global environmental solutions

Cranberry Pipeline Corporation

Tanner Compressor Station

Pineville, West Virginia

Rule 13 Permit Application

SLR Ref: 116.00400.00130

January 2016

January 29, 2016

Mr. William F. Durham
Director
WVDEP, Division of Air Quality
601 – 57th Street
Charleston, West Virginia 25304

Re: Rule 13 Permit Application
Tanner Compressor Station (109-00106)
Cranberry Pipeline Corporation

Dear Mr. Durham,

SLR International Corporation has prepared the attached Rule 13 Permit Application on behalf of Cranberry Pipeline Corporation for the Tanner Compressor Station located in Pineville, West Virginia (plant ID No. 109-00106). The facility is currently permitted by general permit number G35-A105, but would like to receive a Rule 13 Permit to encompass the requested change to emission potential.

An updated wet gas analysis was taken on April 22, 2015 from the Tanner Compressor Station. This sample and GLYCalc emission modeling indicate the need to increase the facility's potential to emit via a Minor Source NSR Permit Modification. The resulting emission increases are reflected in the following table for the facility. These proposed limits do not trigger any additional permit requirements.

Pollutant	Currently Permitted Emission Limits (tpy)	Proposed Emission Limits (tpy)	Difference between Permitted and Proposed Limits (tpy)
PM/PM_{10}/$PM_{2.5}$	-	0.80	0.80
SO_2	-	0.05	0.05
NO_X	48.16	48.20	0.04
CO	84.19	84.26	0.07
VOCs	25.27	59.03	33.76
Benzene	1.62	1.98	0.36
Toluene	2.69	3.26	0.57
Ethylbenzene	3.79	4.55	0.76
Xylene	4.47	5.38	0.91
n-Hexane	0.06	0.27	0.21
Total HAPs	16.81	20.88	4.07

The public notice was delivered to *The Independent Herald* for publication. The legal advertisement will be forwarded to your office as soon as SLR receives the original affidavit from the newspaper.

If any additional information is needed, please contact me by telephone at (304) 545-8563 or by e-mail at jhanshaw@slrconsulting.com.

Sincerely,
SLR International Corporation

Jesse Hanshaw
Principal Engineer, P.E.

Cc: Mr. Brody Webster, Cranberry Pipeline Corporation

Tanner Compressor Station Rule 13 Permit Application

Prepared for:

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

Chris Boggess
Associate Engineer

Jesse Hanshaw, P.E.
Principal Engineer

CONTENTS

Notes:

ATTACHMENT M – Not applicable - No air pollution control devices used on equipment at this facility
ATTACHMENT Q – Not applicable - No information contained within this application is claimed confidential
ATTACHMENT S – Not applicable - Not a Title V Permit Revision

APPLICATION FOR PERMIT

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

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

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

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

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

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

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

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

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

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Cranberry Pipeline Corporation

2. Federal Employer ID No. ***(FEIN):***
042989934

3. Name of facility *(if different from above):*
Tanner Compressor Station

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

5A. Applicant's mailing address:
900 Lee Street East
Suite 1500
Charleston, WV 25301

5B. Facility's present physical address:
Pinnacle Creek Rd.
Pineville, WV 24874

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

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

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

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

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

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

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

11A. DAQ Plant ID No. (for existing facilities only):
109-00106

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
G35-A105

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

12A.

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

Traveling South on WV Rt. 16 from Pineville, turn left onto Pinnacle Creek Rd. (County Route 12/3). Travel approximately 2.7 miles and turn left onto and unmarked gravel road. Travel approximately 3.5 miles along gravel road and the station will be on your right

12B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
N/A	Pineville	Wyoming
12.E. UTM Northing (KM): 4,155.989	12F. UTM Easting (KM): 459.406	12G. UTM Zone: 17N

13. Briefly describe the proposed change(s) at the facility:
This permit application will account for an increase in emissions associated to the dehydration unit based upon recent wet gas analysis

14A. Provide the date of anticipated installation or change:	14B. Date of anticipated Start-Up if a permit is granted:
– If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: **5/01/2015**	

14C. Provide a **Schedule** of the planned **Installation** of/**Change** to and **Start-Up** of each of the units proposed in this permit application as **Attachment C** (if more than one unit is involved).

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year 52

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

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

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

Section II. Additional attachments and supporting documents.

19. Include a check payable to WVDEP – Division of Air Quality with the appropriate **application fee** (per 45CSR22 and 45CSR13).

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

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

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

23. Provide a **Process Description** as **Attachment G.**
– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

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

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

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

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

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

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

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

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

☒ General Emission Unit, specify: **Internal Combustion Engines Data Sheet, Glycol Dehydration Unit Data Sheet**

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

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

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

☐ Other Collectors, specify

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

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

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

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

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

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

☐ **YES** ☒ **NO**

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

Section III. Certification of Information

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

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

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

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

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

Certification of Truth, Accuracy, and Completeness

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

Compliance Certification

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

SIGNATURE _____ DATE: 1/21/16

(Please use blue ink) *(Please use blue ink)*

35B. Printed name of signee: Brody Webster, CSP		35C. Title: Manager, Safety & Environment
35D. E-mail: brody.webster@cabotog.com	36E. Phone: 304-347-1642	36F. FAX 304-347-1618
36A. Printed name of contact person (if different from above): Jesse Hanshaw, P.E.		36B. Title: Principal Engineer, SLR International Corporation
36C. E-mail: jhanshaw@slrconsulting.com	36D. Phone: 681-205-8949	36E. FAX: 681-205-8969

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

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

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

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

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

ATTACHMENT A

BUSINESS CERTIFICATE

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

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.

atL006 v.4
L1111698560

ATTACHMENT B

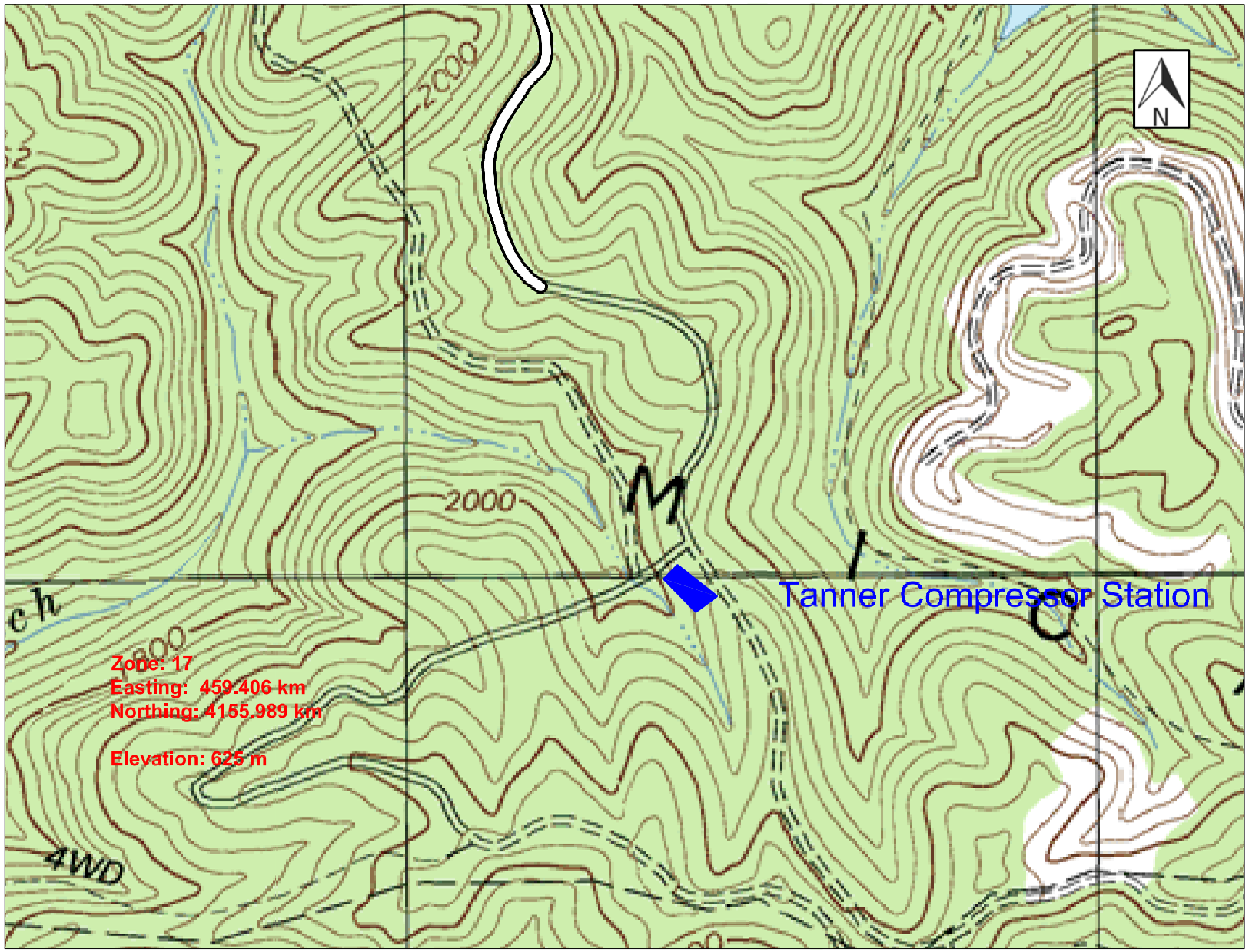
MAP

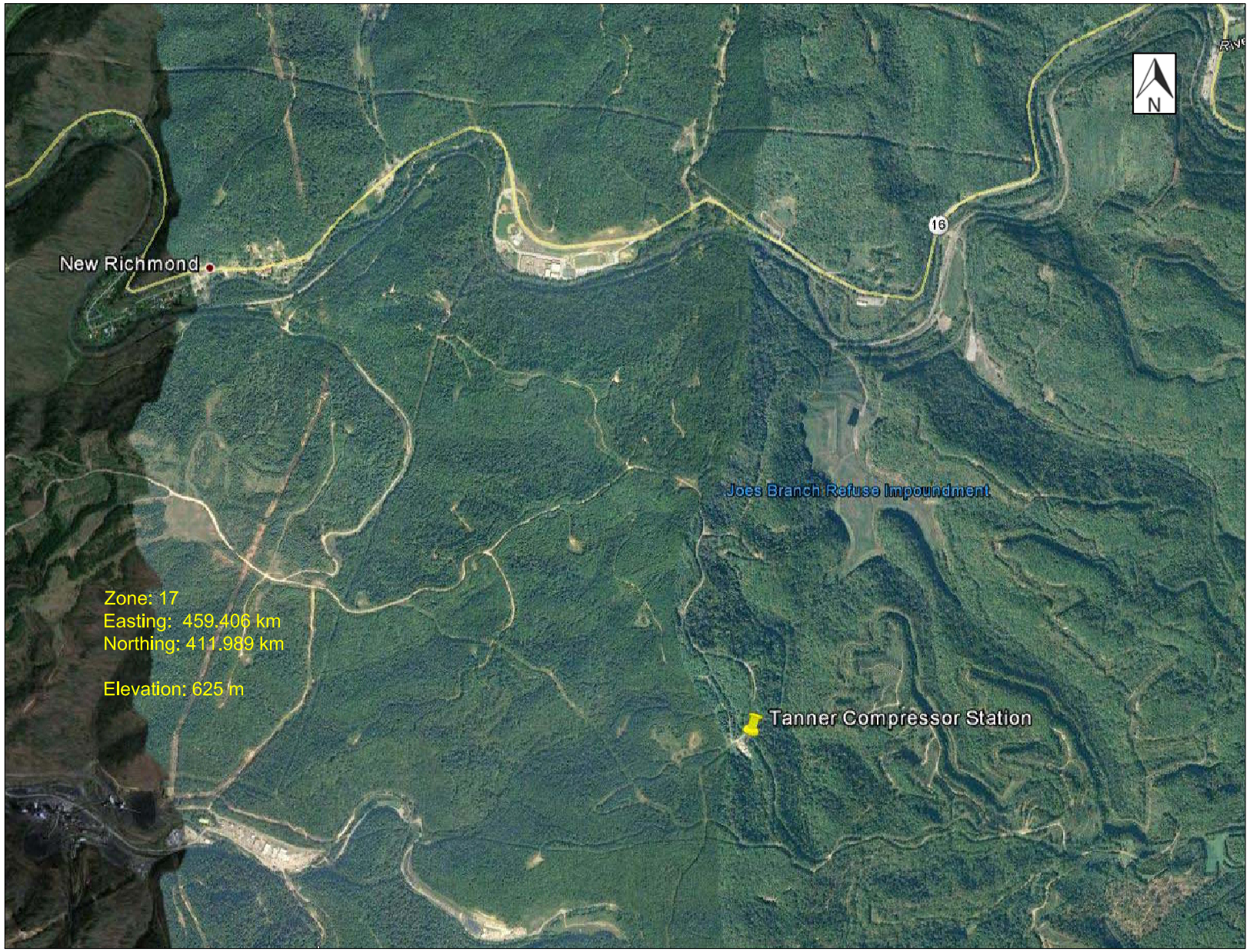
Rule 13 Permit Application

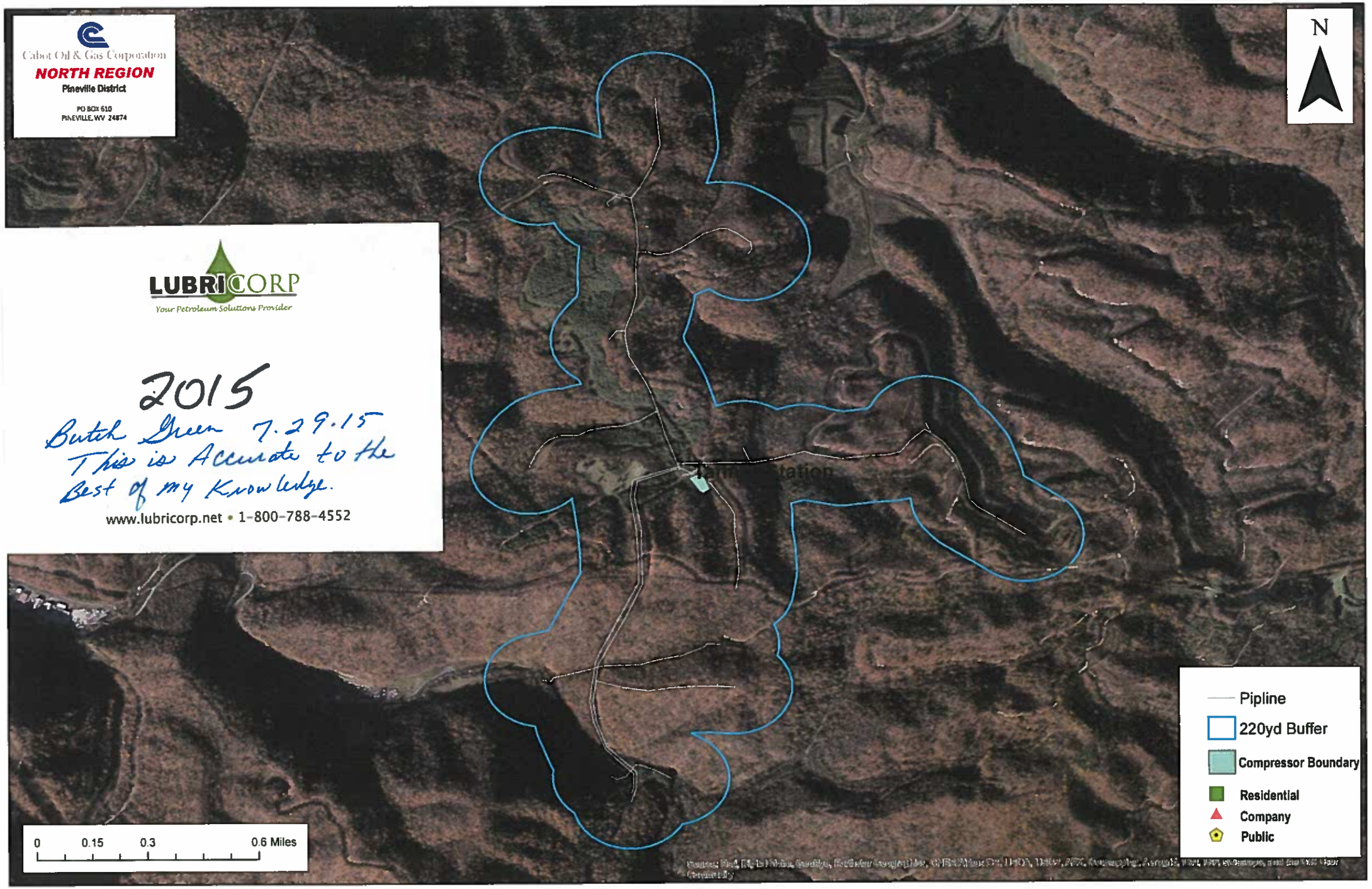
Tanner Compressor Station
Pineville, West Virginia

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

January 2016


2000
2000
2000
N
Tanner Compressor Station
Zone: 17
Easting: 459.406 km
Northing: 4155.989 km
Elevation: 625 m
4WD


N
16
New Richmond
Joes Branch Refuse Impoundment
Zone: 17
Easting: 459.406 km
Northing: 411.989 km
Elevation: 625 m
Tanner Compressor Station


Cabot Oil & Gas Corporation
NORTH REGION
Pineville District
PO BOX 610
PINEVILLE, WV 24874
LUBRICORP
Your Petroleum Solutions Provider
2015
Butch Green 7.29.15
This is Accurate to the
Best of my Knowledge.
www.lubricorp.net • 1-800-788-4552
N
0 0.15 0.3 0.6 Miles
Pipline
220yd Buffer
Compressor Boundary
Residential
Company
Public

ATTACHMENT C

INSTALLATION AND START-UP

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

INSTALLATION AND STARTUP SCHEDULE

This is an after-the-fact permit modification brought about by recent wet gas analysis detailing a change in emissions at the facility. This after the fact modification will more accurately calculate the site's PTE based on site specific measurement and for the first time take into account the addition of emissions sources such as of tanks previously not included in the most recent permit, emissions from truck loading and fugitive emissions.

ATTACHMENT D

REGULATORY DISCUSSION

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

REGULATORY DISCUSSION

APPLICABLE REGULATIONS

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

Federal and State:

45 CSR 2 – Particulate Matter Standards from Combustion of Fuel in Indirect Heat Exchangers

The indirect heat exchanger consist of the dehydration reboiler burner, which is subject to the visible emission standard of §45-2-3 as follows:

3.1. No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.

However, in accordance with the exemptions defined with §45-2-11 these sources have limited requirements as follows:

11.1. Any fuel burning unit(s) having a heat input under ten (10) million B.T.U.'s per hour will be exempt from sections 4, 5, 6, 8 and 9. However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

45 CSR 4 - No Objectionable Odors

45 CSR 6 - Open Burning Prohibited.

This state rule is geared towards reducing particulate matter emissions from the combustion of refuse and is specific to burning solid waste such as trash as well as combustion of waste gas in flares. The rule sets PM limits and establishes a 20% visible emission limit, both of which shouldn't be any problem for the gas fired flare to meet.

45 CSR 10 - Emission of Sulfur Oxides.

The facility evaluated within this application utilizes a fuel burning unit, but it is less than the exemption threshold of 10 MMBtu/hr as stated in 45CSR§10-10.1 as follows:

10.1 Any fuel burning units having a design heat input under ten (10) million BTU's per hour will be exempt from section 3 and sections 6 through 8. However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

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 an increase in emissions of regulated air pollutants associated with the dehydration 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.

45 CSR 17 - Fugitive Particulate Emissions

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

The natural gas fueled emergency generator is subject to this NSPS. This unit was purchased as a certified emergency unit, operating at a maximum of 500 hours per year

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

This subpart applies to existing, new, and reconstructed stationary reciprocating internal combustion engines at major sources and area sources of HAPs. Therefore, this facility is subject to this subpart.

The three (3) White Superior 6GTLB 825 hp natural gas compressor engines are located in a “remote area” and therefore are subject to the maintenance, recordkeeping, and reporting requirements of 40CFR63.6640(a) and 40CFR63.6655(e)(3).

40 CFR 63 Subpart HH - National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

The unit is subject to the Area Source Requirements of this Subpart but complies by meeting the 1 TPY Benzene exemption for actual emissions.

NON-APPLICABILITY DETERMINATIONS

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

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

Section 28 of 45CSR21 is not applicable because all petroleum liquid storage tanks at this station are below 40,000 gallons in capacity. Section 29 of 45CSR21 is not applicable because this station is not engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both.

45 CSR 27 - To Prevent and Control the Emissions of Toxic Air Pollutants.

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

40 CFR 60 Subpart Dc – Reboiler

The reboiler at this facility is below 10 million BTU/hr, thus this subpart does not apply per 40 CFR 60.40c.

40 CFR 60 Subpart K, Ka – Standards of Performance for Storage Vessels of Petroleum Liquids

This subpart is not applicable because all tanks at this station are below 40,000 gallons in capacity.

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

This subpart is not applicable because all tanks at this station are below $75m^3$ (19,813 gallons) in capacity.

40 CFR 60 Subpart KKK – Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plant

This subpart is not applicable because this station in not a processing site engaged in extracting natural gas liquids from production gas.

> *Natural gas processing plant (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both.*

40 CFR 60 Subpart OOOO - Storage Vessel NSPS

This subpart is not applicable because the storage vessels at this facility were all installed before the NSPS applicability date of 8-23-2011.

40 CFR 63 Subpart HHH – NESHAP from Natural Gas Transmission and Storage Facilities

This subpart is related to Natural Gas Transmission Facilities. Therefore, this subpart does not apply to this facility, because it transports gas prior to custody transfer or prior to a natural gas liquids extraction facility.

40 CFR 63 Subpart DDDDD - Boilers & Process Heaters Located at Major Sources of HAPs.

This subpart is not applicable because this facility is not a major source of HAPs.

ATTACHMENT E

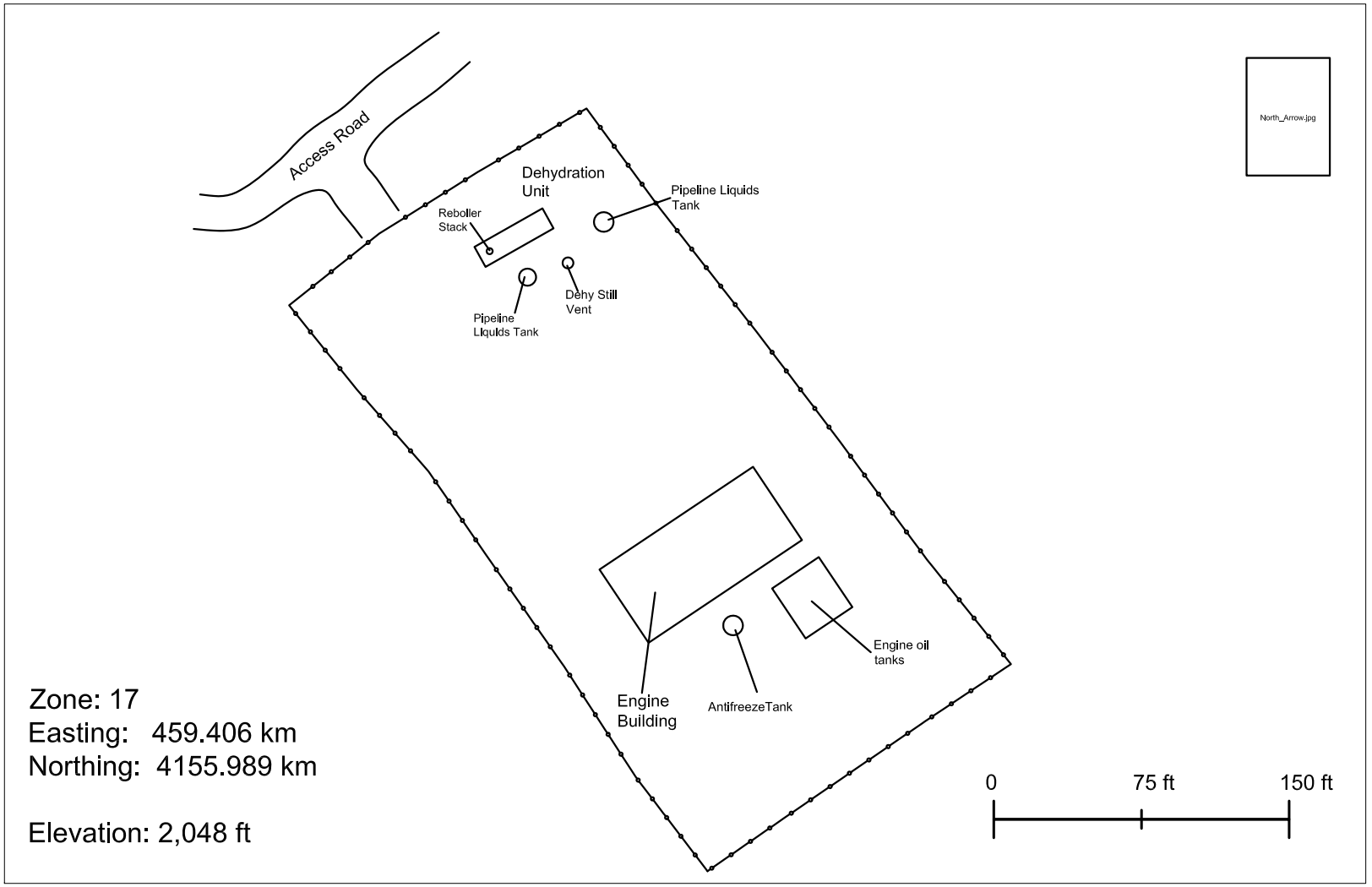
PLOT PLAN

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016



Plot Plan
Cranberry Pipeline Corporation
Tanner Compressor Station - ID# 109-00106
Pineville, West Virginia

ATTACHMENT F

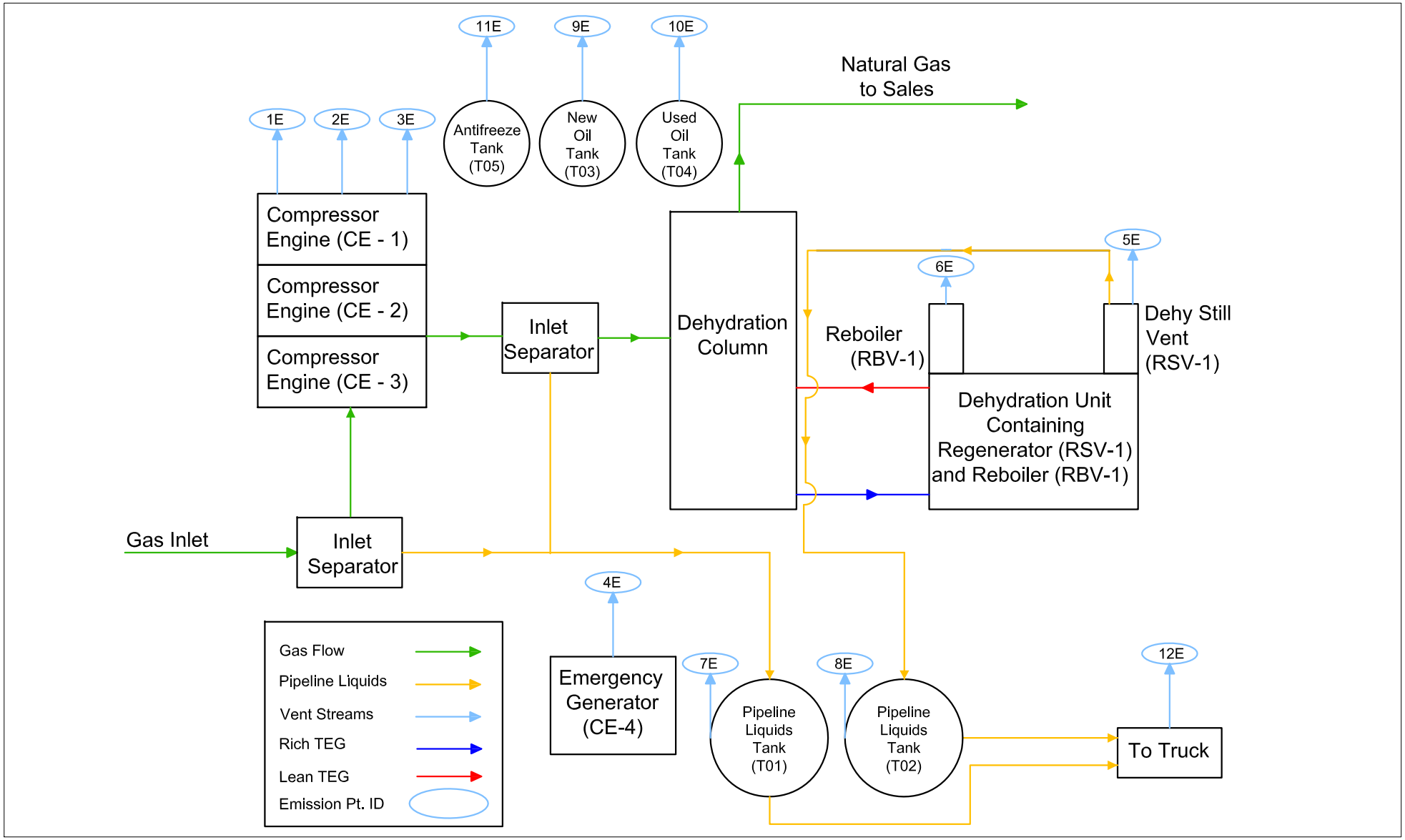
PROCESS FLOW DIAGRAM

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016



Process Flow Diagram
Cranberry Pipeline Corporation
Tanner Compressor Station - ID # 109-00106
Pineville, West Virginia

ATTACHMENT G

PROCESS DESCRIPTION

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

PROCESS DESCRIPTION

Introduction

The facility currently operates under West Virginia New Source Review (NSR) General Permit G35-A105. On behalf of Cranberry Pipeline Corporation (Cranberry) SLR is requesting this modification in order to update the facility registration to more accurately reflect the most recent site measurements.

Recent wet gas analyses from the Tanner Compressor Station indicate that a modification is required to reflect the facility's adjusted emission levels from the dehydration unit still vent. The source's Potential to Emit (PTE) has been adjusted and new emission limits are proposed so that the facility remains within permitted throughput constraints. The proposed emission limits will not trigger new permitting program requirements (e.g. Title V Major Source).

Proposed Update

This application involves the following:

- Increase of emissions limitations on dehydration unit (RSV-1) set forth by the previous permit due to recent wet gas sampling and analysis
- An update of the PTE for the storage vessels T01 and T02 based on new annual throughputs
- Addition of storage vessels T03, T04 and T05 and associated emissions
- An update of emissions from truck loading and fugitive leaks

The new emission estimates reflect the need to increase the VOC and Hazardous Air Pollutant (HAP) levels. These changes to emissions are a result of the increase to HAP and C8+ gas fractions measured within the wet gas inlet to the contactor column.

All other operating parameters on the dehydration unit were set to its maximum capacity. The lean TEG is recirculated through the unit by a gas-driven Kimray TEG pump, model 21015PV. The pump has a maximum pump rate of 3.5 GPM. The gas throughput was modeled to reflect the station's maximum flow of 13.0 MMscf/d. Additionally, the inlet water content was assumed to be saturated at 693.1 psig and 86.4 F, which is the facility's average operating conditions. The outlet is assumed to be pipeline quality NG at 7 lb H20/MMscf.

Pipeline liquids and produced water are separated at the station's inlet, dehy, and compressor separators. These separation by products are transferred to two different above ground storage tanks (AST) represented in the equipment table as T01 and T02. The flashing emissions in addition to tank working and breathing losses have been included within this application to better represent the storage vessel's PTE. The emission estimates for the tank are based on direct measurement pressurized liquid

testing and E&P Tanks simulation analysis taken at a representative Cranberry Pipeline site. The throughput was based on a maximum of 5 bbls/d.

As a result of this proposed permit revision, the tank flashing potential, loading losses and fugitive equipment leaks will be more accurately accounted for along with the new assessment of dehydration emissions based on updated gas measurement.

ATTACHMENT H

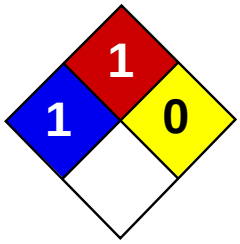
SAFETY DATA SHEETS (SDS)

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016



Material Safety Data Sheet
Triethylene glycol MSDS

Section 1: Chemical Product and Company Identification

Product Name: Triethylene glycol

Catalog Codes: SLT2644

CAS#: 112-27-6

RTECS: YE4550000

TSCA: TSCA 8(b) inventory: Triethylene glycol

CI#: Not available.

Synonym: 2,2'-[1,2-Ethanediylbis(oxy)]bisethanol

Chemical Formula: C6H14O4

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Triethylene glycol	112-27-6	100

Toxicological Data on Ingredients: Triethylene glycol: ORAL (LD50): Acute: 17000 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of ingestion. Slightly hazardous in case of inhalation. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
Very hazardous in case of eye contact (irritant). Slightly hazardous in case of inhalation. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, the nervous system. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

Skin Contact: No known effect on skin contact, rinse with water for a few minutes.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:
Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 371°C (699.8°F)

Flash Points: CLOSED CUP: 177°C (350.6°F). OPEN CUP: 165.5°C (329.9°F).

Flammable Limits: LOWER: 0.9% UPPER: 9.2%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Not available.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/spray. Avoid contact with eyes If ingested, seek medical advice immediately and show the container or the label.

Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Splash goggles. Lab coat.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Hygroscopic liquid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 150.18 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 285°C (545°F)

Melting Point: -5°C (23°F)

Critical Temperature: Not available.

Specific Gravity: 1.1274 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 5.17 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 17000 mg/kg [Rat].

Chronic Effects on Humans: The substance is toxic to kidneys, the nervous system.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion. Slightly hazardous in case of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
Pennsylvania RTK: Triethylene glycol TSCA 8(b) inventory: Triethylene glycol

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC): R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 0

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:
Not applicable. Lab coat. Not applicable. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:31 PM

Last Updated: 05/21/2013 12:00 PM

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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

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

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

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:

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

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

Health Hazards: Use with adequate ventilation.

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

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

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

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

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

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

Eye: Not expected to be an eye irritant.

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

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

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

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

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

Cancer: No data available.

Target Organs: No data available.

Developmental: Limited data - See Other Comments, below.

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

Pre-Existing Medical Conditions: None known.

4. FIRST AID MEASURES

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

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

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

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

5. FIRE FIGHTING MEASURES

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

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

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

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

6. ACCIDENTAL RELEASE MEASURES

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

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

7. HANDLING AND STORAGE

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

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Personal Protective Equipment (PPE):

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

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

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

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

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

10. STABILITY AND REACTIVITY

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

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

Incompatible Materials: Avoid contact with strong oxidizing agents.

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

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

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

12. DISPOSAL CONSIDERATIONS

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

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

13. TRANSPORT INFORMATION

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

14. REGULATORY INFORMATION

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

--None--

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

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

--None Known--

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

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

15. DOCUMENTARY INFORMATION

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

16. DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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

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.
383 Madison Avenue, 10th Floor
New York, NY 10017

JP Morgan Commodities Canada Corp.
Suite 600, Vintage Towers II, 326 11th 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

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.

4. FIRST AID MEASURES

Eye Contact

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.

Skin Contact

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.

Ingestion (Swallowing)

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
.

Most Important Symptoms and Effects

Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue
Delayed: Dry skin and possible irritation with repeated or prolonged exposure

Potential Acute Health Effects

Inhalation: 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.
Eye Contact: 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).
Skin Contact: This product is a skin irritant. Contact may cause redness, itching, burning and skin damage.
Ingestion: 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.

Potential Chronic Health Effects

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.

Notes to Physician

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 $3NaNO_2$ solution (0.5 gm $NaNO_2$ in 15 ml water) IV over 2 to 4 minutes. The dosage should be adjusted in children or in the

4. FIRST AID MEASURES

presence of anemia and methemoglobin levels, arterial blood gases, and electrolyties 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^{o}C, < -50^{o}F (ASTM D-56)

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

Autoignition Temperature
232^{o}C, 450^{o}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

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_2S 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.

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_2S immediately dangerous to life or health. Check atmosphere for oxygen content, H_2S 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

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.

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

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

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

Stability Stable under normal anticipated storage and handling temperatures and pressures. Extremely flammable liquid and vapor. Vapor can cause flash fire.
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Conditions to Avoid Avoid high temperatures and all possible sources of ignition. Prevent vapor accumulation.

Incompatibility (Materials to Avoid) Avoid contact with strong oxidizing agents such as strong acids, alkalies, chlorine and other halogens, dichromates or permanganates, which can cause fire or explosion.

Hazardous Decomposition Products Hazardous decomposition products are not expected to form curing 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.

Hazardous Polymerization 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 studiesal 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)

11. TOXICOLOGICAL INFORMATION

Product expected to have low degree of toxicity by inhalation: LC 50 > 5.2 mg/l (vapor)
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.

Ingestion: Product expected to have low degree of toxicity by ingestion: Oral LD50 > 5 g/kg (rat), > 10 g/kg (mice)
Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Eye Damage / Irritation
Causes serious eye irritation.

Sensitization
Skin: Not expected to be a skin sensitizer
Respiratory: Not expected to be a respiratory sensitizer

Specific Target Organ Toxicity
Single Exposure: 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.

Repeated Exposure: 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.

Conditions Aggravated by Overexposure
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.

Carcinogenicity
May cause cancer based on component information.

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.

Unleaded gasoline has been identified as a possible carcinogen by the International Agency for Research on Cancer.

Germ Cell Mutagenicity
Inadequate information available, not expected to be mutagenic.

11. TOXICOLOGICAL INFORMATION

Reproductive and Developmental Toxicity

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.

Additional Information

Hydrogen Sulfide (H_2S). This material may contain or liberate H_2S, 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_2S 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 rapidely 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 eight and increased skeletal variations in rodents. Alterations in hematopoeisis 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

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 (eosinophilio 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_2S as low as 10 ppm over an 8 hour workshift may cause eye or throat irritation. Prolonged breathing of 50-100 ppm H_2S vapors can produce significant eye and respiratory irritation. Sour condensates commonly contain extremely high concentrations of H_2S (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_2S, 6 hrs/day, 5 days/week for 10 weeks, did not produce any toxicity except for irritation of nasal passages. H_2S did not affect reproduction and development (birth defects or neurotoxicity) in rats exposed to concentrations of 75-80 ppm or 150 ppm H_2S, respectively. Over the years a number of acute cases of H_2S 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)

11. TOXICOLOGICAL INFORMATION

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^3/4hr (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.

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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

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.

14. TRANSPORTATION INFORMATION

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

15. REGULATORY INFORMATION

United States Federal Regulatory Information

EPA TSCA Inventory	This product and/or its components are listed on the Toxic Substances Control Act (TSCA) Inventory
EPA SARA 302/304 Emergency Planning and Notification	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
EPA SARA 311/312 (Title III Hazard Categories)	Acute Health: Yes Chronic Health: Yes Fire Hazard: Yes Pressure Hazard: No Reactive Hazard: No

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_2. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

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

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The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. 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 THE INFORMATION PROVIDED ABOVE, 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. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

ATTACHMENT I

EMISSION UNITS TABLE

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Attachment I

Emission Units Table

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

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
CE-1	1E	4 Stroke Lean Burn RICE - White Superior 6GTLB	2005	825 hp	-	None
CE-2	2E	4 Stroke Lean Burn RICE - White Superior 6GTLB	2005	825 hp	-	None
CE-3	3E	4 Stroke Lean Burn RICE - White Superior 6GTLB	2005	825 hp	-	None
CE-4	4E	Emergency Generator – Generac CGNXB9992ST	2013	28 hp	-	None
RSV-1	5E	Sivalls Glycol Dehydration Unit Regenerator Still Vent	2005 / 2016	13 MMscf/d	Modification / 2016	None
RBV-1	6E	Sivalls Glycol Dehydration Unit Reboiler Vent	2005	0.75 mmBTU/hr	-	None
T01	7E	Pipeline Liquids Storage Tank	2005	1000 gal	-	None
T02	8E	Pipeline Liquids Storage Tank	2005	1000 gal	-	None
T03	9E	New Oil Storage Tank	2005	2000 gal	New / 2016	None
T04	10E	Used Oil Storage Tank	2005	1000 gal	New / 2016	None
T05	11E	Antifreeze Storage Tank	2005	250 gal	New / 2016	None
TL	12E	Truck Loading Emissions	2005	153,300 gal/yr	New / 2016	None
Fugitives	13E	Fugitive Emissions	2005	-	New / 2016	None

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

ATTACHMENT J

EMISSION POINTS DATA SUMMARY SHEET

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table-& Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]	Emission Concentration [7] (ppmv or mg/m^4)
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
1E	Vertical Stack	CE-1	4SLB RICE White Superior 6GTLB	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CH_2O HAPs CO2e	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	Gas/ Vapor	EE	Can Supply Upon Request
2E	Vertical Stack	CE-2	4SLB RICE White Superior 6GTLB	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CH_2O HAPs CO2e	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	Gas/ Vapor	EE	Can Supply Upon Request
3E	Vertical Stack	CE-3	4SLB RICE White Superior 6GTLB	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CH_2O HAPs CO2e	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	3.64 6.37 1.37 0.01 0.06 0.31 0.43 690.2	15.93 27.88 5.98 0.02 0.26 1.36 1.88 3023.2	Gas/ Vapor	EE	Can Supply Upon Request
4E	Vertical Stack	CE-4	Em. Generator Generac CGNXB9992ST	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CH_2O HAPs CO2e	0.32 1.37 0.01 0.01 0.01 0.01 0.01 1.38	0.08 0.35 0.01 0.01 0.01 0.01 0.01 6.03	0.32 1.37 0.01 0.01 0.01 0.01 0.01 1.38	0.08 0.35 0.01 0.01 0.01 0.01 0.01 6.03	Gas/ Vapor	EE	Can Supply Upon Request
5E	Vertical Stack	RSV-1	Sivalls Glycol Dehydration Unit Regenerator Still Vent	NA	NA	NA	NA	VOC Benzene Toluene Ethylbenzene Xylene n-Hexane	9.06 0.44 0.74 1.04 1.23 0.04	39.66 1.94 3.23 4.55 5.37 0.18	9.06 0.44 0.74 1.04 1.23 0.04	39.66 1.94 3.23 4.55 5.37 0.18	Gas/ Vapor	EE	Can Supply Upon Request

6E	Vertical Stack	RBV-1	Sivalls Glycol Dehydration Unit Reboiler Vent	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CO2e	0.07 0.06 0.01 0.01 0.01 87.82	0.32 0.27 0.02 0.01 0.02 384.63	0.07 0.06 0.01 0.01 0.01 87.82	0.32 0.27 0.02 0.01 0.02 384.63	Gas/ Vapor	EE	Can Supply Upon Request
7E	Vented	T01	Pipeline Liquids Tank	NA	NA	NA	NA	VOC	0.11	0.50	0.11	0.50	Gas/ Vapor	EE	Can Supply Upon Request
8E	Vented	T02	Pipeline Liquids Tank	NA	NA	NA	NA	VOC	0.11	0.50	0.11	0.50	Gas/ Vapor	EE	Can Supply Upon Request

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

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

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

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

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

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

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

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

EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (^{o}F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
1E	1.0	110	96.4	2.05	2,048 ft	20 ft	4,155.989	459.406
2E	1.0	110	96.4	2.05	2,048 ft	20 ft	4,155.989	459.406
3E	1.0	110	96.4	2.05	2,048 ft	20 ft	4,155.989	459.406
4E	0.25	110	3.37	1.14	2,048 ft	5 ft	4,155.989	459.406
5E	0.25	212	25.3	8.59	2,048 ft	16 ft	4,155.989	459.406
6E	1.0	212	25.3	0.54	2,048 ft	20 ft	4,155.989	459.406

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

ATTACHMENT K

FUGITIVE EMISSIONS DATA SHEET

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

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

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

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

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads		-	-	-	-	EE
Unpaved Haul Roads		-	-	-	-	EE
Storage Pile Emissions		-	-	-	-	EE
Loading/Unloading Operations	VOC	0.064	0.280	0.064	0.280	EE
Wastewater Treatment Evaporation & Operations		-	-	-	-	EE
Equipment Leaks	VOC CO_2e	0.03 0.83	0.16 3.66	0.03 0.83	0.16 3.66	EE
General Clean-up VOC Emissions		-	-	-	-	EE
Other		-	-	-	-	EE

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

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

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

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

ATTACHMENT L

EMISSION UNIT DATA SHEET

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

INTERNAL COMBUSTION ENGINE DATA SHEET							
Complete this data sheet for each internal combustion engine at the facility. Include manufacturer performance data sheet(s) or any other supporting document if applicable. Use extra pages if necessary. *Generator(s) and microturbine generator(s) shall also use this form.*							
Emission Unit ID#[1]		CE-1		CE-2		CE-3	
Engine Manufacturer/Model		White Superior 6GTLB		White Superior 6GTLB		White Superior 6GTLB	
Manufacturers Rated bhp/rpm		825/900		825/900		825/900	
Source Status[2]		ES		ES		ES	
Date Installed/ Modified/Removed/Relocated[3]		2005		2005		2005	
Engine Manufactured /Reconstruction Date[4]		Pre-2006		Pre-2006		Pre-2006	
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☒40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☒ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☒40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☒ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☒40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☒ NESHAP ZZZZ Remote Sources	
Engine Type[6]		LB4S		LB4S		LB4S	
APCD Type[7]		A/F		A/F		A/F	
Fuel Type[8]		PQ		PQ		PQ	
H_2S (gr/100 scf)		0.25		0.25		0.25	
Operating bhp/rpm		825/900		825/900		825/900	
BSFC (BTU/bhp-hr)		7,150		7,150		7,150	
Hourly Fuel Throughput		5,784	ft^3/hr gal/hr	5,784	ft^3/hr gal/hr	5,784	ft^3/hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		50.66	$MMft^3$/yr gal/yr	50.66	$MMft^3$/yr gal/yr	50.66	$MMft^3$/yr gal/yr
Fuel Usage or Hours of Operation Metered		Yes ☐	No ☒	Yes ☐	No ☒	Yes ☐	No ☒
Calculation Methodology[9]	**Pollutant**[10]	**Hourly PTE (lb/hr)**[11]	**Annual PTE (tons/year)**[11]	**Hourly PTE (lb/hr)**[11]	**Annual PTE (tons/year)**[11]	**Hourly PTE (lb/hr)**[11]	**Annual PTE (tons/year)**[11]
MD	NO_x	3.64	15.93	3.64	15.93	3.64	15.93
MD	CO	6.37	27.88	6.37	27.88	6.37	27.88
MD	VOC	1.37	5.98	1.37	5.98	1.37	5.98
AP	SO_2	0.01	0.02	0.01	0.02	0.01	0.02
AP	PM_{10}	0.06	0.26	0.06	0.26	0.06	0.26
AP	Formaldehyde	0.31	1.36	0.31	1.36	0.31	1.36
AP	Total HAPs	0.43	1.88	0.43	1.88	0.43	1.88
AP	GHG (CO_2e)	690.2	3023.2	690.2	3023.2	690.2	3023.2

INTERNAL COMBUSTION ENGINE DATA SHEET

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

Emission Unit ID#[1]		CE-4		-		-	
Engine Manufacturer/Model		Generac CGNXB999ST		-		-	
Manufacturers Rated bhp/rpm		28		-		-	
Source Status[2]		ES		-		-	
Date Installed/ Modified/Removed/Relocated[3]		2013		-		-	
Engine Manufactured /Reconstruction Date[4]		2013		-		-	
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]		☒40CFR60 Subpart JJJJ ☒JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources		☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	
Engine Type[6]		RB4S		-		-	
APCD Type[7]		A/F		-		-	
Fuel Type[8]		PQ		-		-	
H_2S (gr/100 scf)		0.25		-		-	
Operating bhp/rpm		28		-		-	
BSFC (BTU/bhp-hr)		7,360		-		-	
Hourly Fuel Throughput		202 ft^3/hr gal/hr		ft^3/hr gal/hr		ft^3/hr gal/hr	
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)		1.77 $MMft^3$/yr gal/yr		$MMft^3$/yr gal/yr		$MMft^3$/yr gal/yr	
Fuel Usage or Hours of Operation Metered		Yes ☐ No ☒		Yes ☐ No ☐		Yes ☐ No ☐	
Calculation Methodology[9]	**Pollutant[10]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**
MD	NO_x	0.32	0.08	-	-	-	-
MD	CO	1.37	0.35	-	-	-	-
AP	VOC	0.01	0.01	-	-	-	-
AP	SO_2	0.01	0.01	-	-	-	-
AP	PM_{10}	0.01	0.01	-	-	-	-
AP	Formaldehyde	0.01	0.01	-	-	-	-
AP	Total HAPs	0.01	0.01	-	-	-	-
AP	GHG (CO_2e)	1.38	6.03	-	-	-	-

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

2 Enter the Source Status using the following codes:

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

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

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

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

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

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

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

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

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

8 Enter the Fuel Type using the following codes:

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

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

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

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

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

SMALL HEATERS AND REBOILERS NOT SUBJECT TO 40CFR60 SUBPART DC
DATA SHEET

Complete this data sheet for each small heater and reboiler not subject to 40CFR60 Subpart Dc at the facility. ***The Maximum Design Heat Input (MDHI) must be less than 10 MMBTU/hr.***

Emission Unit ID#[1]	Emission Point ID#[2]	Emission Unit Description (manufacturer, model #)	Year Installed/ Modified	Type[3] and Date of Change	Maximum Design Heat Input (MMBTU/hr)[4]	Fuel Heating Value (BTU/scf)[5]
RBV-1	6E	Sivalls Glycol Dehydration Unit Reboiler Vent	2005	Exist	0.75	1,020

1 Enter the appropriate Emission Unit (or Source) identification number for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For sources, use 1S, 2S, 3S…or other appropriate designation. Enter glycol dehydration unit Reboiler Vent data on the Glycol Dehydration Unit Data Sheet.

2 Enter the appropriate Emission Point identification numbers for each fuel burning unit located at the production pad. Gas Producing Unit Burners should be designated GPU-1, GPU-2, etc. Heater Treaters should be designated HT-1, HT-2, etc. Heaters or Line Heaters should be designated LH-1, LH-2, etc. For emission points, use 1E, 2E, 3E…or other appropriate designation.

3 New, modification, removal

4 Enter design heat input capacity in MMBtu/hr.

5 Enter the fuel heating value in BTU/standard cubic foot.

GLYCOL DEHYDRATION UNIT DATA SHEET

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI- GLYCalc™ input and aggregate report. Use extra pages if necessary.

Manufacturer: Sivalls	Model: RT-1
Max. Dry Gas Flow Rate: 13.0 mmscf/day	Reboiler Design Heat Input: 0.75 MMBTU/hr
Design Type: ☒ TEG ☐ DEG ☐ EG	Source Status[1]: MS
Date Installed/Modified/Removed[2]: 2005/2016	Regenerator Still Vent APCD/ERD[3]: NA
Control Device/ERD ID#[3]: NA	Fuel HV (BTU/scf): 1,020
H_2S Content (gr/100 scf): 0.25	Operation (hours/year): 8760
Pump Rate (scfm): 3.5 GPM TEG	
Water Content (wt %) in: Wet Gas: Saturated	Dry Gas: 7.0 lbs H2O/MMSCF

Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? ☒ Yes ☐ No: If Yes, answer the following:

The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. ☐ Yes ☒ No

The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. ☒ Yes ☐ No

Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? ☐ Yes ☒ No

Is a lean glycol pump optimization plan being utilized? ☐ Yes ☒ No

Recycling the glycol dehydration unit back to the flame zone of the reboiler.
☐ Yes ☒ No

Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel.
☐ Yes ☒ No

What happens when temperature controller shuts off fuel to the reboiler?
☒ Still vent emissions to the atmosphere.
☐ Still vent emissions stopped with valve.
☐ Still vent emissions to glow plug.

Please indicate if the following equipment is present.
☐ Flash Tank
☐ Burner management system that continuously burns condenser or flash tank vapors

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)

Emissions Data

Emission Unit ID / Emission Point ID[4]	Description	Calculation Methodology[5]	PTE[6]	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)
RBV-1 / 6E	Reboiler Vent	AP	NO_x	0.07	0.32
		AP	CO	0.06	0.27
		AP	VOC	0.01	0.02
		AP	SO_2	0.01	0.01
		AP	PM_{10}	0.01	0.02
		AP	GHG (CO_2e)	87.82	384.63

RSV-1 / 5E	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	9.06	39.66
		GRI-GlyCalc™	Benzene	0.44	1.94
		GRI-GlyCalc™	Toluene	0.74	3.23
		GRI-GlyCalc™	Ethylbenzene	1.04	4.55
		GRI-GlyCalc™	Xylenes	1.23	5.37
		GRI-GlyCalc™	n-Hexane	0.04	0.18

1 Enter the Source Status using the following codes:
NS Construction of New Source ES Existing Source
MS Modification of Existing Source

2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.

3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:
NA None CD Condenser FL Flare
CC Condenser/Combustion Combination TO Thermal Oxidizer
O Other (please list)

4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

5 Enter the Potential Emissions Data Reference designation using the following codes:
MD Manufacturer's Data AP AP-42
GR GRI-GLYCalc™ OT Other (please list)

6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

STORAGE VESSEL DATA SHEET

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

The following information is REQUIRED:

□ Composition of the representative sample used for the simulation
□ For each stream that contributes to flashing emissions:
  □ Temperature and pressure (inlet and outlet from separator(s))
  □ Simulation-predicted composition
  □ Molecular weight
  □ Flow rate
□ Resulting flash emission factor or flashing emissions from simulation
□ Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION

1. Bulk Storage Area Name Tanner Compressor Station	2. Tank Name Pipeline Liquids Storage Tank
3. Emission Unit ID number T01	4. Emission Point ID number 7E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2005 Was the tank manufactured after August 23, 2011? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* Update emissions from storage vessel	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☒ Yes ☐ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft.)	9B. Tank Internal Height (ft.)
10A. Maximum Liquid Height (ft.)	10B. Average Liquid Height (ft.)
11A. Maximum Vapor Space Height (ft.)	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume".	
13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of tank turnovers per year	15. Maximum tank fill rate (gal/min)
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	

17. Is the tank system a variable vapor space system? ☐ Yes ☐ No
If yes, (A) What is the volume expansion capacity of the system (gal)?
(B) What are the number of transfers into the system per year?

18. Type of tank (check all that apply):
☐ Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe)

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

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:
☐ Does Not Apply ☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]
☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)
☐ Conservation Vent (psig) ☐ Condenser[1]
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)
Vacuum Setting Pressure Setting
☐ Thief Hatch Weighted ☐ Yes ☐ No
[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

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

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

TANK CONSTRUCTION AND OPERATION INFORMATION

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

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

22. Shell Condition (if metal and unlined):
☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

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

23. Operating Pressure Range (psig):
Must be listed for tanks using VRUs with closed vent system.

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

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

25A. Year Internal Floaters Installed:

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

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

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

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No			
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No			
SITE INFORMATION			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):	
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION

1. Bulk Storage Area Name Tanner Compressor Station	2. Tank Name Pipeline Liquids Storage Tank
3. Emission Unit ID number T02	4. Emission Point ID number 8E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2005 Was the tank manufactured after August 23, 2011? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* update emissions from storage vessel	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☒ Yes ☐ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft.)	9B. Tank Internal Height (ft.)
10A. Maximum Liquid Height (ft.)	10B. Average Liquid Height (ft.)
11A. Maximum Vapor Space Height (ft.)	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume".	
13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of tank turnovers per year	15. Maximum tank fill rate (gal/min)
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☐ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☐ Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).									
Material Name	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	

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

TANK CONSTRUCTION AND OPERATION INFORMATION		
21. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)		
21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:
22. Shell Condition (if metal and unlined): ☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)		
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No		
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No		
SITE INFORMATION		
29. Provide the city and state on which the data in this section are based:		
30. Daily Avg. Ambient Temperature (°F):	31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):	33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):	35. Atmospheric Pressure (psia):	
LIQUID INFORMATION		
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):
38A. Minimum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):	39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):	40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.		
41A. Material name and composition:		

41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION

1. Bulk Storage Area Name Tanner Compressor Station	2. Tank Name New Oil Storage Tank
3. Emission Unit ID number T03	4. Emission Point ID number 9E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2005 Was the tank manufactured after August 23, 2011? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* addition of storage vessel to permit	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☒ Yes ☐ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft.)	9B. Tank Internal Height (ft.)
10A. Maximum Liquid Height (ft.)	10B. Average Liquid Height (ft.)
11A. Maximum Vapor Space Height (ft.)	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume".	
13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of tank turnovers per year	15. Maximum tank fill rate (gal/min)
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☐ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☐ Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

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

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

TANK CONSTRUCTION AND OPERATION INFORMATION		
21. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)		
21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:
22. Shell Condition (if metal and unlined): ☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)		

26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:

27. Closed Vent System with VRU? ☐ Yes ☐ No	
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No	
SITE INFORMATION	
29. Provide the city and state on which the data in this section are based:	
30. Daily Avg. Ambient Temperature (°F):	31. Annual Avg. Maximum Temperature (°F):
32. Annual Avg. Minimum Temperature (°F):	33. Avg. Wind Speed (mph):
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):	35. Atmospheric Pressure (psia):
LIQUID INFORMATION	

36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):

38A. Minimum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):
39A. Avg. liquid surface temperature (°F):	39B. Corresponding vapor pressure (psia):
40A. Maximum liquid surface temperature (°F):	40B. Corresponding vapor pressure (psia):
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.	

41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION

1. Bulk Storage Area Name Tanner Compressor Station	2. Tank Name Used Oil Storage Tank
3. Emission Unit ID number T04	4. Emission Point ID number 10E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2005 Was the tank manufactured after August 23, 2011? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* addition of storage vessel to permit	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☒ Yes ☐ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft.)	9B. Tank Internal Height (ft.)
10A. Maximum Liquid Height (ft.)	10B. Average Liquid Height (ft.)
11A. Maximum Vapor Space Height (ft.)	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume".	
13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of tank turnovers per year	15. Maximum tank fill rate (gal/min)
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☐ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☐ Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).									
Material Name	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	

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

TANK CONSTRUCTION AND OPERATION INFORMATION		
21. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)		
21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:
22. Shell Condition (if metal and unlined): ☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)		
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No		
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No		
SITE INFORMATION		
29. Provide the city and state on which the data in this section are based:		
30. Daily Avg. Ambient Temperature (°F):	31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):	33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):	35. Atmospheric Pressure (psia):	
LIQUID INFORMATION		
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):
38A. Minimum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):	39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):	40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.		
41A. Material name and composition:		

41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION

1. Bulk Storage Area Name Tanner Compressor Station	2. Tank Name Antifreeze Tank
3. Emission Unit ID number T05	4. Emission Point ID number 11E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2005 Was the tank manufactured after August 23, 2011? ☐ Yes ☒ No	6. Type of change: ☐ New construction ☐ New stored material ☒ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)* addition of storage vessel to permit	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Was USEPA Tanks simulation software utilized? ☒ Yes ☐ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height.	
9A. Tank Internal Diameter (ft.)	9B. Tank Internal Height (ft.)
10A. Maximum Liquid Height (ft.)	10B. Average Liquid Height (ft.)
11A. Maximum Vapor Space Height (ft.)	11B. Average Vapor Space Height (ft.)
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume".	
13A. Maximum annual throughput (gal/yr)	13B. Maximum daily throughput (gal/day)
14. Number of tank turnovers per year	15. Maximum tank fill rate (gal/min)
16. Tank fill method ☐ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☐ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☐ Fixed Roof ☐ vertical ☐ horizontal ☐ flat roof ☐ cone roof ☐ dome roof ☐ other (describe) ☐ External Floating Roof ☐ pontoon roof ☐ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ☐ vertical column support ☐ self-supporting ☐ Variable Vapor Space ☐ lifter roof ☐ diaphragm ☐ Pressurized ☐ spherical ☐ cylindrical ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☐ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☐ Emergency Relief Valve (psig)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

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

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

TANK CONSTRUCTION AND OPERATION INFORMATION		
21. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☐ Other (describe)		
21A. Shell Color:	21B. Roof Color:	21C. Year Last Painted:
22. Shell Condition (if metal and unlined): ☐ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **Must be listed for tanks using VRUs with closed vent system.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☐ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):
25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☐ Does not apply		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)		
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? ☐ Yes ☐ No		
28. Closed Vent System with Enclosed Combustor? ☐ Yes ☐ No		
SITE INFORMATION		
29. Provide the city and state on which the data in this section are based:		
30. Daily Avg. Ambient Temperature (°F):	31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):	33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):	35. Atmospheric Pressure (psia):	
LIQUID INFORMATION		
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):
38A. Minimum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):	39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):	40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.		

41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

STORAGE TANK DATA TABLE

List all deminimis storage tanks (i.e. lube oil, glycol, diesel etc.)

Source ID #[1]	Status[2]	Content[3]	Volume[4]

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:
   - EXIST Existing Equipment
   - NEW Installation of New Equipment
   - REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, diesel, mercaptan etc.
4. Enter the maximum design storage tank volume in gallons.

TANKER TRUCK LOADING DATA SHEET

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

Truck Loadout Collection Efficiencies

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

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

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

Emission Unit ID#: TL	Emission Point ID#: 12E	Year Installed/Modified: 2005
Emission Unit Description: Emissions from Truck Loading are vented to Atmosphere		
Loading Area Data		
Number of Pumps: 1 / On Truck	Number of Liquids Loaded: 1	Max number of trucks loading at one (1) time: 1
Are tanker trucks pressure tested for leaks at this or any other location? ☐ Yes ☐ No ☒ Not Required If Yes, Please describe:		
Provide description of closed vent system and any bypasses.		
Are any of the following truck loadout systems utilized? ☐ Closed System to tanker truck passing a MACT level annual leak test? ☐ Closed System to tanker truck passing a NSPS level annual leak test? ☐ Closed System to tanker truck not passing an annual leak test and has vapor return?		

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

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

Bulk Liquid Data (use extra pages as necessary)

Liquid Name	Pipeline Liquids		
Max. Daily Throughput (1000 gal/day)	0.42		
Max. Annual Throughput (1000 gal/yr)	153.3		
Loading Method[1]	SUB		
Max. Fill Rate (gal/min)	0.30		
Average Fill Time (min/loading)	60		
Max. Bulk Liquid Temperature (^{o}F)	65.0		

True Vapor Pressure[2]		7.70		
Cargo Vessel Condition[3]		C		
Control Equipment or Method[4]		None		
Max. Collection Efficiency (%)		0		
Max. Control Efficiency (%)		0		
Max.VOC Emission Rate	Loading (lb/hr)	0.07		
	Annual (ton/yr)	0.28		
Max.HAP Emission Rate	Loading (lb/hr)	0.00		
	Annual (ton/yr)	0.00		
Estimation Method[5]		TM		

1	BF	Bottom Fill	SP	Splash Fill		SUB	Submerged Fill
2	At maximum bulk liquid temperature						
3	B	Ballasted Vessel	C	Cleaned	U	Uncleaned (dedicated service)	
	O	Other (describe)					
4	List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)						
	CA	Carbon Adsorption	VB	Dedicated Vapor Balance (closed system)			
	ECD	Enclosed Combustion Device	F	Flare			
	TO	Thermal Oxidization or Incineration					
5	EPA	EPA Emission Factor in AP-42			MB	Material Balance	
	TM	Test Measurement based upon test data submittal			O	Other (describe)	

ATTACHMENT M

NOT APPLICABLE (SEE NOTE)

Note: No air pollution control devices used on equipment at this facility.

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

ATTACHMENT N

SUPPORTING EMISSIONS CALCULATIONS

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Table 1. Annual Potential To Emit (PTE) Summary
Cranberry Pipeline Corporation - Tanner Compressor Station

Criteria Pollutants

Proposed PTE - Criteria Pollutants

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Engines (ton/yr)	0.769	0.769	0.769	0.046	47.876	83.990	17.926	9064.736
Reboiler (ton/yr)	0.024	0.024	0.024	0.002	0.322	0.271	0.018	384.378
Dehydration Unit (ton/yr)	-	-	-	-	-	-	39.653	4219.170
Storage Tanks (ton/yr)	-	-	-	-	-	-	0.994	-
Truck Loading (ton/yr)	-	-	-	-	-	-	0.280	-
Fugitives (ton/yr)	-	-	-	-	-	-	0.157	3.656
Total Emissions (ton/yr)	0.793	0.793	0.793	0.048	48.198	84.260	59.028	13671.940
Total Emissions (lb/hr)	0.181	0.181	0.181	0.011	11.004	19.238	13.477	3121.447

Previous Emission Summary (G35-A105) - Criteria Pollutants

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Engines (ton/yr)	-	-	-	-	47.840	83.920	9.310	-
Reboiler (ton/yr)	-	-	-	-	0.320	0.270	0.020	-
Dehydration Unit (ton/yr)	-	-	-	-	-	-	15.940	-
Storage Tanks (ton/yr)	-	-	-	-	-	-	-	-
Truck Loading (ton/yr)	-	-	-	-	-	-	-	-
Fugitives (ton/yr)	-	-	-	-	-	-	-	-
Total Emissions (ton/yr)	0.000	0.000	0.000	0.000	48.160	84.190	25.270	0.000
Total Emissions (lb/hr)	0.000	0.000	0.000	0.000	10.995	19.221	5.769	0.000

Proposed Difference of Emissions - Criteria Pollutants

	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Total Emissions (ton/yr)	0.793	0.793	0.793	0.048	0.038	0.070	33.758	13671.940

Hazardous Air Pollutants (HAPs)

Proposed PTE - HAPs

Source	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Engines (ton/yr)	0.034	0.032	0.003	0.014	0.086	4.094	5.617
Reboiler (ton/yr)	0.000	0.000	-	-	-	0.000	0.000
Dehydration Unit (ton/yr) [(1)]	1.944	3.228	4.548	5.364	0.179	-	15.263
Storage Tanks (ton/yr)	-	-	-	-	-	-	-
Truck Loading (ton/yr)	-	-	-	-	-	-	-
Fugitives (ton/yr)	0.000	0.000	0.000	0.000	-	-	0.001
Total Emissions (ton/yr)	1.978	3.260	4.551	5.378	0.265	4.094	20.881
Total Emissions (lb/hr)	0.452	0.744	1.039	1.228	0.061	0.935	4.767

Previous Emission Summary (G35-A105) - HAPs

Source	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Engines (ton/yr)	-	-	-	-	-	4.180	4.180
Reboiler (ton/yr)	-	-	-	-	-	-	-
Dehydration Unit (ton/yr)	1.620	2.690	3.790	4.470	0.060	-	12.630
Storage Tanks (ton/yr)	-	-	-	-	-	-	-
Truck Loading (ton/yr)	-	-	-	-	-	-	-
Fugitives (ton/yr)	-	-	-	-	-	-	-
Total Emissions (ton/yr)	1.620	2.690	3.790	4.470	0.060	4.180	16.810
Total Emissions (lb/hr)	0.370	0.614	0.865	1.021	0.014	0.954	3.838

Proposed Difference of Emissions - HAPs

	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Total Emissions (ton/yr)	0.358	0.570	0.761	0.908	0.205	-0.086	4.071

Table 2. Natural Gas-Fired Compressor Emissions WS 6GTLB (CE-1 through CE-3)
Cranberry Pipeline Corporation - Tanner Compressor Station

Pollutant	Emission Factor			PTE per Engine (lb/hr)	PTE per Engine [(a)] (tons/yr)	PTE x 3 (tons/yr)
Criteria Pollutants						
PM/PM10/PM2.5	9.91E-03	lb/MMBtu	(2)	0.058	0.256	0.768
SO_2	5.88E-04	lb/MMBtu	(2)	0.003	0.015	0.046
NOx	2.00E+00	g/hp-hr	(1)	3.638	15.93	47.80
CO	3.50E+00	g/hp-hr	(1)	6.366	27.88	83.65
VOC	7.50E-01	g/hp-hr	(1)	1.364	5.975	17.92
Hazardous Air Pollutants						
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	(2)	0.000	0.001	0.003
1,1,2-Trichloroethane	3.18E-04	lb/MMBtu	(2)	0.002	0.008	0.025
1,3-Butadiene	2.67E-04	lb/MMBtu	(2)	0.002	0.007	0.021
1,3-Dichloropropene	2.64E-05	lb/MMBtu	(2)	0.000	0.001	0.002
2-Methylnaphthalene	3.32E-05	lb/MMBtu	(2)	0.000	0.001	0.003
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	(2)	0.001	0.006	0.019
Acetaldehyde	8.36E-03	lb/MMBtu	(2)	0.049	0.216	0.648
Acrolein	5.14E-03	lb/MMBtu	(2)	0.030	0.133	0.398
Benzene	4.40E-04	lb/MMBtu	(2)	0.003	0.011	0.034
Biphenyl	2.12E-04	lb/MMBtu	(2)	0.001	0.005	0.016
Carbon Tetrachloride	3.67E-05	lb/MMBtu	(2)	0.000	0.001	0.003
Chlorobenzene	3.04E-05	lb/MMBtu	(2)	0.000	0.001	0.002
Chloroform	2.85E-05	lb/MMBtu	(2)	0.000	0.001	0.002
Ethylbenzene	3.97E-05	lb/MMBtu	(2)	0.000	0.001	0.003
Ethylene Dibromide	4.43E-05	lb/MMBtu	(2)	0.000	0.001	0.003
Formaldehyde	5.28E-02	lb/MMBtu*	(2)	0.311	1.364	4.093
Methanol	2.50E-03	lb/MMBtu	(2)	0.015	0.065	0.194
Methylene Chloride	2.00E-05	lb/MMBtu	(2)	0.000	0.001	0.002
n-Hexane	1.11E-03	lb/MMBtu	(2)	0.007	0.029	0.086
Naphthalene	7.44E-05	lb/MMBtu	(2)	0.000	0.002	0.006
PAH (POM)	2.69E-05	lb/MMBtu	(2)	0.000	0.001	0.002
Phenol	2.40E-05	lb/MMBtu	(2)	0.000	0.001	0.002
Styrene	2.36E-05	lb/MMBtu	(2)	0.000	0.001	0.002
Toluene	4.08E-04	lb/MMBtu	(2)	0.002	0.011	0.032
Vinyl Chloride	1.49E-05	lb/MMBtu	(2)	0.000	0.000	0.001
Xylenes	1.84E-04	lb/MMBtu	(2)	0.001	0.005	0.014
Total HAPs				**0.427**	**1.872**	**5.616**
Greenhouse Gas Emissions						
CO_2	116.89	lb/MMBtu	(3)	6.89E+02	3.02E+03	9.06E+03
CH_4	2.2E-03	lb/MMBtu	(3)	1.30E-02	5.70E-02	1.71E-01
N_2O	2.2E-04	lb/MMBtu	(3)	1.30E-03	5.70E-03	1.71E-02
CO_2e [(b)]	-	-		690.21	3023.13	9058.71

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/HP-hr)]x[Power Output (HP)] x [Hours of Operation (hrs/yr)] x [Number of engines]x[1.10231131x10^-6(ton/gram)]

(b) Annual emissions (tons/yr) = [Emission Factor (lbs/MMBtu)] x Brake Specific Fuel Consumption (BTU/HP-hr)] x Power Output (HP)] x [Number of engines] x [8760 (hrs/yr)] x [1 ton/2000 lbs)

Engine Power Output (kW) =	615	
Engine Power Output (hp) =	825	
Number of Engines Operating at a Time =	1	
Average BSFC (BTU/HP-hr) =	7,150	(4)
Heat Content Natural Gas(Btu/scf) =	1,020.0	(5)
Fuel Throughput (ft3/hr) =	5,783.1	(6)
PTE Hours of Operation =	8,760	

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

CO_2	1	(7)
CH_4	25	(7)
N_2O	298	(7)

Notes:

(1) Emission factors from White Superior 6G825 spec sheet

(2) AP-42, Chapter 3.2, Table 3.2-2. *Natural Gas-fired Reciprocating Engines* (7/00). Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines.

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

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

(5) Value obtained from AP-42, Chapter 3.2, Table 3.2-1, footnote b

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

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

Table 3. Emergency Generator Generac CGNXB 9992ST (CE-4)
Cranberry Pipeline Corporation - Tanner Compressor Station

Pollutant	Emission Factor			PTE (lb/hr)	PTE [(a)] (tons/yr)
Criteria Pollutants					
PM/PM10/PM2.5	9.50E-03	lb/MMBtu	(2)	0.002	0.000
SO_2	5.88E-04	lb/MMBtu	(2)	0.000	0.000
NOx	5.08	g/hp-hr	(1)	0.314	0.078
CO	22.30	g/hp-hr	(1)	1.377	0.344
VOC	2.96E-02	lb/MMBtu	(1)	0.006	0.002
Hazardous Air Pollutants					
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	(2)	0.000	0.000
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	(2)	0.000	0.000
1,3-Butadiene	6.63E-04	lb/MMBtu	(2)	0.000	0.000
1,3-Dichloropropene	1.27E-05	lb/MMBtu	(2)	0.000	0.000
Acetaldehyde	2.79E-03	lb/MMBtu	(2)	0.001	0.000
Acrolein	2.63E-03	lb/MMBtu	(2)	0.001	0.000
Benzene	1.58E-03	lb/MMBtu	(2)	0.000	0.000
Carbon Tetrachloride	1.77E-05	lb/MMBtu	(2)	0.000	0.000
Chlorobenzene	1.29E-05	lb/MMBtu	(2)	0.000	0.000
Chloroform	1.37E-05	lb/MMBtu	(2)	0.000	0.000
Ethylbenzene	2.48E-05	lb/MMBtu	(2)	0.000	0.000
Ethylene Dibromide	2.13E-05	lb/MMBtu	(2)	0.000	0.000
Formaldehyde	2.05E-02	lb/MMBtu*	(2)	0.004	0.001
Methanol	3.06E-03	lb/MMBtu	(2)	0.001	0.000
Methylene Chloride	4.12E-05	lb/MMBtu	(2)	0.000	0.000
Naphthalene	9.71E-05	lb/MMBtu	(2)	0.000	0.000
PAH (POM)	1.41E-04	lb/MMBtu	(2)	0.000	0.000
Styrene	1.19E-05	lb/MMBtu	(2)	0.000	0.000
Toluene	5.58E-04	lb/MMBtu	(2)	0.000	0.000
Vinyl Chloride	7.18E-06	lb/MMBtu	(2)	0.000	0.000
Xylenes	1.95E-04	lb/MMBtu	(2)	0.000	0.000
Total HAPs				**0.000**	**0.002**
Greenhouse Gas Emissions					
CO_2	116.89	lb/MMBtu	(3)	2.41E+01	6.02E+00
CH_4	2.2E-03	lb/MMBtu	(3)	4.54E-04	1.14E-04
N_2O	2.2E-04	lb/MMBtu	(3)	4.54E-05	1.14E-05
CO_2e [(b)]	-	-		1.38	6.03

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

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

(b) Annual emissions (tons/yr) = [Emission Factor (lbs/MMBtu)] x Brake Specific Fuel Consumption (BTU/HP-hr)] x Power Output (HP)] x [Number of engines] x [8760 (hrs/yr)] x [1 ton/2000 lbs)

Engine Power Output (kW) =	21	
Engine Power Output (hp) =	28	
Number of Engines Operating at a Time =	1	
Average BSFC (BTU/HP-hr) =	7,360	(4)
Heat Content Natural Gas(Btu/scf) =	1,020.0	(5)
Fuel Throughput (ft3/hr) =	202.0	(6)
PTE Hours of Operation =	500	

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

CO_2	1	(7)
CH_4	25	(7)
N_2O	298	(7)

Notes:

(1) Emission factors from manufacturer's spec sheet

(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.

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

(5) Value obtained from AP-42, Chapter 3.2, Table 3.2-3, footnote b

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

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

Table 4. Reboiler Rates and Emissions (RBV-1)
Cranberry Pipeline Corporation - Tanner Compressor Station

Pollutant	Emission Factor			Emissions (lb/hr)	Emissions (tons/year)
Criteria Pollutants					
PM/PM10/PM2.5	7.6	lb/MMcf	(1)	0.01	0.02
SO_2	0.6	lb/MMcf	(1)	0.00	0.00
NOx	100	lb/MMcf	(2)	0.07	0.32
CO	84	lb/MMcf	(2)	0.06	0.27
VOC	5.5	lb/MMcf	(1)	0.00	0.02
Hazardous Air Pollutants					
Arsenic	2.0E-04	lb/MMcf	(3)	1.47E-07	6.44E-07
Benzene	2.1E-03	lb/MMcf	(4)	1.54E-06	6.76E-06
Beryllium	1.2E-05	lb/MMcf	(3)	8.82E-09	3.86E-08
Cadmium	1.1E-03	lb/MMcf	(3)	8.09E-07	3.54E-06
Chromium	1.4E-03	lb/MMcf	(3)	1.03E-06	4.51E-06
Cobalt	8.4E-05	lb/MMcf	(3)	6.18E-08	2.71E-07
Dichlorobenzene	1.2E-03	lb/MMcf	(4)	8.82E-07	3.86E-06
Formaldehyde	7.5E-02	lb/MMcf	(4)	5.51E-05	2.42E-04
Hexane	1.8E+00	lb/MMcf	(4)	1.32E-03	5.80E-03
Lead	5.0E-04	lb/MMcf	(3)	3.68E-07	1.61E-06
Manganese	3.8E-04	lb/MMcf	(3)	2.79E-07	1.22E-06
Mercury	2.6E-04	lb/MMcf	(3)	1.91E-07	8.37E-07
Naphthalene	6.1E-04	lb/MMcf	(4)	4.49E-07	1.96E-06
Nickel	2.1E-03	lb/MMcf	(3)	1.54E-06	6.76E-06
PAH/POM	1.3E-03	lb/MMcf	(4)	9.47E-07	4.15E-06
Selenium	2.4E-05	lb/MMcf	(3)	1.76E-08	7.73E-08
Toluene	3.4E-03	lb/MMcf	(4)	2.50E-06	1.10E-05
Total HAP	**1.9E+00**	**lb/MMCF**		1.39E-03	6.09E-03
Greenhouse Gas Emissions					
CO_2	116.89	lb/MMBtu	(5)	**87.67**	**383.981**
CH_4	2.2E-03	lb/MMBtu	(5)	**1.65E-03**	**7.24E-03**
N_2O	2.20E-04	lb/MMBtu	(5)	**1.65E-04**	**7.24E-04**
CO_2e[(b)]	-	-		**87.76**	**384.378**
Total				**87.815**	**384.631**

Calculations:

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

Number Reboilers 1
Fuel Use (MMBtu/hr) = 0.75
Hours of Operation (hr/yr)= 8760
PTE Fuel Use (MMcf/yr) = 6.4 (7)

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

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

Notes:

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

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

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

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

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

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

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

Table 5. Dehydration Unit Still Vent Emissions (RSV-1)
Cranberry Pipeline Corporation - Tanner Compressor Station

Pollutant	Newly Calculated Emissions[1]			Currently Permitted Emissions[2]		Proposed Emission Limits[3]		Proposed Emission Limits w/ Buffer[4]	
	PTE (lb/hr)	PTE (lb/day)	PTE (tons/yr)	PTE (lb/hr)	PTE (tons/yr)	PTE (lb/hr)	PTE[3] (tons/yr)	PTE (lb/hr)	PTE[3] (tons/yr)
Criteria Pollutants									
VOC	7.5444	181.0652	33.0444	3.639	15.940	7.544	33.044	9.053	39.653
Hazardous Air Pollutants									
Benzene	0.2277	5.4658	0.9975	0.370	1.620	0.370	1.620	0.444	1.944
Toluene	0.3863	9.2718	1.6921	0.614	2.690	0.614	2.690	0.737	3.228
Ethylbenzene	0.5770	13.8477	2.5272	0.865	3.790	0.865	3.790	1.038	4.548
Xylenes	0.7174	17.2170	3.1421	1.021	4.470	1.021	4.470	1.225	5.364
n-Hexane	0.0341	0.8181	0.1493	0.014	0.060	0.034	0.149	0.041	0.179
Total HAP	1.9425	46.6203	8.5082	2.884	12.630	2.904	12.719	3.485	15.263
Greenhouse Gas Emissions									
CO_2			-						
CH_4	38.5312	924.7496	168.7668						
N_2O	-	-	-						
CO_2e[a]	963.28	23118.74	4219.17						

Calculations:

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

Global Warming Potential (GWP)

CO_2	1	(5)
CH_4	25	(5)
N_2O	298	(5)

Notes:

(1) Emissions Calculated utilizing GRI-GLYCalc and reflect the uncontrolled regenerator emissions

(2) PTE emissions from previously issued General Permit G35-A105

(3) PTE emissions composite of highest emission rate from newly calculated emissions and previously issued permit

(4) PTE emissions account for a 20% buffer due to gas variability

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

Table 6. Tank Emissions
Cranberry Pipeline Corporation - Tanner Compressor Station

Emission Unit ID	Tank Capacity (gal)	Tank Contents	Control Devices	Tank Throughput (bbls/day)	VOC Emission Factor (lbs/bbls)		VOC Emissions (lbs/yr)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)
T01	1000	Pipeline Liquids	None	5.00	0.35	(1)	993.45	0.113	0.497
T02	1000	Pipeline Liquids	None	5.00	0.35	(1)	993.45	0.113	0.497
T03	2000	New Oil	None	0.65	0.004	(2)	1.01	1.15E-04	5.05E-04
T04	1000	Used Oil	None	0.33	0.003	(2)	0.34	3.88E-05	1.70E-04
T05	250	Antifreeze	None	0.07	0.000	(2)	0.00	0.00E+00	0.00E+00
Total VOC Emissions**							**1988.25**	**0.23**	**0.99**

Calculations:

Notes:

(1) VOC emission factor includes Flashing/Working/Breathing losses calculated from pressurized liquid sample taken by FESCO and modeled using E+P Tanks 2.0. The sample was taken from the Putnam B6 site on 4-25-13 and is assumed to be representative worst case with respect to Tanner

(2) VOC emission factor includes Working/Breathing losses as calculated from TANKS 4.0.9.d

** Based on Putnam B-6 Tank Study, Total HAP emissions were found to be less than 0.01 tons per year. The highest emissions from any individual HAP was from n-Hexane where emissions were 0.004 tons per year

Table 7. Fugitive Leak Emissions
Cranberry Pipeline Corporation - Tanner Compressor Station

Pollutant	Emission Factor			PTE[(a)] Gas Service (tons/yr)
Valves	9.9E-03	lb/hr/source	(1)	3.08
Low Bleed Pneumatic Valves	9.9E-03	lb/hr/source	(1)	1.56
Flanges	8.6E-04	lb/hr/source	(1)	1.13
Connector	4.4E-04	lb/hr/source	(1)	0.58
Other Points in Gas Service	1.9E-02	lb/hr/source	(1)	1.50
Total Gas Released	-	-		7.86
Total **VOC** Released (gas service)			(b)	**0.16**
Total **Benzene** Released (gas service)			(2)	**0.00**
Total **Toluene** Released (gas service)			(2)	**0.00**
Total **Ethylbenzene** Released (gas service)			(2)	**0.00**
Total **Xylene** Released (gas service)			(2)	**0.00**
Calculations:			**CO2e**	**3.66**

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

(b) Gas sample from Tanner gas analysis as worst case at 2 wt % VOC

Number of Components in Gas Service

Valves=	71	(3)
Low Bleed Pneumatic Valves=	36	(3)
Connectors=	301	(3)
Other Points in Gas Service =	8	(3)
Maximum Hour of Operation =	8,760	

Global Warming Potential (GWP)

CO_2	1	(4)
CH_4	25	(4)
N_2O	298	(4)

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

(2) Wt % for individual HAP taken from Tanner Station gas analysis performed by Southern Petroleum Laboratories 02/13

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

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

Table 8. Truck Loading (TL) VOC Emissions
Cranberry Pipeline Corporation - Tanner Compressor Station

Contents	Volume Transferred [3]	Loading Loss [(a)] (lb VOC/1000gal)	PTE VOC Emissions (lb/hr)	PTE VOC Emissions (ton/yr) [(b)]
Pipeline Liquids	153,300 gal/yr	3.659	0.064	0.280
Total			**0.064**	**0.280**

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/lbmole)]/ [Temperature of Bulk Liquid Loaded(°R)]

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

	Pipeline liquids	
Saturation factor	0.60	Note [(1)]
Pvap (psia)	7.70	Note [(2)]
Molecular Weight Vap (lb/lbmol)	33.37	Note [(2)]
Bulk Liquid Tempurature (F)	65.00	Note [(2)]

Notes:

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

(2) Putnam B6 Compressor Station Pressurized Separator Sampling and Emission Estimation Report, August 2013

(3) Annual rates based on maximum throughput of 5 bbls/d

SUPERIOR

CleanBurn™ II Gas Engine Model 6GTLB

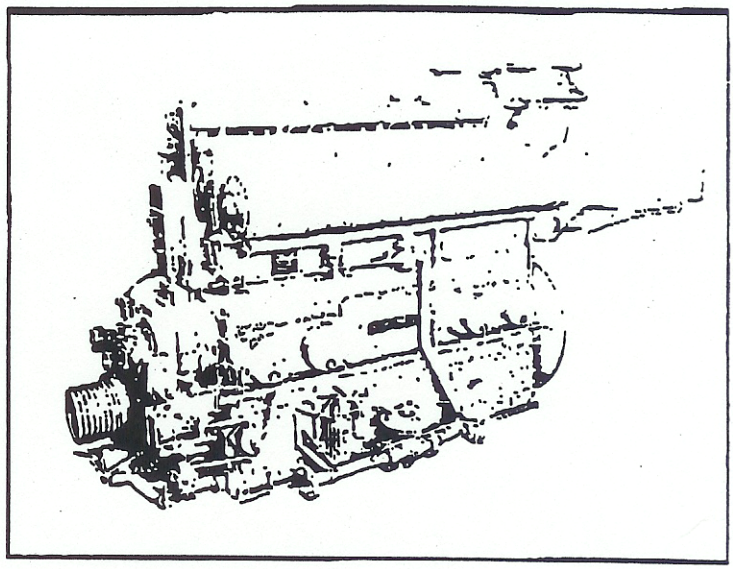
Standard Equipment

- **Air Intake Connection:** 12"-150# inlet flange.
- **Bearings:** Heavy duty precision trimetal, adapted for bearing temperature sensors.
- **Cylinder Heads:** Individual, "prechambered" with pilot check valve, water cooled with one intake and one exhaust valve per head, stellite faced valves and valve inserts.
- **Cylinder Block:** With removable wet cylinder liners.
- **Connecting Rods:** Forged steel, H-section, rifle drilled, machined for bearing temperature sensors.
- **Controls:** Electronic air/fuel panel controls engine mounted exhaust wastegate valve, pneumatic starting logic controls engine mounted start and run fuel valve.
- **Cooler, Lube Oil:** Shell and tube type, mounted and piped.
- **Crankcase Doors:** Pressure relief doors (Bicera type).
- **Crankshaft:** Bedded, forged steel, counterweighted, dynamically balanced.

  Engine Bed: Heavy duty, deeply ribbed.

  Exhaust Manifold: Dry type, insulation blanketed.
- **Filter, Lube Oil:** Full flow off engine.
- **Flywheel:** With ring gear and barring holes.
- **Fuel System:** Fuel injected with electronic air-fuel control.
- **Governor:** Hydraulic UG8L with manual speed setting.
- **Ignition:** High energy capacitor discharge Altronic III, non-shielded primary and secondary with electronic ignition advance.
- **Intercooler:** Rectangular, fin type, separate water system, 3" water connections with companion flanges, thermostat unmounted.
- **Pistons:** Oil cooled, cast iron, 6 ring design.
- **Pumps:** Jacket Water; built-in centrifugal, belt driven, 4"-150# inlet flange.
  Lube Oil; gear type with pressure regulating valve.
  Prelube; manual, mounted and piped.
- **Sheave, Crankshaft:** 6 "C" section and 2 "B" section grooves.
- **Shutdowns:** Overspeed; electronic with automatic reset.
  Turbine inlet temperature; (relays in pyrometer).
- **Starter Motor:** One air/gas starter motor, with strainer, lubricator, quick opening valve and brackets, engine mounted.
- **Thermocouples/Temperature Monitoring:** 50 ft. leads, type 'J' — individual cylinder exhaust thermocouples, turbocharger inlet and final exhaust thermocouples, unmounted magneto powered digital pyrometer.
- **Thermometers, Oil and Jacket Water:** In and out, (4) dial type.

  Thermostat, Jacket Water: With full flow bypass, 4" inlet connections, unmounted.
- **Turbocharger:** High capacity, exhaust driven, 14"-150# outlet flange.
- **Optional Equipment:** Available upon request.



Specifications — (Full Load Data)

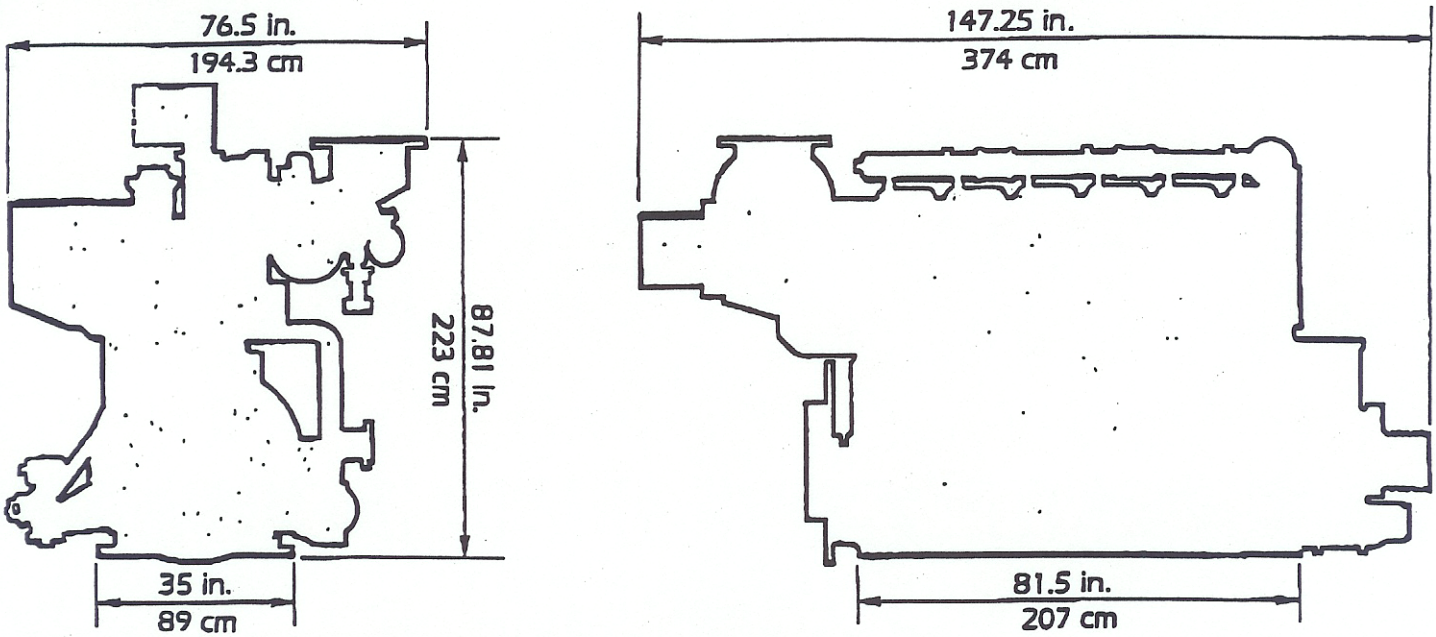
4-Stroke Cycle, Turbocharged, Intercooled, Fuel Injected

Configuration & no. of cylinders		Inline 6
Bore/Stroke	in.	10x10-1/2
Displacement	cu. in.	4948
BMEP	psi	146.7
Compression Ratio		8.20 : 1
BSFC @ 900 rpm	Btu/bhp-hr	7150
Speed — rated/range	rpm	900/600-900
Torque — constant over range	ft. lbs.	4814
Piston speed @ 900 rpm	fpm	1575
Power @ 900 rpm	bhp (kW)	825 (615)
Fuel gas pressure	psig	35 - 40
Starting air pressure	psig	150
Engine air flow requirement	scfm	1885
Air intake pressure drop-max.	in. H_2O	10
Exhaust flow	lbs./min.	149
Exhaust temp.	°F	1080
Exhaust back pressure-max.	in. H_2O	10
Heat rejection — jacket water	Btu/min.[1]	12500
Heat rejection — lube oil & intercooler	Btu/min.[2]	8350
Lube oil system — engine only	gal.	65
Lube oil flow thru filter	gpm	35
Cooling water system	gal.	50
Jacket water pump flow	gpm	275
Intercooler water pump flow	gpm	100
Engine weight — dry (approx)	lbs.	20000
Rotation — from flywheel end		counter-clockwise

[1] Given 180° F jacket water out of engine.
[2] 120° F water to engine required.

Model 6GTLB

Dimensions:



Note: Above dimensions are approximate and not to be used for construction purposes.

Performance Data (full load):

RPM	BHP (kW)	Fuel Consumption (BTU/BHP-HR)	*Emissions (TONS/YEAR)		
		BSFC	NO_X	CO	**NMHC
900	825 (615)	7150	15.9	27.9	6.0
750	688 (513)	7050	13.3	19.9	5.0
600	550 (410)	7400	21.2	18.1	4.0

*Exhaust Emissions-full load & speed (gm/bhp-hr) NO_X 2.0, CO 3.5, NMHC 0.75
**Denotes non-methane hydrocarbons

Conversions:

Torque (ft/lbs) = $\frac{5252 \times \text{bhp}}{\text{rpm}}$

BMEP (psi) = $\frac{\text{Torque} \times 150.8}{824.67 \times (\#\text{ of Cyls.})}$

Emissions (gms/bhp-hr) = $\frac{103.6 \times \text{tpy}}{\text{bhp}}$

Qualifying Conditions: Emissions & BSFC

- Ratings based on 130°F air manifold temperature.
- For NO_X requirements less than those expressed above, trade-offs between NO_X and BSFC will be evaluated on a specific case basis.
- Emissions are based on pipeline quality gas — i.e., LHV = 900 BTU/ft³ ± 15% and CH_4 content greater than 90%.

Rating Conditions:

- Superior engines are rated per DEMA standards; i.e., continuous-duty, full load operation w/10% overload for 2 hours maximum in any 24 hour period.
- Ratings are based on pipeline quality gas. Performance may vary depending on fuel composition.
- Consult Superior for ratings above 4000' elevation or 100°F.

Note: Standard equipment, specifications and data are subject to change without notice.

SUPERIOR

Cooper Industries
Ajax-Superior Division
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Cooper Energy Services

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MANUFACTURER DATA SHEET

GENERAC®

2013 Home Standby Emissions Information (Air Cooled)

Model Home Standby	kW_E Rating	Fuel	Engine Size cc	EPA Engine Family	EPA Certificate # (*1)	Values in grams / bhp-hr. THC	N0x	CO	BHP
8 kW	7	Nat Gas	407	DGNXS.4072DB	DGNXS.4072DB-001	3.75	0.45	317.3	8.55
8 kW	8	Propane	407	DGNXS.4072DB	DGNXS.4072DB-001	1.57	1.86	168.4	10.67
10 kW	9	Nat Gas	530	DGNXS.5302DC	DGNXS.5302DC-006	2.93	1.88	43.5	13.18
10 kW	10	Propane	530	DGNXS.5302DC	DGNXS.5302DC-006	1.80	1.91	79.8	14.28
14 kW	14	Nat Gas	992	DGNXB.9992ST	DGNXB.9992ST-018	0.84	5.68	18.6	22.36
14 kW	14	Propane	992	DGNXB.9992SL	DGNXB.9992SL-017	0.81	6.76	51.2	22.20
17 kW	17	Nat Gas	992	DGNXB.9992ST	DGNXB.9992ST-018	0.85	6.01	23.1	25.04
17 kW	17	Propane	992	DGNXB.9992SL	DGNXB.9992SL-017	0.98	6.13	81.1	26.80
20 kW	18	Nat Gas	999	DGNXB.9992ST	DGNXB.9992ST-018	0.84	5.08	22.3	27.67
20 kW	20	Propane	999	DGNXB.9992SL	DGNXB.9992SL-017	0.80	5.84	58.0	30.52

Effective in 2009, the EPA has implemented exhaust emissions regulations on stationary spark-ignited gaseous engine generators for emergency applications. All Generac spark ignited gensets meet the requirements of 40 CFR part 60 subpart JJJJ and are EPA certified.

Actual exhaust emission data for Total Hydrocarbons (THC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) that were submitted to EPA and are official data of record for certification. This data can be used for permitting if necessary. The information provided here is proprietary to Generac and its' authorized dealers. This information may only be disseminated upon request, to regulatory governmental bodies for emissions permitting purposes or to specifying organizations as submittal data when expressly required by project specifications, and shall remain confidential and not open to public viewing.

The information in not intended for compilation or sales purposes and may not be used as such, nor may it be reproduced without the expressed written permission of Generac Power Systems, Inc.

The stated values are actual exhaust emission test measurements obtained from units representative of the generator types and engines described.

Values are official data of record as submitted to the EPA for certification purposes. Testing was conducted in accordance with prevailing EPA protocols, which are typically accepted by SCAQMD and other regional authorities.

No emission values provided are to be construed as guarantees of emission levels for any given Generac generator unit.

Generac Power Systems reserves the right to revise this information without prior notice.

Consult state and local regulatory agencies for specific permitting requirements.

The emissions performance data supplied by the equipment manufacturer is only one element required toward completion of the permitting and installation process. State and local regulation may vary on a case by case basis and must be consulted by the permit applicant or equipment owner prior to equipment purchase or installation.

The data supplied herein by Genera Power Systems cannot be construed as guarantee of install- ability of the generator set.

load point.

The emission values provide are not to be construed as emission limits.

*1 All the listed units can be sold in California, SCAQMD and CARB certification are not required. | 1/2013 | Rev 0

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Tanner Compressor Station
File Name: N:\West Virginia\Cabot\Projects\2015\Air Permits\Tanner Station\Jan_2016 Update\GlyCalc\GLYCalc Tanner PTE R13_2016.ddf
Date: January 12, 2016

DESCRIPTION:

Description: PTE for Rule 13 Permit Application

Sample Taken on 4/22/2015

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 86.40 deg. F
Pressure: 693.07 psig
Wet Gas Water Content: Saturated

Component	Conc. (vol %)
Carbon Dioxide	0.0695
Nitrogen	0.9319
Methane	97.1809
Ethane	1.4730
Propane	0.0793
Isobutane	0.0092
n-Butane	0.0187
Isopentane	0.0009
n-Pentane	0.0009
Cyclopentane	0.0009
n-Hexane	0.0035
Cyclohexane	0.0019
Other Hexanes	0.0062
Heptanes	0.0134
Methylcyclohexane	0.0063
2,2,4-Trimethylpentane	0.0009
Benzene	0.0009
Toluene	0.0009
Ethylbenzene	0.0009
Xylenes	0.0009
C8+ Heavies	0.0389

DRY GAS:

Flow Rate: 13.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.5 wt% H2O
Flow Rate: 3.5 gpm

PUMP:

Glycol Pump Type: Gas Injection
Gas Injection Pump Volume Ratio: 0.080 acfm gas/gpm glycol

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Tanner Compressor Station
File Name: N:\West Virginia\Cabot\Projects\2015\Air Permits\Tanner Station\Jan_2016 Update\GlyCalc\GLYCalc Tanner PTE R13_2016.ddf
Date: January 12, 2016

DESCRIPTION:

Description: PTE for Rule 13 Permit Application

Sample Taken on 4/22/2015

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	38.5312	924.750	168.7668
Ethane	1.4297	34.312	6.2620
Propane	0.1409	3.381	0.6169
Isobutane	0.0264	0.633	0.1155
n-Butane	0.0637	1.529	0.2790
Isopentane	0.0040	0.095	0.0173
n-Pentane	0.0048	0.114	0.0208
Cyclopentane	0.0154	0.369	0.0673
n-Hexane	0.0341	0.818	0.1493
Cyclohexane	0.0682	1.636	0.2985
Other Hexanes	0.0482	1.156	0.2111
Heptanes	0.2709	6.502	1.1866
Methylcyclohexane	0.3045	7.309	1.3338
2,2,4-Trimethylpentane	0.0101	0.243	0.0444
Benzene	0.2277	5.466	0.9975
Toluene	0.3863	9.272	1.6921
Ethylbenzene	0.5770	13.848	2.5272
Xylenes	0.7174	17.217	3.1421
C8+ Heavies	4.6450	111.479	20.3449
Total Emissions	47.5053	1140.127	208.0732
Total Hydrocarbon Emissions	47.5053	1140.127	208.0732
Total VOC Emissions	7.5444	181.065	33.0444
Total HAP Emissions	1.9527	46.864	8.5526
Total BTEX Emissions	1.9084	45.802	8.3589

EQUIPMENT REPORTS:

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25

and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages:	1.25	
Calculated Dry Gas Dew Point:	2.21	lbs. H2O/MMSCF
Temperature:	86.4	deg. F
Pressure:	693.1	psig
Dry Gas Flow Rate:	13.0000	MMSCF/day
Glycol Losses with Dry Gas:	0.0509	lb/hr
Wet Gas Water Content:	Saturated	
Calculated Wet Gas Water Content:	50.96	lbs. H2O/MMSCF
Calculated Lean Glycol Recirc. Ratio:	7.95	gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	4.34%	95.66%
Carbon Dioxide	99.68%	0.32%
Nitrogen	99.98%	0.02%
Methane	99.98%	0.02%
Ethane	99.93%	0.07%
Propane	99.87%	0.13%
Isobutane	99.81%	0.19%
n-Butane	99.74%	0.26%
Isopentane	99.73%	0.27%
n-Pentane	99.64%	0.36%
Cyclopentane	98.45%	1.55%
n-Hexane	99.36%	0.64%
Cyclohexane	97.17%	2.83%
Other Hexanes	99.52%	0.48%
Heptanes	98.74%	1.26%
Methylcyclohexane	96.71%	3.29%
2,2,4-Trimethylpentane	99.46%	0.54%
Benzene	77.50%	22.50%
Toluene	67.58%	32.42%
Ethylbenzene	57.93%	42.07%
Xylenes	47.65%	52.35%
C8+ Heavies	95.25%	4.75%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	52.73%	47.27%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.32%	99.68%
n-Pentane	0.35%	99.65%
Cyclopentane	0.46%	99.54%
n-Hexane	0.40%	99.60%
Cyclohexane	3.04%	96.96%
Other Hexanes	0.76%	99.24%
Heptanes	0.45%	99.55%

Methylcyclohexane	3.83%	96.17%
2,2,4-Trimethylpentane	1.17%	98.83%
Benzene	4.97%	95.03%
Toluene	7.87%	92.13%
Ethylbenzene	10.37%	89.63%
Xylenes	12.87%	87.13%
C8+ Heavies	11.69%	88.31%

STREAM REPORTS:

WET GAS STREAM

Temperature: 86.40 deg. F
Pressure: 707.77 psia
Flow Rate: 5.42e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	1.07e-001	2.76e+001
Carbon Dioxide	6.95e-002	4.37e+001
Nitrogen	9.32e-001	3.73e+002
Methane	9.72e+001	2.23e+004
Ethane	1.47e+000	6.33e+002
Propane	7.93e-002	5.00e+001
Isobutane	9.20e-003	7.65e+000
n-Butane	1.87e-002	1.55e+001
Isopentane	9.00e-004	9.29e-001
n-Pentane	9.00e-004	9.29e-001
Cyclopentane	9.00e-004	9.03e-001
n-Hexane	3.50e-003	4.31e+000
Cyclohexane	1.90e-003	2.29e+000
Other Hexanes	6.20e-003	7.64e+000
Heptanes	1.34e-002	1.92e+001
Methylcyclohexane	6.30e-003	8.85e+000
2,2,4-Trimethylpentane	9.00e-004	1.47e+000
Benzene	9.00e-004	1.01e+000
Toluene	9.00e-004	1.19e+000
Ethylbenzene	9.00e-004	1.37e+000
Xylenes	9.00e-004	1.37e+000
C8+ Heavies	3.89e-002	9.48e+001
Total Components	100.00	2.36e+004

DRY GAS STREAM

Temperature: 86.40 deg. F
Pressure: 707.77 psia
Flow Rate: 5.42e+005 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.67e-003	1.20e+000
Carbon Dioxide	6.94e-002	4.36e+001
Nitrogen	9.33e-001	3.73e+002

Methane	9.73e+001	2.23e+004
Ethane	1.47e+000	6.33e+002
Propane	7.93e-002	5.00e+001
Isobutane	9.20e-003	7.63e+000
n-Butane	1.87e-002	1.55e+001
Isopentane	8.99e-004	9.26e-001
n-Pentane	8.98e-004	9.25e-001
Cyclopentane	8.88e-004	8.89e-001
n-Hexane	3.48e-003	4.29e+000
Cyclohexane	1.85e-003	2.22e+000
Other Hexanes	6.18e-003	7.61e+000
Heptanes	1.33e-002	1.90e+001
Methylcyclohexane	6.10e-003	8.56e+000
2,2,4-Trimethylpentane	8.97e-004	1.46e+000
Benzene	6.99e-004	7.79e-001
Toluene	6.09e-004	8.01e-001
Ethylbenzene	5.22e-004	7.92e-001
Xylenes	4.30e-004	6.51e-001
C8+ Heavies	3.71e-002	9.03e+001
Total Components	100.00	2.36e+004

LEAN GLYCOL STREAM

Temperature: 86.40 deg. F
Flow Rate: 3.50e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.85e+001	1.94e+003
Water	1.50e+000	2.95e+001
Carbon Dioxide	7.03e-013	1.38e-011
Nitrogen	4.29e-013	8.46e-012
Methane	7.97e-018	1.57e-016
Ethane	1.12e-008	2.21e-007
Propane	1.34e-010	2.64e-009
Isobutane	2.25e-011	4.43e-010
n-Butane	5.05e-011	9.94e-010
Isopentane	6.49e-007	1.28e-005
n-Pentane	8.52e-007	1.68e-005
Cyclopentane	3.57e-006	7.04e-005
n-Hexane	7.02e-006	1.38e-004
Cyclohexane	1.09e-004	2.14e-003
Other Hexanes	1.88e-005	3.69e-004
Heptanes	6.17e-005	1.21e-003
Methylcyclohexane	6.16e-004	1.21e-002
2,2,4-Trimethylpentane	6.12e-006	1.20e-004
Benzene	6.05e-004	1.19e-002
Toluene	1.68e-003	3.30e-002
Ethylbenzene	3.39e-003	6.68e-002
Xylenes	5.38e-003	1.06e-001
C8+ Heavies	3.12e-002	6.15e-001
Total Components	100.00	1.97e+003

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 86.40 deg. F
Pressure: 707.77 psia
Flow Rate: 3.66e+000 gpm
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.49e+001	1.94e+003
Water	2.74e+000	5.60e+001
Carbon Dioxide	1.00e-002	2.05e-001
Nitrogen	3.19e-002	6.52e-001
Methane	1.88e+000	3.85e+001
Ethane	6.99e-002	1.43e+000
Propane	6.89e-003	1.41e-001
Isobutane	1.29e-003	2.64e-002
n-Butane	3.12e-003	6.37e-002
Isopentane	1.94e-004	3.97e-003
n-Pentane	2.33e-004	4.77e-003
Cyclopentane	7.55e-004	1.54e-002
n-Hexane	1.67e-003	3.42e-002
Cyclohexane	3.44e-003	7.03e-002
Other Hexanes	2.37e-003	4.86e-002
Heptanes	1.33e-002	2.72e-001
Methylcyclohexane	1.55e-002	3.17e-001
2,2,4-Trimethylpentane	5.02e-004	1.03e-002
Benzene	1.17e-002	2.40e-001
Toluene	2.05e-002	4.19e-001
Ethylbenzene	3.15e-002	6.44e-001
Xylenes	4.03e-002	8.23e-001
C8+ Heavies	2.57e-001	5.26e+000
Total Components	100.00	2.04e+003

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
Pressure: 14.70 psia
Flow Rate: 1.52e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.67e+001	2.65e+001
Carbon Dioxide	1.16e-001	2.05e-001
Nitrogen	5.81e-001	6.52e-001
Methane	5.99e+001	3.85e+001
Ethane	1.19e+000	1.43e+000
Propane	7.97e-002	1.41e-001
Isobutane	1.13e-002	2.64e-002
n-Butane	2.73e-002	6.37e-002
Isopentane	1.37e-003	3.96e-003
n-Pentane	1.64e-003	4.75e-003
Cyclopentane	5.47e-003	1.54e-002
n-Hexane	9.87e-003	3.41e-002
Cyclohexane	2.02e-002	6.82e-002
Other Hexanes	1.40e-002	4.82e-002
Heptanes	6.75e-002	2.71e-001
Methylcyclohexane	7.74e-002	3.05e-001
2,2,4-Trimethylpentane	2.22e-003	1.01e-002
Benzene	7.28e-002	2.28e-001

Toluene	1.05e-001	3.86e-001
Ethylbenzene	1.36e-001	5.77e-001
Xylenes	1.69e-001	7.17e-001
C8+ Heavies	6.80e-001	4.64e+000
Total Components	100.00	7.48e+001

R.L. Laughlin®
Natural Gas Consultants Since 1970

Website	www.rllco.com
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- Certificate of Analysis -

Final Report

Company Name: CABOT

Report Date: 5/1/2015

Report Number: 31298-0

Chain of Custody #: 04272015

Lab Analyst: WG

Project Comments: NG EXTENDED

Lab ID: 15043511

Sample Type: Natural Gas

Your Sample ID: TANNER

Date Sampled: 4/22/2015 9:50:00AM

Date Received: 4/27/2015

Analysis Date: 04/30/15

Method	Analyte	Result	Units	MDL/PQL
Collection	Sampler	EAS	-	
	Sampling Temp	71.9	°F	
	Sample PSI	575	-	
GPA 2145	Temperature (heating value)	60.0	°F	
	Temperature (density)	60.0	°F	
	Atmospheric Pressure	14.696	PSIA	
per GPA 2172	Molar Mass	16.4940	-	
	Relative Density	0.5704	-	
	Compressibility Factor	0.9980	-	
per GPA 2172	Btu/Gal	59690.0	BTU/Gal	
	Btu/Ideal CF	1017.2	BTU/Ideal CF	
	Btu/Real CF	1019.3	BTU/Real CF	
GPA 2286	Helium	0.0252	Mole %	0.001
	Hydrogen	0.1395	Mole %	0.001
	Nitrogen	0.9319	Mole %	0.001
	Oxygen	<0.0010	Mole %	0.001
	Methane	97.1809	Mole %	0.001
	Carbon Dioxide	0.0695	Mole %	0.001
	Ethane	1.4730	Mole %	0.001
	Propane	0.0793	Mole %	0.001
	I-Butane	0.0092	Mole %	0.001
	N-Butane	0.0187	Mole %	0.001
	I-Pentane	<0.0010	Mole %	0.001
	N-Pentane	<0.0010	Mole %	0.001

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Website	www.rllco.com
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Email	CustomerService@rllco.com

Lab ID: 15043511
Sample Type: Natural Gas
Your Sample ID: TANNER

Date Sampled: 4/22/2015 9:50:00AM
Date Received: 4/27/2015
Analysis Date: 04/30/15

Method	Analyte	Result	Units	MDL/PQL
GPA 2286	Hexanes Plus	0.0728	Mole %	0.001
	Carbon Monoxide	<0.0010	Mole %	0.001
	2,2-Dimethylbutane	0.0010	Mole %	0.001
	2,3-Dimethylbutane	<0.0010	Mole %	0.001
	2-Methylpentane	0.0026	Mole %	0.001
	3-Methylpentane	0.0026	Mole %	0.001
	N-Hexane	0.0035	Mole %	0.001
	2,2-Dimethylpentane	<0.0010	Mole %	0.001
	Methylcyclopentane	0.0026	Mole %	0.001
	Benzene	<0.0010	Mole %	0.001
	3-dimethylpentane	<0.0010	Mole %	0.001
	Cyclohexane	0.0019	Mole %	0.001
	2-Methylhexane/2,3-Dimethylpentane	0.0047	Mole %	0.001
	3-Methylhexane	0.0035	Mole %	0.001
	3-Dimethylcyclopentane	<0.0010	Mole %	0.001
	3-Ethylpentane	<0.0010	Mole %	0.001
	2,2,4-Trimethylpentane	<0.0010	Mole %	0.001
	N-Heptane	0.0052	Mole %	0.001
	Methylcyclohexane	0.0063	Mole %	0.001
	2,5-Dimethylhexane	0.0020	Mole %	0.001
	1,t-2,c-4-trimethylcyclopentane	<0.0010	Mole %	0.001
	2,2,3-Trimethylpentane	<0.0010	Mole %	.001
	Toluene	<0.0010	Mole %	0.001
	2-Methylheptane	<0.0010	Mole %	0.001
	4-Methylheptane	0.0035	Mole %	0.001
	3-Methylheptane	0.0027	Mole %	0.001
	2,2,5-trimethylhexane	0.0016	Mole %	0.001
	N-Octane	0.0049	Mole %	0.001
	2,2,4,4-tetramethylpentane	<0.0010	Mole %	0.001
	2,2,4-trimethylhexane	<0.0010	Mole %	0.001
	isopropylcyclopentane	<0.0010	Mole %	0.001

R.L.Laughlin®
Natural Gas Consultants Since 1970

Website	www.rllco.com
Phone	304-776-7740
Email	CustomerService@rllco.com

Lab ID: 15043511
Sample Type: Natural Gas
Your Sample ID: TANNER

Date Sampled: 4/22/2015 9:50:00AM
Date Received: 4/27/2015
Analysis Date: 04/30/15

Method	Analyte	Result	Units	MDL/PQL
GPA 2286	2,2-dimethylheptane	<0.0010	Mole %	0.001
	2,4-dimethylheptane	<0.0010	Mole %	0.001
	2,2,3-trimethylhexane	<0.0010	Mole %	0.001
	Ethylbenzene	<0.0010	Mole %	0.001
	2,2,3,3-tetramethylpentane	<0.0010	Mole %	0.001
	1,t-2,t-4-trimethylcyclohexane	<0.0010	Mole %	0.001
	M/P Xylene	<0.0010	Mole %	0.001
	2-Methyloctane	0.0021	Mole %	0.001
	O-Xylene	<0.0010	Mole %	0.001
	3-Methyloctane	0.0014	Mole %	0.001
	1,1,2-trimethylcyclohexane	<0.0010	Mole %	0.001
	isobutylcyclopentane	<0.0010	Mole %	0.001
	N-Nonane	0.0101	Mole %	0.001
	1,c-2,t-3,trimethylcyclohexane	<0.0010	Mole %	0.001
	Isopropylbenzene	<0.0010	Mole %	0.001
	2,2-dimethyloctane	<0.0010	Mole %	0.001
	isopropylcyclohexane	<0.0010	Mole %	0.001
	Cyclooctane	<0.0010	Mole %	0.001
	n-butylcyclopentane	<0.0010	Mole %	0.001
	propylcyclohexane	<0.0010	Mole %	0.001
	N-Propylbenzene	<0.0010	Mole %	0.001
	m-ethyltoluene	<0.0010	Mole %	0.001
	p-ethyltoluene	<0.0010	Mole %	0.001
	1,3,5-Trimethylbenzene	<0.0010	Mole %	0.001
	2-methylnonane	<0.0010	Mole %	0.001
	3-ethyloctane	<0.0010	Mole %	0.001
	3-methylnonane	<0.0010	Mole %	0.001
	t-butylbenzene	<0.0010	Mole %	0.001
	n-decane	0.0018	Mole %	0.001
	i-butylbenzene	<0.0010	Mole %	0.001
	sec-butylbenzene	<0.0010	Mole %	0.001

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Lab ID: 15043511
Sample Type: Natural Gas
Your Sample ID: TANNER

Date Sampled: 4/22/2015 9:50:00AM
Date Received: 4/27/2015
Analysis Date: 04/30/15

Method	Analyte	Result	Units	MDL/PQL
GPA 2286	T-Butylcyclohexane n-Butylcyclohexane	<0.0010	Mole %	0.001
	n-Butylbenzene	<0.0010	Mole %	0.001
	n-undecane	0.0088	Mole %	0.001

Joe Arnold
Laboratory QA/QC Manager

HOUSTON LABORATORIES
8820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CERTIFICATE OF ANALYSIS

Number : 2013020311-004A

SLR International Corp
Roy Judy
900 Lee St. E Suite 0500
Huntington Square
Charleston, WV 25301

Field:	Charlestown, WV.	**Report Date:**	02/15/13
Station:	Tanner	**Sample Of:**	Spot - Gas
Station No.:	109-00106	**Sample Date:**	01/30/2013 15:45
Sample Point:	Meter Run	**Sample Conditions:**	650 psi ,N.G.° F
Cylinder # :	SLR-021	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.650 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286	JL	02/15/13
Nitrogen	0.496	0.850		(MC14)		
Methane	97.897	96.021				
Carbon Dioxide	0.068	0.183				
Ethane	1.445	2.653	0.384			
Propane	0.066	0.177	0.018			
iso Butane	0.007	0.024	0.002			
n-Butane	0.009	0.031	0.003			
iso Pentane	0.003	0.012	0.001			
n-Pentane	0.002	0.006	0.001			
Hexanes Plus	0.007	0.043	0.001			
	100.000	100.000	0.410			

		TOTAL	C6+
Relative Density at 60 °F (air =1) Real Gas		0.5655	3.64
Calculated Molecular Weight		16.356	105.263
Compressibility Factor		0.9980	
Calculated Gross BTU per ft3 @ 14.650 psia & 60 °F			
Real Gas	Dry Basis	1015.9	5658.3
	Saturated Basis	999	5560.2

Chris Staley

Hydrocarbon Laboratory Manager

HOUSTON LABORATORIES
8820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CERTIFICATE OF ANALYSIS

Number : 2013020311-004A

SLR International Corp
Roy Judy
900 Lee St. E Suite 0500
Huntington Square
Charleston, WV 25301

Field:	Charlestown, WV.	**Report Date:**	02/15/13
Station:	Tanner	**Sample Of:**	Spot - Gas
Station No.:	109-00106	**Sample Date:**	01/30/2013 15:45
Sample Point:	Meter Run	**Sample Conditions:**	650 psi ,N.G.° F
Cylinder # :	SLR-021	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.650 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286	JL	02/15/13
Nitrogen	0.496	0.850		(MC14)		
Methane	97.897	96.021				
Carbon Dioxide	0.068	0.183				
Ethane	1.445	2.653	0.384			
Propane	0.066	0.177	0.018			
iso Butane	0.007	0.024	0.002			
n-Butane	0.009	0.031	0.003			
iso Pentane	0.003	0.012	0.001			
n-Pentane	0.002	0.006	0.001			
Hexanes	0.000	0.004	0.000			
Heptanes Plus	0.007	0.039	0.001			
	100.000	100.000	0.410			

	TOTAL	C7+
Relative Density at 60 °F (air =1) Real Gas	0.5655	3.7464
Calculated Molecular Weight	16.356	108.327
Compressibility Factor	0.998	
Calculated Gross BTU per ft3 @ 14.650 psia & 60 °F		
Real Gas Dry Basis	1015.9	5814.1
Saturated Basis	999	5713.2

Hydrocarbon Laboratory Manager

HOUSTON LABORATORIES
8820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CERTIFICATE OF ANALYSIS

Number : 2013020311-004A

SLR International Corp
Roy Judy
900 Lee St. E Suite 0500
Charleston, WV 25301

Field:	Charlestown, WV.	**Report Date:**	02/15/13
Station:	Tanner	**Sample Of:**	Spot - Gas
Station No.:	109-00106	**Sample Date:**	01/30/2013 15:45
Sample Point:	Meter Run	**Sample Conditions:**	650 psi ,N.G.° F
Cylinder # :	SLR-021	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.650 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286	JL	02/15/13
Nitrogen	0.496	0.850		(MC14)		
Methane	97.897	96.021				
Carbon Dioxide	0.068	0.183				
Ethane	1.445	2.653	0.384			
Propane	0.066	0.177	0.018			
iso Butane	0.007	0.024	0.002			
n-Butane	0.009	0.031	0.003			
iso Pentane	0.003	0.012	0.001			
n-Pentane	0.002	0.006	0.001			
i-Hexanes	NIL	0.002	NIL			
n-Hexane	NIL	0.002	NIL			
Benzene	NIL	NIL	NIL			
Cyclohexane	NIL	0.002	NIL			
i-Heptanes	NIL	0.002	NIL			
n-Heptane	0.002	0.005	NIL			
Toluene	0.001	0.003	NIL			
i-Octanes	0.003	0.015	0.001			
n-Octane	0.001	0.004	NIL			
*e-Benzene	NIL	NIL	NIL			
*m,o,&p-Xylene	NIL	0.002	NIL			
i-Nonanes	NIL	0.002	NIL			
n-Nonane	NIL	0.002	NIL			
i-Decanes	NIL	NIL	NIL			
n-Decane	NIL	0.002	NIL			
Undecanes	NIL	NIL	NIL			
Dodecanes	NIL	NIL	NIL			
Tridecanes	NIL	NIL	NIL			
Tetradecanes Plus	NIL	NIL	NIL			
Totals	100.000	100.000	0.410			

Calculated Values	TOTAL	C10+
Molecular Weight	16.356	144.567
Real Dry BTU @ 14.65 psia, 60 °F	1015.9	7718.7
Real Wet BTU @ 14.65 psia, 60 °F	999.0	7584.5
Relative Density	0.5655	4.9126

GPM's at 14.65 psia, 60 °F	0.410
Compressibility Factor	0.998

Chris Staley
Hydrocarbon Laboratory Manager

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

Identification

User Identification:	T01 - PPL Storage Tank - 7E
City:	Beckley
State:	West Virginia
Company:	Cranberry Pipeline Corporation
Type of Tank:	Vertical Fixed Roof Tank
Description:	Tanner Compressor Station

Tank Dimensions

Shell Height (ft):	6.75
Diameter (ft):	5.20
Liquid Height (ft) :	6.75
Avg. Liquid Height (ft):	3.50
Volume (gallons):	1,000.00
Turnovers:	76.65
Net Throughput(gal/yr):	76,650.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	5.20

Breather Vent Settings

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

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

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

T01 - PPL Storage Tank - 7E - Vertical Fixed Roof Tank
Beckley, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 9)	All	52.42	47.61	57.23	50.92	3.9633	3.5920	4.3650	67.0000			92.00	Option 4: RVP=9, ASTM Slope=3

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

T01 - PPL Storage Tank - 7E - Vertical Fixed Roof Tank
Beckley, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	84.2574
Vapor Space Volume (cu ft):	80.1630
Vapor Density (lb/cu ft):	0.0483
Vapor Space Expansion Factor:	0.1068
Vented Vapor Saturation Factor:	0.5578
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	80.1630
Tank Diameter (ft):	5.2000
Vapor Space Outage (ft):	3.7747
Tank Shell Height (ft):	6.7500
Average Liquid Height (ft):	3.5000
Roof Outage (ft):	0.5247
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5247
Dome Radius (ft):	5.2000
Shell Radius (ft):	2.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0483
Vapor Molecular Weight (lb/lb-mole):	67.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Daily Avg. Liquid Surface Temp. (deg. R):	512.0898
Daily Average Ambient Temp. (deg. F):	50.9000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	510.5900
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,123.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1068
Daily Vapor Temperature Range (deg. R):	19.2311
Daily Vapor Pressure Range (psia):	0.7730
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.5920
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.3650
Daily Avg. Liquid Surface Temp. (deg R):	512.0898
Daily Min. Liquid Surface Temp. (deg R):	507.2821
Daily Max. Liquid Surface Temp. (deg R):	516.8976
Daily Ambient Temp. Range (deg. R):	19.2833
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5578
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	3.9633
Vapor Space Outage (ft):	3.7747
Working Losses (lb):	270.4428
Vapor Molecular Weight (lb/lb-mole):	67.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Annual Net Throughput (gal/yr.):	76,650.0000
Annual Turnovers:	76.6500
Turnover Factor:	0.5581
Maximum Liquid Volume (gal):	1,000.0000
Maximum Liquid Height (ft):	6.7500
Tank Diameter (ft):	5.2000
Working Loss Product Factor:	1.0000
Total Losses (lb):	354.7002

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

Emissions Report for: Annual

T01 - PPL Storage Tank - 7E - Vertical Fixed Roof Tank
Beckley, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	270.44	84.26	354.70

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

Identification

User Identification:	T02 - PPL Storage Tank - 8E
City:	Beckley
State:	West Virginia
Company:	Cranberry Pipeline Corporation
Type of Tank:	Vertical Fixed Roof Tank
Description:	Tanner Compressor Station

Tank Dimensions

Shell Height (ft):	6.75
Diameter (ft):	5.20
Liquid Height (ft) :	6.75
Avg. Liquid Height (ft):	3.50
Volume (gallons):	1,000.00
Turnovers:	76.65
Net Throughput(gal/yr):	76,650.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	5.20

Breather Vent Settings

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

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

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

T02 - PPL Storage Tank - 8E - Vertical Fixed Roof Tank
Beckley, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 9)	All	52.42	47.61	57.23	50.92	3.9633	3.5920	4.3650	67.0000			92.00	Option 4: RVP=9, ASTM Slope=3

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

T02 - PPL Storage Tank - 8E - Vertical Fixed Roof Tank
Beckley, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	84.2574
Vapor Space Volume (cu ft):	80.1630
Vapor Density (lb/cu ft):	0.0483
Vapor Space Expansion Factor:	0.1068
Vented Vapor Saturation Factor:	0.5578
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	80.1630
Tank Diameter (ft):	5.2000
Vapor Space Outage (ft):	3.7747
Tank Shell Height (ft):	6.7500
Average Liquid Height (ft):	3.5000
Roof Outage (ft):	0.5247
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5247
Dome Radius (ft):	5.2000
Shell Radius (ft):	2.6000
Vapor Density	
Vapor Density (lb/cu ft):	0.0483
Vapor Molecular Weight (lb/lb-mole):	67.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Daily Avg. Liquid Surface Temp. (deg. R):	512.0898
Daily Average Ambient Temp. (deg. F):	50.9000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	510.5900
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,123.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1068
Daily Vapor Temperature Range (deg. R):	19.2311
Daily Vapor Pressure Range (psia):	0.7730
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	3.5920
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	4.3650
Daily Avg. Liquid Surface Temp. (deg R):	512.0898
Daily Min. Liquid Surface Temp. (deg R):	507.2821
Daily Max. Liquid Surface Temp. (deg R):	516.8976
Daily Ambient Temp. Range (deg. R):	19.2833
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5578
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	3.9633
Vapor Space Outage (ft):	3.7747
Working Losses (lb):	270.4428
Vapor Molecular Weight (lb/lb-mole):	67.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	3.9633
Annual Net Throughput (gal/yr.):	76,650.0000
Annual Turnovers:	76.6500
Turnover Factor:	0.5581
Maximum Liquid Volume (gal):	1,000.0000
Maximum Liquid Height (ft):	6.7500
Tank Diameter (ft):	5.2000
Working Loss Product Factor:	1.0000
Total Losses (lb):	354.7002

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

Emissions Report for: Annual

T02 - PPL Storage Tank - 8E - Vertical Fixed Roof Tank
Beckley, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 9)	270.44	84.26	354.70

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

Identification

User Identification:	T03 - New Oil Tank - 9E
City:	Beckley
State:	West Virginia
Company:	Cranberry Pipeline Corporation
Type of Tank:	Horizontal Tank
Description:	Tanner Compressor Station

Tank Dimensions

Shell Length (ft):	12.00
Diameter (ft):	5.50
Volume (gallons):	2,000.00
Turnovers:	5.00
Net Throughput(gal/yr):	10,000.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

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

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

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

T03 - New Oil Tank - 9E - Horizontal Tank
Beckley, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	61.23	50.76	71.70	55.24	0.0068	0.0047	0.0095	130.0000			188.00	Option 1: VP60 = .0065 VP70 = .009

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

T03 - New Oil Tank - 9E - Horizontal Tank
Beckley, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	0.8022
Vapor Space Volume (cu ft):	181.5921
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0765
Vented Vapor Saturation Factor:	0.9990
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	181.5921
Tank Diameter (ft):	5.5000
Effective Diameter (ft):	9.1693
Vapor Space Outage (ft):	2.7500
Tank Shell Length (ft):	12.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0068
Daily Avg. Liquid Surface Temp. (deg. R):	520.8986
Daily Average Ambient Temp. (deg. F):	50.9000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	514.9100
Tank Paint Solar Absorptance (Shell):	0.8900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,123.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0765
Daily Vapor Temperature Range (deg. R):	41.8775
Daily Vapor Pressure Range (psia):	0.0049
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0068
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0047
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0095
Daily Avg. Liquid Surface Temp. (deg R):	520.8986
Daily Min. Liquid Surface Temp. (deg R):	510.4292
Daily Max. Liquid Surface Temp. (deg R):	531.3679
Daily Ambient Temp. Range (deg. R):	19.2833
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9990
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0068
Vapor Space Outage (ft):	2.7500
Working Losses (lb):	0.2107
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0068
Annual Net Throughput (gal/yr.):	10,000.0000
Annual Turnovers:	5.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	5.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1.0129

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

Emissions Report for: Annual

T03 - New Oil Tank - 9E - Horizontal Tank
Beckley, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.21	0.80	1.01

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

Identification

User Identification:	T04 - Used Oil Tank - 10E
City:	Beckley
State:	West Virginia
Company:	Cranberry Pipeline Corporation
Type of Tank:	Vertical Fixed Roof Tank
Description:	Tanner Compressor Station

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	6.00
Liquid Height (ft) :	5.00
Avg. Liquid Height (ft):	3.00
Volume (gallons):	1,000.00
Turnovers:	5.00
Net Throughput(gal/yr):	5,000.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	6.00

Breather Vent Settings

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

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

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

T04 - Used Oil Tank - 10E - Vertical Fixed Roof Tank
Beckley, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	58.66	49.84	67.48	53.98	0.0062	0.0045	0.0084	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

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

T04 - Used Oil Tank - 10E - Vertical Fixed Roof Tank
Beckley, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	0.2425
Vapor Space Volume (cu ft):	71.2094
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0641
Vented Vapor Saturation Factor:	0.9992
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	71.2094
Tank Diameter (ft):	6.0000
Vapor Space Outage (ft):	2.5185
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	3.0000
Roof Outage (ft):	0.5185
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5185
Dome Radius (ft):	6.0000
Shell Radius (ft):	3.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0062
Daily Avg. Liquid Surface Temp. (deg. R):	518.3293
Daily Average Ambient Temp. (deg. F):	50.9000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	513.6500
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,123.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0641
Daily Vapor Temperature Range (deg. R):	35.2723
Daily Vapor Pressure Range (psia):	0.0039
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0062
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0045
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0084
Daily Avg. Liquid Surface Temp. (deg R):	518.3293
Daily Min. Liquid Surface Temp. (deg R):	509.5113
Daily Max. Liquid Surface Temp. (deg R):	527.1474
Daily Ambient Temp. Range (deg. R):	19.2833
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9992
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.0062
Vapor Space Outage (ft):	2.5185
Working Losses (lb):	0.0964
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0062
Annual Net Throughput (gal/yr.):	5,000.0000
Annual Turnovers:	5.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	1,000.0000
Maximum Liquid Height (ft):	5.0000
Tank Diameter (ft):	6.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.3390

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

Emissions Report for: Annual

T04 - Used Oil Tank - 10E - Vertical Fixed Roof Tank
Beckley, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.10	0.24	0.34

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

Identification

User Identification:	T05 - Antifreeze Tank - 11E
City:	Beckley
State:	West Virginia
Company:	Cranberry Pipeline Corporation
Type of Tank:	Vertical Fixed Roof Tank
Description:	Tanner Compressor Station

Tank Dimensions

Shell Height (ft):	5.00
Diameter (ft):	2.80
Liquid Height (ft) :	5.00
Avg. Liquid Height (ft):	3.00
Volume (gallons):	250.00
Turnovers:	5.00
Net Throughput(gal/yr):	1,250.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	2.80

Breather Vent Settings

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

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

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

T05 - Antifreeze Tank - 11E - Vertical Fixed Roof Tank
Beckley, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Propylene glycol	All	52.42	47.61	57.23	50.92	0.0006	0.0005	0.0008	76.1100			76.11	Option 2: A=8.2082, B=2085.9, C=203.54

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

T05 - Antifreeze Tank - 11E - Vertical Fixed Roof Tank
Beckley, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	0.0016
Vapor Space Volume (cu ft):	15.9174
Vapor Density (lb/cu ft):	0.0000
Vapor Space Expansion Factor:	0.0334
Vented Vapor Saturation Factor:	0.9999
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	15.9174
Tank Diameter (ft):	2.8000
Vapor Space Outage (ft):	2.5850
Tank Shell Height (ft):	5.0000
Average Liquid Height (ft):	3.0000
Roof Outage (ft):	0.5850
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5850
Dome Radius (ft):	2.8000
Shell Radius (ft):	1.4000
Vapor Density	
Vapor Density (lb/cu ft):	0.0000
Vapor Molecular Weight (lb/lb-mole):	76.1100
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0006
Daily Avg. Liquid Surface Temp. (deg. R):	512.0898
Daily Average Ambient Temp. (deg. F):	50.9000
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	510.5900
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,123.3333
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0334
Daily Vapor Temperature Range (deg. R):	19.2311
Daily Vapor Pressure Range (psia):	0.0003
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0006
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0005
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0008
Daily Avg. Liquid Surface Temp. (deg R):	512.0898
Daily Min. Liquid Surface Temp. (deg R):	507.2821
Daily Max. Liquid Surface Temp. (deg R):	516.8976
Daily Ambient Temp. Range (deg. R):	19.2833
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9999
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.0006
Vapor Space Outage (ft):	2.5850
Working Losses (lb):	0.0014
Vapor Molecular Weight (lb/lb-mole):	76.1100
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0006
Annual Net Throughput (gal/yr.):	1,250.0000
Annual Turnovers:	5.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	250.0000
Maximum Liquid Height (ft):	5.0000
Tank Diameter (ft):	2.8000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.0030

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

Emissions Report for: Annual

T05 - Antifreeze Tank - 11E - Vertical Fixed Roof Tank
Beckley, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Propylene glycol	0.00	0.00	0.00

ATTACHMENT O

MONITORING/RECORDKEEPING/REPORTING/ TESTING PLANS

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Monitoring

The company will at a minimum monitor hours of operation, 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

There are no testing requirements until such time as the remote source designation should change

ATTACHMENT P

PUBLIC NOTICE

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

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 Modification Permit, for a natural gas compression and dehydration station located off Pinnacle Creek Rd. (Country Rt. 12/3) near Pineville, in Pineville, West Virginia. The latitude and longitude coordinates are 37.55001 and -81.45957.

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

Pollutant	Tons/yr
$PM/PM_{10}/PM_{2.5}$	0.80
SO^2	0.05
NO_X	0.04
CO	0.07
VOCs	33.76
Benzene	0.36
Toluene	0.57
Ethylbenzene	0.76
Xylene	0.91
n-hexane	0.21
Total HAPs	4.07

Modification of operation will take place upon issuance of permit. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

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

Dated this the XXth day of Febraury, 2016.

By: Cranberry Pipeline Corporation
Brody Webster
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

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

ATTACHMENT R

AUTHORITY FORMS

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

Attachment R
AUTHORITY OF CORPORATION
OR OTHER BUSINESS ENTITY (DOMESTIC OR FOREIGN)

TO: The West Virginia Department of Environmental Protection, Division of Air Quality

DATE: **October 8**, **2015**

ATTN.: Director

Corporation's / other business entity's Federal Employer I.D. Number **042989934**

The undersigned hereby files with the West Virginia Department of Environmental Protection, Division of Air Quality, a permit application and hereby certifies that the said name is a trade name which is used in the conduct of an incorporated business or other business entity.

Further, the corporation or the business entity certifies as follows:

(1) **BRODY WEBSTER** (is/are) the authorized representative(s) and in that capacity may represent the interest of the corporation or the business entity and may obligate and legally bind the corporation or the business entity.

(2) The corporation or the business entity is authorized to do business in the State of West Virginia.

(3) If the corporation or the business entity changes its authorized representative(s), the corporation or the business entity shall notify the Director of the West Virginia Department of Environmental Protection, Division of Air Quality, immediately upon such change.

President or Other Authorized Officer
(Vice President, Secretary, Treasurer or other official in charge of a principal business function of the corporation or the business entity)

(If not the President, then the corporation or the business entity must submit certified minutes or bylaws stating legal authority of other authorized officer to bind the corporation or the business entity).

Secretary

CABOT OIL & GAS CORPORATION
CRANBERRY PIPELINE CORPORATION
Name of Corporation or business entity

ATTACHMENT S

NOT APPLICABLE (SEE NOTE)

Note: Not a Title V Permit Revision.

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

ATTACHMENT T

PERMIT APPLICATION FEE

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016

FINAL PERMITS

Rule 13 Permit Application

Tanner Compressor Station
Pineville, West Virginia

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

January 2016