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 ORIGINAL

Cranberry Pipeline Corporation

**Bonham Station**

Sissonville, West Virginia

Rule 13 Permit Application

SLR Ref: 116.00400.00142

*Entire Document*  
**NON-CONFIDENTIAL**

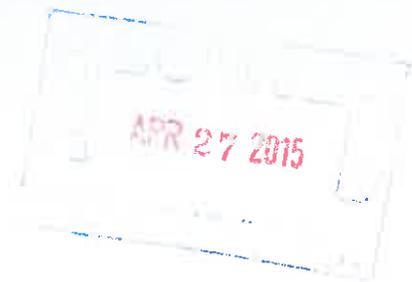
April 2015

I.D. No. 039-00046 Reg. 2765B

Company Cranberry

Facility Bonham Region \_\_\_\_\_

Initials ML





## Rule 13 Permit Application

Prepared for:

**Cranberry Pipeline Corporation**  
**c/o Cabot Oil & Gas Corporation**  
900 Lee Street East  
Suite 1500  
Charleston, West Virginia 25301

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.

A handwritten signature in blue ink that reads "Ethan Saturday". The signature is written in a cursive style and is positioned above a horizontal line.

Ethan Saturday, E.I.  
Staff Engineer

A handwritten signature in blue ink that reads "Jesse Hanshaw". The signature is written in a cursive style and is positioned above a horizontal line.

Jesse Hanshaw, P.E.  
Principal Engineer

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#### Notes:

- ATTACHMENT M - No air pollution control device modification
- 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**

## **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

**Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia**

**April 2015**



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304  
 (304) 926-0475  
[www.dep.wv.gov/daq](http://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): Cranberry Pipeline Corporation		2. Federal Employer ID No. (FEIN): 042989934	
3. Name of facility (if different from above): Bonham Compressor Station		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: 1500 Lee Street East Charleston, WV 25301		5B. Facility's present physical address: Derricks Creek Road Sissonville, WV	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - If YES, provide a copy of the <b>Certificate of Incorporation/Organization/Limited Partnership</b> (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b> . - If NO, provide a copy of the <b>Certificate of Authority/Authority of L.L.C./Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .			
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? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - If YES, please explain: <b>The applicant leases the site.</b> - If NO, you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be <b>constructed, modified, relocated, administratively updated or temporarily permitted</b> (e.g., coal preparation plant, primary crusher, etc.): <b>Natural Gas Compressor Station</b>		10. North American Industry Classification System (NAICS) code for the facility:  <b>211111</b>	
11A. DAQ Plant ID No. (for existing facilities only):  <b>039-00046</b>		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):  <b>R13-2765A</b>	

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

<p>12A.</p> <ul style="list-style-type: none"> <li>For <b>Modifications, Administrative Updates</b> or <b>Temporary permits</b> at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</li> <li>For <b>Construction</b> or <b>Relocation permits</b>, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a <b>MAP</b> as <b>Attachment B</b>.</li> </ul> <p>From the intersection of US-21 and St. Rte. 32/Derricks Creek road in Sissonville, WV, go east on Derrick Creek Road for 2 miles and station will be on left.</p>		
12B. New site address (if applicable): N/A	12C. Nearest city or town: Sissonville	12D. County: Kanawha
12E. UTM Northing (KM): 4,263.22	12F. UTM Easting (KM): 441.64	12G. UTM Zone: 17N
<p>13. Briefly describe the proposed change(s) at the facility: This modification involves the addition of an emergency generator and updates to storage tank content descriptions and capacity. No new tanks were installed, but one of the "offsite pipeline liquids" tanks was listed for the first time under this modification.</p>		
<p>14A. Provide the date of anticipated installation or change: <b>07/01/2015</b></p> <ul style="list-style-type: none"> <li>If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen:</li> </ul>		<p>14B. Date of anticipated Start-Up if a permit is granted: <b>07/01/2015</b></p>
<p>14C. Provide a <b>Schedule</b> of the planned <b>Installation of/Change</b> to and <b>Start-Up</b> of each of the units proposed in this permit application as <b>Attachment C</b> (if more than one unit is involved).</p>		
<p>15. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application: The emergency generator will only be used for emergency power outage situations and for readiness periodic testing.</p>		
<p>16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>		
<p>17. <b>Risk Management Plans.</b> If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see <a href="http://www.epa.gov/ceppo">www.epa.gov/ceppo</a>), submit your <b>Risk Management Plan (RMP)</b> to U. S. EPA Region III.</p>		
<p>18. <b>Regulatory Discussion.</b> List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). 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 (<i>if known</i>). Provide this information as <b>Attachment D</b>.</p>		
<p><b>Section II. Additional attachments and supporting documents.</b></p>		
<p>19. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).</p>		
<p>20. Include a <b>Table of Contents</b> as the first page of your application package.</p>		
<p>21. Provide a <b>Plot Plan</b>, 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 <b>Attachment E</b> (Refer to <b>Plot Plan Guidance</b>) .</p> <ul style="list-style-type: none"> <li>Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).</li> </ul>		
<p>22. Provide a <b>Detailed Process Flow Diagram(s)</b> showing each proposed or modified emissions unit, emission point and control device as <b>Attachment F</b>.</p>		
<p>23. Provide a <b>Process Description</b> as <b>Attachment G</b>.</p> <ul style="list-style-type: none"> <li>Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).</li> </ul>		
<p><i>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</i></p>		

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:

<input checked="" type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input checked="" type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

General Emission Unit, specify: Emergency Generator (RICE)

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

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

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

Other Collectors, specify

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

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

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

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

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

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

YES       NO

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

### Section III. Certification of Information

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

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> 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 \_\_\_\_\_

*Randy Spencer*  
(Please use blue ink)

DATE: \_\_\_\_\_

*4/22/15*  
(Please use blue ink)

35B. Printed name of signee: Randy Spencer

*RANDY SPENCER*

35C. Title:

Safety & Environmental Manager-North

35D. E-mail: randy.spencer@cabotog.com

36E. Phone: 304-347-1642

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.**

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

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

ISSUED TO:  
**CRANBERRY PIPELINE CORPORATION  
900 LEE ST E 1700  
CHARLESTON, WV 25301-1741**

**BUSINESS REGISTRATION ACCOUNT NUMBER 1006-3673**

This certificate is issued on: **06/1/2011**

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code.*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

*This certificate is not transferrable and must be displayed at the location for which issued.  
This certificate shall be permanent until cessation of the business for which the certificate of registration  
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.*

*Change in name or change of location shall be considered a cessation of the business and a new  
certificate shall be required.*

**TRAVELING STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of  
this certificate displayed at every job site within West Virginia.**

# **ATTACHMENT B**

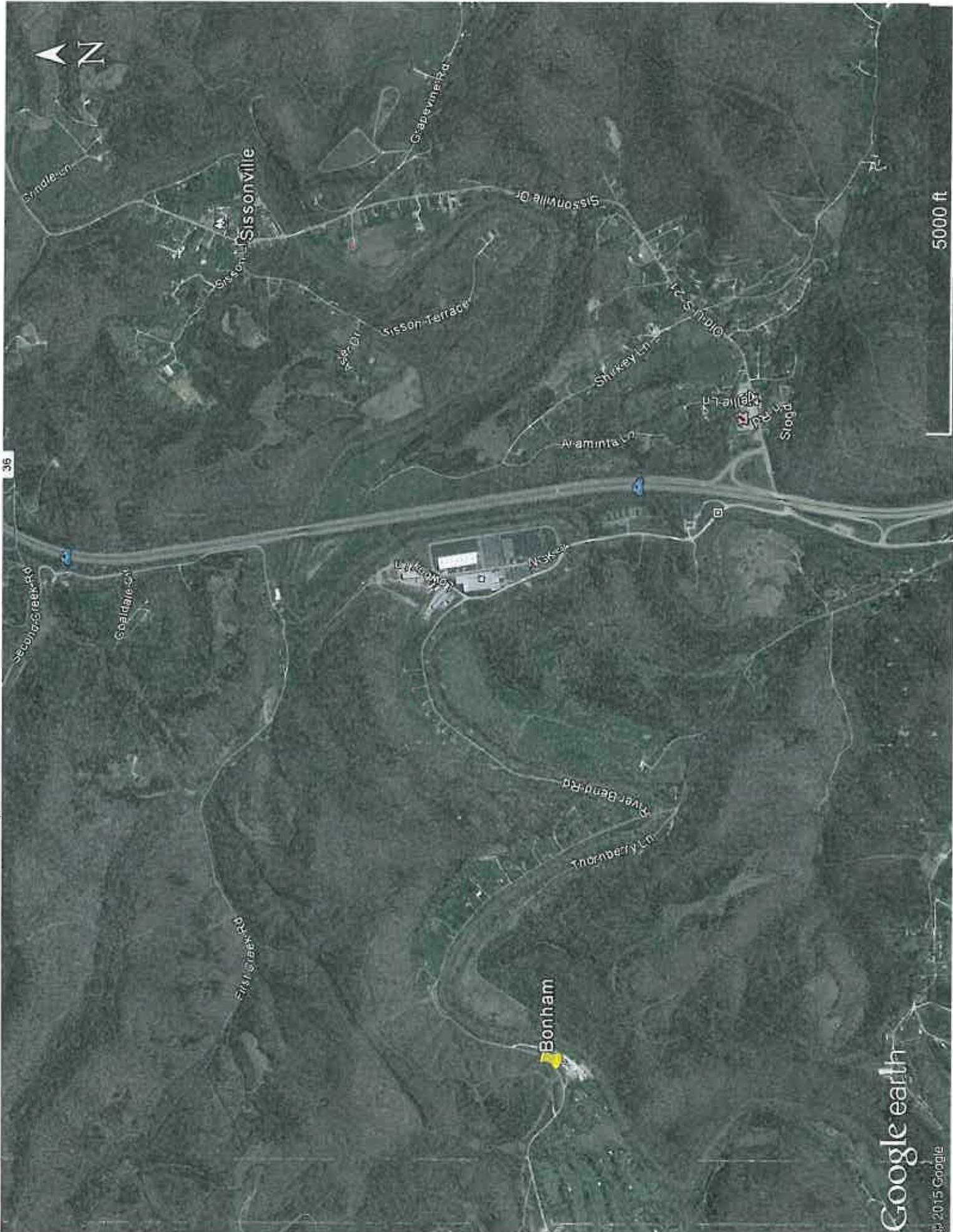
## **MAP**

### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015



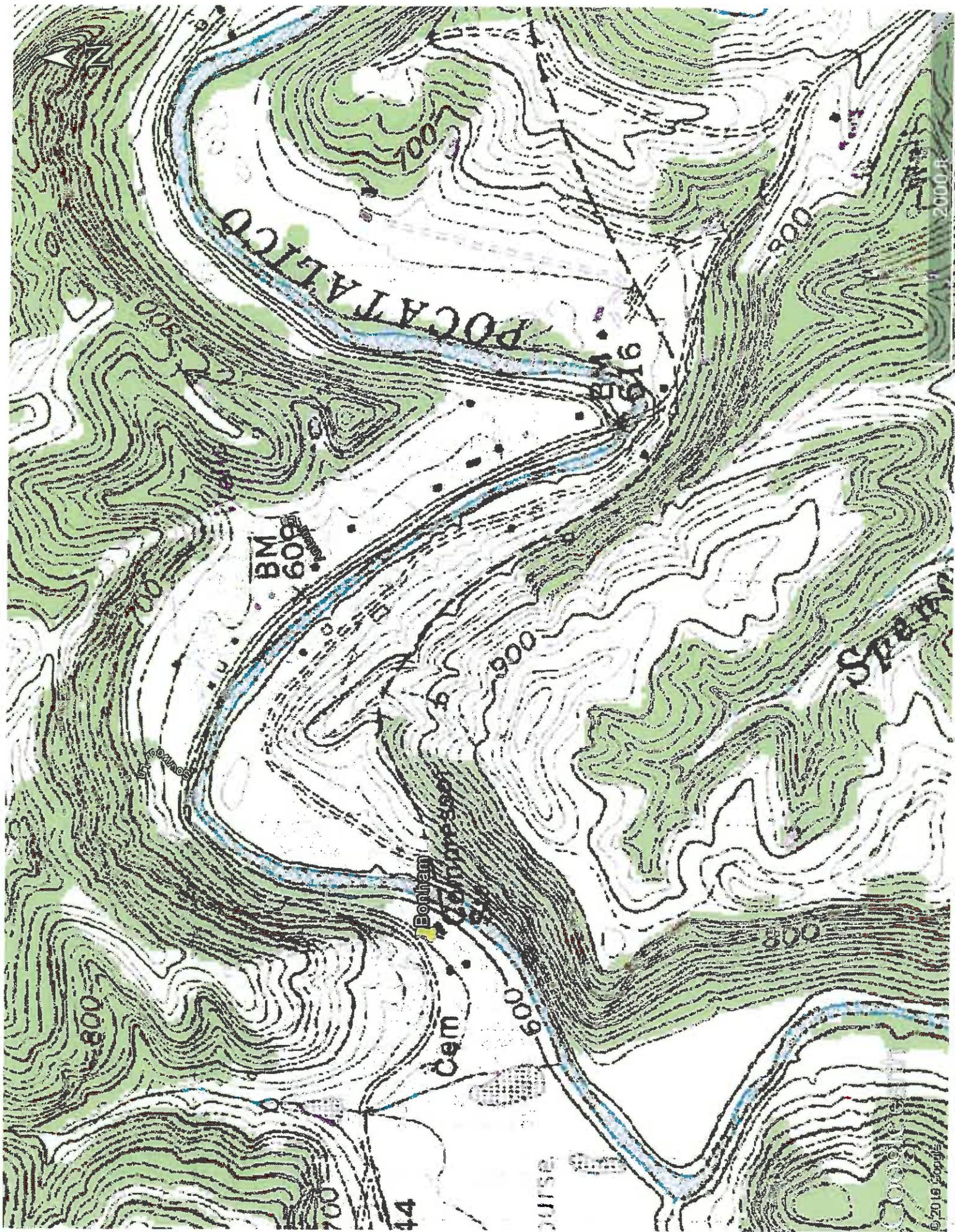
5000 ft

36

Bonham

Google earth

© 2015 Google



2000 FT

© 2018 Topographic

**ATTACHMENT C**

**INSTALLATION AND START-UP**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## INSTALLATION AND STARTUP SCHEDULE

Cranberry Pipeline Corporation is preparing this facility for a proposed modification with an anticipated date of July 1, 2015.

## **ATTACHMENT D**

### **REGULATORY DISCUSSION**

#### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## REGULATORY DISCUSSION

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### APPLICABLE REGULATIONS

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

#### Federal and State:

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

The emergency engine (S4) is a 4SRB 63 Hp Generac unit which was manufactured on 12/17/2014; therefore, this engine is required to adhere to 40 CFR 60 Subpart JJJJ.

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

The emergency engine (S4) is a 4SRB 63 Hp Generac unit which was manufactured on 12/17/2014; therefore, this engine is required to adhere to this standard of performance.

**45 CSR 4** - No Objectionable Odors

**45 CSR 11** - Standby Plans for Emergency Episodes.

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

The company has applied for a Rule 13 modification permit to incorporate new applicable requirements and emissions associated with emergency generator, RICE unit.

Additionally, under this modification the storage vessel calculations were updated to include flashing emissions as well as tank truck loading emissions. Although, these emissions were estimated using worst case assumptions they were still found to be relatively low and do not trigger any additional requirements.

## NON-APPLICABILITY DETERMINATIONS

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

### **40 CFR 60 Subpart OOOO - Storage Vessel NSPS**

The storage vessels at this facility were all installed before the NSPS applicability date of 8-23-2011. There was one exception pertaining to the TEG tank, which was installed in 2013. However, due to TEG having a low vapor pressure, the new storage vessel emissions have been determined to be an insignificant source of VOCs and therefore has a PTE < 6tpy. Therefore, the storage vessels at this site are not considered affected sources under this regulation.

### **40 CFR 60 Subpart K, Ka, Kb - Storage Vessel NSPS**

Pipeline fluids storage tanks are exempt under 60.110b(d)(4) in accordance with the following: Vessels with a design capacity less than or equal to 1,589.874 m<sup>3</sup> (approx 420,000 gallons) used for petroleum or condensate stored, processed, or treated prior to custody transfer.

# **ATTACHMENT E**

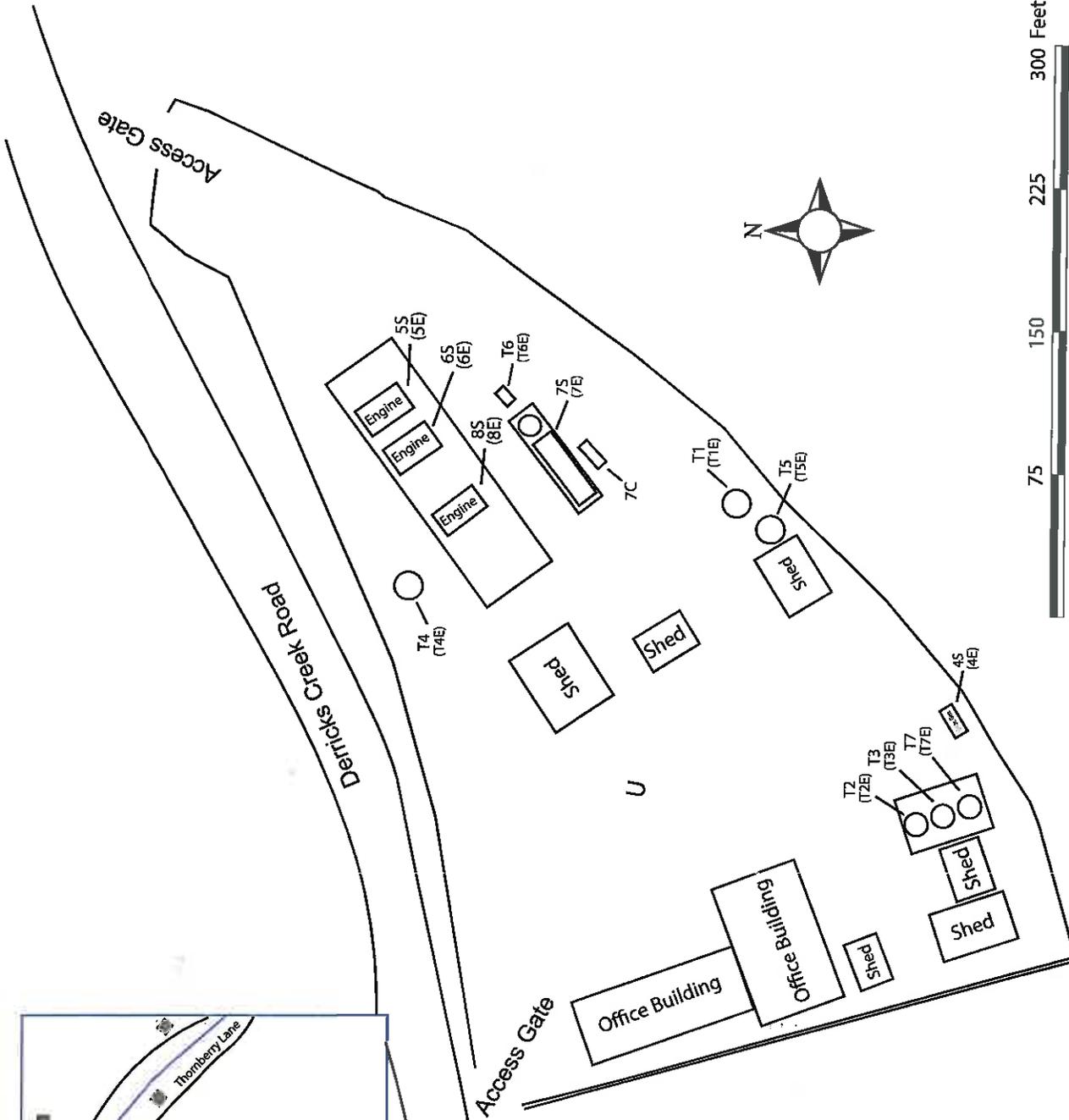
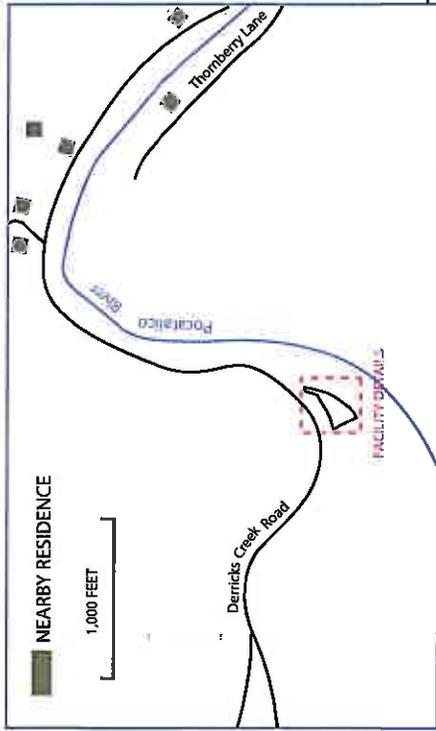
## **PLOT PLAN**

### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015



ELEVATION: 615 FEET  
 REFERENCE COORDINATES (LAT/LONG):  
 38.51735/-81.66824°

**LEGEND**

[Symbol]	BUILDING
[Symbol]	NATURAL GAS WELL
[Symbol]	U UNPAVED
[Symbol]	P PAVED

Report	Regulation 13 Application
Drawing	PLOT PLAN
Date	March 23, 2015

Cranberry Pipeline Corporation  
 Bonham Compressor Station  
 Sissonville, West Virginia



FIGURE 1

**ATTACHMENT F**

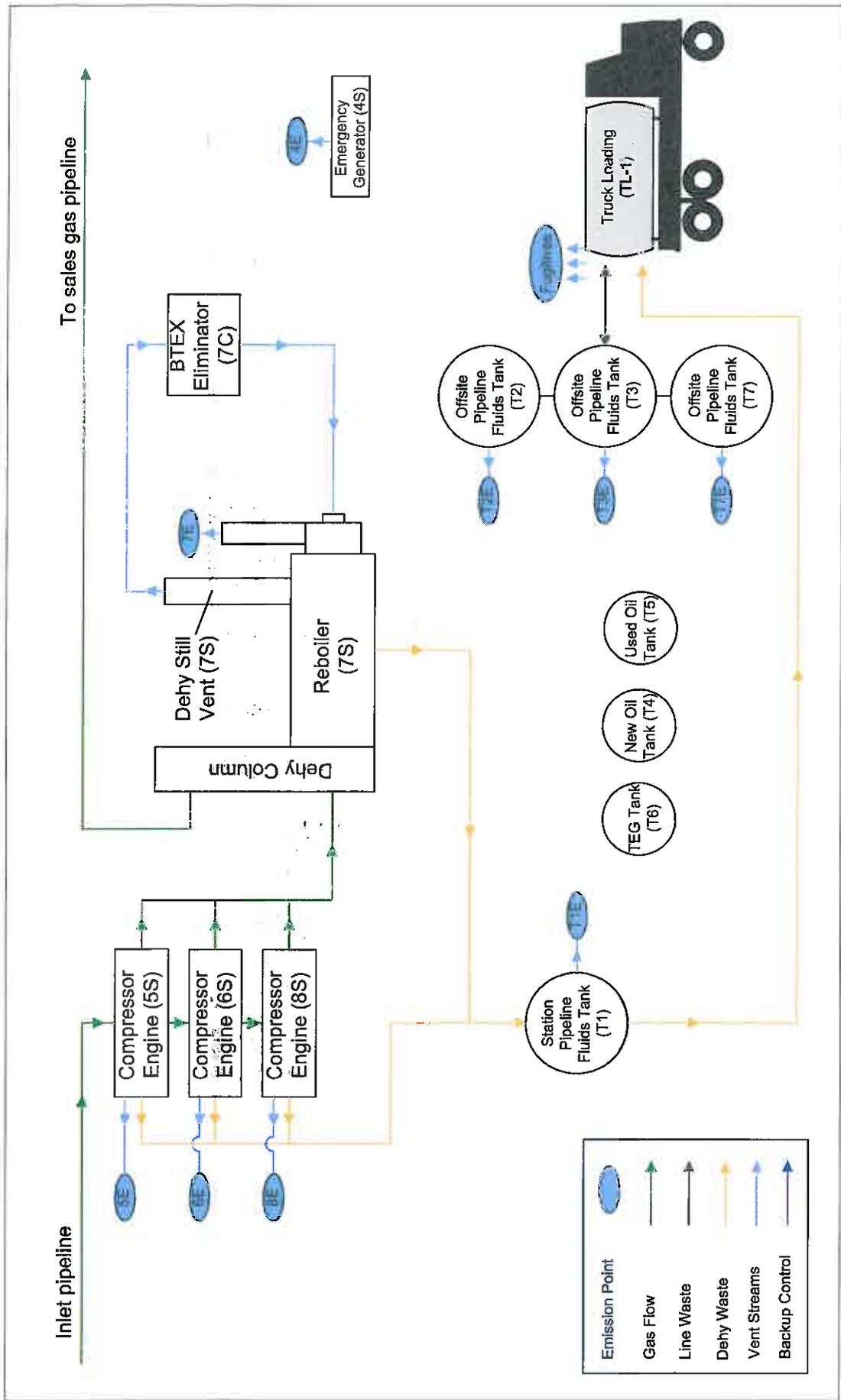
**PROCESS FLOW DIAGRAM**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015



**Process Flow Diagram**  
**Cranberry Pipeline Corporation**  
**Bonham Compressor Station**  
**Sissonville, West Virginia**

**ATTACHMENT G**

**PROCESS DESCRIPTION**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## PROCESS DESCRIPTION

Cranberry Pipeline Corporation is applying for a modification of Permit R13-2765A for Bonham Compressor Station.

### DESCRIPTION OF PROCESS MODIFICATION

This modification request is to accommodate the installation and operation of a 63 hp emergency generator engine. Although the engine is relatively small and certified to meet EPA's Part 60 emission standards it triggers new applicable requirements under 40CFR60, subpart JJJJ. Additionally, the engine also has the potential to trigger modification thresholds for CO emissions in excess of 6 lb/hr and 10 tons/yr if not limited by a federally enforceable operating limits pertaining to hours of operation per year.

While reviewing the equipment at this site during this modification review it was realized that one of the pipeline liquids tanks (T7) was not listed within the existing permit's equipment table. Therefore under this modification Cranberry Pipeline would like to request this 100 bbl tank be added to the equipment list. The descriptions of tank contents were revised to more accurately reflect what is actually stored in each vessel.

As a result of taking a detailed look at the pipeline liquids storage vessels it was realized that only the pipeline liquids collected in (T1) were from the separators at the Bonham site. This one tank was identified as having the potential for flashing emissions. Since these fluids are separated within the process at various points, which include the inlet pipeline separator, intermediate compressor suction pots, dehydration unit separators, and exiting coalescing filter we assumed the highest average pressure corresponding to after compression (300 psig) to associated with the flash gas storage vessel calculation.

In addition to the above described processes, Bonham station contains three 100 BBL offsite pipeline fluid tanks (T2, T3, & T7) which are not connected to any onsite processing equipment. These three tanks act as temporary holding/settling vessels for mixed pipeline fluids that are trucked in from area wells. The three tanks, along with the station's pipeline fluids tank (T1) are emptied by 100 BBL tank trucks. The contents of the three offsite tanks are removed at a rate of 33.33 BBL/month per tank. The contents of the station pipeline fluids tank are removed at a rate of 50 BBL/month.

It is believed that by including the revised tank calculations and assessment as well as tank loading and fugitive piping emissions, this permit will have address all current DAQ standards.

## **ATTACHMENT H**

### **SAFETY DATA SHEETS (SDS)**

#### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## Safety Data Sheet

Natural Gas Condensate, Sweet or Sour

J.P. Morgan Ventures Energy Corp.  
JP Morgan Commodities Canada Corp.

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** Natural Gas Condensate, Sweet or Sour  
**Synonyms** Sweet Condensate, Sour Condensate, Lease Condensate (Sweet or Sour), Field Condensate (Sweet or Sour), Casing Head Gasoline (Sweet or Sour), Natural Gas Liquids (Sweet or Sour), Gas Drips (Sweet or Sour), Natural Gas Condensate C2-C8 (Sweet or Sour)  
**Chemical Family** Petroleum Hydrocarbon  
**Intended Use** Feedstock  
**MARPOL Annex I Category** Naphthas and Condensates  
**Supplier** J.P. Morgan Ventures Energy Corp. JP Morgan Commodities Canada Corp.  
383 Madison Avenue, 10th Floor Suite 600, Vintage Towers II, 326 11<sup>th</sup>  
New York, NY 10017 Avenue SW  
Calgary, Alberta  
T2R 0C5

**24 Hour Emergency Numbers** **Chemtrec:** 800-424-9300  
**JP Morgan Technical Information:** 212-834-5788 (USA), 403-532-2000 (Canada)  
**California Poison Control:** 800-356-3219

### 2. HAZARDS IDENTIFICATION

#### GHS Classification

H224 Flammable liquid – Category 1  
H304 May be fatal if swallowed and enters airways – Category 1  
H319 Eye damage/irritation – Category 2  
H335 May cause respiratory irritation – Category 3  
H336 Specific target organ toxicity (single exposure) – Category 3  
H350 Carcinogenicity – Category 1B  
H411 Hazardous to the aquatic environment, chronic toxicity – Category 2

#### Hazards Not Otherwise Classified

May contain or release poisonous hydrogen sulfide gas

#### Label Elements



**Signal Words** Danger

#### GHS Hazard Statements

H224 Extremely flammable liquid and vapor  
H350 May cause cancer  
H304 May be fatal if swallowed and enters airways  
H319 Causes serious eye irritation  
H336 May cause drowsiness or dizziness  
H315 Causes skin irritation  
H331 Toxic if inhaled  
H411 Toxic to aquatic life with long lasting effects

#### GHS Precautionary Statements

P201 Obtain special instructions before use  
P202 Do not handle until all safety precautions have been read and understood  
P210 Keep away from heat/sparks/open flames/hot surfaces – no smoking  
P233 Keep container tightly closed  
P240 Ground/bond container and receiving equipment

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### 2. HAZARDS IDENTIFICATION

P241	Use explosion-proof electrical/ventilating/lighting equipment
P242	Use only non-sparking tools
P243	Take precautionary measures against static discharge
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P264	Wash thoroughly after handling
P271	Use only outdoors or in a well-ventilated area
P273	Avoid release to the environment
P280	Wear protective gloves / protective clothing / eye protection / face protection
P361, P352, P362	IF ON SKIN OR HAIR: Remove/take off immediately all contaminated clothing. Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse.
P305,P351,P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P313	If eye irritation persists, get medical advice/attention
P301,P310	IF SWALLOWED: immediately call a POISON CENTER or doctor/physician
P331	Do NOT induce vomiting
P304,P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P312	Call a POISON CENTER or doctor/physician if you feel unwell
P370,P378	In case of fire: Use dry chemical, carbon dioxide, or foam for extinction
P391	Collect spillage
P405	Store locked up
P403,P233, P235	Store in a well-ventilated place. Keep container tightly closed, Keep cool
P501	Dispose of contents/container to approved facility

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS Registration No.	Concentration (%)
Natural Gas Condensate C2-C8	68919-39-1	100
Benzene	71-43-2	0.1 - 5
n-Butane	106-97-8	5 - 15
Cyclohexane	110-82-7	< 1 - 5
Ethyl Benzene	100-41-4	< 1 - 3
n-Heptane	142-82-5	10 - 20
n-Hexane	110-54-3	2 - 50
Hexane (all isomers)	mixture	2 - 50
Hydrogen Sulfide	7783-06-4	< 0.1 - 20
Methylcyclohexane	108-87-2	5 - 10
n-Nonane	111-84-2	5 - 15
n-Octane	111-65-9	10 - 20
n-Pentane	109-66-0	5 - 20
n-Propane	74-98-6	<1 - 8
Toluene	108-88-3	< 1 - 15
1,2,4 Trimethyl Benzene	95-63-6	< 1 - 4
Xylene, all isomers	1330-20-7	< 1 - 12

### 4. FIRST AID MEASURES

**Inhalation (Breathing)** Move the exposed person to fresh air. If not breathing, clear airways and give artificial respiration. If breathing is difficult, humidified oxygen should be administered by qualified personnel. Seek medical attention if breathing difficulties continue.

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### 4. FIRST AID MEASURES

<b>Eye Contact</b>	Flush eyes with water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye. Remove contact lenses, if worn, after initial flushing. Do not use eye ointment. Seek medical attention.
<b>Skin Contact</b>	Remove contaminated shoes and clothing, and flush affected areas with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, clean affected area thoroughly with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists. Launder or discard contaminated clothing.
<b>Ingestion (Swallowing)</b>	Aspiration hazard. Do not induce vomiting or give anything by mouth because the material can enter the lungs and cause severe lung damage. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention
<b>Most Important Symptoms and Effects</b>	<b>Acute:</b> Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue <b>Delayed:</b> Dry skin and possible irritation with repeated or prolonged exposure
<b>Potential Acute Health Effects</b>	<b>Inhalation:</b> Breathing high concentrations may be harmful. Mist or vapor can irritate the throat and lungs. Breathing this material may cause central nervous system depression with symptoms including nausea, headache, dizziness, fatigue, drowsiness or unconsciousness. This material may contain or liberate hydrogen sulfide, a poisonous gas with the smell of rotten eggs. Hydrogen sulfide and other hazardous vapors may evolve and collect in the headspace of storage tanks or other enclosed vessels. The smell disappears rapidly because of olfactory fatigue so odor may not be a reliable indicator of exposure. Effects of overexposure include irritation of the eyes, nose, throat and respiratory tract, blurred vision, photophobia (light sensitivity) and pulmonary edema (fluid accumulation in lungs). Severe exposures can result in nausea, vomiting, muscle weakness or convulsions, respiratory failure and death. <b>Eye Contact:</b> This product can cause eye irritation from short-term contact with liquid, mists or vapors. Symptoms include stinging, watering, redness and swelling. Effects may be more serious with repeated or prolonged contact. Hydrogen sulfide vapors may cause moderate to severe eye irritation and photophobia (light sensitivity). <b>Skin Contact:</b> This product is a skin irritant. Contact may cause redness, itching, burning and skin damage. <b>Ingestion:</b> Ingestion may result in nausea, vomiting, diarrhea and restlessness. Aspiration (inadvertent suction) of liquid into the lungs must be avoided as even small quantities in the lungs can produce chemical pneumonitis, pulmonary edema or hemorrhage and even death.
<b>Potential Chronic Health Effects</b>	Chronic effects of overexposure are similar to acute effects including central nervous system (CNS) effects and CNS depression. Effects may also include irritation of the digestive tract, irritation of the respiratory tract, nausea, vomiting and skin dermatitis.
<b>Notes to Physician</b>	This material may contain or liberate hydrogen sulfide. In high doses, hydrogen sulfide may produce pulmonary edema and respiratory depression or paralysis. The first priority in treatment should be providing adequate ventilation and administering 100% oxygen. If unresponsive to supportive care, nitrites (amyl nitrite by inhalation or sodium nitrite by I.V.) may be an effective antidote, if delivered within the first few minutes of exposure. For adults, the dose is 10 ml of a 3NaNO <sub>2</sub> solution (0.5 gm NaNO <sub>2</sub> in 15 ml water) IV over 2 to 4 minutes. The dosage should be adjusted in children or in the

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### 4. FIRST AID MEASURES

presence of anemia and methemoglobin levels, arterial blood gases, and electrolytes should be monitored.

Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis. Inhalation overexposure can produce toxic effects, monitor for respiratory distress. If cough or breathing difficulties develop, evaluate for upper respiratory tract inflammation, bronchitis and pneumonitis.

Skin contact may aggravate an existing dermatitis. High pressure injection injuries may cause necrosis of underlying tissue regardless of superficial appearance.

Federal regulations (29 CFR 1910.1028) specify medical surveillance programs for certain exposures to benzene above the action level or PEL (specified in Section (i)(1)(i) of the Standard). In addition, employees exposed in an emergency situation shall, as described in Section (i)(4)(i), provide a urine sample at the end of the shift for measurement of urine phenol.

### 5. FIRE FIGHTING MEASURES

**Flammability Classification** OSHA Classification (29 CFR 1910.1200): Flammable Liquid  
NFPA Class-1B Flammable Liquid  
NFPA Ratings: Health: 3, Flammability: 4, Reactivity: 0

**Flash Point** < -46°C, < -50°F (ASTM D-56)

**Flammable Limits** Lower Limit: < 1%  
Upper Limit: 10%

**Autoignition Temperature** 232°C, 450°F

**Combustion Products** Highly dependent on combustion conditions. Fume, smoke, carbon monoxide, carbon dioxide, sulfur and nitrogen oxides, aldehydes and unburned hydrocarbons.

**Fire and Explosion Hazards** This material is extremely flammable and can be ignited by heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment and electronic devices such as cell phones, computers, calculators and pagers which have not been certified as intrinsically safe). Vapors are heavier than air and can accumulate in low areas. May create vapor/air explosion hazard indoors, in confined spaces, outdoors or in sewers. Vapors may travel considerable distances to a remote source of ignition where they can ignite, flash back or explode. Product can accumulate a static charge that may cause a fire or explosion. A product container, if not properly cooled, can rupture in the heat of a fire.

**Extinguishing Media** Dry chemical, carbon dioxide or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be

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### 5. FIRE FIGHTING MEASURES

ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

**Fire Fighting** Use water spray to cool fire-exposed containers and to protect personnel. Isolate immediate hazard area and keep unauthorized personnel out. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water. Avoid spreading burning liquid with water used for cooling. For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by regulations, a self-contained breathing apparatus should be worn. Wear other appropriate protective equipment as conditions warrant.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions** Extremely Flammable. Spillage of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof electrical equipment is recommended. Product may contain or release poisonous hydrogen sulfide gas. If the presence of dangerous amounts of H<sub>2</sub>S around the spilled product is suspected, additional or special actions may be warranted including access restrictions and the use of protective equipment. Stay upwind and away from spill/release. Isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment as conditions warrant per Exposure Controls/Personal Protection guidelines.

**Environmental Precautions** Stop the leak if it can be done without risk. Prevent spilled material from entering waterways, sewers, basements or confined areas. Contain release to prevent further contamination of soils, surface water or groundwater. Clean up spill as soon as possible using appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil.

**Methods for Containment and Clean Up** Immediate cleanup of any spill is recommended. Build dike far ahead of spill for containment and later recovery or disposal of spilled material. Absorb spill with inert material such as sand or vermiculite and place in suitable container for disposal. If spilled on water, remove with appropriate equipment like skimmers, booms or absorbents. In case of soil contamination, remove contaminated soil for remediation or disposal in accordance with applicable regulations.

**Reporting** Report spills/releases as required, to appropriate local, state and federal authorities. US Coast Guard and Environmental Protection Agency regulations require immediate reporting of spills/release that could reach any waterway including intermittent dry creeks. Report spill/release to the National Response Center at (800) 424-8802. In case of accident or road spill, notify Chemtrec at (800) 424-9300.

### 7. HANDLING AND STORAGE

**Precautions for Safe Handling** Extremely flammable. May vaporize easily at ambient temperatures. The vapor is heavier than air and may create an explosive mixture of vapor and air. Beware of accumulation in confined spaces and low lying areas.

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### 7. HANDLING AND STORAGE

Use non-sparking tools and explosion-proof equipment. Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. Explosion-proof electrical equipment is recommended and may be required by fire codes.

Warning! Use of this material in spaces without adequate ventilation may result in the generation of hazardous levels of combustion products and/or inadequate oxygen levels for breathing. Odor is an inadequate warning for hazardous conditions.

To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (such as cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified as intrinsically safe. Electrical equipment and fittings should comply with local fire codes.

#### Precautions for Safe Storage

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 warnings: 'No Smoking or Open Flame'. Keep away from incompatible material. Outdoor or detached storage of portable containers is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

In a tank, barge or other closed container, the vapor space above materials containing hydrogen sulfide may result in concentrations of H<sub>2</sub>S immediately dangerous to life or health. Check atmosphere for oxygen content, H<sub>2</sub>S and flammability prior to entry.

Portable containers should never be filled while they are in or on a motor vehicle or marine craft. Static electricity may ignite vapors when filling non-grounded containers or vehicles on trailers. To avoid static buildup, do not use a nozzle lock open device. Use only approved containers. Keep containers tightly closed. Place the container on the ground before filling. Keep the nozzle in contact with the container during filling.

Empty containers retain liquid and vapor residues and can be dangerous. Do NOT pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat, flame, sparks, static electricity or other sources of ignition; they may explode and cause injury or death. Do not attempt to refill or clean containers since residue is difficult to remove. Empty drums should be completely drained, properly closed and returned to the supplier or a qualified drum reconditioner. All containers should be disposed of in an environmentally safe manner in accordance with government regulations.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	ACGIH Exposure Limits	OSHA Exposure Limits	NIOSH Exposure Limits
Natural Gas Condensate	300 ppm TWA 500 ppm STEL (as gasoline)	300 ppm TWA 500 ppm STEL (as petroleum distillate (naphtha))	450 ppm TWA 1100 ppm IDLH (as petroleum distillate (naphtha))
Benzene	0.5 ppm TWA 2.5 ppm STEL Skin	1 ppm TWA 5 ppm STEL Skin	0.5 ppm TWA 1 ppm STEL Skin 500 ppm IDLH
n-Butane	800 ppm TWA		800 ppm TWA

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### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	ACGIH Exposure Limits	OSHA Exposure Limits	NIOSH Exposure Limits
Cyclohexane	100 ppm TWA	300 ppm TWA	300 ppm TWA 1300 ppm IDLH
Ethyl Benzene	100 ppm TWA 125 ppm STEL	100 ppm TWA 125 ppm STEL	100 ppm TWA 125 ppm STEL 800 ppm IDLH
n-Heptane	400 ppm TWA 500 ppm STEL	500 ppm TWA	85 ppm TWA 440 ppm Ceiling 750 ppm IDLH
n-Hexane	50 ppm TWA Skin	500 ppm TWA	50 ppm TWA 1100 ppm IDLH
Hexane (all isomers)	500 ppm TWA 1000 ppm STEL		100 ppm TWA 510 ppm IDLH Ceiling
Hydrogen Sulfide	10 ppm TWA 15 ppm STEL	20 ppm Ceiling 50 ppm Peak	10 ppm Ceiling 100 ppm IDLH
Methylcyclohexane	400 ppm TWA	500 ppm TWA	400 ppm TWA 1200 ppm IDLH
n-Nonane	200 ppm TWA		200 ppm TWA
n-Octane	300 ppm TWA	500 ppm TWA	75 ppm TWA 385 ppm Ceiling 1000 ppm IDLH
n-Pentane	600 ppm TWA	1000 ppm TWA	120 ppm TWA 610 ppm Ceiling 1500 ppm IDLH
n-Propane	2500 ppm TWA	1000 ppm TWA	1000 ppm TWA 2100 ppm IDLH
Toluene	50 ppm TWA Skin	200 ppm TWA 300 ppm Ceiling 500 ppm Peak-10 min	100 ppm TWA 150 ppm STEL 500 ppm IDLH
1,2,4 Trimethyl Benzene	25 ppm TWA	25 ppm TWA	25 ppm TWA
Xylene, all isomers	100 ppm TWA 150 ppm STEL	100 ppm TWA 150 ppm STEL	900 ppm IDLH

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

ACGIH - American Conference of Government Industrial Hygienists, OSHA - Occupational Safety and Health Administration, NIOSH - National Institute for Industrial Safety and Health, TWA - Time Weighted Average (8 hour average for ACGIH and OSHA, 10 hour average for NIOSH), STEL - 15 Minute Short Term Exposure Level, Skin - indicates potential for cutaneous absorption of liquid or vapor through the eyes or mucous membranes, Ceiling - Ceiling Level, Peak - Acceptable peak over the ceiling concentration for a specified number of minutes, IDLH - Immediately Dangerous to Life and Health

#### Personal Protective Equipment

**General Considerations** Consider the potential hazards of this material, applicable exposure limits, job activities and other substances in the work place when designing engineering controls and selecting personal protective equipment.

**Engineering Controls** Use process enclosures, local exhaust ventilation or other engineering controls to maintain airborne levels below the recommended exposure limits. An emergency eye wash station and safety shower should be located near the work station.

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### Personal Protective Equipment

**Personal Protective Equipment** If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, personal protective equipment (PPE) is recommended. A hazard assessment of the work should be conducted by a qualified professional to determine what PPE is required.

**Respiratory Protection** A respiratory protection program that meets or exceeds OSHA 29 CFR 1910.134 and ANSI Z.88.2 should be followed whenever workplace conditions warrant the use of a respirator. When airborne concentrations are expected to exceed the established exposure limits given in Section 8, use a NIOSH approved air purifying respirator equipped with organic vapor cartridges/canisters. Use a full-face positive-pressure supplied air respirator in circumstances where air-purifying respirators may not provide adequate protection or where there may be the potential for airborne exposure above the exposure limits. If exposure concentration is unknown, IDLH conditions exist or there is a potential for exposure to hydrogen sulfide above exposure limits, use a NIOSH approved self contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode.

**Eye Protection** Eye protection that meets or exceeds ANSI Z.87.1 is recommended if there is a potential for liquid contact to the eyes. Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Chemical goggles should be worn during transfer operations or when there is a likelihood of misting, splashing or spraying of this material. A face shield may be necessary depending on conditions of use.

**Skin and Body Protection** Avoid skin contact. Wear long-sleeved fire-retardant garments while working with flammable and combustible liquids. Additional chemical-resistant protective gear may be required if splashing or spraying conditions exist. This may include an apron, arm covers, impervious gloves, boots and additional facial protection.

**Hand Protection** Avoid skin contact. Use impervious gloves (e.g., PVC, neoprene, nitrile rubber). Check with glove suppliers to confirm the breakthrough performance of gloves. PVC and neoprene may be suitable for incidental contact. Nitrile rubber should be used for longer term protection when prolonged or frequent contact may occur. Gloves should be worn on clean hands and hands should be washed after removing gloves. Also wash hands with plenty of mild soap and water before eating, drinking, smoking, using toilet facilities or leaving work.

**Special Considerations** Workplace monitoring plans should consider the possibility that heavy metals such as mercury may concentrate in process vessels and equipment presenting the possibility of exposure during sampling and maintenance operations. Mercury and other heavy metals may be present in trace quantities in crude oil, raw natural gas and condensates. Storage and processing of these materials can result in these metals, including elemental mercury, accumulating in enclosed vessels and piping, typically at the low point of the processing equipment. Mercury may also concentrate in sludges, sands, scales, waxes and filter media.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Clear to dark brown liquid	<b>Physical Form</b>	Liquid
<b>Odor</b>	Strong hydrocarbon, sulfurous odor possible	<b>Odor Threshold</b>	Not established
<b>pH</b>	Neutral	<b>Vapor Pressure</b>	5 - 15 psi (Reid)
<b>Vapor Density</b>	>1 (air = 1)	<b>Boiling Point/Range</b>	-20-1000°F/-17-538°C

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

Percent Volatile	>50%	Partition Coefficient	Not established
Specific Gravity	0.6 - 0.8 @ 60°F	Density	6.3 lb/gal @ 60°F
Molecular Weight	Not determined	Evaporation Rate	Not established
Flash Point	<100°F/<38°C	Test Method	ASTM D-56
Explosive Limits	< 1% LEL, 10% UEL	Autoignition Temperature	450°F/232°C
Solubility in Water	Slightly soluble in water		

### 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under normal anticipated storage and handling temperatures and pressures. Extremely flammable liquid and vapor. Vapor can cause flash fire.
<b>Conditions to Avoid</b>	Avoid high temperatures and all possible sources of ignition. Prevent vapor accumulation.
<b>Incompatibility (Materials to Avoid)</b>	Avoid contact with strong oxidizing agents such as strong acids, alkalies, chlorine and other halogens, dichromates or permanganates, which can cause fire or explosion.
<b>Hazardous Decomposition Products</b>	Hazardous decomposition products are not expected to form during normal storage. The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.
<b>Hazardous Polymerization</b>	Not known to occur

### 11. TOXICOLOGICAL INFORMATION

**Overview** This product is a clear to dark brown liquid with a strong hydrocarbon odor. It may also have a sulfurous or rotten egg odor. Hydrogen sulfide, an extremely flammable and very toxic gas is expected to be present. This product is a volatile and extremely flammable liquid that may cause flash fires. Keep away from heat, sparks and flames and other sources of ignition. This product contains benzene, which may cause cancer or be toxic to blood forming organs. It contains material that has caused cancer based on animal data. Never siphon this product by mouth. If swallowed, this product may be aspirated into the lungs and cause lung damage or death.

This material may contain benzene and ethyl benzene at concentrations above 0.1%. Benzene is considered to be a known human carcinogen by OSHA, IARC and NTP. IARC has ethyl benzene, gasoline and gasoline engine exhaust as possibly carcinogenic to humans (Group 2B) based on laboratory animal studies.

#### Toxicological Information of the Material.

**Acute Toxicity** **Dermal:** Low Toxicity: LD50 > 2000 mg/kg (rabbit)  
Causes mild skin irritation. Repeated exposure may cause skin dryness or cracking that can lead to dermatitis.

**Inhalation:** Hydrogen Sulfide is Extremely Toxic: LC100 = 600 ppm(v), 30 min (man)

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### 11. TOXICOLOGICAL INFORMATION

	<p>Product expected to have low degree of toxicity by inhalation: LC 50 &gt; 5.2 mg/l (vapor)</p> <p>Effect of overexposure may include irritation of the digestive tract, irritation of the respiratory tract, nausea, vomiting, diarrhea and signs of central nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue). Continued inhalation may result in unconsciousness and/or death.</p> <p><b>Ingestion:</b> Product expected to have low degree of toxicity by ingestion: Oral LD50 &gt; 5 g/kg (rat), &gt; 10 g/kg (mice)</p> <p>Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.</p>
<b>Eye Damage / Irritation</b>	<p><b>Causes serious eye irritation.</b></p>
<b>Sensitization</b>	<p><b>Skin:</b> Not expected to be a skin sensitizer</p> <p><b>Respiratory:</b> Not expected to be a respiratory sensitizer</p>
<b>Specific Target Organ Toxicity</b>	<p><b>Single Exposure:</b> High concentrations may cause irritation of the skin, eyes, digestive tract, irritation of the respiratory tract, nausea, vomiting, diarrhea and signs of central nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue). Continued inhalation may result in unconsciousness and/or death.</p> <p><b>Repeated Exposure:</b> Two year inhalation studies of wholly vaporized unleaded gasoline and 90 day studies of various petroleum naphthas did not produce significant target organ toxicity in laboratory animals. Nephropathy in male rates, characterized by the accumulation of alpha-2-uglobulin in epithelial cells of the proximal tubules was observed, however follow up studies suggest that these changes are unique to the male rat.</p>
<b>Conditions Aggravated by Overexposure</b>	<p>Disorders of the organs or organ systems that may be aggravated by significant exposure to this material or its components include the skin, respiratory system, liver, kidneys, CNS, cardiovascular system and blood-forming system.</p>
<b>Carcinogenicity</b>	<p>May cause cancer based on component information.</p> <p>Two year inhalation studies of vaporized unleaded gasoline produced an increased incidence of kidney tumors in male rats and liver tumors in female mice. Repeated skin application of various petroleum naphthas in mice for two years resulted in an increased incidence of skin tumors but only in the presence of severe skin irritation. Follow up mechanistic studies suggest that the occurrence of these tumors may be the consequence of promotional process and not relevant to human risk assessment. Epidemiology data collected from a study of more than 18,000 petroleum marketing and distribution workers showed no increased risk of leukemia, multiple myeloma or kidney cancer from gasoline exposure.</p> <p>Unleaded gasoline has been identified as a possible carcinogen by the International Agency for Research on Cancer.</p>
<b>Germ Cell Mutagenicity</b>	<p>Inadequate information available, not expected to be mutagenic.</p>

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### 11. TOXICOLOGICAL INFORMATION

<b>Reproductive and Developmental Toxicity</b>	Not expected to cause reproductive or developmental toxicity. No evidence of developmental toxicity was found in pregnant laboratory animals (rats and mice) exposed to high vapor concentrations of unleaded gasoline and petroleum naphthas via inhalation. A two generation reproductive toxicity study of vapor recovery gasoline did not adversely affect reproductive function or offspring survival and development.
<b>Additional Information</b>	<b>Hydrogen Sulfide (H<sub>2</sub>S).</b> This material may contain or liberate H <sub>2</sub> S, a poisonous gas with the smell of rotten eggs. Odor is not a reliable indicator of exposure because olfactory fatigue causes the smell to disappear. H <sub>2</sub> S has a broad range of effects depending on the airborne concentration and length of exposure: 10 ppm: eye and respiratory tract irritation 100 ppm: coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes 200 ppm: potential for pulmonary edema after 20 minutes 500 ppm: loss of consciousness after short exposures, potential for respiratory arrest 1000 ppm: Immediate loss of consciousness may lead rapidly to death, prompt cardiopulmonary resuscitation may be required.

#### Toxicological Information of Components

##### Benzene 71-43-2

###### Acute Data:

Dermal LD50 > 9400 mg/kg (Rabbit), (Guinea Pig)

LC50 = 9980 ppm (Mouse); 10000 ppm/7hr (Rat)

Oral LD50 = 4700 mg/kg (Mouse); 930 mg/kg (Rat); 5700 mg/kg (Mammal)

**Carcinogenicity:** Benzene is an animal carcinogen and is known to produce acute myelogenous leukemia (a form of cancer) in humans. Benzene has been identified as a human carcinogen by NTP, IARC and OSHA.

**Target Organs:** Prolonged or repeated exposures to benzene vapors has been linked to bone marrow toxicity which can result in blood disorders such as leukopenia, thrombocytopenia, and aplastic anemia. All of these diseases can be fatal.

**Developmental:** Exposure to benzene during pregnancy demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased body weight and increased skeletal variations in rodents. Alterations in hematopoiesis have been observed in the fetuses and offspring of pregnant mice.

**Mutagenicity:** Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells, and DNA damage in mammalian cells in vitro

##### Cyclohexane 110-82-7

###### Acute Toxicity:

Dermal LD50 > 2 g/kg (Rabbit)

LC50 > 4,044 ppm (4-hr, Rat)

Oral LD50 > 2 g/kg (Rat)

**Target Organs:** Cyclohexane can cause eye, skin and mucous membrane irritation, CNS depressant and narcosis at elevated concentrations. In experimental animals exposed to lethal concentrations by inhalation or oral route, generalized vascular damage and degenerative changes in the heart, lungs, liver, kidneys and brain were identified.

**Developmental:** Cyclohexane has been the focus of substantial testing in laboratory animals. Cyclohexane was not found to be genotoxic in several tests including unscheduled DNA synthesis, bacterial and mammalian cell mutation assays, and in vivo chromosomal aberration. An increase in chromosomal aberrations in bone marrow cells of rats exposed to cyclohexane was reported in the 1980's. However, a careful reevaluation of slides from this study by the laboratory which conducted the study indicates these findings were in error, and that no significant chromosomal effects were

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### 11. TOXICOLOGICAL INFORMATION

observed in animals exposed to cyclohexane. Findings indicate long-term exposure to cyclohexane does not promote dermal tumorigenesis.

#### Ethyl Benzene 100-41-4

##### Acute Toxicity:

Dermal LD50 = 17800 mg/kg (Rabbit)

LC50 = 4000 ppm/4 hr; 13367 ppm (Rat)

Oral LD50 = 3500 mg/kg (Rat)

**Carcinogenicity:** Rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study demonstrated limited evidence of kidney, liver, and lung cancer. Ethyl benzene has been listed as a possible human carcinogen by IARC. Ethyl benzene has not been listed as a carcinogen by NTP or OSHA.

**Target Organs:** In rats and mice exposed to 0, 75, 250, or 750 ppm ethyl benzene in a two year inhalation study there was mild damage to the kidney (tubular hyperplasia), liver (eosinophilic foci, hypertrophy, necrosis), thyroid (hyperplasia) and pituitary (hyperplasia).

#### n-Hexane 110-54-3

##### Acute Toxicity:

Dermal LD50 = >2,000 mg/kg (Rabbit)

LC50 > 3,367 ppm (4 hr, Rat)

Oral LD50 > 5,000 mg/kg (Rat)

**Target Organs:** Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone. Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) has resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

#### Hydrogen Sulfide 7783-06-4

##### Acute Toxicity:

Dermal - No data

LCLo = 600 ppm, 30 min (Human)

Hydrogen sulfide concentrations will vary significantly depending on the source and sulfur content of the product. Sweet natural gas condensate (<0.5% sulfur) may contain toxicologically significant levels of hydrogen sulfide in the vapor spaces of bulk storage tanks and transport compartments. Concentrations of H<sub>2</sub>S as low as 10 ppm over an 8 hour workshift may cause eye or throat irritation. Prolonged breathing of 50-100 ppm H<sub>2</sub>S vapors can produce significant eye and respiratory irritation. Sour condensates commonly contain extremely high concentrations of H<sub>2</sub>S (500-70,000 ppm) in the vapor spaces of bulk storage vessels. Exposure to 250-600 ppm for 15-30 minutes can produce headache, dizziness, nervousness, staggering gait, nausea and pulmonary edema or bronchial pneumonia. Concentrations >1,000 ppm will cause immediate unconsciousness and death through respiratory paralysis. Rats and mice exposed to 80 ppm H<sub>2</sub>S, 6 hrs/day, 5 days/week for 10 weeks, did not produce any toxicity except for irritation of nasal passages. H<sub>2</sub>S did not affect reproduction and development (birth defects or neurotoxicity) in rats exposed to concentrations of 75-80 ppm or 150 ppm H<sub>2</sub>S, respectively. Over the years a number of acute cases of H<sub>2</sub>S poisonings have been reported. Complete and rapid recovery is the general rule. However, if the exposure was sufficiently intense and sustained causing cerebral hypoxia (lack of oxygen to the brain), neurologic effects such as amnesia, intention tremors or brain damage are possible.

#### Toluene 108-88-3

##### Acute Toxicity:

Dermal LD50 = 14 g/kg (Rabbit)

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LC50 = 8,000 ppm (4-hr, Rat)

Oral LD50 = 2.5 - 7.9 g/kg (Rat)

**Target Organs:** Epidemiology studies suggest that chronic occupational overexposure to toluene may damage color vision. Subchronic and chronic inhalation studies with toluene produced kidney and liver damage, hearing loss and central nervous system (brain) damage in laboratory animals. Intentional misuse by deliberate inhalation of high concentrations of toluene has been shown to cause liver, kidney, and central nervous system damage, including hearing loss and visual disturbances.

**Developmental:** Exposure to toluene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased fetal body weight and increased skeletal variations in both inhalation and oral studies.

#### 1,2,4 Trimethyl Benzene 95-63-6

**Acute Toxicity:**

Dermal LD50 = No data available

LC50 = 18 gm/m<sup>3</sup>/4hr (Rat)

Oral LD50 = 3-6 g/kg (Rat)

#### Xylenes 1330-20-7

**Acute Toxicity:**

Dermal LD50 = 3.16 ml/kg (Rabbit)

LC50 = 5000 ppm/4 hr. (Rat)

Oral LD50 = 4300 mg/kg (Rat)

**Target Organs:** A six week inhalation study with xylene produced hearing loss in rats.

**Developmental:** Both mixed xylenes and the individual isomers produced limited evidence of developmental toxicity in laboratory animals. Inhalation and oral administration of xylene resulted in decreased fetal weight, increased incidences of delayed ossification, skeletal variations and resorptions.

### 12. ECOLOGICAL INFORMATION

**Toxicity**

This material is expected to be toxic to aquatic organisms with the potential to cause long term adverse effects in the aquatic environment. Acute aquatic toxicity studies on samples of gasoline and naphtha streams show acute toxicity values greater than 1 mg/l and mostly in the range of 1 to 100 mg/l. These tests were carried out on water accommodated fractions in closed systems to prevent evaporative loss. Results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon composition.

**Classification** H411, Chronic Category 2

96 hours LC50: 8.3 mg/l (Cyprinodon variegatus)

96 hours LC50: 1.8 mg/l (Mysidopsis bahia)

48 hours LC50: 3.0 mg/l (Daphnia magna)

96 hours LC50: 2.7 mg/l (Oncorhynchus mykiss)

Coating action of oil can kill birds, plankton, aquatic life, algae and fish.

**Persistence and Degradability**

This material is not readily biodegradable. Most of the nonvolatile constituents are inherently biodegradable. Some of the highest molecular weight components are persistent in water. The individual hydrocarbon components of this material are differentially soluble in water with aromatic hydrocarbons tending to be more water soluble than aliphatic hydrocarbons. If spilled, the lighter components will generally

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### 12. ECOLOGICAL INFORMATION

evaporate but depending on local environmental conditions (temperature, wind, soil type, mixing or wave action in water, etc), photo-oxidation and biodegradation, the remainder may become dispersed in the water column or absorbed to soil or sediment. Because of their differential solubility, the occurrence of hydrocarbons in groundwater will be at different proportions than the parent material. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.

**Persistence per IOPC Fund Definition** Non-Persistent

**Bioaccumulative Potential** Contains components with the potential to bioaccumulate. The octanol water coefficient values measured for the hydrocarbon components of this material range from 3 to greater than 6, and therefore would be considered as having the potential to bioaccumulate.

**Mobility** **Air:** Contains volatile components. Lighter components will volatilize in the air. In air, the volatile hydrocarbons undergo photodegradation by reaction with hydroxyl radicals with half lives varying from 0.5 days for n-dodecane to 6.5 days for benzene.  
**Water:** Spreads on a film on the surface of water. Significant proportion of spill will remain after one day. Lower molecular weight aromatic hydrocarbons and some polar compounds have low but significant water solubility. Some higher molecular weight compounds are removed by emulsification and these also slowly biodegrade while others adsorb to sediment and sink. Heavier fractions agglomerate to form tars, some of which sink.  
**Soil:** Some constituents may be mobile and contaminate groundwater.

**Other Adverse Effects** Films form on water and may affect oxygen transfer and damage organisms.

### 13. DISPOSAL CONSIDERATIONS

Recover or recycle if possible. It is the responsibility of the generator to determine the toxicity and physical properties of the material generated so as to properly classify the waste and ensure disposal methods comply with applicable regulations.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste. However, it should be fully characterized for ignitability (D001), reactivity (D003) and benzene (D018) prior to disposal (40 CFR 261). Use which results in chemical or physical change or contamination may subject it to regulation as a hazardous waste. Along with properly characterizing all waste materials, consult state and local regulations regarding the proper disposal of this material.

Do not dispose of tank water bottoms by draining onto the ground. This will result in soil and groundwater contamination. Waste arising from spillage or tank cleaning should be disposed of in accordance with applicable regulations.

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 qualified drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

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### 14. TRANSPORTATION INFORMATION

<b>United States Department of Transportation (US DOT)</b>	<b>Shipping Description:</b> Petroleum Distillates, n.o.s., 3, UN1268, I or II <b>Shipping Name:</b> Petroleum Distillates, n.o.s (contains natural gas condensate) <b>Hazard Class and Division:</b> 3 <b>ID Number:</b> UN1268 <b>Packing Group:</b> I or II <b>Label:</b> Flammable Liquid <b>Placard:</b> Flammable <b>Reportable Quantity:</b> None established for this material <b>Emergency Response Guide:</b> 128
<b>Transportation of Dangerous Goods (TDG) Canada</b>	
<b>International Maritime Dangerous Goods Code (IMDG)</b>	<b>Shipping Description:</b> Petroleum Distillates, n.o.s., 3, UN1268, I or II <b>Shipping Name:</b> Petroleum Distillates, n.o.s (contains natural gas condensate) <b>Hazard Class and Division:</b> 3 <b>UN Number:</b> 1268 <b>Label:</b> Flammable Liquid <b>EMS Guide:</b> F-E, S-E Not a DOT Marine Pollutant per 49 CFR 71.8
<b>European Agreements Concerning the International Carriage by Rail (RID) and by Road (ADR)</b>	<b>Shipping Name:</b> Petroleum Distillates, n.o.s (contains natural gas condensate) <b>Hazard Class:</b> 3 <b>Packing Group:</b> I or II <b>Label:</b> Flammable Liquid <b>Danger Number:</b> 33 <b>UN Number:</b> 1268
<b>International Civil Aviation Organization / International Air Transport Association (ICAO/IATA)</b>	<b>Shipping Name:</b> Petroleum Distillates, n.o.s (contains natural gas condensate) or Natural Gasoline <b>UN/ID Number:</b> UN1268 <b>Hazard Class/Division:</b> 3 <b>Packing Group:</b> I or II <b>Labels:</b> Flammable <b>Emergency Response Guide:</b> 3H

### 15. REGULATORY INFORMATION

#### United States Federal Regulatory Information

<b>EPA TSCA Inventory</b>	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) Inventory
<b>EPA SARA 302/304 Emergency Planning and Notification</b>	This material contains the following chemicals subject to reporting under the Superfund Amendments and Reauthorization Act of 1986 (SARA): Material contains hydrogen sulfide, considered an extremely hazardous substance. TPQ- 500 lb, EPCRA RQ - 100 lb
<b>EPA SARA 311/312 (Title III Hazard Categories)</b>	Acute Health: Yes Chronic Health: Yes Fire Hazard: Yes Pressure Hazard: No Reactive Hazard: No

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### 15. REGULATORY INFORMATION

EPA SARA Toxic Chemical Notification and Release Reporting (40 CFR 372) and CERCLA Reportable Quantities (40 CFR 302.4)	Component	CAS Number	Concentration	RQ
	Benzene	71-43-2	< 5 %	10 lb
	Cyclohexane	110-82-7	< 5 %	1000 lb
	Ethyl Benzene	100-41-4	< 3 %	1000 lb
	n-Hexane	110-54-3	< 50 %	5000 lb
	Toluene	108-88-3	< 15 %	1000 lb
	1,2,4-Trimethyl Benzene	95-63-6	< 4 %	not listed
	Xylene, all isomers	1330-20-7	< 12 %	100 lb

CERCLA Section 101(14) excludes crude oil and crude oil fractions, including hazardous constituents of petroleum, from the definition of hazardous substances. The petroleum exclusion applies to this product.

**EPA CWA and OPA** This product is classified as an oil under Section 311 of the Clean Water Act (CWA) and Oil Pollution Act of 1990 (OPA), subject to spill reporting requirements.

#### Canadian Regulatory Information

**DSL/NDSL Inventory** This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations..

#### Workplace Hazardous Materials Information System (WHMIS) Hazard Class

B2 - Flammable Liquid  
D1A - Material Causing Immediate and Serious Toxic Effects - Very Toxic Material  
D2A: Material Causing Other Toxic Effects - Very Toxic  
D2B - Material Causing Other Toxic Effects - Toxic Material

#### European Union Regulatory Information

**Labeling** Product is dangerous as defined by the European Union Dangerous Substances / Preparations Directives  
Contains: Low Boiling Point Naphtha

**Symbol** **F+** Extremely Flammable  
**T** Toxic  
**N** Dangerous for the Environment

**Risk Phrases** R12-45-38-65-67-51/53  
Extremely flammable. May cause cancer. Irritating to skin. Harmful: may cause lung damage if swallowed. Vapors may cause drowsiness and dizziness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases** S16-53-45-2-23-24-29-43-62  
Keep away from sources of ignition - No smoking. Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Keep out of reach of children. Do not breathe vapor. Avoid contact with skin. Do not empty into drains. In case of fire use foam/dry powder/CO<sub>2</sub>. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

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### 15. REGULATORY INFORMATION

#### California Proposition 65

This product may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects, or other reproductive harm and which may be subject to the warning requirements of California Proposition 65. Chemicals known to the State of California to cause cancer, birth defects or other reproductive harm are created by the combustion of this product.

**Carcinogens:** Benzene, Ethyl Benzene

**Developmental Toxicity:** Benzene, Toluene

**Male Reproductive Toxicity:** Benzene

#### Carcinogen Identification by International Agency for Research on Cancer

Group 1	Carcinogenic to Humans	Benzene
Group 2A	Probably Carcinogenic to Humans	
Group 2B	Possibly Carcinogenic to Humans	Ethyl Benzene, Gasoline, Gasoline Engine Exhaust
Group 3	Not Classifiable	Toluene, Xylenes

### 16. OTHER INFORMATION

Prepared By J.P. Morgan Ventures Energy Corp.  
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**UNOCAL MATERIAL SAFETY DATA SHEET**

Product Name: Processed Natural Gas  
Product Code: None

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**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 H<sub>2</sub>S or mercaptans

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

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Status: Final Revised

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## 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,

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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.

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**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 to 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

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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.

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**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 H<sub>2</sub>S 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.

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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

Issue Date: 03/18/03  
Revised Sections: 1, 3

Status: Final Revised

**UNOCAL**

Product Name: Processed Natural Gas  
Product Code: None

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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.

Issue Date: 03/18/03  
Revised Sections: 1, 3

Status: Final Revised

# **ATTACHMENT I**

## **EMISSION UNITS TABLE**

### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## 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 <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
7S	7E	Glycol Dehydration Still Vent	2008	12.0 mmcf/day	Exist	1C
7S	7E	Glycol Dehydration Reboiler	2008	0.275 mmBtu/hr	Exist	None
5S	5E	AJAX DPC-2802 LE Compressor Engine	2002	384 HP	Exist	None
6S	6E	AJAX DPC-2802 LE Compressor Engine	2002	384 HP	Exist	None
8S	8E	AJAX DPC-2804 LE Compressor Engine	2006	800 HP	Exist	None
9S	9E	AJAX C-42 Compressor Engine	2008	40 HP	Exist	None
4S	4E	Emergency Generator	2015	63 HP	New	None
T1	T1E	Station Pipeline Fluids Tank	Pre-2006	2,100 gal	Capacity Mod	None
T2	T2E	Offsite Pipeline Fluids Tank	Pre-2006	4,200 gal	Capacity Mod	None
T3	T3E	Offsite Pipeline Fluids Tank	Pre-2006	4,200 gal	Capacity Mod	None
T7	T7E	Offsite Pipeline Fluids Tank	Pre-2006	4,200 gal	New	None
T4	T4E	New Oil Storage Tank	Pre-2006	3,000 gal	Description Mod	None
T5	T5E	Used Oil Storage Tank	Pre-2006	1,050 gal	Description Mod	None
T6	T6E	Triethylene Glycol Storage Tank	2013	520 gal	Capacity Mod/Correction	None
7C	7E	BTEX Elimination System	2008	99% destruction	Exist	None
TL-1	Fugitives	Truck Loading	2015	Fugitives	New	None
Fugitives	Fugitives	Fugitive	2015	Fugitives	New	None

<sup>1</sup> For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.

<sup>2</sup> For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

<sup>3</sup> New, modification, removal

<sup>4</sup> For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

## **ATTACHMENT J**

### **EMISSION POINTS DATA SUMMARY SHEET**

#### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**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 <sup>1</sup>	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 <sup>3</sup> (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration <sup>7</sup> (ppmv or mg/m <sup>3</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup> (hr/yr)	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
4E	Vertical Stack	EG-1	Emergency Generator	NA	NA	NA	NA	PM SO2 NOx CO VOC CO2e	0.01 <0.01 0.54 10.35 0.22 60.03	0.01 <0.01 0.14 2.59 0.06 15.01	0.01 <0.01 0.54 10.35 0.22 60.03	0.01 <0.01 0.14 2.59 0.06 15.01	Gas/ Vapor	EE	Can Supply Upon Request
T1E	Vented	T1	Tank	NA	NA	NA	NA	VOC	0.90	3.95	0.90	3.95	Gas/ Vapor	EE	Can Supply Upon Request
T2E	Vented	T2	Tank	NA	NA	NA	NA	VOC	0.07	0.30	0.07	0.30	Gas/ Vapor	EE	Can Supply Upon Request
T3E	Vented	T3	Tank	NA	NA	NA	NA	VOC	0.07	0.30	0.07	0.30	Gas/ Vapor	EE	Can Supply Upon Request
T7E	Vented	T7	Tank	NA	NA	NA	NA	VOC	0.07	0.30	0.07	0.30	Gas/ Vapor	EE	Can Supply Upon Request
Fugitives	Truck Vacuum Pump	TL-1	Truck Loading	NA	NA	NA	NA	VOC	0.02	0.08	0.02	0.08	Gas/ Vapor	EE	Can Supply Upon Request
Fugitives	-	-	Fugitives	NA	NA	NA	NA	VOC CO2e	0.01 5.11	0.01 22.37	0.01 5.11	0.01 22.37	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.

- Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- 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).
- List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
- 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).
- 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).
- 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).

<sup>7</sup> 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<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data

Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height <sup>2</sup> (Release height of emissions above ground level)	Northing	Easting
4E	0.33	1075	300	57.5	615	4	4,263.43	441.75

<sup>1</sup> Give at operating conditions. Include inerts.  
<sup>2</sup> Release height of emissions above ground level.

## **ATTACHMENT K**

### **FUGITIVE EMISSIONS DATA SHEET**

#### **Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## 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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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.)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 <sup>1</sup>	Maximum Potential Uncontrolled Emissions <sup>2</sup>		Maximum Potential Controlled Emissions <sup>3</sup>		Est. Method Used <sup>4</sup>
			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	0.02	0.08	0.02	0.08	EE
Wastewater Treatment Evaporation & Operations			-	-	-	-	EE
Equipment Leaks		VOC CO <sub>2</sub> e	0.01 5.11	0.01 22.38	0.01 5.11	0.01 22.38	EE
General Clean-up VOC Emissions			-	-	-	-	EE
Other			-	-	-	-	EE

<sup>1</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. DO NOT LIST H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.

<sup>2</sup> 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).

<sup>3</sup> 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).

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

**ATTACHMENT L**  
**EMISSION UNIT DATA SHEET**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

# STORAGE VESSEL EMISSION UNIT DATA SHEET

*Provide the following information for each new or modified bulk liquid storage tank.*

## I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name Bonham Compressor Station	2. Tank Name Station Pipeline Fluids Tank
3. Emission Unit ID number T1	4. Emission Point ID number T1E
5. Date Installed or Modified ( <i>for existing tanks</i> ) Pre-2006	6. Type of change: <input type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other
7A. Description of Tank Modification ( <i>if applicable</i> ) NA	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) None	

## II. TANK INFORMATION (required)

8. Design Capacity ( <i>specify barrels or gallons</i> ). Use the internal cross-sectional area multiplied by internal height. 2,100 gallons	
9A. Tank Internal Diameter (ft.) 8	9B. Tank Internal Height (ft.) 5.5
10A. Maximum Liquid Height (ft.) 5.5	10B. Average Liquid Height (ft.) 2.75
11A. Maximum Vapor Space Height (ft.) 5.5	11B. Average Vapor Space Height (ft.) 2.75
12. Nominal Capacity ( <i>specify barrels or gallons</i> ). This is also known as "working volume." 2,100 gallons	
13A. Maximum annual throughput (gal/yr) 25,200	13B. Maximum daily throughput (gal/day) 70
14. Number of tank turnovers per year 12	15. Maximum tank fill rate (gal/min) 100
16. Tank fill method <input checked="" type="checkbox"/> Submerged <input type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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): <input checked="" type="checkbox"/> Fixed Roof <input checked="" type="checkbox"/> vertical <input type="checkbox"/> horizontal <input checked="" type="checkbox"/> flat roof <input type="checkbox"/> cone roof <input type="checkbox"/> dome roof <input type="checkbox"/> other (describe)  <input type="checkbox"/> External Floating Roof <input type="checkbox"/> pontoon roof <input type="checkbox"/> double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof <input type="checkbox"/> vertical column support <input type="checkbox"/> self-supporting <input type="checkbox"/> Variable Vapor Space <input type="checkbox"/> lifter roof <input type="checkbox"/> diaphragm <input type="checkbox"/> Pressurized <input type="checkbox"/> spherical <input type="checkbox"/> cylindrical <input type="checkbox"/> Underground <input type="checkbox"/> Other (describe)	

## III. TANK CONSTRUCTION AND OPERATION INFORMATION (*check which one applies*)

<input checked="" type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input type="checkbox"/> Refer to the responses to items 19 – 26 in section VII

## IV. SITE INFORMATION (*check which one applies*)

<input checked="" type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input type="checkbox"/> Refer to the responses to items 27 – 33 in section VII

**V. LIQUID INFORMATION** (check which one applies)

<input checked="" type="checkbox"/> Refer to enclosed TANKS Summary Sheets
<input type="checkbox"/> Refer to the responses to items 34 – 39 in section VII

**VI. EMISSIONS AND CONTROL DEVICE DATA (required)**

40. Emission Control Devices (check as many as apply):

<input checked="" type="checkbox"/> Does Not Apply	<input type="checkbox"/> Rupture Disc (psig)
<input type="checkbox"/> Carbon Adsorption <sup>1</sup>	<input type="checkbox"/> Inert Gas Blanket of _____
<input type="checkbox"/> Vent to Vapor Combustion Device <sup>1</sup> (vapor combustors, flares, thermal oxidizers)	<input type="checkbox"/> Conservation Vent (psig)
<input type="checkbox"/> Condenser <sup>1</sup>	<input type="checkbox"/> Vacuum Setting _____ Pressure Setting _____
<input type="checkbox"/> Other <sup>1</sup> (describe)	<input type="checkbox"/> Emergency Relief Valve (psig)

<sup>1</sup> Complete appropriate Air Pollution Control Device Sheet

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application). See Attachment I

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method <sup>1</sup>
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
See Calculations for details									EE

<sup>1</sup> 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.

**SECTION VII (required if did not provide TANKS Summary Sheets)**

**TANK CONSTRUCTION AND OPERATION INFORMATION**

19. Tank Shell Construction:  
 Riveted    Gunite lined    Epoxy-coated rivets    Other (describe)

20A. Shell Color: \_\_\_\_\_   20B. Roof Color: \_\_\_\_\_   20C. Year Last Painted: \_\_\_\_\_

21. 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): \_\_\_\_\_

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

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

25A. Year Internal Floaters Installed: \_\_\_\_\_

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

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

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

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

25F. Describe deck fittings: \_\_\_\_\_

26. Complete the following section for Internal Floating Roof Tanks  Does not apply

26A. Deck Type:  Bolted    Welded   26B. For bolted decks, provide deck construction: \_\_\_\_\_

26C. Deck seam. Continuous sheet construction:  
 5 ft. wide    6 ft. wide    7 ft. wide    5 x 7.5 ft. wide    5 x 12 ft. wide    other (describe)

26D. Deck seam length (ft.): \_\_\_\_\_   26E. Area of deck (ft<sup>2</sup>): \_\_\_\_\_   26F. For column supported tanks, # of columns: \_\_\_\_\_   26G. For column supported tanks, diameter of column: \_\_\_\_\_

**SITE INFORMATION:**

27. Provide the city and state on which the data in this section are based: \_\_\_\_\_

28. Daily Avg. Ambient Temperature (°F): \_\_\_\_\_   29. Annual Avg. Maximum Temperature (°F): \_\_\_\_\_

30. Annual Avg. Minimum Temperature (°F): \_\_\_\_\_   31. Avg. Wind Speed (mph): \_\_\_\_\_

32. Annual Avg. Solar Insulation Factor (BTU/ft<sup>2</sup>-day): \_\_\_\_\_   33. Atmospheric Pressure (psia): \_\_\_\_\_

LIQUID INFORMATION:		
34. Avg. daily temperature range of bulk liquid (°F):	34A. Minimum (°F):	34B. Maximum (°F):
35. Avg. operating pressure range of tank (psig):	35A. Minimum (psig):	35B. Maximum (psig):
36A. Minimum liquid surface temperature (°F):	36B. Corresponding vapor pressure (psia):	
37A. Avg. liquid surface temperature (°F):	37B. Corresponding vapor pressure (psia):	
38A. Maximum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.		
39A. Material name and composition:		
39B. CAS number:		
39C. Liquid density (lb/gal):		
39D. Liquid molecular weight (lb/lb-mole):		
39E. Vapor molecular weight (lb/lb-mole):		
39F. Maximum true vapor pressure (psia):		
39G. Maxim Reid vapor pressure (psia):		
39H. Months Storage per year. From:		
To:		

## STORAGE VESSEL EMISSION UNIT DATA SHEET

### I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name Bonham Compressor Station	2. Tank Name Offsite Pipeline Fluids Tanks
3. Emission Unit ID number T2, T3 & T7	4. Emission Point ID number T2E, T3E & T7E
5. Date Installed or Modified ( <i>for existing tanks</i> ) Pre-2006	6. Type of change: <input type="checkbox"/> New construction <input type="checkbox"/> New stored material <input checked="" type="checkbox"/> Other
7A. Description of Tank Modification ( <i>if applicable</i> ) <i>Throughput Updates</i>	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Provide any limitations on source operation affecting emissions. (Production variation, etc.) None	

### II. TANK INFORMATION (required)

8. Design Capacity ( <i>specify barrels or gallons</i> ). Use the internal cross-sectional area multiplied by internal height. 100 BBL - 4,200 gallons	
9A. Tank Internal Diameter (ft.) 8	9B. Tank Internal Height (ft.) 11
10A. Maximum Liquid Height (ft.) 11	10B. Average Liquid Height (ft.) 5.5
11A. Maximum Vapor Space Height (ft.) 11	11B. Average Vapor Space Height (ft.) 5.5
12. Nominal Capacity ( <i>specify barrels or gallons</i> ). This is also known as "working volume. 100 BBL	
13A. Maximum annual throughput (gal/yr) 16,800 per tank	13B. Maximum daily throughput (gal/day) 50 per tank
14. Number of tank turnovers per year 4 per tank	15. Maximum tank fill rate (gal/min) 100
16. Tank fill method <input checked="" type="checkbox"/> Submerged <input type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

Underground

Other (describe)

**III. TANK CONSTRUCTION AND OPERATION INFORMATION** (check which one applies)

Refer to enclosed TANKS Summary Sheets

Refer to the responses to items 19 – 26 in section VII

**IV. SITE INFORMATION** (check which one applies)

Refer to enclosed TANKS Summary Sheets

Refer to the responses to items 27 – 33 in section VII

**V. LIQUID INFORMATION** (check which one applies)

Refer to enclosed TANKS Summary Sheets

Refer to the responses to items 34 – 39 in section VII

**VI. EMISSIONS AND CONTROL DEVICE DATA (required)**

40. Emission Control Devices (check as many as apply):

Does Not Apply     Rupture Disc (psig)

Carbon Adsorption<sup>1</sup>     Inert Gas Blanket of \_\_\_\_\_

Vent to Vapor Combustion Device<sup>1</sup> (vapor combustors, flares, thermal oxidizers)

Condenser<sup>1</sup>     Conservation Vent (psig)

Other<sup>1</sup> (describe)    Vacuum Setting    Pressure Setting

Emergency Relief Valve (psig)

<sup>1</sup> Complete appropriate Air Pollution Control Device Sheet

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application). See Attachment I

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method <sup>1</sup>
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
See Calculations for details									EE

<sup>1</sup> 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.

**SECTION VII (required if did not provide TANKS Summary Sheets)**

**TANK CONSTRUCTION AND OPERATION INFORMATION**

19. Tank Shell Construction:

Riveted     Gunitelined     Epoxy-coated rivets     Other (describe)

20A. Shell Color: \_\_\_\_\_    20B. Roof Color: \_\_\_\_\_    20C. Year Last Painted: \_\_\_\_\_

21. 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): \_\_\_\_\_

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

25. Complete item 25 for <b>Floating Roof Tanks</b> <input type="checkbox"/> Does not apply <input type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type ( <i>check one</i> ): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? ( <i>check one</i> ) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for <b>Internal Floating Roof Tanks</b> <input type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft <sup>2</sup> ):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
<b>SITE INFORMATION:</b>			
27. Provide the city and state on which the data in this section are based:			
28. Daily Avg. Ambient Temperature (°F):		29. Annual Avg. Maximum Temperature (°F):	
30. Annual Avg. Minimum Temperature (°F):		31. Avg. Wind Speed (mph):	
32. Annual Avg. Solar Insulation Factor (BTU/ft <sup>2</sup> -day):		33. Atmospheric Pressure (psia):	
<b>LIQUID INFORMATION:</b>			
34. Avg. daily temperature range of bulk liquid (°F):	34A. Minimum (°F):	34B. Maximum (°F):	
35. Avg. operating pressure range of tank (psig):	35A. Minimum (psig):	35B. Maximum (psig):	
36A. Minimum liquid surface temperature (°F):		36B. Corresponding vapor pressure (psia):	
37A. Avg. liquid surface temperature (°F):		37B. Corresponding vapor pressure (psia):	
38A. Maximum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:			
39B. CAS number:			
39C. Liquid density (lb/gal):			
39D. Liquid molecular weight (lb/lb-mole):			
39E. Vapor molecular weight (lb/lb-mole):			
39F. Maximum true vapor pressure (psia):			
39G. Maxim Reid vapor pressure (psia):			
39H. Months Storage per year. From:			
To:			

## NATURAL GAS-FIRED COMPRESSOR ENGINE (RICE) EMISSION UNIT DATA SHEET

*Complete this section for any natural gas-fired reciprocating internal combustion engine.*

Emission Unit (Source) ID No. <sup>1</sup>		4S					
Emission Point ID No. <sup>2</sup>		4E					
Engine Manufacturer and Model		Generac					
Manufacturer's Rated bhp/rpm		63/1800					
Source Status <sup>3</sup>		NS					
Date Installed/Modified/Removed <sup>4</sup>		2015					
Engine Manufactured/Reconstruction Date <sup>5</sup>		12/17/2014					
Is this engine subject to 40CFR60, Subpart JJJ?		Yes					
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60, Subpart JJJJ? (Yes or No) <sup>6</sup>		Yes					
Is this engine subject to 40CFR63, Subpart ZZZZ? (yes or no)		Yes					
Engine, Fuel and Combustion Data	Engine Type <sup>7</sup>	4SRB					
	APCD Type <sup>8</sup>	None					
	Fuel Type <sup>9</sup>	PQ					
	H <sub>2</sub> S (gr/100 scf)	0.25					
	Operating bhp/rpm	63/1800					
	BSFC (Btu/bhp-hr)	8,275					
	Fuel throughput (ft <sup>3</sup> /hr)	536					
	Fuel throughput (MMft <sup>3</sup> /yr)	4.41					
	Operation (hrs/yr)	8760					
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr			lbs/hr	tons/yr
	NO <sub>x</sub>	0.55	0.14				
	CO	10.52	2.63				
	VOC	0.22	0.06				
	SO <sub>2</sub>	<0.01	<0.01				
	PM <sub>10</sub>	0.01	0.01				
	Formaldehyde	0.01	0.01				
MRR <sup>12</sup>	Proposed Monitoring:	Hours of operation will be monitored and recorded to show operating hours remain below 500 hrs/yr					
	Proposed Recordkeeping:	Generator maintenance will be recorded to show operations in accordance with the manufacturer's emission related instructions Will keep records for 5 years and 2 years on site.					
	Proposed Reporting:	Will report any malfunctions					

Emission Unit (Source) ID No. <sup>1</sup>	4S		
Emission Point ID No. <sup>2</sup>	4E		
Engine Manufacturer and Model	Generac		
Manufacturer's Rated bhp/rpm	63/1800		
Source Status <sup>3</sup>	NS		
Date Installed/Modified/Removed <sup>4</sup>	2015		

**Instructions for completing the Engine Emission Unit Data Sheet:**

- 1 Enter the appropriate Emission Unit (Source) identification number for each natural gas-fueled reciprocating internal combustion compressor/generator engine located at the production pad. Multiple compressor engines should be designated CE-1<sub>S</sub>, CE-2<sub>S</sub>, etc. or other appropriate designation. Generator engines should be designated GE-1<sub>S</sub>, GE-2<sub>S</sub>, etc. or other appropriate designation. If more than three (3) engines exist, please use additional sheets.
- 2 For Emission Points, use the following numbering system: 1E, 2E, etc. or other appropriate designation.
- 3 Enter the Source Status using the following codes: NS = Construction of New Source (installation); ES = Existing Source; MS = Modification of Existing Source; and RS = Removal of Source
- 4 Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
- 5 Enter the date that the engine was manufactured, modified or reconstructed.
- 6 Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart 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 according to 40CFR§60.4243a(2)(i) through (iii), as appropriate. *Provide a manufacturer's data sheet for all engines being registered and a manufacturer's EPA certification of conformity sheet.*
- 7 Enter the Engine Type designation(s) using the following codes: LB2S = Lean Burn Two Stroke, RB4S = Rich Burn Four Stroke, and LB4S = Lean Burn Four Stroke.
- 8 Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes: NSCR = Rich Burn & Non-Selective Catalytic Reduction, PSC = Rich Burn & Prestratified Charge, SCR = Lean Burn & Selective Catalytic Reduction, or CAT = Lean Burn & Catalytic Oxidation
- 9 Enter the Fuel Type using the following codes: PQ = Pipeline Quality Natural Gas, or RG = Raw Natural Gas
- 10 Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*. Codes: MD = Manufacturer's Data, AP = AP-42 Factors, GR = GRI-HAPCalc™, or OT = Other \_\_\_\_\_ (please list)
- 11 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 as Attachment O*.
- 12 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the operation of this engine operation and associated air pollution control device. Include operating ranges and maintenance procedures required by the manufacturer to maintain the warranty.

## TANK TRUCK LOADING EMISSION UNIT DATA SHEET

*Furnish the following information for each new or modified bulk liquid transfer area or loading rack at the natural gas production pad.  
This form is to be used for bulk liquid transfer operations to tank trucks.*

1. Emission Unit ID: TL-1	2. Emission Point ID: Loading Fugitives	3. Year Installed/ Modified: 2015		
4. Emission Unit Description: Tank truck loading emissions are listed here as fugitive emissions because they evolve from the vacuum pump on tank truck during loading operations. Any vapors pulled from the vapor space of the tank truck are routed through the vacuum pump and are exhausted from the pump which is usually towards the ground under the truck. Therefore, these emissions are classified as fugitive since they are not ducted through a stack.				
5. Loading Area Data: Adjacent to tanks				
5A. Number of pumps: 1 on truck	5B. Number of liquids loaded: 1	5C. Maximum number of tank trucks loading at one time: 1		
6. Describe cleaning location, compounds and procedure for tank trucks: NA				
7. Are tank trucks pressure tested for leaks at this or any other location? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, describe:    NA				
8. Projected Maximum Operating Schedule (for rack or transfer point as a whole):				
Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	24	24	24	24
days/week	7	7	7	7
9. Bulk Liquid Data (add pages as necessary):				
Liquid Name	Site Pipeline Liquids	Offsite Pipeline Liquids		
Max. daily throughput (1000 gal/day)	0.07	0.14		
Max. annual throughput (1000 gal/yr)	25.2	50.4		
Loading Method <sup>1</sup>	Sub	Sub		
Max. Fill Rate (gal/min)	-	-		
Average Fill Time (min/loading)	-	-		
Max. Bulk Liquid Temperature (°F)	75	75		
True Vapor Pressure <sup>2</sup>	2.8	2.8		
Cargo Vessel Condition <sup>3</sup>	U	U		
Control Equipment or Method <sup>4</sup>	NA	NA		
Minimum collection efficiency (%)	0	0		
Minimum control efficiency (%)	0	0		

\* Continued on next page

Maximum Emission Rate	Loading (lb/hr)	0.01	0.02	
	Annual (ton/yr)	0.03	0.06	
Estimation Method <sup>5</sup>		EPA	EPA	
Notes: AP-42 Section 5.2				
<sup>1</sup> BF = Bottom Fill    SP = Splash Fill    SUB = Submerged Fill				
<sup>2</sup> At maximum bulk liquid temperature				
<sup>3</sup> B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)				
<sup>4</sup> List as many as apply (complete and submit appropriate <i>Air Pollution Control Device Sheets as Attachment "H"</i> ): CA = Carbon Adsorption VB = Dedicated Vapor Balance (closed system) ECD = Enclosed Combustion Device F = Flare TO = Thermal Oxidation or Incineration				
<sup>5</sup> EPA = EPA Emission Factor as stated in AP-42 MB = Material Balance TM = Test Measurement based upon test data submittal O = other (describe)				

<b>10. Proposed Monitoring, Recordkeeping, Reporting, and Testing</b>	
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.	
<p><b>MONITORING</b> <i>Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation/air pollution control device.</i></p> <p>The loadout operation will be visual monitored during the procedure.</p>	<p><b>RECORDKEEPING</b> <i>Please describe the proposed recordkeeping that will accompany the monitoring.</i></p> <p>Records will be kept of the amount of liquids transferred, as well as the frequency of the operation.</p>
<p><b>REPORTING</b> <i>Please describe the proposed frequency of reporting of the recordkeeping.</i></p> <p>Reporting of records will be performed as required by permit standards.</p>	<p><b>TESTING</b> <i>Please describe any proposed emissions testing for this process equipment/air pollution control device.</i></p> <p>Testing will be performed as required by permit standards</p>
11. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty:	

## LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components <sup>1</sup>	Number of Components Monitored by Frequency <sup>2</sup>	Average Time to Repair (days) <sup>3</sup>	Estimated Annual Emission Rate (lb/yr) <sup>4</sup>
Pumps <sup>5</sup>	light liquid VOC <sup>6,7</sup>				
	heavy liquid VOC <sup>8</sup>				
	Non-VOC <sup>9</sup>				
Valves <sup>10</sup>	Gas VOC	166	Quarterly	As soon as possible	0.22
	Light Liquid VOC				
Safety Relief Valves <sup>11</sup>	Heavy Liquid VOC				
	Non-VOC-CO2e	166	Quarterly	As soon as possible	995.33
	Gas VOC	7	Quarterly	As soon as possible	0.09
	Non VOC-CO2e	7	Quarterly	As soon as possible	387.43
	VOC	18	Quarterly	As soon as possible	0.22
Open-ended Lines <sup>12</sup>	Non-VOC-CO2e	18	Quarterly	As soon as possible	968.87
	VOC				
Sampling Connections <sup>13</sup>	VOC				
	Non-VOC				
Compressor Seals	VOC				
	Non-VOC				
Flanges	VOC				
	Non-VOC				
Other - Connectors	VOC	766	Quarterly	As soon as possible	9.34
	Non-VOC-CO2e	766	Quarterly	As soon as possible	42,395.9

1 - 13 See notes on the following page.

## Notes for Leak Source Data Sheet

1. For VOC sources include components on streams and equipment that contain greater than 10% w/w VOC, including feed streams, reaction/separation facilities, and product/by-product delivery lines. Do not include certain leakless equipment as defined below by category.
2. By monitoring frequency, give the number of sources routinely monitored for leaks, using a portable detection device that measures concentration in ppm. Do not include monitoring by visual or soap-bubble leak detection methods. "M/Q(M)/Q/SA/A/O" means the time period between inspections as follows:  
  
Monthly/Quarterly, with Monthly follow-up of repaired leakers/Quarterly/Semi-annual/Annually/Other (specify time period)  
  
If source category is not monitored, a single zero in the space will suffice. For example, if 50 gas-service valves are monitored quarterly, with monthly follow-up of those repaired, 75 are monitored semi-annually, and 50 are checked bimonthly (alternate months), with none checked at any other frequency, you would put in the category "valves, gas service:" 0/50/0/75/0/50 (bimonthly).
3. Give the average number of days, after a leak is discovered, that an attempt will be made to repair the leak.
4. Note the method used: MB - material balance; EE - engineering estimate; EPA - emission factors established by EPA (cite document used); O - other method, such as in-house emission factor (specify).
5. Do not include in the equipment count sealless pumps (canned motor or diaphragm) or those with enclosed venting to a control device. (Emissions from vented equipment should be included in the estimates given in the Emission Points Data Sheet.)
6. Volatile organic compounds (VOC) means the term as defined in 40 CFR  51.100 (s).
7. A light liquid is defined as a fluid with vapor pressure equal to or greater than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if 20% w/w or more of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a light liquid.
8. A heavy liquid is defined as a fluid with a vapor pressure less than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if less than 20% w/w of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a heavy liquid.
9. LIST CO, H<sub>2</sub>S, mineral acids, NO, NO<sub>2</sub>, SO<sub>3</sub>, etc. DO NOT LIST CO<sub>2</sub>, H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
10. Include all process valves whether in-line or on an open-ended line such as sample, drain and purge valves. Do not include safety-relief valves, or leakless valves such as check, diaphragm, and bellows seal valves.
11. Do not include a safety-relief valve if there is a rupture disk in place upstream of the valve, or if the valve vents to a control device.
12. Open-ended lines include purge, drain and vent lines. Do not include sampling connections, or lines sealed by plugs, caps, blinds or second valves.
13. Do not include closed-purge sampling connections.

**ATTACHMENT M**

**NOT APPLICABLE (SEE NOTE)**

Note: No Air Pollution Control Device Modification

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

**Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia**

April 2015

**ATTACHMENT N**

**SUPPORTING EMISSIONS CALCULATIONS**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**Table 1. Annual Potential To Emit (PTE)  
Cranberry Pipeline Corporation - Bonham**

**Criteria PTE**

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Emergency Generator (ton/yr)	0.001	0.001	0.001	0.000	0.137	2.628	0.054	15.008
Tanks (ton/yr)							4.829	
Truck Loading (ton/yr)							0.076	
Fugitives (ton/yr)							0.005	22.374
<b>Total Emissions (ton/yr)</b>	0.001	0.001	0.001	0.000	0.137	2.628	4.964	37.382
<b>Total Emissions (lb/hr)</b>	0.000	0.000	0.000	0.000	0.031	0.600	1.133	8.535

**HAP PTE**

Source	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs Listed
Emergency Generator (ton/yr)	0.000	0.000	0.000	0.000		0.003	0.003
Tanks (ton/yr)							0.000
<b>Total Emissions (ton/yr)</b>	0.000	0.000	0.000	0.000	0.000	0.003	0.003
<b>Total Emissions (lb/hr)</b>	0.000	0.000	0.000	0.000	0.000	0.001	0.001

**Table 2. Tank Emissions  
Cranberry Pipeline Corporation - Bonham**

Emission Unit	Tank Contents	Tank Throughput (bbls/day)	Flashing Emissions (lbs/day) (1)	Working and Breathing Emissions (lbs/day) (b)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)
T1	Station Pipeline Fluids	1.6	20.24	1.35	0.8998	3.9413
T2	Offsite Pipeline Fluids	1.1	NA	1.62	0.0675	0.2959
T3	Offsite Pipeline Fluids	1.1	NA	1.62	0.0675	0.2959
T7	Offsite Pipeline Fluids	1.1	NA	1.62	0.0675	0.2959
<b>Total</b>					<b>1.1025</b>	<b>4.8289</b>

**Calculations:**

(a) Flashing Emissions

$$\text{PTE emissions (lbs/day)} = [\text{Tank Throughput (bbls/day)}] \times [\text{Flashing EF (lbs/bbls)}]$$

(b) Working and Breathing Emissions (Note 2)

$$\text{PTE emissions (lbs/day)} = [\text{Tank 4.0 Emissions (lbs/year)}] / [(\text{days/year})]$$

**Notes:**

- (1) Flashing emissions from Vasquez-Beggs
- (2) Model output from Tank 4.0 (See backup documentation)

Company Name: Cranberry Pipeline Corporation  
 Facility Name: Bonham Compressor Station

**Volatile Organic Compound Emission Calculation for Flashing for Station Pipeline Liquids Tank (T1)**

**Vasquez - Beggs Solution Gas/Oil Ratio Correlation Method**

(For Estimating VOC Flashing Emissions, Using Stock Tank Gas-Oil Ratios)

**INPUTS:**

Stock Tank API Gravity	40	API
Separator Pressure (psig)	300	P
Separator Temperature (°F)	91	Ti
Separator Gas Gravity at Initial Condition	1.18	SGi
Stock Tank Barrels of Oil per day (BOPD)	1.65	Q
Stock Tank Gas Molecular Weight	49	MW
Fraction VOC (C3+) of Stock Tank Gas	0.8	VOC
Atmospheric Pressure (psia)	14.7	Patm

**DEFAULTS**

78
N/A
60
0.90
N/A
49
0.8
14.7

$SG_x = \text{Dissolved gas gravity at 100 psig} = SG_i [1.0 + 0.00005912 \cdot API \cdot T_i \cdot \log(P_i/114.7)]$

SGx = 1.29

$R_s = (C_1 \cdot SG_x \cdot P_i^{C_2}) \exp((C_3 \cdot API) / (T_i + 460))$

Where:

Rs	Gas/Oil Ratio of liquid at pressure of interest
SGx	Dissolved gas gravity at 100 psig
Pi	Pressure of initial condition (psia)
API	API Gravity of liquid hydrocarbon at final condition
Ti	Temperature of initial condition (F)

**Constants**

°API →	°API Gravity		Given °API
	< 30	>= 30	
C1	0.0362	0.0178	0.0178
C2	1.0937	1.187	1.187
C3	25.724	23.931	23.931

Rs = 120.49 scf/bbl for P + Patm = 314.7

$THC = R_s \cdot Q \cdot MW \cdot 1/385 \text{ scf/lb-mole} \cdot 365 \text{ D/Yr} \cdot 1 \text{ ton}/2000 \text{ lb.s}$

THC	Total Hydrocarbon (tons/year)
Rs	Solution Gas/Oil Ratio (scf/STB)
Q	Oil Production Rate (bbl/day)
MW	Molecular Weight of Stock Tank Gas (lb/lb-mole)
385	Volume of 1 lb-mole of gas at 14.7 psia and 68 F (WAQS&R Std Cond)

THC = 4.6 TPY

$VOC = THC \cdot \text{Frac. of C3+ in the Stock Tank Vapor}$

VOC = 3.68 TPY from "FLASHING" of oil from separator to tank press

Document Notes:

**Table 3. Emergency Generator (EG-1)  
Cranberry Pipeline Corporation - Bonham**

Pollutant	Emission Factor	PTE per Generator (lb/hr)	PTE per Generator <sup>(a)</sup> (tons/yr)
<b>Criteria Pollutants</b>			
PM/PM10/PM2.5	9.50E-03 lb/MMBtu (2)	0.00487	0.00122
SO <sub>2</sub>	5.88E-04 lb/MMBtu (2)	0.00030	0.00008
NO <sub>x</sub>	3.94 g/hp-hr (1)	0.54722	0.13681
CO	75.70 g/hp-hr (1)	10.51389	2.62847
VOC	1.56 g/hp-hr (1)	0.21667	0.05417
<b>Hazardous Air Pollutants</b>			
1,1,2,2-Tetrachloroethane	2.53E-05 lb/MMBtu (2)	0.00001	0.00000
1,1,2-Trichloroethane	1.53E-05 lb/MMBtu (2)	0.00001	0.00000
1,3-Butadiene	6.63E-04 lb/MMBtu (2)	0.00034	0.00009
1,3-Dichloropropene	1.27E-05 lb/MMBtu (2)	0.00001	0.00000
Acetaldehyde	2.79E-03 lb/MMBtu (2)	0.00143	0.00036
Acrolein	2.63E-03 lb/MMBtu (2)	0.00135	0.00034
Benzene	1.58E-03 lb/MMBtu (2)	0.00081	0.00020
Carbon Tetrachloride	1.77E-05 lb/MMBtu (2)	0.00001	0.00000
Chlorobenzene	1.29E-05 lb/MMBtu (2)	0.00001	0.00000
Chloroform	1.37E-05 lb/MMBtu (2)	0.00001	0.00000
Ethylbenzene	2.48E-05 lb/MMBtu (2)	0.00001	0.00000
Ethylene Dibromide	2.13E-05 lb/MMBtu (2)	0.00001	0.00000
Formaldehyde	2.05E-02 lb/MMBtu (2)	0.01052	0.00263
Methanol	3.06E-03 lb/MMBtu (2)	0.00157	0.00039
Methylene Chloride	4.12E-05 lb/MMBtu (2)	0.00002	0.00001
Naphthalene	9.71E-05 lb/MMBtu (2)	0.00005	0.00001
PAH (POM)	1.41E-04 lb/MMBtu (2)	0.00007	0.00002
Styrene	1.19E-05 lb/MMBtu (2)	0.00001	0.00000
Toluene	5.58E-04 lb/MMBtu (2)	0.00029	0.00007
Vinyl Chloride	7.18E-06 lb/MMBtu (2)	0.00000	0.00000
Xylenes	1.95E-04 lb/MMBtu (2)	0.00010	0.00003
<b>Total HAP</b>		<b>0.017</b>	<b>0.00416</b>
<b>Greenhouse Gas Emissions</b>			
CO <sub>2</sub>	116.89 lb/MMBtu (3)	6.00E+01	1.50E+01
CH <sub>4</sub>	2.2E-03 lb/MMBtu (3)	1.13E-03	2.83E-04
N <sub>2</sub> O	2.2E-04 lb/MMBtu (3)	1.13E-04	2.83E-05
CO <sub>2</sub> e <sup>(b)</sup>	-	60.03	15.01

**Calculations: If emission factor note 1 is used, use calculation (a). If emission factor note 2 or 3 is used, use calculation (b).**

(a) Annual emissions (tons/yr) = [Emission Factor (g/(kW or HP)-hr)]x[Power Output (kW or HP)] x [Hours of Operation (hrs/yr)] x [Number of engines]x[1.10231131x10<sup>-6</sup>(ton/gram)]

(b) Annual emissions (tons/yr) = [Emission Factor (lbs/MMBtu)] x [Hours of Operation (hrs/yr)] x [BSFC (cf/hr)] x [1/Heat Content (Btu/scf)] / [1,000,000 (BTU/MMBtu)] / [2,000 lb/ton] x [Number of engines]

Engine Power Output (kW) =	47	
Engine Power Output (hp) =	63	
Number of Engines Operating at a Time =	1	
Fuel Throughput (cf/hr) =	503	(5)
Heat Content Natural Gas(Btu/scf) =	1,020.0	(6)
BSFC (Btu/hp-hr)=	8,143.8	(7)
PTE Hours of Operation =	500	

(b) CO<sub>2</sub> equivalent = [(CO<sub>2</sub> emissions)\*(GWP<sub>CO2</sub>)]+[(CH<sub>4</sub> emissions)\*(GWP<sub>CH4</sub>)]+[(N<sub>2</sub>O emissions)\*(GWP<sub>N2O</sub>)]  
Global Warming Potential (GWP)

CO <sub>2</sub>	1	(8)
CH <sub>4</sub>	25	(8)
N <sub>2</sub> O	298	(8)

**Notes:**

(1) Emission factors supplied by manufacturer

(2) 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.

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

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

(6) Value obtained from AP-42, section 4.1.1.

(7) Calculated : (Heat Content)/(Fuel Throughput(x) Engine HP)

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

**Table 4. Truck Loading (TL) VOC Emissions  
Cranberry Pipeline Corporation - Bonham**

Contents	Volume Transferred	Loading Loss <sup>(a)</sup> (lb VOC/1000gal)	PTE VOC Emissions (lb/hr)	PTE VOC Emissions (ton/yr) <sup>(b)</sup>
Offsite Pipeline Fluids	50,400 gal/yr	2.013	0.012	0.051
Station Pipeline Fluids	25,200 gal/yr	2.013	0.006	0.025
<b>Total</b>			<b>0.017</b>	<b>0.076</b>

**Calculations:**

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

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

	<u>Line Waste</u>	<u>Dehy Waste</u>	
Saturation factor	0.60	0.60	Note <sup>(1)</sup>
Condensate Pvpap (psia)	2.80	2.80	Note <sup>(2)</sup>
Molecular Weight (lb/lb-mol)	50.00	50.00	Note <sup>(2)</sup>
Bulk Liquid Temperature (F)	60.00	60.00	Note <sup>(2)</sup>

**Notes:**

(1) AP-42 Section 5.2

(2) AP-42 Section 7.1, Table 7.1-2.

**Table 5. Fugitive Leak Emissions  
Cranberry Pipeline Corporation - Bonham**

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

Pollutant	Emission Factor Total Gas Losses	Annual emission losses <sup>(a)</sup> (tons/yr)
Valves	1.30E-05 kg/hr/source (1)	0.0208
Pressure Relief Valves	1.20E-04 kg/hr/source (1)	0.0081
Connector	1.20E-04 kg/hr/source (1)	0.8874
Open-ended Lines	1.20E-04 kg/hr/source (1)	0.0203
<b>Total</b>	-	<b>0.9366</b>

**Calculations:**

(a) Annual emission losses (tons/yr) = [Emission Factor (kg/hr/source)] x [Number of Sources] x [Hours of Operation per Year] x [0.001102 tons/ kg]

(b) Leak detection survey conducted on 12-29-2012 revealed no leaks at the facility.

Number of Components in Gas Service

Valves=	166	(2)
Pressure Relief Valves=	7	(2)
Connectors=	766	(2)
Open-ended lines	18	(2)

Maximum Hour of Operation = 8,760

Compound	Fraction <sup>(3)</sup>	Potential Annual Emissions (tons/yr) <sup>(b)</sup>
C6 +	0.00022	0.0002
Nitrogen	0.01138	0.0107
Methane	0.95532	0.8947
CO2	0.00601	0.0056
Ethane	0.02203	0.0206
Propane	0.0035	0.0033
i Butane	0.00039	0.0004
n Butane	0.0008	0.0007
i Pentane	0.0002	0.0002
n Pentane	0.00015	0.0001
<b>Total VOC Emissions</b>		<b>0.0049</b>
<b>Total CO2e<sup>(c)</sup></b>		<b>22.37</b>

(b) Potential Annual Emissions (tons/yr) = Annual Emission Losses (TPY) X (compound Weight fraction)

(c) CO<sub>2</sub> equivalent = [(CO<sub>2</sub> emissions) x (GWP<sub>CO2</sub>)] + [(CH<sub>4</sub> emissions) x (GWP<sub>CH4</sub>)] + [(N<sub>2</sub>O emissions) x (GWP<sub>N2O</sub>)]  
Global Warming Potential (GWP)

CO <sub>2</sub>	1	(4)
CH <sub>4</sub>	25	(4)
N <sub>2</sub> O	298	(4)

**Notes:**

(1) Emission factors from *Protocol for Equipment Leak Emission Estimates* Table 2-3 Marketing Terminal Average Emission Factors

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

(3) Representative Gas Analysis Results from the Dangle Facility

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



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
2015 MODEL YEAR  
CERTIFICATE OF CONFORMITY  
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION  
AND AIR QUALITY  
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Generac Power Systems, Inc.**  
(U.S. Manufacturer or Importer)

Certificate Number: **FGNXB02.42NN-005**

Effective Date:  
11/12/2014

Expiration Date:  
12/31/2015

Byron J. Bunker, Division Director  
Compliance Division

Issue Date:  
11/12/2014

Revision Date:  
N/A

Manufacturer: **Generac Power Systems, Inc.**

Engine Family: **FGNXB02.42NN**

Certification Type: **Stationary (Part 60)**

Fuel: **Natural Gas (CNG/LNG)**

Emission Standards: **HC + NOx (g/kW-hr) : 13.4**

**NMHC + NOx (g/kW-hr) : 13.4**

**CO (g/kW-hr) : 519**

Emergency Use Only : **Y**

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

## Ethan Saturday

---

**From:** Amanda Olivares [Amanda.Olivares@generac.com] on behalf of Customer Support [customersupport@generac.com]  
**Sent:** March 19, 2015 4:37 PM  
**To:** Ethan Saturday  
**Subject:** RE: EPA

Hello,

The unit information you requested is a 2.4L QT036, NG fuel, EPA certified for 2015, and has no catalyst.

Emission Info:

- THC: 1.56 g/hp-hr
- NOx: 3.94 g/hp-hr
- CO: 75.70 g/hp-hr

Attached is the 2015 EPA Certificate for this unit.

If you need any other info, please let me know.

Thank You,

**Amanda**

Customer Support

Generac Power Systems

ph: 1 888-GENERAC (436-3722)

Tell us how we're doing! Please take a moment and follow the below link to take a short survey and rate your experience with us today. By participating, you will be entered to win a \$500 American Express giftcard! Thank you for your feedback!

<http://tiny.cc/GeneracExperienceAO2>

---

**From:** [noreply@generac.com](mailto:noreply@generac.com) [mailto:noreply@generac.com]

**Sent:** 03 Wednesday 2015 16:31

**To:** [generac@generacleads.com](mailto:generac@generacleads.com)

**Subject:** Contact Us Form - I'm a Specifying Engineer

ContactUsID: 11649

Form inserted:

Form updated:

What type of user are you?\*: Specifying Engineer

Topic:

Topic:

Topic:

Topic: Specifying Engineer

Topic:

Serial Number: 9400758

First Name\*: Ethan

Last Name\*: Saturday

Country/State\*: USA;WV

City\*: Charleston

Postal Code\*: 25301

Phone\*: 681-205-8949

Email\*: [esaturday@slrconsulting.com](mailto:esaturday@slrconsulting.com)

Questions/Comments: I am looking for an EPA-Certificate of Conformity for a particular engine for WVDEP Permitting purposes. Generac Model: QTO3624KNAX Serial: 9400758 Prod Date: 12/17/14 Engine Family: FGNX802.42NN I was not able to find this model on the EPA Engine Certification Data website. The most recent Generacs they had listed began with the engine family 'E' instead of 'F' like this one is. Please advise on where I may be able to locate this form by email or phone. Thanks, Ethan

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# Specifications

## SPECIFICATIONS

### STATIONARY EMERGENCY GENERATOR

Type.....Synchronous  
 Rotor Insulation.....Class F  
 Stator Insulation.....Class H  
 Telephone Interference Factor (TIF)..... < 50  
 Alternator Output Leads 3-phase..... 6-wire  
 Bearings..... Sealed Ball  
 Coupling..... Flexible Disc  
 Load Capacity (Standby Rating)..... 36 kW\*

\* NOTE: Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1348, ISO3046 and DIN 6271 Standards. kW rating is based on LPG fuel and may derate with natural gas.

Excitation System..... Direct  
 Generator Output Voltage/kW - 60 Hz

	kW	Amp	CB Size
120/240 V, 1-phase, 1.0 pf	36	150	175
120/208 V, 3-phase, 0.8 pf	36	125	150
120/240 V, 3-phase, 0.8 pf	36	108	125
277/480 V, 3-phase, 0.8 pf	36	54	60

Generator Locked Rotor kVA Available @ Voltage Dip of 35%  
 Single-phase or 208 V, 3-phase..... 59 kVA  
 480 V, 3-phase..... 68 kVA

### ENGINE

Make.....Generac  
 Model.....In Line  
 Cylinders and Arrangement.....4  
 Displacement.....2.4 Liter  
 Bore.....86.5 mm (3.41 in.)  
 Stroke.....100 mm (3.94 in.)  
 Compression Ratio.....9.5-to-1  
 Air Intake System.....Turbocharged/Aftercooled  
 Valve Seats.....Hardened  
 Lifter Type.....Hydraulic  
 Spark Plug Gap.....0.71 mm (0.028 inch)

Engine Parameters  
 Rated Synchronous rpm.....60 Hz, 1800

Exhaust System  
 Exhaust Flow at Rated Output 60 Hz.....300 cfm  
 Exhaust Temp. at Rated Output.....1075 °F

Combustion Air Requirements (Natural Gas)  
 Flow at rated power, 60 Hz.....106 cfm

Governor  
 Type.....Electronic  
 Frequency Regulation.....Isochronous  
 Steady State Regulation.....± 0.25%

### Engine Lubrication System

Type of Oil Pump.....Gear  
 Oil Filter..... Full Flow Spin-on, Cartridge  
 Crankcase Oil Capacity.....4 U.S. qts.  
 (including filter capacity)

### COOLING SYSTEM

Type..... Pressurized Closed Recovery  
 Water Pump..... Belt Driven  
 Fan Speed..... 1500 rpm  
 Fan Diameter..... 22 inches  
 Fan Mode..... Puller  
 Air Flow (inlet air including alternator and combustion air)..... 2200 ft<sup>3</sup>/min.  
 Coolant Capacity..... 2.5 U.S. gal.  
 Heat Rejection to Coolant..... 145,000 Btu/h  
 Maximum Operating Air Temp. on Radiator..... 60 °C (150 °F)  
 Maximum Ambient Temperature..... 50 °C (140 °F)

### FUEL SYSTEM

Type of Fuel..... Natural Gas, Propane Vapor  
 Carburetor..... Down Draft  
 Secondary Fuel Regulator..... Standard  
 Fuel Shut-off Solenoid..... Standard  
 Operating Fuel Pressure..... 5 in. - 14 in. Water Column

### Fuel Consumption - ft<sup>3</sup>/hr (Natural Gas/LPV)

Exercise Cycle	25% Load	50% Load	75% Load	100% Load
48/19	156/62	282/112	392/156	503/200

### ELECTRICAL SYSTEM

Battery Charge Alternator..... 12 V, 30 Amp  
 Static Battery Charger..... 2.5 Amp  
 Recommended Battery..... Group 26, 525CCA  
 System Voltage..... 12 Volts

#### NOTE:

Battery dimensions (L x W x H) for the Group 26 battery should not exceed 8 3/16" x 6 13/16" x 7 3/4" (208 mm x 173 mm x 197 mm).

### Voltage Regulator

Type..... Electronic  
 Sensing..... Single-phase  
 Regulation..... ± 1%  
 Features..... Adjustable Voltage and Gain

### Power Adjustment for Ambient Conditions

Temperature Deration  
 3% for every 10 °C above °C..... 25  
 1.65% for every 10 °F above °F..... 77  
 Altitude Deration  
 1% for every 100 m above m..... 915  
 3% for every 1000 ft. above ft..... 3000

Controller..... Nexus

### TANKS 4.0.9d Emissions Report - Detail Format Tank Identification and Physical Characteristics

**Identification**

User Identification: Bonham T1  
 City: Charleston  
 State: West Virginia  
 Company: Cranberry Pipeline Corporation  
 Type of Tank: Vertical Fixed Roof Tank  
 Description: Line Waste Tank - 50 BBL

**Tank Dimensions**

Shell Height (ft): 5.50  
 Diameter (ft): 8.00  
 Liquid Height (ft) : 5.50  
 Avg. Liquid Height (ft): 2.75  
 Volume (gallons): 2,100.00  
 Turnovers: 12.00  
 Net Throughput(gal/yr): 25,200.00  
 Is Tank Heated (y/n): N

**Paint Characteristics**

Shell Color/Shade: Red/Primer  
 Shell Condition: Good  
 Roof Color/Shade: Red/Primer  
 Roof Condition: Good

**Roof Characteristics**

Type: Dome  
 Height (ft): 0.00  
 Radius (ft) (Dome Roof): 8.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
 Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

### TANKS 4.0.9d Emissions Report - Detail Format Liquid Contents of Storage Tank

**Bonham T1 - Vertical Fixed Roof Tank  
Charleston, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 6)	All	66.21	54.54	77.87	59.32	3.3337	2.8185	4.2030	69.0000			92.00	Option 4: RVP=6, ASTM Slope=3

### TANKS 4.0.9d Emissions Report - Detail Format Detail Calculations (AP-42)

**Bonham T1 - Vertical Fixed Roof Tank  
Charleston, West Virginia**

**Annual Emission Calculations**

Standing Losses (lb): 356.1815  
 Vapor Space Volume (cu ft): 165.8119  
 Vapor Density (lb/cu ft): 0.0408  
 Vapor Space Expansion Factor: 0.2285  
 Vented Vapor Saturation Factor: 0.6318

**Tank Vapor Space Volume:**

Vapor Space Volume (cu ft): 165.8119  
 Tank Diameter (ft): 8.0000  
 Vapor Space Outage (ft): 3.2987  
 Tank Shell Height (ft): 5.5000  
 Average Liquid Height (ft): 2.7500

TANKS 4.0 Report

Roof Outage (ft):	0.5487
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5487
Dome Radius (ft):	8.0000
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0408
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Daily Avg. Liquid Surface Temp. (deg. R):	525.8765
Daily Average Ambient Temp. (deg. F):	54.9833
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9833
Tank Paint Solar Absorptance (Shell):	0.8900
Tank Paint Solar Absorptance (Roof):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250.5728
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2285
Daily Vapor Temperature Range (deg. R):	46.6683
Daily Vapor Pressure Range (psia):	1.5865
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	2.6185
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.2030
Daily Avg. Liquid Surface Temp. (deg R):	525.8765
Daily Min. Liquid Surface Temp. (deg R):	514.2084
Daily Max. Liquid Surface Temp. (deg R):	537.5438
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8318
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Space Outage (ft):	3.2987
Working Losses (lb):	138.0135
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Annual Net Throughput (gal/yr):	25,200.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	2,100.0000
Maximum Liquid Height (ft):	5.5000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	494.1951

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**Bonham T1 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 6)	138.01	356.18	494.20

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Bonham T2  
 City: Charleston  
 State: West Virginia  
 Company: Cranberry Pipeline Corporation  
 Type of Tank: Vertical Fixed Roof Tank  
 Description: Line Waste Tank - 100 BBL

**Tank Dimensions**

Shell Height (ft): 11.00  
 Diameter (ft): 8.00  
 Liquid Height (ft) : 11.00  
 Avg. Liquid Height (ft): 5.50  
 Volume (gallons): 4,200.00  
 Turnovers: 4.00  
 Net Throughput(gal/yr): 16,800.00  
 Is Tank Heated (y/n): N

**Paint Characteristics**

Shell Color/Shade: Red/Primer  
 Shell Condition: Good  
 Roof Color/Shade: Red/Primer  
 Roof Condition: Good

**Roof Characteristics**

Type: Dome  
 Height (ft): 0.00  
 Radius (ft) (Dome Roof): 8.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
 Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**Bonham T2 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 6)	All	66.21	54.54	77.87	59.32	3.3337	2.6185	4.2030	69.0000			92.00	Option 4: RVP=6, ASTM Slope=3

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**Bonham T2 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

**Annual Emission Calculations**

Standing Losses (lb): 499.7166  
 Vapor Space Volume (cu ft): 304.0420  
 Vapor Density (lb/cu ft): 0.0408  
 Vapor Space Expansion Factor: 0.2285  
 Vented Vapor Saturation Factor: 0.4834

Tank Vapor Space Volumes:  
 Vapor Space Volume (cu ft): 304.0420  
 Tank Diameter (ft): 8.0000  
 Vapor Space Outage (ft): 6.0487  
 Tank Shell Height (ft): 11.0000  
 Average Liquid Height (ft): 5.5000

TANKS 4.0 Report

Roof Outage (ft):	0.5487
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5487
Dome Radius (ft):	8.0000
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0408
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Daily Avg. Liquid Surface Temp. (deg. F):	525.8765
Daily Average Ambient Temp. (deg. F):	54.9633
Ideal Gas Constant R (psia cuft / (lb-mol-deg R):	10.731
Liquid Bulk Temperature (deg. R):	518.9933
Tank Paint Solar Absorptance (Shell):	0.8900
Tank Paint Solar Absorptance (Roof):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250.5726
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2285
Daily Vapor Temperature Range (deg. R):	46.6663
Daily Vapor Pressure Range (psia):	1.5865
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	2.6185
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.2030
Daily Avg. Liquid Surface Temp. (deg R):	525.8765
Daily Min. Liquid Surface Temp. (deg R):	514.2094
Daily Max. Liquid Surface Temp. (deg R):	537.5436
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4834
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Space Outage (ft):	6.0487
Working Losses (lb):	92.0090
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Annual Net Throughput (gal/yr):	18,800.0000
Annual Turnovers:	4.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	4,200.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	591.7256

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**Bonham T2 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 6)	92.01	499.72	591.73

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Bonham T3  
 City: Charleston  
 State: West Virginia  
 Company: Cranberry Pipeline Corporation  
 Type of Tank: Vertical Fixed Roof Tank  
 Description: Line Waste Tank - 100 BBL

**Tank Dimensions**

Shell Height (ft): 11.00  
 Diameter (ft): 8.00  
 Liquid Height (ft): 11.00  
 Avg. Liquid Height (ft): 5.50  
 Volume (gallons): 4,200.00  
 Turnovers: 4.00  
 Net Throughput(gal/yr): 16,800.00  
 Is Tank Heated (y/n): N

**Paint Characteristics**

Shell Color/Shade: Red/Primer  
 Shell Condition: Good  
 Roof Color/Shade: Red/Primer  
 Roof Condition: Good

**Roof Characteristics**

Type: Dome  
 Height (ft): 0.00  
 Radius (ft) (Dome Roof): 8.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
 Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**Bonham T3 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 6)	All	66.21	54.54	77.87	59.32	3.3337	2.6165	4.2030	68.0000			92.00	Option 4: RVP=6, ASTM Slope=3

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**Bonham T3 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

**Annual Emission Calculations**

Standing Losses (lb): 499.7166  
 Vapor Space Volume (cu ft): 304.0420  
 Vapor Density (lb/cu ft): 0.0408  
 Vapor Space Expansion Factor: 0.2285  
 Vented Vapor Saturation Factor: 0.4834

**Tank Vapor Space Volume:**

Vapor Space Volume (cu ft): 304.0420  
 Tank Diameter (ft): 8.0000  
 Vapor Space Outage (ft): 6.0487  
 Tank Shell Height (ft): 11.0000  
 Average Liquid Height (ft): 5.5000

TANKS 4.0 Report:

Roof Outage (ft):	0.5487
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5487
Dome Radius (ft):	8.0000
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0408
Vapor Molecular Weight (lb/lb-mole):	89.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Daily Avg. Liquid Surface Temp. (deg. R):	525.8765
Daily Average Ambient Temp. (deg. F):	54.8833
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.8833
Tank Paint Solar Absorptance (Shell):	0.8800
Tank Paint Solar Absorptance (Roof):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,250.5726
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2285
Daily Vapor Temperature Range (deg. R):	46.8683
Daily Vapor Pressure Range (psia):	1.5865
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	2.6165
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.2030
Daily Avg. Liquid Surface Temp. (deg R):	525.8765
Daily Min. Liquid Surface Temp. (deg R):	514.2094
Daily Max. Liquid Surface Temp. (deg R):	537.5436
Daily Ambient Temp. Range (deg. R):	21.5333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4834
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Vapor Space Outage (ft):	6.0487
Working Losses (lb):	92.0090
Vapor Molecular Weight (lb/lb-mole):	89.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.3337
Annual Net Throughput (gal/yr.):	16,800.0000
Annual Turnovers:	4.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	4,200.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	591.7256

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**Bonham T3 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 6)	92.01	499.72	591.73

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: Bonham T7  
 City: Charleston  
 State: West Virginia  
 Company: Cranberry Pipeline Corporation  
 Type of Tank: Vertical Fixed Roof Tank  
 Description: Line Waste Tank - 100 BBL

**Tank Dimensions**

Shell Height (ft): 11.00  
 Diameter (ft): 8.00  
 Liquid Height (ft): 11.00  
 Avg. Liquid Height (ft): 5.50  
 Volume (gallons): 4,200.00  
 Turnovers: 4.00  
 Net Throughput(gal/yr): 16,800.00  
 Is Tank Heated (y/n): N

**Paint Characteristics**

Shell Color/Shade: Red/Primer  
 Shell Condition: Good  
 Roof Color/Shade: Red/Primer  
 Roof Condition: Good

**Roof Characteristics**

Type: Dome  
 Height (ft): 0.00  
 Radius (ft) (Dome Roof): 8.00

**Breather Vent Settings**

Vacuum Settings (psig): -0.03  
 Pressure Settings (psig): 0.03

Meteorological Data used in Emissions Calculations: Charleston, West Virginia (Avg Atmospheric Pressure = 14.25 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**Bonham T7 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Gasoline (RVP 8)	All	66.21	54.54	77.87	59.32	3.3337	2.6165	4.2030	69.0000			92.00	Option 4: RVP=8, ASTM Slope=3

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**Bonham T7 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

**Annual Emission Calculations**

Standing Losses (lb): 499.7166  
 Vapor Space Volume (cu ft): 304.0420  
 Vapor Density (lb/cu ft): 0.0408  
 Vapor Space Expansion Factor: 0.2285  
 Vented Vapor Saturation Factor: 0.4834

Tank Vapor Space Volume:  
 Vapor Space Volume (cu ft): 304.0420  
 Tank Diameter (ft): 8.0000  
 Vapor Space Outage (ft): 6.0467  
 Tank Shell Height (ft): 11.0000  
 Average Liquid Height (ft): 5.5000

TANKS 4.0 Report

Roof Outage (ft):	0.5487
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5487
Dome Radius (ft):	8.0000
Shell Radius (ft):	4.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0408
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	3.3337
Daily Avg. Liquid Surface Temp. (deg. R):	525.8765
Daily Average Ambient Temp. (deg. F):	54.9833
Ideal Gas Constant R	
(psia cuft / (lb-mol-deg R):	10.731
Liquid Bulk Temperature (deg. R):	518.9933
Tank Paint Solar Absorptance (Shell):	0.8900
Tank Paint Solar Absorptance (Roof):	0.8900
Daily Total Solar Insulation	
Factor (Btu/sqft day):	1,250.5726
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2285
Daily Vapor Temperature Range (deg. R):	46.6663
Daily Vapor Pressure Range (psia):	1.5865
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	3.3337
Vapor Pressure at Daily Minimum Liquid	
Surface Temperature (psia):	2.6185
Vapor Pressure at Daily Maximum Liquid	
Surface Temperature (psia):	4.2030
Daily Avg. Liquid Surface Temp. (deg R):	525.8765
Daily Min. Liquid Surface Temp. (deg R):	514.2094
Daily Max. Liquid Surface Temp. (deg R):	537.5436
Daily Ambient Temp. Range (deg. R):	21.5233
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.4834
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	3.3337
Vapor Space Outage (ft):	6.0467
Working Losses (lb):	92.0090
Vapor Molecular Weight (lb/lb-mole):	69.0000
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	3.3337
Annual Net Throughput (gal/yr.):	16,800.0000
Annual Turnovers:	4.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	4,200.0000
Maximum Liquid Height (ft):	11.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	591.7256

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**Bonham T7 - Vertical Fixed Roof Tank**  
**Charleston, West Virginia**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 6)	92.01	499.72	591.73

**ATTACHMENT O**  
**MONITORING/RECORDKEEPING/REPORTING/  
TESTING PLANS**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

## MONITORING, RECORD KEEPING, REPORTING, TESTING PLANS

### **Monitoring**

The company will at a minimum monitor hours of operation corresponding to the emergency generator, site production throughputs, as well as planned and unplanned maintenance of permitted equipment comprising the facility.

### **Recordkeeping**

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

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.

### **Reporting**

The company will report any control equipment malfunctions, emission limit or opacity deviations.

### **Testing**

The emergency generator will undergo readiness testing periodically as recommended by the manufacturer.

**ATTACHMENT P**

**PUBLIC NOTICE**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**AIR QUALITY PERMIT NOTICE**  
**Notice of Application**

Notice is given that Cranberry Pipeline Corporation has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Regulation 13 permit modification for a compressor station located at the Bonham site, off Derricks Creek Road in Sissonville, Kanawha County, WV. The latitude and longitude coordinates are: 38.51735 and -81.66824.

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

<b>Pollutant</b>	<b>Tons/yr</b>
NOx	0.14
CO	2.63
VOC	4.97
SO <sub>2</sub>	<0.01
PM <sub>10</sub>	<0.01
PM <sub>2.5</sub>	<0.01
CO <sub>2</sub> e	37.39
Benzene	<0.01
Toluene	<0.01
Ethylbenzene	<0.01
Xylenes	<0.01
n-Hexane	<0.01
Formaldehyde	<0.01
Total HAPs	<0.01

Startup of operation is planned to begin on or about the 1<sup>st</sup> day of July, 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> 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 1227, during normal business hours.

Dated this the 28<sup>th</sup> Day of April, 2015.

By: Cranberry Pipeline Corporation  
Randy Spencer  
Safety and Environmental Manager  
900 Lee Street East, Suite 1500  
Charleston, WV 25301

**ATTACHMENT Q**

**NOT APPLICABLE (SEE NOTE)**

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

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**ATTACHMENT R**

**NOT APPLICABLE (SEE NOTE)**

Note: No delegation of authority.

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**ATTACHMENT S**

**NOT APPLICABLE (SEE NOTE)**

Note: Not a Title V Permit Revision.

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046  
Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015

**ATTACHMENT T**  
**PERMIT APPLICATION FEE**

**Rule 13 Permit Application**

**Bonham Station, Plant ID No. 039-00046**  
**Sissonville, West Virginia**

Cranberry Pipeline Corporation  
c/o Cabot Oil & Gas Corporation  
900 Lee Street East, Suite 1500  
Charleston, West Virginia

April 2015