damage to the hematopoietic (blood) system, spleen, and liver through prolonged or repeat exposures.

4(c) Immediate Medical Attention and Special Treatment: If exposed, concerned or feel unwell: Get medical advice/attention.

Additional Information:

Primary Entry Routes: Inhalation, Ingestion, skin and eye contact.

Target Organs: Central nervous system, blood, eyes, skin lungs, and liver. Causes damage to the hematopoietic (blood) system, spleen, and liver.

Carcinogenicity: IARC, NTP, ACGIH and OSHA list benzene as a carcinogen.

Section 5 – Fire-fighting Measures

5(a) Suitable (and unsuitable) Extinguishing Media: In case of fire: Use foam, dry powder or carbon dioxide for extinction. Do not use a solid stream of water as it may scatter and spread the fire.

5(b) Specific Hazards Arising from the Chemical: Vapors are heavier than air and may accumulate in low areas. Fire will produce irritating, corrosive and toxic gasses.

5(c) Special Protective Equipment and Precautions for Fire-Fighters: Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause formation of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used. Evacuate area. Remove pressurized gas cylinders from the immediate vicinity. Cool containers exposed to flames with water until well after the fire is out. Close the valve if no risk is involved. Fight fire from a protected location. Prevent buildup of vapors or gases to explosive concentrations.

Section 6 - Accidental Release Measures

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Spills of condensate will create a fire hazard and may form an explosive atmosphere. Stay up wind and away from the spill. Clean-up personnel should be protected against contact with eyes and skin. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations.

6(b) Methods and Materials for Containment and Clean Up: Collect with sand or oil absorbing materials. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

Section 7 - Handling and Storage

7(a) Precautions for Safe Handling: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

7(b) Conditions for Safe Storage, Including Any Incompatibilities: Store in well-ventilated place. Keep cool. Take precautions to avoid static discharges around stored condensate. Ground storage tanks and transfer piping. Use only outdoors or in a well-ventilated area. If feasible, store locked up.

Section 8 - Exposure Controls / Personal Protection

8(a) Occupational Exposure Limits (OELs): The following exposure limits are offered as reference, for an experience industrial hygienist to review.

Ingredients	OSHA PEL [1]	ACGIH TLV [2]	NIOSH REL [3]	IDLH [4]
Benzene	1.0 ppm "STEL" 5.0 ppm	0.5 ppm (1.6 mg/m^3), skin "STEL" 2.5 ppm (8 mg/m^3)	0.1 ppm (0.32 mg/m^3) "STEL" 1.0 ppm (3.2 mg/m^3)	500 ppm

1. OSHA PEL are 8-hour TWA concentrations unless otherwise noted. A Short Term Exposure Limit (STEL) is defined in the benzene standard as: The employer shall assure that no employee is exposed to an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period.
2. TLVs established by the ACGIH are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. A Short Term Exposure Limit (STEL) is defined as the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.
3. The NIOSH-REL- Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
4. The IDLHs are used by NIOSH as part of the respirator selection criteria and were first developed in the mid 1970's by NIOSH. The Documentation for IDLHs is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994.

8(b) Appropriate Engineering Controls: Local exhaust ventilation should be used to control the emission of air contaminants. General dilution ventilation may assist with the reduction of air contaminant concentrations. Emergency eye wash stations and deluge safety showers should be available in the work area.

8(c) Individual Protection Measures:

- **Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-mask negative-pressure, air-purifying respirator equipped with organic vapor cartridge is acceptable for concentrations up to 10 times the exposure limit. Full-face negative-pressure air purifying respirator equipped with organic vapor cartridges is acceptable for concentrations up to 50 times the exposure limit. Protection by air purifying both negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

  Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes**: Employees should be required to wear chemical safety glasses to prevent eye contact. A face shield should be used when appropriate to prevent contact with splashed materials. Chemical goggles, face shields or glasses should be worn to prevent eye contact. Contact lenses should not be worn where industrial exposure to this material is likely.
- **Skin**: Persons handling this product should wear appropriate clothing to prevent skin contact. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Wear protective gloves. Chemical goggles, face shields or glasses should be worn to prevent eye contact. Contact lenses should not be worn where industrial exposure to this material is likely. Wash skin that has been exposed with soap and water.
- **Other Protective Equipment**: An eyewash fountain and deluge shower should be readily available in the work area.

Section 9 - Physical and Chemical Properties

9(a) Appearance (physical state, color, etc.): Colorless to amber liquid

9(b) Odor: gasoline - like

9(j) Upper/lower Flammability or Explosive Limits: 10% / 1%

9(k) Vapor Pressure: 200-500 mmHg@68^{o}F

Section 9 - Physical and Chemical Properties (continued)

9(c) Odor Threshold: NA

9(d) pH: NA

9(e) Melting Point/Freezing Point: NA

9(f) Initial Boiling Point and Boiling Range: 96.8 - 258 °F (36-125.6 °C)

9(g) Flash Point: <-50°F (<-45.6 °C)

9(h) Evaporation Rate: NA

9(i) Flammability (liquid): Highly Flammable

9(l) Vapor Density (Air = 1): ND

9(m) Relative Density: 6.25 lbs/gal (Bulk Density)

9(n) Solubility(ies): ND

9(o) Partition Coefficient n-octanol/water: ND

9(p) Auto-ignition Temperature: ND

9(q) Decomposition Temperature: ND

9(r) Viscosity: ND

NA - Not Applicable

ND - Not Determined for product as a whole

Section 10 - Stability and Reactivity

10(a) Reactivity: Not Determined (ND) for product as a whole.

10(b) Chemical Stability: Stable under normal storage and handling conditions.

10(c) Possibility of Hazardous Reaction: No Data Found

10(d) Conditions to Avoid: Storage with incompatible materials. Avoid heat, flame, or ignition sources.

10(e) Incompatible Materials: Strong acids and oxidizing agents.

10(f) Hazardous Decomposition Products: Can produce carbon dioxide and carbon monoxide.

Section 11 - Toxicological Information

11(a-e) Information on Toxicological Effects: The following toxicity data have been determined using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU*	OSHA			
Acute Toxicity Hazard (covers Categories 1-5)	NA**	3[a]		**Danger**	Toxic if inhaled
Skin Corrosion/Irritation (covers Categories 1A, 1B, 1C and 2)	2	2[b]		**Warning**	Causes skin irritation
Eye Damage/ Irritation (covers Categories 1, 2A and 2B)	NA**	2A[c]		**Warning**	Causes serious eye irritation
Skin/Dermal Sensitization (covers Category 1)	NA**	NA**	NA**	NA**	NA**
Germ Cell Mutagenicity (covers Categories 1A, 1B and 2)	1B	1B[d]		**Danger**	May cause genetic defects
Carcinogenicity (covers Categories 1A, 1B and 2)	1B	1A[e]		**Danger**	May cause cancer
Toxic Reproduction (covers Categories 1A, 1B and 2)	NA**	1B[f]		**Danger**	May damage fertility or the unborn child
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA**	2[g]		**Warning**	May cause CNS and Peripheral depression, and damage lung liver (vacuoled hepatocytes) and red blood cells
STOT following Repeated Exposure (covers Categories 1 and 2)	NA**	1[h]		**Warning**	May cause damage to the Hematopoietic system, spleen, liver through prolonged or repeat exposures
Aspiration (covers category 1)	1	1		**Danger**	May be fatal if swallowed and enters the airway

*Natural Gas Condensate has been harmonized as - Base classification: High Benzene Naphtha, flashpoint < 23°C and initial boiling point ≥ 35°C, benzene or 1,3-butadiene ≥ 0.1%, naphthalene < 25% .

** Not Applicable - Many categories have conclusive but not sufficient for classification information.

Section 11 - Toxicological Information (continued)

11(a-e) Information on toxicological effects (continued):

a. The following LC_{50} or LD_{50} has been established for **Condensate** as a mixture:

- Rat (4 hr) LC_{50} >5.2 mg/L
- Rat (4 hr) LC_{50} >5.81 mg/L
- Rat (4 hr) LC_{50} >5.2 mg/L

b. The following **Skin Corrosion/Irritation** information was found for **Condensate** as a mixture:

- Rabbit – Slightly irritating.
- Rabbit - Irritating but not corrosive.

c. The following **Eye Damage/Irritation** information was found for **Condensate** as a mixture:

- Rabbit – Slightly irritating.

d. No **Germ Cell Mutagenicity** data available for **Condensate** as a mixture. The following **Germ Cell Mutagenicity** information was found for the components:

- Benzene - Positive with activation. Positive In vitro Clastogenicity.

e. No **Carcinogenicity** data available for **Condensate** as a mixture. The following **Carcinogenicity** information was found for the components:

- Benzene - Listed as class 1 carcinogen by the NTP, IARC, EPA and ACGIH.

f. No **Reproductive Toxicity** data available for **Condensate** as a mixture. The following **Reproductive Toxicity** information was found for the components:

- Benzene - NOAEC for both adult and offspring toxicity and female fertility. 300ppm (960 mg/m^3). NOAEC for maternal toxicity and teratogenicity was 100 ppm (320 mg/m^3). The NOAEC for slight fetotoxicity was 40 ppm (128 mg/m^3).

g. No **Specific Target Organ Toxicity (STOT) following Single Exposure** data available for **Condensate** as a mixture. The following STOT following Single Exposure information was found for the components:

- Benzene - CNS and peripheral Depression, lung liver (vacuoled hepatocytes) and red blood cells may be effected.

h. No **Specific Target Organ Toxicity (STOT) following Repeated Exposure** data available for **Condensate** as a mixture. The following STOT following Repeated Exposure data is available for the components:

- Benzene - Spleen hematopoiesis, Liver, lung kidney effects are specific to male Rat. Early signs and symptoms of chronic overexposure include effects on CNS & the GI tract (headache, loss of appetite, drowsiness, nervousness, & pallor) but the major manifestation of toxicity is aplastic anemia. Bone marrow depression may occur resulting in leucopoenia, anemia, or thrombocytopenia (leukemogenic action). With continued exposure the disease states may progress to pancytopenia resulting from bone marrow aplasia. Evidence has linked benzene in the etiology of leukemia.

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial): No Data Found

12(b) Persistence & Degradability: Loss due to volatility. Not readily biodegradable but is inherently biodegradable by microorganisms.

12(c) Bioaccumulative Potential: No Data Found

12(d) Mobility (in soil): Will float on water and will volatilize in air.

12(e) Other adverse effects: No Data Found

Additional Information:

Hazard Category: Not Reported

Signal Word: No Signal Word

Hazard Symbol: No Symbol

Hazard Statement: No Statement

Section 13 - Disposal Considerations

Disposal: Waste code D001: Waste Flammable material with a flash point <140°F. This material and its container must be disposed of as hazardous waste. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. **European Waste Catalogue (EWC):** 05-01-99 (waste from petroleum refining).

Container Cleaning and Disposal: Containers should be completely empty prior to discarding. Dispose of contents in accordance with federal, state and local regulations. Observe safe handling precautions.

Please note this information is for Condensate in its original form. Any alterations can void this information.

Section 14 - Transportation Information

14(a-g) Transportation Information:

US DOT under 49 CFR 172.101 regulates **Condensate** as a hazardous material. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

Shipping Name: RQ, UN3295, Hydrocarbon, Liquid, N.O.S. PGIII (Benzene) **Shipping Symbols:** Flammable Liquid **Hazard Class:** 3 **UN No.:** UN3295 **Packing Group:** III **DOT/ IMO Label:** 3 **Special Provisions (172.102):** 144,B1,IB3,T4,TP1,TP29	**Packaging Authorizations** **a) Exceptions:** 150 **b) Non-Bulk:** 203 **c) Bulk:** 242	**Quantity Limitations** **a) Passenger, Aircraft, or Railcar:** 60L **b) Cargo Aircraft Only:** 220L **Vessel Stowage Requirements** **a) Vessel Stowage:** A **b) Other:** NA **DOT Reportable Quantities**: 10 lbs.

IMDG and RID classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

ADR regulates **Condensate** as a hazardous material.

Shipping Name: Hydrocarbons, Liquid, N.O.S. **Classification Code:** 3 **UN No.:** 3295 **Packing Group:** III **ADR Label:** Flammable Liquid **Special Provisions:** 223 **Limited Quantities:** 5L **Excepted Quantities (EQ):** E1	**Packaging** **a) Packing Instructions:** P001, LP01 **b) Special Packing Provisions:** NA **c) Mixed Packing Provisions:** NA	**Portable Tanks & Bulk Containers** **a) Instructions:** T4 **b) Special Provisions:** TP1, TP29

IATA regulates **Condensate** as a hazardous material.

Shipping Name: Hydrocarbons, Liquid, N.O.S. **Class/Division:** 3 **Hazard Label (s):** Flammable Liquid **UN No.:** 3295 **Packing Group:** 1 **Excepted Quantities (EQ):** E3	**Passenger & Cargo Aircraft Limited Quantity (EQ)**		**Cargo Aircraft Only** **Pkg Inst:** 303 **Max Net Qty/Pkg:** 30 L	**Special Provisions:** A3 **ERG Code:** 3H
	Pkg Inst: Forbidden **Max Net Qty/Pkg:** Forbidden	**Pkg Inst:** 302 **Max Net Qty/Pkg:** 1L		

Pkg Inst – Packing Instructions Max Net Qty/Pkg – Maximum Net Quantity per Package ERG – Emergency Response Drill Code

TDG Classification: Condensate does have a TDG classification.

Section 15 - Regulatory Information

Regulatory Information: *The following listing of regulations relating to a CONSOL Energy Inc. product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities.*

This product and/or its constituents are subject to the following regulations:

OSHA Regulations: Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-2, Z-3): The product, **Condensate** as a whole is not listed. However, individual components of the product are listed: Refer to Section 8, Exposure Controls and Personal Protection

EPA Regulations: Condensate is not listed as a whole. However, individual components of the product are listed:

Components	Regulations
Benzene	SARA 313, CERCLA, RCRA, SDWA, CWA, CAA

SARA Potential Hazard Categories: Immediate Acute Health Hazard, Delayed Chronic Health Hazard, Fire Hazard

Regulations Key:

CAA	Clean Air Act (42 USC Sec. 7412; 40 CFR Part 61 [As of: 8/18/06])
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (42 USC Secs. 9601(14), 9603(a); 40 CFR Sec. 302.4, Table 302.4, Table 302.4 and App. A)
CWA	Clean Water Act (33 USC Secs. 1311; 1314(b), (c), (e), (g); 136(b), (c); 137(b), (c) [as of 8/2/06])
RCRA	Resource Conservation Recovery Act (42 USC Sec. 6921; 40 CFR Part 261 App VIII)
SARA	Superfund Amendments and Reauthorization Act of 1986 Title III Section 302 Extremely Hazardous Substances (42 USC Secs. 11023, 13106; 40 CFR Sec. 372.65) and Section 313 Toxic Chemicals (42 USC Secs. 11023, 13106; 40 CFR Sec. 372.65 [as of 6/30/05])
TSCA	Toxic Substance Control Act (15 U.S.C. s/s 2601 et seq. [1976])
SDWA	Safe Drinking Water Act (42 U.S.C. s/s 300f et seq. [1974])

Section 313 Supplier Notification: This product, **Condensate** contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
71-43-2	Benzene	0.1

Section 15 - Regulatory Information (continued)

Regulatory Information (continued):

State Regulations: The product, **Condensate** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

Pennsylvania Right to Know: Contains regulated material in the following categories:

- Environmental Hazards: Benzene
- Special Hazardous Substance: Benzene

California Prop. 65: This product contains materials known to the State of California to cause cancer. Benzene

New Jersey: Contains regulated material in the following categories: Hazardous Substance: Benzene

Minnesota: Benzene

Massachusetts: Benzene

Other Regulations:

WHMIS Classification (Canadian): Condensate is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Benzene	D-2A, D-2B, B-2

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Prepared By: CONSOL Energy Inc.

Issue Date: 8/12/2013

Additional Information:

HMIS Classification

Health Hazard	2
Fire Hazard	3
Physical Hazard	1

HEALTH = **2**, Temporary or minor injury may occur.

FIRE = **3**, Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F and boiling points above 100 °F, as well as liquids with flash points between 73 °F and 100 °F. (Classes IB & IC).

PHYSICAL HAZARD = **1,** Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

NFPA

HEALTH = **2**, Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

FIRE = **3,** Liquids and solids that can be ignited under almost all ambient conditions.

INSTABILITY = **1,** Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

ABBREVIATIONS/ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists	**mg/m^3**	milligram per cubic meter of air
ADR	Regulations Concerning the International Carriage of Dangerous Goods by Road	**NFPA**	National Fire Protection Association
CAS	Chemical Abstracts Service	**NIOSH**	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	**NOAEC**	No Observed Adverse Effect Concentration
CFR	Code of Federal Regulations	**NTP**	National Toxicology Program
CNS	Central Nervous System	**OSHA**	Occupational Safety and Health Administration
CPL	Classification, Labeling and Packaging	**PEL**	Permissible Exposure Limit
DOT	Department of Transportation	**ppm**	parts per million
EC	European Community	**RCRA**	Resource Conservation and Recovery Act
EU	European Union	**REACH**	**R**egistration, **E**valuation, **A**uthorization and Restriction of **Ch**emical substances.
EWC	European Waste Catalogue	**RID**	Regulations Concerning the International Carriage of Dangerous Goods by Rail
GI, GIT	Gastro-Intestinal, Gastro-Intestinal Tract	**REL**	Recommended Exposure Limits
GHS	Globally Harmonized System	**SDS**	Safety Data Sheet
HMIS	Hazardous Materials Identification System	**SARA**	Superfund Amendment and Reauthorization Act
IARC	International Agency for Research on Cancer	**SCBA**	Self-contained Breathing Apparatus
IATA	International Air Transport Association	**STEL**	Short Term Exposure Limit
IDLH	Immediately Dangerous to Life or Health	**TDG**	Transport Dangerous Goods
IMDG	International Maritime Dangerous Goods	**TLV**	Threshold Limit Value
LC50	Median Lethal Concentration	**TWA**	Time-weighted Average

Section 16 - Other Information (continued)

ABBREVIATIONS/ACRONYMS (continued):

MSHA	Mine Safety and Health Administration
mg/L	milligram per liter

WHMIS	Workplace Hazardous Materials Information System

Disclaimer: This information is taken from sources or based upon data believed to be reliable. Our objective in sending this information is to help you protect the health and safety of your personnel and to comply with the OSHA Hazard Communication Standard and Title III of the Superfund Amendment and Reauthorization Act of 1986. CONSOL Energy Inc. makes no warranty as to the absolute correctness, completeness, or sufficiency of any of the foregoing, or any additional, or other measures that may be required under particular conditions. CONSOL Energy Inc. MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Processed Natural Gas
Product Code: None
Synonyms: Dry Gas
Generic Name: Natural Gas
Chemical Family: Paraffin hydrocarbon

Responsible Party: Unocal Corporation
Union Oil Company of California
14141 Southwest Freeway
Sugar Land, Texas
77478

For further information contact MSDS Coordinator
8am - 4pm Central Time, Mon - Fri: 281-287-5310

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:

For Chemical Emergencies:
Spill, Leak, Fire or Accident
Call CHEMTREC
North America: (800)424-9300
Others: (703)527-3887(collect)

For Health Emergencies:
California Poison
Control System
(800)356-3129

Health Hazards: Use with adequate ventilation.

Physical Hazards: Flammable gas. Can cause flash fire. Gas displaces oxygen available for breathing. Keep away from heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment). Do not enter storage areas or confined space unless adequately ventilated.

< Physical Form: Gas
< Appearance: Colorless
< Odor: Odorless in the absence of H2S or mercaptans

NFPA HAZARD CLASS: Health: 1 (Slight)
Flammability: 4 (Extreme)
Reactivity: 0 (Least)

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	% Weight	EXPOSURE GUIDELINE		
		Limits	Agency	Type
Methane CAS# 74-82-8	98	1000 ppm	MSHA	TWA
Carbon Dioxide CAS# 124-38-9	0-5	5000 ppm	ACGIH	TWA
		30000 ppm	ACGIH	STEL
		5000 ppm	OSHA	TWA
		5000 ppm	MSHA	TWA
		5000 ppm	Cal.OSHA	TWA
		30000 ppm	Cal.OSHA	STEL
Nitrogen CAS# 7727-37-9	0-5	1000 ppm	MSHA	TWA
Ethane CAS# 74-84-0	1	1000 ppm	MSHA	TWA

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

Eye: Not expected to be an eye irritant.

Skin: Skin contact is unlikely. Skin absorption is unlikely.

Inhalation (Breathing): Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiants which, at high enough concentrations, can reduce the amount of oxygen available for breathing. Symptoms of overexposure can include shortness of breath, drowsiness, headaches, confusion,

decreased coordination, visual disturbances and vomiting, and are reversible if exposure is stopped. Continued exposure can lead to hypoxia (inadequate oxygen), cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death. High concentrations of carbon dioxide can increase heart rate and blood pressure.

Cancer: No data available.

Target Organs: No data available.

Developmental: Limited data - See Other Comments, below.

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) and respiratory acidosis (increased carbon dioxide in blood), during pregnancy may have adverse effects on the developing fetus. Exposure during pregnancy to high concentrations of carbon monoxide, which is produced during the combustion of hydrocarbon gases, can also cause harm to the developing fetus.

Pre-Existing Medical Conditions: None known.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: First aid is not normally required. However, it is good practice to wash any chemical from the skin.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely.

5. FIRE FIGHTING MEASURES

Flammable Properties: Flash Point: Not applicable (gas)
OSHA Flammability Class: Flammable gas
LEL / UEL: No data
Autoignition Temperature: 800-1000°F

Unusual Fire & Explosion Hazards: This material is flammable and may be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment). Vapors may travel considerable distances to a source of ignition where they can ignite, flashback, or explode. May create vapor/air explosion hazard indoors, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Closed containers exposed t extreme heat can rupture due to pressure buildup.

Extinguishing Media: Dry chemical or carbon dioxide is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk.

6. ACCIDENTAL RELEASE MEASURES

Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with

minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8). Notify fire authorities and appropriate federal, state, and local agencies. Water spray may be useful in minimizing or dispersing vapors (see Section 5).

7. HANDLING AND STORAGE

Handling: The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Section 2 and 8). Use good personal hygiene practice.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

Personal Protective Equipment (PPE):

Respiratory: Wear a positive pressure air supplied respirator in oxygen deficient environments (oxygen content <19.5%). A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Skin: Not required based on the hazards of the material. However, it is considered good practice to wear gloves when handling chemicals.

Eye/Face: While contact with this material is not expected to cause irritation, the use of approved eye protection to safeguard against potential eye contact is considered good practice.

Other Protective Equipment: A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed. Self-contained respirators should be available for non-routine and emergency situations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

Flash Point: Not applicable (gas)
Flammable/Explosive Limits (%): No data
Autoignition Temperature: 800-1000°F
Appearance: Colorless
Physical State: Gas
Odor: Odorless in the absence of H2S or mercaptans
Vapor Pressure (mm Hg): No data
Vapor Density (air=1): <1
Boiling Point: -259°F
Freezing/Melting Point: No data
Solubility in Water: Slight
Specific Gravity: 0.30+ (Air=1)
Percent Volatile: 100 vol.%
Evaporation Rate (nBuAc=1): N/A (Gas)

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of storage and handling.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 & 7).

Incompatible Materials: Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products: Combustion can yield carbon dioxide and carbon monoxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

No definitive information available on carcinogenicity, mutagenicity, target organs or developmental toxicity.

12. DISPOSAL CONSIDERATIONS

This material, if discarded as produced, would be a RCRA "characteristic" hazardous waste due to the characteristic(s) of ignitability (D001). If the material is spilled to soil or water, characteristic testing of the contaminated materials is recommended. Further, this material is subject to the land disposal restriction in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name / Technical Name: Hydrocarbon Gas, Liquified N.O.S. (Methane)
Hazard Class or Division: 2.1
ID #: UN1965

14. REGULATORY INFORMATION

This material contains the following chemicals subject to the reporting requirements of **SARA 313** and 40 CFR 372:

--None--

Warning: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or

other reproductive harm, and are subject to the requirements of **California Proposition 65** (CA Health & Safety Code Section 25249.5):

--None Known--

This material has not been identified as a carcinogen by NTP, IARC, or OSHA.

EPA (CERCLA) Reportable Quantity: --None--

15. DOCUMENTARY INFORMATION

Issue Date: 03/18/03
Previous Issue Date: 11/29/99
Product Code: None
Previous Product Code: None

16. DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. **HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.** This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

ATTACHMENT I

EMISSION UNITS TABLE

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

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]
CE-1	E01	Reciprocating Engine/Integral Compressor; Zenith ZPP NA 428 ;4SRB	10-2014 Mfg. 10-27-2014	42 hp	Existing	None
T01	E02	Pipeline Liquids AST	7-1-2014	4,200 gal 50 bbl	Existing	NA
TL-1	Fugitive	Pipeline Liquids – Truck Loading	7-1-2014	76,650 gal/yr	Existing	NA
Comp. Blowdowns	Fugitive	Blowdowns from the Zenith ZPP NA 428; 4SRB Compressor	7-1-2014	7.7 lb/event	Existing	NA
Equipment Leaks	Fugitive	Equipment Leak	7-1-2014	NA	Existing	NA

[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

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

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			
E01	Horizontal Stack	CE-1	4SRB RICE Zenith ZPP NA 428	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CH2O HAPs CO2e	0.26 0.45 0.01 <0.01 0.01 0.01 0.02 44.11	1.15 1.96 0.05 0.01 0.03 0.04 0.06 193.21			Gas/ Vapor	EE	Can Supply Upon Request
E02	Vertical Stack	T01	Pipeline Liquids AST	NA	-	-	-	VOC	0.04	0.14	-	-	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 K

FUGITIVE EMISSIONS DATA SHEET

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 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	0.01	0.05	-	-	EE
Wastewater Treatment Evaporation & Operations	-	-	-	-	-	EE
Equipment Leaks	VOC	0.13	0.57	-	-	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

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

INTERNAL COMBUSTION ENGINE DATA SHEET

Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*

Emission Unit ID#[1]		CE-1					
Engine Manufacturer/Model		Zenith/ ZPP NA 428					
Manufacturers Rated bhp/rpm		42/1800					
Source Status[2]		NS					
Date Installed/ Modified/Removed/Relocated[3]		10/2014					
Engine Manufactured /Reconstruction Date[4]		10/27/2014					
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]		☐40CFR60 Subpart JJJJ ☒JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☒40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	
Engine Type[6]		4SRB					
APCD Type[7]		None					
Fuel Type[8]		RG					
H_2S (gr/100 scf)		0.25					
Operating bhp/rpm		42/1800					
BSFC (BTU/bhp-hr)		8,976					
Hourly Fuel Throughput		337.80 ft^3/hr					
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		2.96 $MMft^3/yr$					
Fuel Usage or Hours of Operation Metered		Yes ☐ No ☒		Yes ☐ No ☐		Yes ☐ No ☐	
Calculation Methodology[9]	**Pollutant[10]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**
AP	NO_x	0.26	1.15				
AP	CO	0.45	1.96				
AP	VOC	0.01	0.05				
AP	SO_2	<0.01	0.01				
AP	PM_{10}	0.01	0.03				
AP	Formaldehyde	0.01	0.04				
AP	Total HAPs	0.02	0.06				
AP	GHG (CO_2e)	44.11	193.21				

1 Enter the appropriate Source Identification Number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the compressor station. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Generator engines should be designated GE-1, GE-2, GE-3 etc. Microturbine generator engines should be designated MT-1, MT-2, MT-3 etc. If more than three (3) engines exist, please use additional sheets.

2 Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Relocated Source
REM	Removal of Source		

3 Enter the date (or anticipated date) of the engine's installation (construction of source), modification, relocation or removal.

4 Enter the date that the engine was manufactured, modified or reconstructed.

5 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart IIII/JJJJ? If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance as appropriate.

Provide a manufacturer's data sheet for all engines being registered.

6 Enter the Engine Type designation(s) using the following codes:

2SLB	Two Stroke Lean Burn	4SRB	Four Stroke Rich Burn
4SLB	Four Stroke Lean Burn		

7 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	OxCat	Oxidation Catalyst
SCR	Lean Burn & Selective Catalytic Reduction		

8 Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas /Production Gas	D	Diesel

9 Enter the Potential Emissions Data Reference designation using the following codes. Attach all reference data used.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other	(please list)

10 Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

11 PTE for engines shall be calculated from manufacturer's data unless unavailable.

ATTACHMENT L – 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 (REQUIRED)

1. Bulk Storage Area Name: Goosepen Station	2. Tank Name Pipeline Liquids AST
2. Emission Unit ID number: T-1	3. Emission Point ID number: E01
5. Date Installed , Modified or Relocated *(for existing tanks)* T-1 (7-1-2014) Was the tank manufactured after August 23, 2011 and on or before September 18, 2015? ☐ Yes ☒ No Was the tank manufactured after September 18, 2015? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)*	
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. 100 bbl/ 4,200 gal	
9A. Tank Internal Diameter (ft.) 8.45	9B. Tank Internal Height (ft.) 10
10A. Maximum Liquid Height (ft.) 10	10B. Average Liquid Height (ft.) 5
11A. Maximum Vapor Space Height (ft.) 10	11B. Average Vapor Space Height (ft.) 5
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume". 100 bbl/ 4,200 gal	
13A. Maximum annual throughput (gal/yr) 76,650	13B. Maximum daily throughput (gal/day) 210
14. Number of tank turnovers per year 1	15. Maximum tank fill rate (gal/min) 0.15
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]

-0.03 Vacuum Setting 0.03 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).

Material Name	**Flashing Loss**		**Working/ Breathing Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
VOCs Combined Tanks	<0.01	0.01	0.03	0.14	0.04	0.14	O - 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) Welded		
21A. Shell Color: Green	21B. Roof Color: Green	21C. Year Last Painted: NA
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): 4.23	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): 49.06	31. Annual Avg. Maximum Temperature (°F): 61.15
32. Annual Avg. Minimum Temperature (°F): 36.97	33. Avg. Wind Speed (mph): 6.17
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): 1,193.70	35. Atmospheric Pressure (psia): 13.73

LIQUID INFORMATION		
36. Avg. daily temperature range of bulk liquid (°F): 49.07	36A. Minimum (°F): 36.97	36B. Maximum (°F): 61.15
37. Avg. operating pressure range of tank (psig): 0.0	37A. Minimum (psig): -0.03	37B. Maximum (psig): 0.03

38A. Minimum liquid surface temperature (°F): 36.97	38B. Corresponding vapor pressure (psia): 6.37
39A. Avg. liquid surface temperature (°F): 50.67	39B. Corresponding vapor pressure (psia): 6.77
40A. Maximum liquid surface temperature (°F): 56.45	40B. Corresponding vapor pressure (psia): 7.19

41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary. SEE PROMAX MODEL 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#: Fugitive	Year Installed/Modified: 2014
Emission Unit Description: Emissions from Truck Loading are vented to Atmosphere		
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	Pipeline Liquids		
Max. Daily Throughput (1000 gal/day)	0.21		
Max. Annual Throughput (1000 gal/yr)	76.65		
Loading Method[1]	SUB		
Max. Fill Rate (gal/min)	0.15		
Average Fill Time (min/loading)	60		
Max. Bulk Liquid Temperature (^{o}F)	49.1		

True Vapor Pressure[2]		6.77		
Cargo Vessel Condition[3]		C		
Control Equipment or Method[4]		None		
Max. Collection Efficiency (%)		0		
Max. Control Efficiency (%)		0		
Max.VOC Emission Rate	Loading (lb/hr)	0.01		
	Annual (ton/yr)	0.04		
Max.HAP Emission Rate	Loading (lb/hr)	0.00		
	Annual (ton/yr)	0.00		
Estimation Method[5]		O - ProMax		

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 SHEET(S)

NOT APPLICABLE – No APCD in use at the facility

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

ATTACHMENT N

SUPPORTING EMISSIONS CALCULATIONS

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

Table 1. Annual Potential To Emit (PTE) Summary
CNX Gas Company - Goosepen Station

Criteria Pollutants

Proposed Facility Wide PTE - Criteria Pollutants

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Engines (ton/yr)	0.032	0.032	0.032	0.001	1.148	1.963	0.049	193.210
Tanks (ton/yr)	-	-	-	-	-	-	0.137	-
Truck Loading (ton/yr)	-	-	-	-	-	-	0.041	-
Compressor Blowdowns (ton/yr)	-	-	-	-	-	-	0.231	-
Fugitives (ton/yr)	-	-	-	-	-	-	0.573	13.327
Total Emissions (ton/yr)	0.032	0.032	0.032	0.001	1.148	1.963	1.032	206.537
Total Emissions (lb/hr)	0.007	0.007	0.007	0.000	0.262	0.448	0.236	47.154

Hazardous Air Pollutants (HAPs)

Proposed Facility Wide PTE - HAPs

Source	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Engines (ton/yr)	0.0046	0.0026	0.0009	0.0000	0.0003	-	0.034	0.054
Tanks (ton/yr)	-	-	-	-	-	-	-	-
Truck Loading (ton/yr)	-	-	-	-	-	-	-	-
Compressor Blowdowns (ton/yr)	-	-	-	-	-	-	-	-
Fugitives (ton/yr)	-	-	-	-	-	-	-	-
Total Emissions (ton/yr)	0.005	0.003	0.001	0.000	0.000	0.000	0.034	0.054
Total Emissions (lb/hr)	0.001	0.001	0.000	0.000	0.000	0.000	0.008	0.012

Table 2. Reciprocating Engine / Integral Compressor Emissions (CE-1)
Zenith ZPP NA 428
CNX Gas Company - Goosepen Station

Pollutant	Maximum Hourly Emissions					Annual Emissions				
	Emission Factor			PTE per Engine (lb/hr)		Emission Factor			PTE per Engine (tons/yr)	
Criteria Pollutants										
PM/PM10/PM2.5**	1.94E-02	lb/MMBtu	(1)	0.007	(a)	1.94E-02	lb/MMBtu	(1)	0.03	(c)
SO_2	0.25 grains S / 100 ft^3		(2)	0.000	(e)	0.25 grains S / 100 ft^3		(2)	0.001	(f)
NOx	2.83E+00	g/hp-hr	(3)	0.26	(b)	2.83E+00	g/hp-hr	(3)	1.15	(d)
CO	4.84E+00	g/hp-hr	(3)	0.45	(b)	4.84E+00	g/hp-hr	(3)	1.96	(d)
VOC*	1.20E-01	g/hp-hr	(1)	0.01	(b)	1.20E-01	g/hp-hr	(1)	0.05	(d)
*VOCs does not include formaldehyde										
Hazardous Air Pollutants										
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	(1)	0.000	(a)	2.53E-05	lb/MMBtu	(1)	0.000	(c)
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	(1)	0.000	(a)	1.53E-05	lb/MMBtu	(1)	0.000	(c)
1,3-Butadiene	6.63E-04	lb/MMBtu	(1)	0.000	(a)	6.63E-04	lb/MMBtu	(1)	0.001	(c)
1,3-Dichloropropene	1.27E-05	lb/MMBtu	(1)	0.000	(a)	1.27E-05	lb/MMBtu	(1)	0.000	(c)
Acetaldehyde	2.79E-03	lb/MMBtu	(1)	0.001	(a)	2.79E-03	lb/MMBtu	(1)	0.005	(c)
Acrolein	2.63E-03	lb/MMBtu	(1)	0.001	(a)	2.63E-03	lb/MMBtu	(1)	0.004	(c)
Benzene	1.58E-03	lb/MMBtu	(1)	0.001	(a)	1.58E-03	lb/MMBtu	(1)	0.003	(c)
Carbon Tetrachloride	1.77E-05	lb/MMBtu	(1)	0.000	(a)	1.77E-05	lb/MMBtu	(1)	0.000	(c)
Chlorobenzene	1.29E-05	lb/MMBtu	(1)	0.000	(a)	1.29E-05	lb/MMBtu	(1)	0.000	(c)
Chloroform	1.37E-05	lb/MMBtu	(1)	0.000	(a)	1.37E-05	lb/MMBtu	(1)	0.000	(c)
Ethylbenzene	2.48E-05	lb/MMBtu	(1)	0.000	(a)	2.48E-05	lb/MMBtu	(1)	0.000	(c)
Ethylene Dibromide	2.13E-05	lb/MMBtu	(1)	0.000	(a)	2.13E-05	lb/MMBtu	(1)	0.000	(c)
Formaldehyde	2.05E-02	lb/MMBtu	(1)	0.008	(a)	2.05E-02	lb/MMBtu	(1)	0.034	(c)
Methanol	3.06E-03	lb/MMBtu	(1)	0.001	(a)	3.06E-03	lb/MMBtu	(1)	0.005	(c)
Methylene Chloride	4.12E-05	lb/MMBtu	(1)	0.000	(a)	4.12E-05	lb/MMBtu	(1)	0.000	(c)
Naphthalene	9.71E-05	lb/MMBtu	(1)	0.000	(a)	9.71E-05	lb/MMBtu	(1)	0.000	(c)
PAH (POM)	1.41E-04	lb/MMBtu	(1)	0.000	(a)	1.41E-04	lb/MMBtu	(1)	0.000	(c)
Styrene	1.19E-05	lb/MMBtu	(1)	0.000	(a)	1.19E-05	lb/MMBtu	(1)	0.000	(c)
Toluene	5.58E-04	lb/MMBtu	(1)	0.000	(a)	5.58E-04	lb/MMBtu	(1)	0.001	(c)
Vinyl Chloride	7.16E-06	lb/MMBtu	(1)	0.000	(a)	7.16E-06	lb/MMBtu	(1)	0.000	(c)
Xylenes	1.95E-04	lb/MMBtu	(1)	0.000	(a)	1.95E-04	lb/MMBtu	(1)	0.000	(c)
Total HAP				**0.012**					**0.054**	
Greenhouse Gas Emissions										
CO_2	116.89	lb/MMBtu	(4)	44.07	(a)	116.89	lb/MMBtu	(4)	193.01	(c)
CH_4	2.2E-03	lb/MMBtu	(4)	0.00	(a)	2.2E-03	lb/MMBtu	(4)	0.00	(c)
N_2O	2.2E-04	lb/MMBtu	(4)	0.00	(a)	2.2E-04	lb/MMBtu	(4)	0.00	(c)
$CO_2e^{(g)}$	-	-		44.11					193.21	

** PM emission factor includes condensables and filterables

Calculations:

Maximum Hourly Emissions - If emission factor note 1 or 4 is used, use calculation (a). If emission factor note 3 is used, use calculation (b).

(a) Maximum Hourly Emissions (lb/hr) = Emission factor (lb/MMBtu) * (1MMBtu/1000000 Btu) * Engine Power Output (hp) * Average BSFC (Btu/hp-hr)

(b) Maximum Hourly Emissions (lb/hr) = Emission factor (g/hp-hr) * Engine Power Output (hp) * (1 lb/453.6 g)

Annual Emissions - If emission factor note 1 or 4 is used, use calculation (c). If emission factor note 3 is used, use calculation (d).

(c) Annual emissions (tons/yr) = Emission factor (lb/MMBtu) * (1MMBtu/1000000Btu) * Engine Power Output (hp) * Average BSFC (Btu/hp-hr) * Annual Hours of operation (hr/yr) * (1ton/2000lbs)

(d) Annual emissions (tons/yr) = Emission factor (g/hp-hr) * Engine Power Output (hp) * (1 lb/453.6 g) * Annual Hours of operation (hr/yr) * (1ton/2000lbs)

SO_2 Emissions - If emission factor note 2 is used, use calculations (e) and (f) for hourly and annual emissions, respectively.

(e) Maximum Hourly Emissions SO2 Caclulation (lb/hr) = (0.25 grain S/100ft3) * Fuel throughput (ft3/hr) * (1lb/7000 grains) * (lbmol S/32.06 lb S) * (lbmol SO2/ lbmol S) *(64.07 lb SO2/lbmol SO2)

(f) Annual Emissions SO2 Caclulation (ton/yr) = (0.25 grain S/100ft3) * Fuel throughput (ft3/hr) * (1lb/7000 grains) * (lbmol S/32.06 lb S) * (lbmol SO2/ lbmol S) *(64.07 lb SO2/lbmol SO2) * Annual hours of operation (hr/yr) * (1ton/2000lbs)

MAXIMUM HOURLY EMISSION INPUTS		
Engine Power Output (kW) =	31	
Engine Power Output (hp) =	42	
Number of Engines =	1	
Average BSFC (BTU/HP-hr) =	8,976	(5)
Heat Content Natural Gas(Btu/scf) =	1,116.0	(6)
Fuel Throughput (ft3/hr) =	337.8	(7)
PTE Hours of Operation =	8,760	

(g) 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	(8)
CH_4	25	(8)
N_2O	298	(8)

Notes:

(1) AP-42, Chapter 3.2, Table 3.2-3. *Natural Gas-fired Reciprocating Engines* (7/00). Uncontrolled Emission Factors for 4-Stroke Rich-Burn Engines.

(2) AP-42, Chapter 5.3, Section 5.3.1

(3) Emission Factors from 40CFR1048.101(c), referenced by 40CFR60.4233(d).

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

(5) Fuel consumption from manufacturer's specification sheet.

(6) Value supplied from client based on gas composition in area field

(7) Fuel throughput = BSFC (BTU/HP-hr) x Power (HP) / Heat Content (BTU/scf)

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

Table 3. Tank Emissions
CNX Gas Company - Goosepen Station

Emission Unit ID	Tank Capacity (gal)	Tank Contents	Control Devices	Tank Throughput (bbls/day)	VOC Emission Factor (lbs/bbls)		VOC Emissions (lbs/yr)[a]	VOC Emissions (lb/hr)[b]	VOC Emissions (tons/yr)[c]
T-1	4200	Pipeline Liquids	None	5.00	1.50E-01	(1)	274.58	0.031	0.137
Totals							**274.58**	**0.03**	**0.14**

Calculations:

(a) VOC Emissions (lb/yr) = Tank Throughput (bbls/day) * VOC Emission Factor (lbs/bbls) * (365days/yr)

(b) VOC Emissions (lb/hr) = VOC Emissions (lbs/yr) * (yr/8760hr)

(c) VOC Emissions (ton/yr) = VOC Emissions (lbs/yr) * (1ton/2000lbs)

Notes:

(1) VOC emission factor includes Flashing/Working/Breathing losses as calculated from the Promax Model Simulation report

Table 4. Truck Loading (TL-1) VOC Emissions
CNX Gas Company - Goosepen Station

Contents	Volume Transferred [3]	PTE VOC Emissions (lb/hr)	PTE VOC Emissions (ton/yr) [(a)]
Pipeline Liquids	76,650 gal/yr	9.44E-03	4.14E-02
Total		**9.44E-03**	**4.14E-02**

Calculations:

(a) PTE VOC Emissions (ton/yr) given as calculated in the Promax Model simulation report

	Pipeline liquids	
Saturation factor	0.60	Note [(1)]
Pvap (psia)	4.89	Note [(2)]
Molecular Weight Vap (lb/lbmol)	25.35	Note [(2)]
Bulk Liquid Tempurature (F)	49.08	Note [(2)]

Notes:

(1) AP-42 Section 5.2, Table 5.2-1 Saturation Factors for Calculating Petroleum Liquid Loading Losses, Submerged loading - dedicated normal service

(2) Input parameters as defined by the Promax Model simulation report

(3) Annual rates based on maximum throughput of 5 bbl/day per tank

Table 5. Fugitive Leak Emissions
CNX Gas Company - Goosepen Station

Pollutant	Emission Factor			PTE[(a) Gas Service] (tons/yr)
Valves	9.9E-03	lb/hr/source	(1)	1.96
Connectors	8.6E-04	lb/hr/source	(1)	0.76
Open-Ended Lines	4.4E-03	lb/hr/source	(1)	0.01
Pressure Relief Valves	1.9E-02	lb/hr/source	(1)	0.00
Compressors	1.9E-02	lb/hr/source	(1)	0.17
Total Gas Released	-	-		2.73
Total **VOC** Released (gas service)			(b)	**0.57**
Calculations:			**CO2e**	**13.33**

(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) Gas sample from station's gas analysis assumed to be worst case at **21** wt % VOC from 2012 fractional gas analysis measurements

Number of Components in Gas Service

Valves=	45	(2)
Pressure Relief Valves=	0	(2)
Connectors=	203	(2)
Open-Ended Lines=	1	(2)
Compressors=	2.000	(2)
Maximum Hour of Operation =	8,760	

Global Warming Potential (GWP)

CO_2	1	(3)
CH_4	25	(3)
N_2O	298	(3)

(1) Emission factors from 1995 EPA Protocol for Equipment Leak Emission Estimates, Table 2-4 Oil and Gas Production

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

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

Table 8. Reciprocating Engine / Integral Compressor Emissions (E01) Blowdown Venting
Zenith ZPP NA 428
CNX Gas Company - Goosepen Station

Pollutant	Maximum Hourly Emissions		Annual Emissions	
	Emission Factor	PTE per Engine Event (lb/hr)	Emission Factor	Annual PTE (tons/yr)
Criteria Pollutants				
VOC	7.70E+00 lb/Event (1)	7.70 (a)	7.70E+00 lb/Event (1)	0.23 (a)

(1) - 7.7 lbs VOC/ Engine blowdown event; based on 717 scf/event of 20.45 MW gas with 20.2 wt % VOC

(a) - Worst case blowdowns per year equal normal rate 6 times 10 = 60 Events/yr

Bryan Research & Engineering, Inc.

ProMax® 4.0

Simulation Report

Project: Goosepen Tank Run.pmx

Licensed to SLR International Corporation and Affiliates

Client Name: CNX Gas
Location: Goospen Station
Job: Tank Emission Estimate

ProMax Filename: N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
ProMax Version: 4.0.16071.0
Simulation Initiated: 9/22/2017 11:17:08 AM

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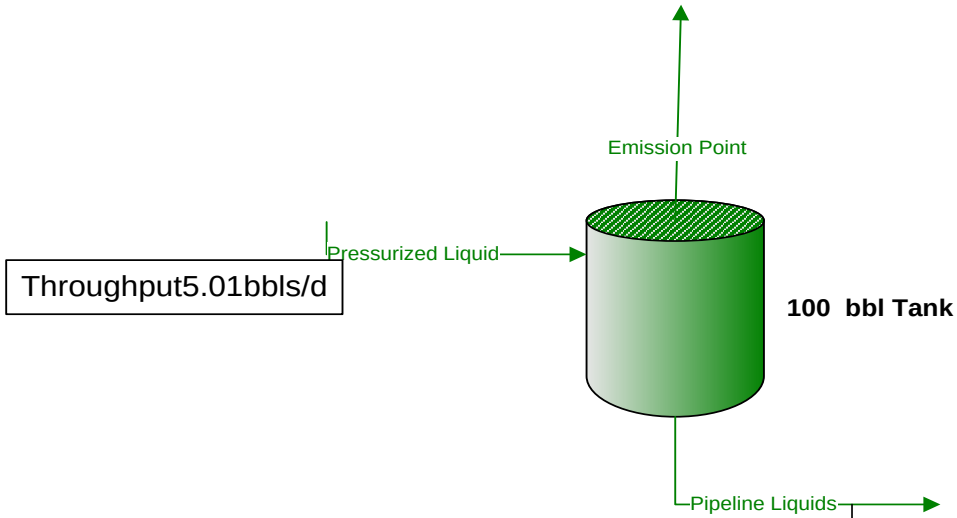
http://www.bre.com/

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.

Annual tank loss calculations for "Pipeline Liquids".
Total working and breathing losses from the Vertical Cylinder are 0.1329 ton/yr.
Flashing losses are 0.004388 ton/yr.
Loading losses are 0.04136 ton/yr of loaded liquid.
* Only Non-Exempt VOCs are reported.
Vapor adjusted to ensure mass balance

Tank-1



Properties	Pipeline Liquids	
Liquid Volumetric Flow (Total)	5	bbl/d

Process Streams		Emission Point	Pipeline Liquids	Pressurized Liquid
Composition	**Status:**	Solved	Solved	Solved
Phase: **Total**	**From Block:**	100 bbl Tank	100 bbl Tank	--
	To Block:	--	--	100 bbl Tank
Mole Fraction		%	%	%
Carbon Dioxide		0	0	0*
Nitrogen		1.15424	0.00213663	0.0160002*
Methane		58.7391	0.297773	1.00101*
Ethane		24.6112	0.747858	1.03501*
Propane		9.51729	1.13616	1.23701*
Isobutane		1.40471	0.469754	0.481005*
n-Butane		2.34122	1.13550	1.15001*
Isopentane		0.703333	0.992489	0.989010*
n-Pentane		0.568989	1.08725	1.08101*
Benzene		0.0100047	0.0768046	0.0760008*
Toluene		0.0163253	0.489701	0.484005*
Ethylbenzene		0.00415519	0.426081	0.421004*
p-Xylene		0.0124147	1.36529	1.34901*
n-Hexane		0.203179	1.49860	1.48301*
2,2,4-Trimethylpentane		0	0	0*
Other C6's		0.311067	1.73313	1.71602*
Heptanes		0.261420	5.60030	5.53606*
Octanes		0.119034	8.14263	8.04608*
Nonanes		0.0223659	5.07384	5.01305*
Decanes +		3.96089E-07	69.7247	68.8857*
Molar Flow		lbmol/h	lbmol/h	lbmol/h
Carbon Dioxide		0	0	0*
Nitrogen		3.71046E-05	5.63923E-06	4.27438E-05*
Methane		0.00188824	0.000785916	0.00267416*
Ethane		0.000791158	0.00197383	0.00276499*
Propane		0.000305945	0.00299868	0.00330463*
Isobutane		4.51561E-05	0.00123983	0.00128499*
n-Butane		7.52616E-05	0.00299695	0.00307221*
Isopentane		2.26095E-05	0.00261949	0.00264210*
n-Pentane		1.82909E-05	0.00286959	0.00288788*
Benzene		3.21613E-07	0.000202711	0.000203033*
Toluene		5.24796E-07	0.00129247	0.00129300*
Ethylbenzene		1.33574E-07	0.00112456	0.00112470*
p-Xylene		3.99086E-07	0.00360344	0.00360384*
n-Hexane		6.53145E-06	0.00395528	0.00396182*
2,2,4-Trimethylpentane		0	0	0*
Other C6's		9.99963E-06	0.00457427	0.00458427*
Heptanes		8.40367E-06	0.0147809	0.0147894*
Octanes		3.82649E-06	0.0214910	0.0214948*
Nonanes		7.18981E-07	0.0133914	0.0133922*
Decanes +		1.27328E-11	0.184025	0.184025*
Mass Fraction		%	%	%
Carbon Dioxide		0	0	0*
Nitrogen		1.27576	0.000262596	0.00198772*
Methane		37.1797	0.0209580	0.0712154*
Ethane		29.1984	0.0986582	0.138016*
Propane		16.5583	0.219801	0.241899*
Isobutane		3.22133	0.119786	0.123981*
n-Butane		5.36899	0.289551	0.296421*
Isopentane		2.00215	0.314159	0.316442*
n-Pentane		1.61972	0.344153	0.345878*
Benzene		0.0308338	0.0263208	0.0263269*
Toluene		0.0593483	0.197955	0.197767*
Ethylbenzene		0.0174052	0.198458	0.198213*
p-Xylene		0.0520026	0.635919	0.635129*
n-Hexane		0.690828	0.566584	0.566752*
2,2,4-Trimethylpentane		0	0	0*
Other C6's		1.04323	0.646315	0.646852*
Heptanes		1.03361	2.46216	2.46023*
Octanes		0.535405	4.07253	4.06774*
Nonanes		0.112955	2.84932	2.84562*
Decanes +		4.44145E-06	86.9371	86.8195*
Mass Flow		lb/h	lb/h	lb/h
Carbon Dioxide		0	0	0*
Nitrogen		0.00103943	0.000157974	0.00119740*
Methane		0.0302920	0.0126080	0.0429001*
Ethane		0.0237894	0.0593512	0.0831406*
Propane		0.0134909	0.132229	0.145720*
Isobutane		0.00262457	0.0720616	0.0746862*
n-Butane		0.00437437	0.174189	0.178564*
Isopentane		0.00163125	0.188993	0.190624*
n-Pentane		0.00131966	0.207037	0.208357*
Benzene		2.51218E-05	0.0158342	0.0158593*
Toluene		4.83539E-05	0.119087	0.119135*
Ethylbenzene		1.41809E-05	0.119389	0.119403*
p-Xylene		4.23690E-05	0.382559	0.382601*
n-Hexane		0.000562850	0.340848	0.341411*
2,2,4-Trimethylpentane		0	0	0*
Other C6's		0.000849969	0.388813	0.389663*
Heptanes		0.000842132	1.48120	1.48204*
Octanes		0.000436220	2.44997	2.45041*
Nonanes		9.20296E-05	1.71410	1.71420*
Decanes +		3.61866E-09	52.3000	52.3000*

Process Streams		Emission Point	Pipeline Liquids	Pressurized Liquid
Properties	**Status:**	Solved	Solved	Solved
Phase: **Total**	**From Block:**	100 bbl Tank	100 bbl Tank	--
	To Block:	--	--	100 bbl Tank
Property	**Units**			
Temperature	°F	57.7653	57.7653	58*
Pressure	psig	0	0	21*
Mole Fraction Vapor	%	100	0	0.0938779
Mole Fraction Light Liquid	%	0	100	99.9061
Mole Fraction Heavy Liquid	%	0	0	0
Molecular Weight	lb/lbmol	25.3450	227.932	225.494
Mass Density	lb/ft^3	0.0674859	51.4304	49.7590
Molar Flow	lbmol/h	0.00321463	0.263931	0.267146
Mass Flow	lb/h	0.0814748	60.1584	60.2399
Vapor Volumetric Flow	ft^3/h	1.20729	1.16970	1.21063
Liquid Volumetric Flow	gpm	0.150519	0.145833	0.150936
API Gravity			40.2833	
Net Ideal Gas Heating Value	Btu/ft^3	1358.11	11167.2	11049.1
Net Liquid Heating Value	Btu/lb	20239.2	18439.8	18442.2

Environments Report

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Project-Wide Constants

Atmospheric Pressure	14.6959 psia	Ideal Gas Reference Volume	379.484 ft^3/lbmol
Ideal Gas Reference Pressure	14.6959 psia	Liquid Reference Temperature	60 °F
Ideal Gas Reference Temperature	60 °F		

Environment1

Environment Settings

Number of Poynting Intervals	0	Phase Tolerance	1 %
Gibbs Excess Model Evaluation Temperature	77 °F	Emulsion Enabled	FALSE
Freeze Out Temperature Threshold Difference	10 °F		

Components

Component	Henry's Law Comp.	Phase Initiator	Component	Henry's Law Comp.	Phase Initiator
Carbon Dioxide	FALSE	FALSE	Nitrogen	FALSE	FALSE
Methane	FALSE	FALSE	Ethane	FALSE	FALSE
Propane	FALSE	FALSE	Isobutane	FALSE	FALSE
n-Butane	FALSE	FALSE	Isopentane	FALSE	FALSE
n-Pentane	FALSE	FALSE	Benzene	FALSE	FALSE
Toluene	FALSE	FALSE	Ethylbenzene	FALSE	FALSE
p-Xylene	FALSE	FALSE	n-Hexane	FALSE	FALSE
2,2,4-Trimethylpentane	FALSE	FALSE	Other C6's	FALSE	FALSE
Heptanes	FALSE	FALSE	Octanes	FALSE	FALSE
Nonanes	FALSE	FALSE	Decanes +	FALSE	FALSE

Physical Property Method Sets

Liquid Molar Volume	COSTALD	Vapor Package	Peng-Robinson
Overall Package	Peng-Robinson	Light Liquid Package	Peng-Robinson
Stability Calculation	Peng-Robinson	Heavy Liquid Package	Peng-Robinson

Notes:

Single Oil Report
Decanes +

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Properties

Volume Average Boiling Point	661.659	°F	Low Temperature Viscosity	6.79714	cP
Molecular Weight	284.2*	lb/lbmol	Temperature of High T Viscosity	210	°F
Specific Gravity	0.8465*		High Temperature Viscosity	1.82072	cP
API Gravity	35.6589		Watson K	12.2730	
Critical Temperature	951.235	°F	ASTM D86 10-90% Slope	0	°F/%
Critical Pressure	170.611	psig	ASTM D93 Flash Point	338.345	°F
Critical Volume	17.6652	ft^3/lbmol	Pour Point	61.4934	°F
Acentric Factor	0.880769		Paraffinic Fraction	71.7542	%
Carbon to Hydrogen Ratio	6.33114?		Naphthenic Fraction	22.5066	%
Refractive Index	1.46817		Aromatic Fraction	5.73929	%
Temperature of Low T Viscosity	100	°F	Ideal Gas Heat Capacity	103.423	Btu/(lbmol*°F)

Notes:

Single Oil Report
Heptanes

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Properties

Volume Average Boiling Point	204.170	°F	Low Temperature Viscosity	0.347616	cP
Molecular Weight	100.21*	lb/lbmol	Temperature of High T Viscosity	210	°F
Specific Gravity	0.7016*		High Temperature Viscosity	0.211224	cP
API Gravity	70.1819		Watson K	12.4336	
Critical Temperature	512.987	°F	ASTM D86 10-90% Slope	0	°F/%
Critical Pressure	396.167	psig	ASTM D93 Flash Point	22.6774	°F
Critical Volume	6.61841	ft^3/lbmol	Pour Point	-5.66945?	°F
Acentric Factor	0.328178		Paraffinic Fraction	72.8431	%
Carbon to Hydrogen Ratio	5.34609		Naphthenic Fraction	21.4149	%
Refractive Index	1.39189		Aromatic Fraction	5.74200	%
Temperature of Low T Viscosity	100	°F	Ideal Gas Heat Capacity	37.1664	Btu/(lbmol*°F)

Notes:

Single Oil Report
Nonanes

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Properties

Volume Average Boiling Point	296.600	°F	Low Temperature Viscosity	0.569789	cP
Molecular Weight	128*	lb/lbmol	Temperature of High T Viscosity	210	°F
Specific Gravity	0.7424*		High Temperature Viscosity	0.313911	cP
API Gravity	59.0981		Watson K	12.2722	
Critical Temperature	612.483	°F	ASTM D86 10-90% Slope	0	°F/%
Critical Pressure	339.966	psig	ASTM D93 Flash Point	86.4541	°F
Critical Volume	8.28440	ft^3/lbmol	Pour Point	-11.0241?	°F
Acentric Factor	0.420394		Paraffinic Fraction	62.4060	%
Carbon to Hydrogen Ratio	5.62062		Naphthenic Fraction	24.7656	%
Refractive Index	1.41424		Aromatic Fraction	12.8284	%
Temperature of Low T Viscosity	100	°F	Ideal Gas Heat Capacity	46.6471	Btu/(lbmol*°F)

Notes:

Single Oil Report
Octanes

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Properties

Volume Average Boiling Point	251.542	°F	Low Temperature Viscosity	0.446533	cP
Molecular Weight	114*	lb/lbmol	Temperature of High T Viscosity	210	°F
Specific Gravity	0.724*		High Temperature Viscosity	0.258447	cP
API Gravity	63.9420		Watson K	12.3290	
Critical Temperature	565.037	°F	ASTM D86 10-90% Slope	0	°F/%
Critical Pressure	367.393	psig	ASTM D93 Flash Point	55.3642	°F
Critical Volume	7.43719	ft^3/lbmol	Pour Point	-9.58266?	°F
Acentric Factor	0.374061		Paraffinic Fraction	66.6140	%
Carbon to Hydrogen Ratio	5.49569		Naphthenic Fraction	23.6971	%
Refractive Index	1.40406		Aromatic Fraction	9.68898	%
Temperature of Low T Viscosity	100	°F	Ideal Gas Heat Capacity	41.8093	Btu/(lbmol*°F)

Notes:

Single Oil Report
Other C6's

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\CNX Gas\Projects\2017\Rule 13 Permirts\Goosepen\ProMax\Goosepen Tank Run.pmx
Location:	0		
Flowsheet:	Flowsheet1		

Properties

Volume Average Boiling Point	147.291	°F	Low Temperature Viscosity	0.256680	cP
Molecular Weight	85*	lb/lbmol	Temperature of High T Viscosity	210	°F
Specific Gravity	0.664*		High Temperature Viscosity	0.164743	cP
API Gravity	81.6024		Watson K	12.7512	
Critical Temperature	445.480	°F	ASTM D86 10-90% Slope	0	°F/%
Critical Pressure	420.214	psig	ASTM D93 Flash Point	-16.5692?	°F
Critical Volume	5.75172	ft^3/lbmol	Pour Point	5.82321?	°F
Acentric Factor	0.277116		Paraffinic Fraction	86.4939?	%
Carbon to Hydrogen Ratio	5.07336		Naphthenic Fraction	13.5061?	%
Refractive Index	1.37271		Aromatic Fraction	0?	%
Temperature of Low T Viscosity	100	°F	Ideal Gas Heat Capacity	32.5709	Btu/(lbmol*°F)

Notes:

Calculators Report

Client Name:	Tank Emission Estimate	**Job:**	N:\W
Location:	0		
Flowsheet:	Flowsheet1		

Simple Solver 1

Source Code

Residual Error (for CV1) = PipelineLiquids-5

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Pressurized Liquid!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	0.146254
Units	sgpm

Measured Variable [PipelineLiquids]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Pipeline Liquids!Phases!Total!Properties!Liquid Volumetric Flow
Value	5.00000
Units	bbl/d

Solver Properties

Status: **Solved**

Error	3.97993E-12		Iterations	2
Calculated Value	0.146254	sgpm	Max Iterations	20
Lower Bound		sgpm	Weighting	1
Upper Bound		sgpm	Priority	0
Step Size		sgpm	Solver Active	Active
Is Minimizer	FALSE		Group	
Algorithm	Default		Skip Dependency Check	FALSE

Notes:

User Value Sets Report

Client Name:	Tank Emission Estimate	**Job:**	N:\West Virginia\
Location:	0		
Flowsheet:	Flowsheet1		

Tank-1

User Value [BlockReady]

Parameter	1*		Upper Boun		
Lower Bound			Enforce Bou	FALSE	

User Value [ShellLength]

Parameter	10*	ft	Upper Boun		ft
Lower Bound	0*	ft	Enforce Bou	FALSE	

User Value [ShellDiam]

Parameter	8.45*	ft	Upper Boun		ft
Lower Bound	0*	ft	Enforce Bou	FALSE	

User Value [BreatherVP]

Parameter	0.0300000*	psig	Upper Boun		psig
Lower Bound		psig	Enforce Bou	FALSE	

User Value [BreatherVacP]

Parameter	-0.0300000*	psig	Upper Boun		psig
Lower Bound		psig	Enforce Bou	FALSE	

User Value [DomeRadius]

Parameter	4.23*	ft	Upper Boun		ft
Lower Bound		ft	Enforce Bou	FALSE	

User Value [OpPress]

Parameter	0*	psig	Upper Boun		psig
Lower Bound		psig	Enforce Bou	FALSE	

User Value [AvgPercentLiq]

Parameter	50*	%	Upper Boun		%
Lower Bound		%	Enforce Bou	FALSE	

User Value [MaxPercentLiq]

Parameter	90*	%	Upper Boun		%
Lower Bound		%	Enforce Bou	FALSE	

User Value [AnnNetTP]

Parameter	4.98235*	bbl/day	Upper Boun		bbl/day
Lower Bound	0*	bbl/day	Enforce Bou	FALSE	

User Value [OREff]

Parameter	0*	%	Upper Boun		%
Lower Bound		%	Enforce Bou	FALSE	

User Value [MaxAvgT]

Parameter	61.15*	°F	Upper Boun		°F
Lower Bound		°F	Enforce Bou	FALSE	

User Value [MinAvgT]

Parameter	36.9667*	°F	Upper Boun		°F
Lower Bound		°F	Enforce Bou	FALSE	

User Value [BulkLiqT]				
Parameter	49.0783*	°F	Upper Boun	°F
Lower Bound		°F	Enforce Bou	FALSE

User Value [AvgP]				
Parameter	13.7315*	psia	Upper Boun	psia
Lower Bound		psia	Enforce Bou	FALSE

User Value [Therml]				
Parameter	1193.89*	Btu/ft^2/day	Upper Boun	Btu/ft^2/day
Lower Bound		Btu/ft^2/day	Enforce Bou	FALSE

User Value [AvgWindSpeed]				
Parameter	6.16667*	mi/h	Upper Boun	mi/h
Lower Bound		mi/h	Enforce Bou	FALSE

User Value [MaxHourlyLoadingRate]				
Parameter	0.207598*	bbl/hr	Upper Boun	bbl/hr
Lower Bound	0*	bbl/hr	Enforce Bou	FALSE

User Value [EntrainedOilFrac]				
Parameter	1*	%	Upper Boun	%
Lower Bound		%	Enforce Bou	FALSE

User Value [TurnoverRate]				
Parameter	20.2280*		Upper Boun	
Lower Bound			Enforce Bou	FALSE

User Value [LLossSatFactor]				
Parameter	0.5*		Upper Boun	
Lower Bound			Enforce Bou	FALSE

User Value [AtmPressure]				
Parameter	13.7315*	psia	Upper Boun	psia
Lower Bound		psia	Enforce Bou	FALSE

User Value [TVP]				
Parameter	6.77054*	psia	Upper Boun	psia
Lower Bound		psia	Enforce Bou	FALSE

User Value [MaxVP]				
Parameter	7.19440*	psia	Upper Boun	psia
Lower Bound		psia	Enforce Bou	FALSE

User Value [MinVP]				
Parameter	6.37364*	psia	Upper Boun	psia
Lower Bound		psia	Enforce Bou	FALSE

User Value [AvgLiqSurfaceT]				
Parameter	50.6729*	°F	Upper Boun	°F
Lower Bound		°F	Enforce Bou	FALSE

User Value [MaxLiqSurfaceT]				
Parameter	56.4466*	°F	Upper Boun	°F
Lower Bound		°F	Enforce Bou	FALSE

User Value [TotalLosses]				
Parameter	0.132943*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE

User Value [WorkingLosses]				
Parameter	0.0806644*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE

User Value [StandingLosses]				
Parameter	0.0522789*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [RimSealLosses]				
Parameter	0*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [WithdrawalLoss]				
Parameter	0*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [LoadingLosses]				
Parameter	0.0413578*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [MaxHourlyLoadingLoss]				
Parameter	0.00944242*	lb/hr	Upper Boun	lb/hr
Lower Bound		lb/hr	Enforce Bou	FALSE
User Value [PStar]				
Parameter			Upper Boun	
Lower Bound			Enforce Bou	FALSE
User Value [AllCTotalLosses]				
Parameter	0.318462*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [AllCLoadingLosses]				
Parameter	0.0990715*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [AllCMaxHLoadingLoss]				
Parameter	0.0226191*	lb/hr	Upper Boun	lb/hr
Lower Bound		lb/hr	Enforce Bou	FALSE
User Value [AllCFlashingLosses]				
Parameter	0.0131886*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [DeckFittingLosses]				
Parameter	0*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [DeckSeamLosses]				
Parameter	0*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [FlashingLosses]				
Parameter	0.00438846*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [TotalResidual]				
Parameter	263.162*	ton/yr	Upper Boun	ton/yr
Lower Bound		ton/yr	Enforce Bou	FALSE
User Value [GasMoleWeight]				
Parameter	0.0318968*	kg/mol	Upper Boun	kg/mol
Lower Bound		kg/mol	Enforce Bou	FALSE
User Value [VapReportableFrac]				
Parameter	41.7454*	%	Upper Boun	%
Lower Bound		%	Enforce Bou	FALSE

User Value [LiqReportableFrac]			
Parameter	99.8835* %	Upper Boun	%
Lower Bound	%	Enforce Bou	FALSE

User Value [FlashReportableFrac]			
Parameter	33.2747* %	Upper Boun	%
Lower Bound	%	Enforce Bou	FALSE

ATTACHMENT O

MONITORING/RECORDKEEPING/REPORTING/ TESTING PLANS

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 2017

MONITORING, RECORD KEEPING, REPORTING, TESTING PLANS

Monitoring

CNX will monitor hours of operation, site production throughputs, malfunctions of equipment, as well as planned and unplanned maintenance of permitted equipment comprising the facility.

Recordkeeping

The company will retain records of the following for five (5) years, two (2) years on site, certified by a company official at such time that the DAQ may request said records

In addition to those mentioned above, the company will keep records of the items monitored, such as station throughput, hours of operation, planned maintenance activities, unplanned maintenance activities, and complaints regarding the facility.

Records of maintenance conducted shall be kept in accordance with Subpart JJJJ (40CFR60.4243(b)(2)(i)).

Reporting

CNX at a minimum will submit results of initial performance test to the WV DAQ and EPA Regional Office within sixty (60) days of completion of such tests. In addition, the company will report any control equipment malfunctions or emission limit deviations.

Testing

The company will demonstrate initial compliance by conducting a performance demonstration according to the procedures specified in 40CFR60.4244 showing the emission limitations in 40CFR1048.101(c) are being met.

ATTACHMENT P

PUBLIC NOTICE

45CSR13 Permit Application

Goosepen Station
Roanoke, West Virginia

CNX Gas Company LLC
1000 Consol Energy Drive
Canonsburg, PA 15317

October 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, for a natural compressor station located off Goosepen Run Rd. near Roanoke, in Lewis County, West Virginia. The latitude and longitude coordinates are 38.96472 and -80.53506.

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

Pollutant	Tons/yr
$PM/PM_{10}/PM_{2.5}$	0.04
SO_2	0.01
NO_X	1.15
CO	1.97
VOCs	1.04
Total HAPs	0.06

Modifications of operations are after the fact. 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 XXth day of August, 2017.

By: CNX Gas Company LLC
Craig Neal
Vice President Gas Operations
1000 Consol Energy Drive
Canonsburg, PA 15317