global environmental solutions

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation

Witcher Compressor Station

Belle, West Virginia

Rule 13 Permit Application

SLR Ref: 116.00400.00153

September 2016

Cabot Oil & Gas Corporation

SLR

Rule 13 Permit Application

Prepared for:

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

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

Chris Boggess
Associate Engineer

Jesse Hanshaw P.E.
Principal Engineer

CONTENTS

ATTACHMENTS

Notes:

ATTACHMENT C – N/A – Permit application addresses after the fact changes
ATTACHMENT K – N/A – No change in fugitive emissions occurred from this modification
ATTACHMENT M – N/A – No APCD utilized at this facility
ATTACHMENT Q – N/A – No information contained within this application claimed as confidential
ATTACHMENT S – N/A – Not a Title V Permit Revision

APPLICATION FOR PERMIT

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 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):*
Witcher 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:
Witcher Creek Rd.
Belle, WV 25015

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):
_ _ _ - _ _ _ _ _

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

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 East on U.S. 60 from Charleston, turn left onto East 21st St. in Belle. Continue along East 21sr St. as it becomes Witcher Creek Rd. Travel along Witcher Creek Rd. for approximately three (3) miles and turn right on access road for the station. Travel on access road across Witcher Creek for approximately 1/10th of a mile. Station will be on the right.

12B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
N/A	Belle	Kanawha
12.E. UTM Northing (KM): 4,233.019	12F. UTM Easting (KM): 458.481	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 with changing gas composition with respect to the dehydration unit and its anticipated increase of production through the unit.

14A. Provide the date of anticipated installation or change: – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: **02/29/2016**	14B. Date of anticipated Start-Up if a permit is granted:

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

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: **Glycol Dehydration Unit Data Sheet, Small Reboilers 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 _____ *(Please use blue ink)* DATE: 9/19/16 *(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

Witcher Compressor Station,
Belle, West Virginia

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

September 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

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

GPS Coordinates of Sites:
Lat: 38.24422, Long: -81.47447
UTM Coordinates of Sites:
Easting: 458.481 km, Northing: 4,233.019 km, Zone: 17

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

Report
Rule 13 Permit Application
Witcher Compressor Station

Drawing
Attachment B - Area Map

SLR

Date: August 2016
Drawn By: CLB
Project: 116.00400.00153

GPS Coordinates of Sites:
Lat: 38.24422, Long: -81.47447

UTM Coordinates of Sites:
Easting: 458.481 km, Northing: 4,233.019 km, Zone: 17

Cranberry Pipeline Corporation
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900 Lee Street East, Suite 1500,
Charleston, WV 25301

Report
Rule 13 Permit Application
Witcher Compressor Station

Drawing
Attachment B - Area Map

Date: August 2016

Drawn By: CLB

Project: 116.00400.00153

SLR

ATTACHMENT C

INSTALLATION AND START-UP

NOT APPLICABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

ATTACHMENT D

REGULATORY DISCUSSION

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 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 – *To Prevent and Control Particulate Air Pollution Control from Combustion of Indirect Heat Exchangers*

The indirect heat exchanger consists 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 – *To Prevent and Control the Discharge of Air Pollutants into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors*

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

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

The proposed permit application addresses an increase in emissions associated with the 1984 dehydration unit at the facility which has been operating as an exempt grandfathered source per the 1974 permitting requirements under 45CSR13§2.11(b)(1). However based upon a recent wet gas analysis and expected production rates the current R13 permitting thresholds under 45CSR13§2.17(d), have been triggered and this source is now subject to the regulations. This site also has an existing 1984 Natural Gas Fired RICE and this source is operating under a grandfather exemption per the 1974 permitting requirements under 45CSR13§2.11(b)(2).

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

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

Emission Unit CE-1, an existing, 225 hp, 4SRB, Caterpillar G342NA engine is subject to Subpart ZZZZ and maintains compliance with the existing source work practice standards in accordance with §63.6640, Table 2d (Line 10) and Table 6 (Line 9) of Subpart ZZZZ. The reporting and recordkeeping requirements pertaining to this engine are in accordance with §63.6655.

40 CFR 63 Subpart HH – *NESHAP from Oil and Natural Gas Production Facilities*

The unit is subject to the area source requirements of this subpart and complies by meeting the 1 ton per year benzene control exemption for actual emissions.

NON-APPLICABILITY DETERMINATIONS

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

45 CSR 6 - *To Prevent and Control Air Pollution from Combustion of Refuse*

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. This site does not operate a flare.

45 CSR 10 – *To Prevent and Control Air Pollution from the Emission of Sulfur Oxides*

The fuel burning unit utilized at this site is exempt from Sections 4 and 5 of this rule because the site does not meet the definition of manufacturing process or refinery process.

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*

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". The wet gas measurements show 0.77 weight % benzene.

40 CFR 60 Subpart Dc – *Standards of Performance for Steam Generating Units*

The dehydration reboiler at this facility is rated at below 10 million BTU/hr; hence, Subpart Dc is not applicable in accordance with §60.40c(a)

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 as specified in §60.110a(a).

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 as specified in §60.110b(a).

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 is not engaged in the extraction or fractionation of natural gas liquids from field gas, the fractionation of mixed natural gas liquids to natural gas products, or both.

40 CFR 60 Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

There are no compression ignition engines at this facility; therefore this Subpart is not applicable.

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

All engines at this facility were constructed, reconstructed, or modified prior to the June 12, 2006 applicability date listed in 60.4230(a)(4).

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

This subpart could apply to this facility since it is a gathering and compression facility. The potentially affected sources addressed by this subpart include reciprocating compressors, pneumatic continuous bleed controllers greater than 6 scfh, and storage vessels emitting VOCs @ 6 tons per year or greater. The facility was evaluated and a determination was made that there has been no construction, modification, or reconstruction of the listed sources after the NSPS applicability date of August 23, 2011 and before September 18, 2015.

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

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

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 production facility, because it gathers and transports gas prior to a point of custody transfer or prior to delivery to an end user.

40 CFR 63 Subpart DDDDD – *NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters*

This subpart is not applicable because this facility is not a major source of HAPs as defined in §63.7575.

40 CFR 63 Subpart JJJJJJ – *NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources*

This subpart is not applicable since there are no steam generating boilers at this facility as defined in §63.11195.

ATTACHMENT E

PLOT PLAN

Rule 13 Permit Application

Witcher Compressor Station,
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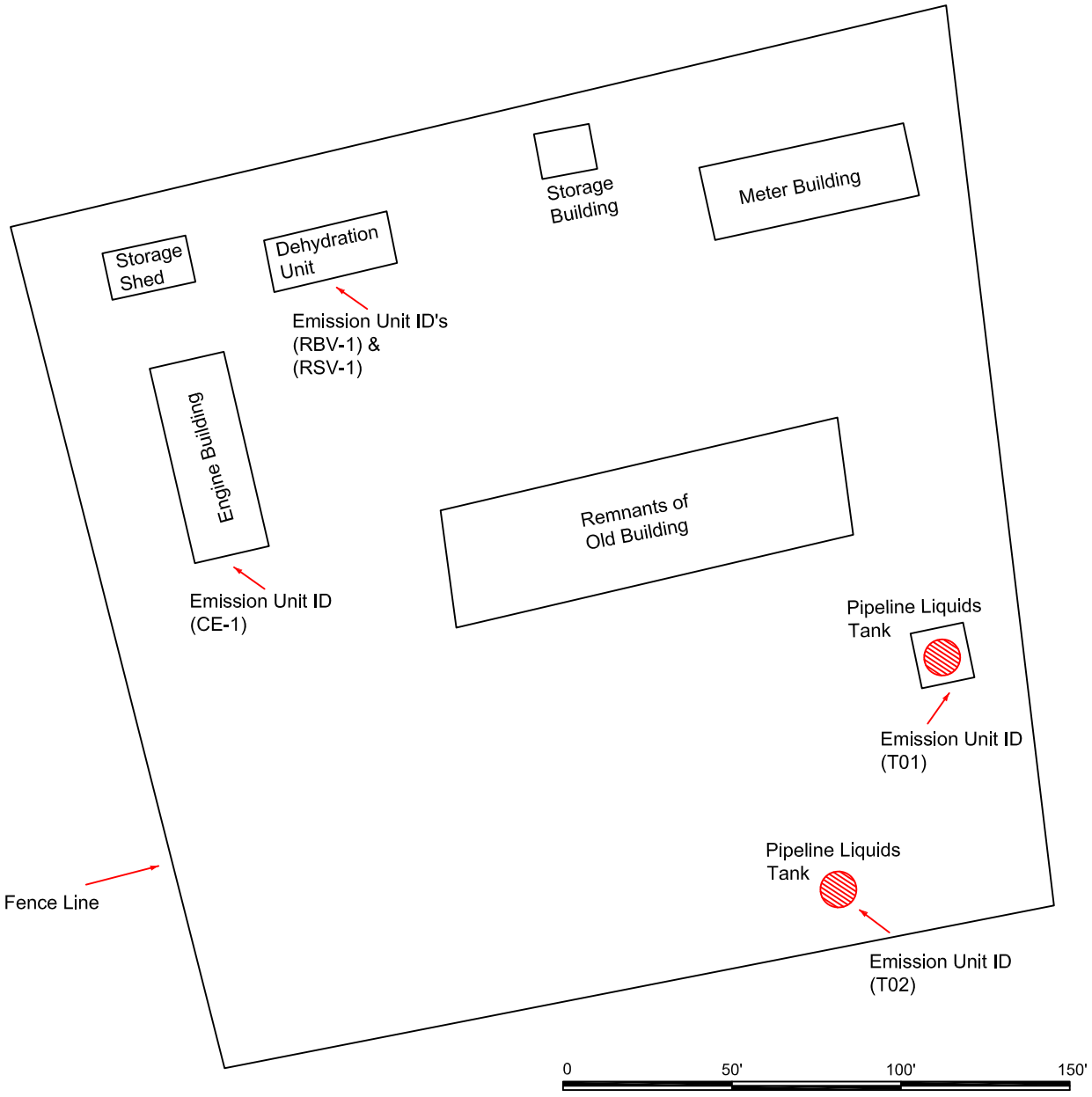
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia

September 2016

UTM REFERENCE

EASTING 458.481 KM
NORTHING 4,233.019 KM
ZONE 17

N



GPS Coordinates of Well Site
Lat: 38.24422 Long: -81.47447

DRAWING LEGEND

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

SLR

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation

900 Lee St. East, Suite 1500
Charleston, WV 25301

Report:
Rule 13 Permit Application
Witcher Compressor Station

Drawing	Drawn By:
Plot Plan	CLB

Date: August 2015	ATTACHMENT E	
	Project #: 116.00400.00153	

ATTACHMENT F

PROCESS FLOW DIAGRAM

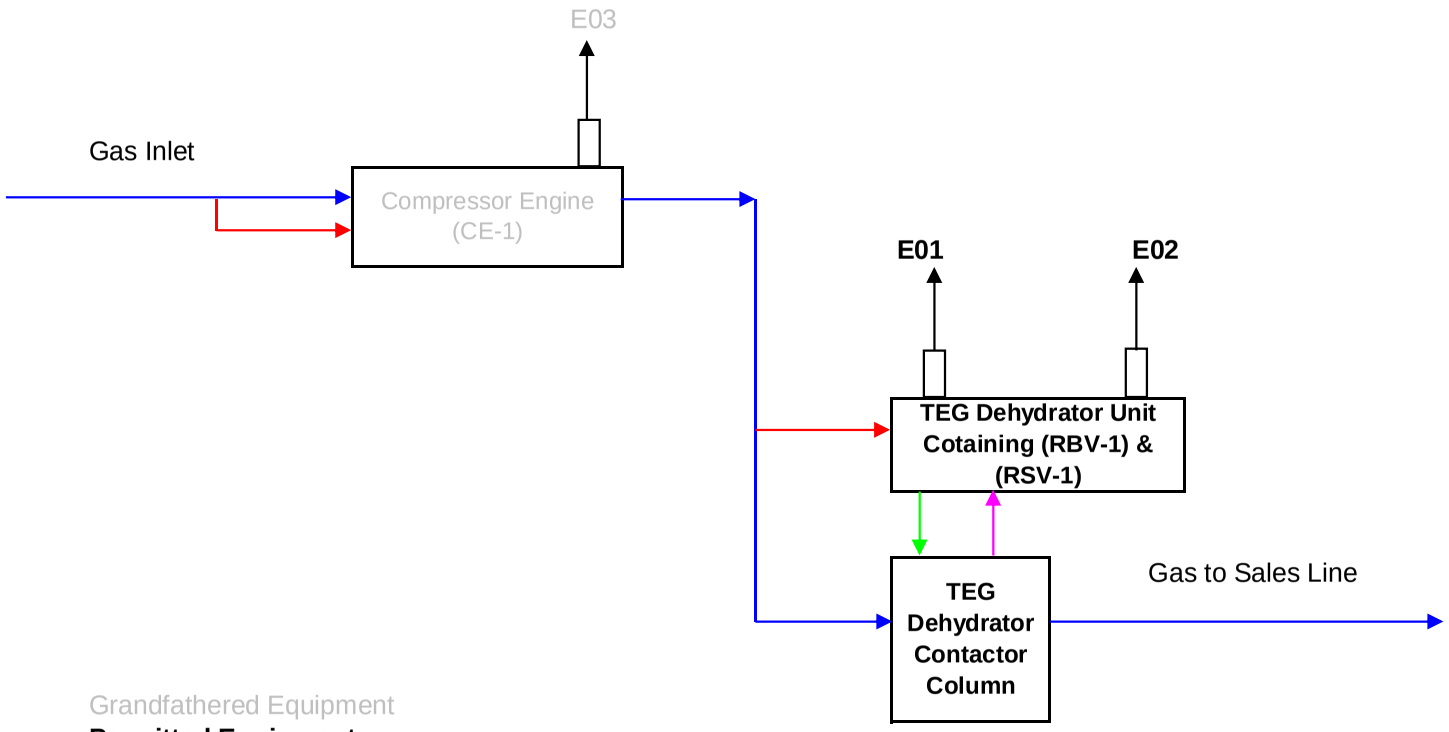
Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

ATTACHMENT F
WITCHER COMPRESSOR STATION PROCESS FLOW DIAGRAM



Grandfathered Equipment

Permitted Equipment

- Gas Stream
- Fuel Gas
- Emission Stream
- Wet (Rich) Glycol Stream
- Dry (Lean) Glycol Stream

Cranberry Pipeline Corporation

A Cabot Oil & Gas Company

ATTACHMENT G

PROCESS DESCRIPTION

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

PROCESS DESCRIPTION

Introduction

Cranberry Pipeline Corporation (Cranberry) is updating their records for the Witcher Compressor Station. The sources specified in this permit application were constructed in 1984 and at that time, in accordance with the 1974 permitting requirements under 45CSR13§2.11(b), no permits were required for this facility.

Proposed Process Changes

Cranberry Pipeline is submitting this Rule 13 Permit Application which is now required due to the following changes:

- Increase in Benzene emission rates found due to a recent wet gas analysis.
- Increase production through emission unit RSV-1.

Included in the supporting calculations section are emission estimates from the dehydration unit still column (RSV-1) and the dehydration unit reboiler (RBV-1).

Title V Applicability Evaluation

It should be noted that facility-wide PTE has been evaluated within the supporting calculations section of this permit application to show evaluate Title V applicability. The following existing sources have emission estimates provided in the supporting calculations section;

- Compressor Engine (CE-1) Caterpillar G-342NA; 4SRB
- Aboveground Storage Tank (T01) – 2,100 gallon pipeline liquids tank
- Aboveground Storage Tank (T02) – 2,100 gallon pipeline liquids tank
- Truck Loading Emissions (TL-1)
- Fugitive Equipment Leak Emissions (Fugitives)

ATTACHMENT H

SAFETY DATA SHEETS (SDS)

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

SAFETY DATA SHEET

Cabot Oil & Gas Corporation

Date Issued : 10/26/2012
SDS No : CA201-006
Date Revised : 12/20/2012
Revision No : 1

Sweet Natural Gas

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Sweet Natural Gas
CHEMICAL FAMILY: Hydrocarbon Mixture; Aliphatic Hydrocarbon
ALTERNATE TRADE NAME(S): Well Head Gas, Casing Head Gas

DISTRIBUTOR
Cabot Oil & Gas Corporation
P.O. Box 4544
Houston, TX 77210-4544

24 HR. EMERGENCY TELEPHONE NUMBERS
(281) 589-4600

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health	Physical
Carcinogenicity, Category 1 Hazard Not Otherwise Classified, Simple Asphyxiant	Gases Under Pressure, Liquefied gas Flammable Gases, Category 1

GHS LABEL

<table>
<tr><td></td><td rowspan="2">  Flame</td></tr>
<tr><td>WARNING
H000: May displace oxygen and cause rapid suffocation.</td></tr>
<tr><td></td><td>DANGER
H220: Extremely flammable gas.</td></tr>
<tr><td>  Gas cylinder</td><td>  Health hazard</td></tr>
<tr><td>WARNING
H280: Contains gas under pressure; may explode if heated.</td><td>DANGER
H350: May cause cancer.</td></tr>
</table>

PRECAUTIONARY STATEMENT(S)

Prevention:

P210: Keep away from heat/sparks/open flames/hot surfaces – no smoking.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.

Response:

P377: Leaking gas fire: Do not extinguish unless leak can be stopped safely.
P381: Eliminate all ignition sources if safe to do so.
P308+P313: IF exposed or concerned: Get medical advice/attention.

Storage:

P403: Store in a well-ventilated place.
P410+P403: Protect from sunlight. Store in a well-ventilated place.

Disposal:

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: HAZARD DESCRIPTION / WARNING INFORMATION SUMMARY - This material is a flammable gas. This product is toxic; inhalation of this material may cause severe injury or death. Please read entire contents of Section 2 of this Safety Data Sheet (SDS) for details.

POTENTIAL HEALTH EFFECTS

EYES: This product is unlikely to cause eye irritation.

SKIN: This product is unlikely to cause skin irritation or injury.

INGESTION: This product is a compressed gas; hence oral exposure and resulting acute toxicity are unlikely.

INHALATION: This product is a simple asphyxiant. Excessive exposure may cause central nervous system effects such as dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure and death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

CARCINOGENICITY: No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible, or confirmed carcinogen by IARC, NTP, OSHA or ACGIH.

MUTAGENICITY: Not Established.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Not Established.

TERATOGENIC EFFECTS: Not Established.

MEDICAL CONDITIONS AGGRAVATED: Persons with pre-existing central nervous system disorders should refrain from contact with this material.

ROUTES OF ENTRY: Inhalation, skin contact, eye contact.

TARGET ORGAN STATEMENT: May cause damage to lungs and central nervous system.

SENSITIZATION: Not Established.

COMMENTS: OTHER HAZARDS - Not Established.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Vol. %	CAS	EINECS	Classification
Methane	70 - 94	74-82-8	200-812-7	T+,N; R61, R26, R48/23, R50/53
Ethane	5 - 10	74-84-0	200-814-8	F+; R12
Propane	1 - 4	74-98-6	200-827-9	F+; R12
i-Butane	0.5 - 3	75-28-5	200-857-2	F+; R12
n-Butane	0.5 - 2	106-97-8	203-448-7	F+; R12
Carbon Dioxide	0.5 - 10	124-38-9	204-696-9	
Nitrogen	0.5 - 10	7727-37-9	231-783-9	
Benzene	may contain	71-43-2	200-753-7	F, T; R45, R46, R11, R36/38, R48/23/24/25, R65
Hydrogen Sulfide	may contain	7783-06-4	231-977-3	F+, T+, N; R12, R26, R50

COMMENTS: This may not be a complete list of components. Compositions given are typical values, not specifications.

(Full text of R-Phrases can be found under heading 16)

4. FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.

SKIN: Wash with soap and water. Get medical attention if irritation develops or persists.

INGESTION: This is not considered a major potential route of exposure.

INHALATION: Move victim to fresh air. Call 911, emergency medical service, or Emergency Phone Numbers(s) provided in Section 1 of this SDS. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper resipratory medical device. Administer oxygen if breathing is difficult.

ANTIDOTES: Not Established.

NOTES TO PHYSICIAN: CLINICAL TESTING & MEDICAL MONITORING FOR DELAYED EFFECTS - Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Provide general supportive measures and treat symptomatically.

5. FIRE FIGHTING MEASURES

FLASH POINT: -188°C (-306.4°F)

Notes: Based on methane.

FLAMMABLE LIMITS: 1.0 to 15.0

Notes: Flammable Limits given as percentage volume in air at normal atmospheric temperature and pressure.

AUTOIGNITION TEMPERATURE: 482°C (900°F) to 649°C (1200°F)

GENERAL HAZARD: DECOMPOSITION TEMPERATURE - Not Established.

EXTINGUISHING MEDIA:

SMALL FIRE - Class B fire extinguisher, carbon dioxide, multipurpose dry chemical, water fog or alcohol-resistant foam.
LARGE FIRE - Water fog or alcohol-resistant foam.

HAZARDOUS COMBUSTION PRODUCTS: Any combustion, including incomplete combustion, may form carbon monoxide and carbon dioxide. Burning produces noxious and toxic fumes. Downwind personnel must be evacuated.

OTHER CONSIDERATIONS: INAPPROPRIATE EXTINGUISHING MEDIA - Do not use water jet.

FIRE FIGHTING PROCEDURES:

PROTECTIVE ACTIONS TO TAKE DURING FIRE FIGHTING - DO NOT extinguish a leaking gas flame unless the leak can be stopped. In many cases it will be preferable to allow continued burning. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. Use water spray or fog; do not use straight streams. Note: Use of water spray when fighitng fire may be inefficient or cause a chemical reaction. Persons involved in fire fighting response involving this product and its containers/packaging should refer to Section 8 of this SDS for the proper selection of exposure controls and personal protective equipment.

FIRE FIGHTING EQUIPMENT: PRECAUTIONS FOR FIRE INVOLVING TANKS OR CAR/TRAILER LOADS - Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. Isolate for 1600 meters (1 mile) in all directions; also consider initial evacuation for 1600 meters (1 mile) in all directions. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

FIRE EXPLOSION: HIGHLY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

COMMENTS:

SPECIFIC HAZARDS THAT MAY ARISE FROM THE PRODUCT - Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: For emergency information and procedures to follow in the case of an accidental release, call the Emergency Telephone Number(s) listed in Section 1 of this SDS. Remove any ignition sources and protect from ignition. Water spray may reduce vapor but may not prevent ignition in closed spaces. A vapor suppressing foam may be used to reduce vapors. Provide sufficient ventilation in the affected area(s) and wear appropriate personal protective equipment as indicated in Section 8 of this

SDS when handling spill material. Isolate the area until gas has dispersed. Never discharge releases directly into sewers or surface waters.

LARGE SPILL: Use similar response procedures as indicated under Small Spill.

GENERAL PROCEDURES: MATERIALS & METHODS (EQUIPMENT & TECHNIQUES) FOR CONTAINMENT & CLEANUP - Call Emergency Telephone Number(s) provided in Section 1 of this SDS. As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

RELEASE NOTES: ENVIRONMENTAL PRECAUTIONS - Prevent entry into waterways, sewers, basements or confined areas. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid allowing water runoff to contact spilled material.

SPECIAL PROTECTIVE EQUIPMENT: EMERGENCY & NON-EMERGENCY RESPONDERS - Refer to Section 8 of this SDS for appropriate exposure controls and personal protective equipment (PPE).

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Handle in accordance with good industrial hygiene and safety practices. These practices include but are not limited to avoiding unnecessary exposure and prompt removal of material from eyes, skin and clothing. If needed, take first aid actions as indicated in Section 4 of this SDS.

HANDLING: Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8 of this SDS. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product dust or vapors. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Do not reuse container. Remove contaminated clothing immediately. Wash with soap and water after working with this product.

STORAGE: Keep in airtight container away from all heat sources. Store in a segregated and approved area. Store in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Keep container in a well-ventilated area. Ground all containers during transfer. Store away from incompatible materials. Cylinders should be separated from oxygen cylinders or other oxidizers by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high having a fire resistance rating of at least 1/2 hour. Store in the orginal container or an approved alternative made from compatible material. Do not store in unlabeled containers. Treat empty containers in a similar fashion as residual product may exist. Use appropriate containment to avoid environmental contamination.

STORAGE TEMPERATURE: Store containers in a room with ambient temperature.

STORAGE PRESSURE: Containers should be stored in room with ambient pressure.

SHELF LIFE:

HOW TO MAINTAIN THE INTEGRITY OF THE SUBSTANCE BY USE OF STABILIZERS OR ANTIOXIDANTS - Not Established.

ELECTROSTATIC ACCUMULATION HAZARD: To minimize the hazard of static electricity during transfer operations, bonding and grounding may be neccessary, but may not by themselves be sufficient. For more information, refer to OSHA Standard 29 CFR 1910.106; National Fire Protection Standard (NFPA) 77 - "Recommended Practice on Static Electricity"; and/or the American Petroleum Institute (API) Recommended Practice 2003 - "Protection Against Ignitions Arising Out of Static, Lighting and Stray Currents."

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		**ppm**	**mg/m³**	**ppm**	**mg/m³**
Ethane	**TWA**	N/E	N/E	1000	N/E
	STEL	N/E	N/E	N/E	N/E
Propane	**TWA**	1000	1800	1000	N/E
	STEL	N/E	N/E	N/E	N/E
i-Butane	**TWA**	N/E	N/E	1000	N/E
	STEL	N/E	N/E	N/E	N/E
n-Butane	**TWA**	N/E	N/E	1000	N/E
	STEL	N/E	N/E	N/E	N/E
Carbon Dioxide	**TWA**	5000	9000	5000	9000
	STEL	N/E	N/E	30000	54000

ENGINEERING CONTROLS: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Employees should be provided with and required to use splash-proof safety goggles and splash shields where there is any possibility of product coming in contact with eyes. Ensure that eye wash station is operable and nearby.

SKIN: GLOVES AND BOOTS - Any impervious gloves and boots including butyl rubber, nitrile rubber or neoprene rubber.

RESPIRATORY: Depending on airborne concentration a full-face supplied air respirator is recommended, because air purifying respirators can not provide adequate protection.

PROTECTIVE CLOTHING: Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn. Cotton clothing is recommended.

WORK HYGIENIC PRACTICES: Consider the potential hazards of this material, applicable exposure limits, job activities, environmental working conditions, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). The user should read and understand all manufacturer instructions and limitations supplied with the personal protection equipment before use.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Generally odorless (if no H_2S is present and no no mercaptan added for odor).

APPEARANCE: Colorless gas.

pH: Not Applicable.

PERCENT VOLATILE: 100

VAPOR PRESSURE: Not Established.

VAPOR DENSITY: 0.6 to 0.8 (Air = 1)

BOILING POINT: -161 °C (-258 °F)

Notes: Based on methane.

FREEZING POINT: Not Applicable.

MELTING POINT: Not Applicable.

FLASH POINT: -188 °C (-306.4 °F)

Notes: Based on methane.

EVAPORATION RATE: Not Established.

DENSITY: Not Established.

SPECIFIC GRAVITY: Not Established.

VISCOSITY: Not Applicable.

COEFF. OIL/WATER: Not Established.

ODOR THRESHOLD: Not Established.

COMMENTS: FLAMMABILITY - Refer to Section 2 and Section 5 of this SDS for classification and flammability characteristics.

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

STABILITY: This product is anticipated to be stable under normal ambient storage and handling conditions of temperature and pressure.

POLYMERIZATION: This product is not anticipated to cause hazardous reactions or polymerizations under normal ambient storage and handling conditions of temperature and pressure.

CONDITIONS TO AVOID: Avoid contact with incompatible materials. Avoid exposure to excess heat, sparks, open flame, or other potential ignition sources. Prevent vapor accumulation.

HAZARDOUS DECOMPOSITION PRODUCTS: Products of thermal decomposition include carbon oxides and nitrogen oxides.

INCOMPATIBLE MATERIALS: Strong oxidizing agents, liquid oxygen, mineral acids and metal catalysts.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	**ORAL LD_{50} (rat)**	**DERMAL LD_{50} (rabbit)**	**INHALATION LC_{50} (rat)**
Ethane	Not Established.	Not Established.	> 800000 ppm (15 min)
Propane	Not Established.	Not Established.	658 mg/L (4 hours)
i-Butane	Not Established.	Not Established.	658 mg/L (4 hours)
n-Butane	Not Established.	Not Established.	658 g/m^3
Carbon Dioxide	Not Established.	Not Established.	30000 to 50000 ppm (30 min)
Benzene	930 mg/kg	> 9400 ug/kg	10000 ppm (7 hours)
Hydrogen Sulfide	Not Established.	Not Established.	444 ppm

NOTES: ACUTE TOXICITY & HEALTH EFFECTS - This product is a simple asphyxiant; higher concentrations may cause dizziness. Refer to Section 2 of this SDS for additional hazards identification.

EYE EFFECTS: Not expected to cause prolonged or significant eye irritation.

SKIN EFFECTS: Not expected to cause prolonged or significant skin irritation.

CHRONIC: TOXICITY & HEALTH EFFECTS - This product is not expected to be toxic. Refer to Section 2 of this SDS for additional hazards identification.

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status
Benzene	1	1	Carcinogen.

Notes: No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH, the International Agency for Research on Cancer (ARC), the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

SENSITIZATION: Not Established.

NEUROTOXICITY: Not Established.

GENETIC EFFECTS: Not Established.

REPRODUCTIVE EFFECTS: Not Established.

TARGET ORGANS: Contact may cause damage to the lungs and central nervous system.

TERATOGENIC EFFECTS: Not Established.

MUTAGENICITY: Not Established.

SYNERGISTIC MATERIALS: Not Established.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: MOBILITY IN SOIL POTENTIAL - Not Established.

ECOTOXICOLOGICAL INFORMATION: TERRESTRIAL/MICROORGANISM TOXICITY -

ACUTE: Ecological data does not exist for this mixture.

CHRONIC: Ecological data does not exist for this mixture.

BIOACCUMULATION/ACCUMULATION: Ecological data does not exist for this mixture.

AQUATIC TOXICITY (ACUTE): Ecological data does not exist for this mixture.

Notes: (CHRONIC) - Ecological data does not exist for this mixture.

CHEMICAL FATE INFORMATION: PERSISTENCE & DEGRADABILITY - Not Established.

GENERAL COMMENTS: Any other adverse environmental effects, such as environmental fate (exposure), ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and global warming potential are indicated in this section if data exists. Otherwise, this data has not been established.

COMMENTS: Data from laboratory studies and from scientific literature is noted in this section if available. Otherwise, data has not been established.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: It is recommended that this product, in any form, be incinerated in a suitable combustion chamber for disposal. Empty containers should be disposed of in a similar fashion due to presence of product residue. Follow applicable Federal, state, and local regulations.

PRODUCT DISPOSAL: Persons conducting disposal of this product and its containers/packaging should refer to Section 8 of this SDS for the proper selection of exposure controls and personal protective equipment.

EMPTY CONTAINER: Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static eclectricity, or other sources of ignition. They may explode and cause injury or death.

GENERAL COMMENTS: PHYSICAL & CHEMICAL PROPERTIES THAT MAY AFFECT DISPOSAL OPTIONS - Not Established.

COMMENTS: Dispose of material in accordance with national, state, regional, and local regulations. Never discharge directly into sewers or surface waters. Consult with environmental regulatory agencies for guidance on acceptable disposal practices for the product, in any form, and its containers/packaging.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Compressed gas, flammable, n.o.s.

PRIMARY HAZARD CLASS/DIVISION: 2.1

UN/NA NUMBER: 1954

NAERG: 115

LABEL: 2.1: Flammable Gas

MARINE POLLUTANT #1: Not Listed.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: Fire Hazard. Immediate (Acute) Health Hazard.

FIRE: Yes **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	Wt.%	CERCLA RQ
Benzene	may contain	10
Hydrogen Sulfide	may contain	100

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
Methane	74-82-8
Ethane	74-84-0
Propane	74-98-6
i-Butane	75-28-5
n-Butane	106-97-8
Carbon Dioxide	124-38-9
Nitrogen	7727-37-9

CLEAN AIR ACT

Chemical Name	Vol. %	CAS
Ethane	5 - 10	74-84-0
Propane	1 - 4	74-98-6
i-Butane	0.5 - 3	75-28-5
n-Butane	0.5 - 2	106-97-8

STATES WITH SPECIAL REQUIREMENTS

Chemical Name	Requirements
Ethane	Delaware Air Quality Management Massachusetts Hazardous Substance Minnesota Hazardous Substance New Jersey RTK Hazardous Substance New Jersey TCPA EHS Pennsylvania Hazardous Substance Washington PELs for Air Contaminants
Propane	Delaware Air Quality Management Massachusetts Hazardous Substance Minnesota Hazardous Substance New Jersey RTK Hazardous Substance Pennsylvania Hazardous Substance Washington PELs for Air Contaminants
	CA Hazardous Substance Delaware Air Quality Management Massachusetts Hazardous Substance

n-Butane	Minnesota Hazardous Substance New Jersey RTK Hazardous Substance Pennsylvania Hazardous Substance Pennsylvania Hazardous Substance Washington PELs for Air Contaminants
Carbon Dioxide	CA Hazardous Substance Maine Hazardous Air Pollutant Massachusetts Hazardous Substance Minnesota Hazardous Substance Pennsylvania Hazardous Substance Washington PELs for Air Contaminants
Benzene	CA Hazardous Substance Delaware Air Quality Management Illinois Toxic Air Contaminant Maine Hazardous Air Pollutant Massachusetts Hazardous Substance Michigan Critical Material Minnesota Hazardous Substance New Jersey RTK Hazardous Substance New York Hazardous Substance North Carolina Toxic Air Contaminant Pennsylvania Hazardous Substance Washington PELs for Air Contaminants West Virginia Toxic Air Pollutant Wisconsin Hazardous Air Containment
Hydrogen Sulfide	CA Hazardous Substance Delaware Air Quality Management Idaho Air Pollutant Massachusetts Hazardous Substance Maine Hazardous Air Pollutant Minnesota Hazardous Substance New Jersey RTK Hazardous Substance New Jersey TCPA EHS New York Hazardous Substance North Carolina Toxic Air Contaminant Pennsylvania Hazardous Substance Washington PELs for Air Contaminants Wisconsin Hazardous Air Containment

16. OTHER INFORMATION

RELEVANT R-PHRASES:R61: May cause harm to the unborn child.
R26: Very toxic by inhalation.
R48/23: Toxic : danger of serious damage to health by prolonged exposure through inhalation.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R12: Extremely flammable.
R45: May cause cancer.
R46: May cause heritable genetic damage.
R11: Highly flammable.
R36/38: Irritating to eyes and skin.
R65: Harmful: may cause lung damage if swallowed.

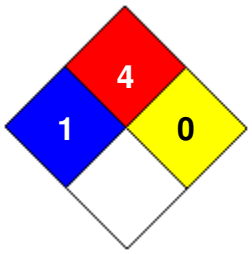
PREPARED BY: Total Safety d/b/a EHS Services

REVISION SUMMARY: This MSDS replaces the 10/26/2012 MSDS.

HMIS RATING

HEALTH	1
FLAMMABILITY	4
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

NFPA CODES



HMIS RATINGS NOTES: Please refer to Section 8 of this SDS for recommended personal protective equipment.

DATA SOURCES:

REFERENCES

ACGIH. 2012 Guide to Occupational Exposure Values. Cincinnati, OH. Signature Publications, 2012.
Forsberg, K.; Mansdorf, S.Z. Quick Selection Guide to Chemical Protective Clothing. Fifth Edition. Hoboken, NJ. John Wiley & Sons, 2007.
Lide, D.R. CRC Handbook of Chemistry and Physics. 88th Edition. Boca Raton, FL. CRC Press, 2008.
UNECE. Globally Harmonized System of Classification and labelling of Chemicals (GHS). Third Revised Edition. New York and Geneva. United Nations, 2009.
US DOT; Pipeline and Hazardous Materials Safety Administration. 2008 Emergency Response Guidebook. Neenah, WI. J.J. Keller & Associates, Inc. 2008.
US EPA. Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act. [Available] Online: http://www.epa.gov/ceppo/pubs/title3.pdf. Retrieved 02/02/2011.

ADDITIONAL MSDS INFORMATION:

KEY / LEGEND

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous Goods by Road
CAA - Clean Air Act
CAS - Chemical Abstracts Service Registry Number
CDG - Carriage of Dangerous Goods By Road and Rail Manual
CERCLA - Comprehensive Environmental Response, Conmensation, and Liability Act
CFR - Code of Federal Regulations
EINECS - European Inventory of Existing Chemical Substances Registry Number
ERG - Emergency Response Guidebook
EPCRA - Emergency Planning and Community Right-to-Know Act
GHS - Globally Harmonized System of Classification and Labelling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
ICAO - International Civil Aviation Organization
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
N/E - Not Established
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit
PPE - Personal Protective Equipment
RCRA - Resource Conversation and Recovery Act
RID - Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ - Reportable Quantities
SARA - Superfund Amendments and Reauthorization Act of 1986
SDS - Safety Data Sheet
TCC - Tag Closed Cup
TDG - Transportation of Dangerous Goods
TLV - Threshold Limit Value
TSCA - Toxic Substance Control Act
UN/NA - United Nations / North American Number
UNECE - United Nations Economic Commission for Europe

US DOT - United States Department of Transportation
US EPA - United States Environmental Protection Agency
Vol. - Volume
WHMIS - Workplace Hazardous Materials Information System

GENERAL STATEMENTS: Other information not included anywhere else in this SDS is included in this section if, in fact, such data exists.

MANUFACTURER DISCLAIMER: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitabliity and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

SAFETY DATA SHEET

Cabot Oil & Gas Corporation

Date Issued : 9-6-2013
SDS No : 0001WV
Date Revised : 9-6-2013
Revision No : 01

Natural Gas Condensate
Petroleum (West Virginia)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Natural Gas Condensate
GENERAL USE: Condensate extracted from natural gas well production.

DISTRIBUTOR
Cabot Oil & Gas Corporation
P.O. Box 4544
Houston, TX 77210-4544

24 HR. EMERGENCY TELEPHONE NUMBERS
1-800-642-0300

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health
Carcinogenicity, Category 1 Eye Irritant, Category 2B Skin Irritant, Category 2

GHS LABEL

WARNING

H320: Causes eye irritation.

H315: Causes skin irritation.

DANGER

H350: May cause cancer.

DANGER

H226 Flammable Liquid and Vapor

PRECAUTIONARY STATEMENT(S)

Prevention:

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.
P264: Wash thoroughly after handling.
P280:: Wear protective gloves.

Response:

P308+P313: IF exposed or concerned: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P332+P313: If skin irritation occurs: Get medical advice/attention.

P362: Take off contaminated clothing and wash before reuse.

Disposal:

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Pale to Dark Brown liquid.

IMMEDIATE CONCERNS: HAZARD DESCRIPTION / WARNING INFORMATION SUMMARY - This product is a flammable liquid which may be harmful if ingested, inhaled, comes in contact with skin or eyes, or is released into the environment. Please read entire contents of Section 2 of this Safety Data Sheet (SDS) for details.

POTENTIAL HEALTH EFFECTS

EYES: Eye contact with vapors may cause eye irritation, watering of eyes and reddening. Eye contact with liquid may cause irritation and pain. Prolonged contact may result in tissue damage.

SKIN: Skin contact may cause skin irritation and redness. Repeated or prolonged skin contact may cause dermatitis.

INGESTION: Ingestion may cause irritation to the gastrointestinal tract with nausea and diarrhea. May be harmful if swallowed in large quantities.

INHALATION: Breathing the mist and vapors may be irritating to the respiratory tract.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

CHRONIC EFFECTS: Skin, eye, and respiratory tract irritation. Gastrointestinal and vascular effects and death may occur at high concentrations. May cause nervous system effects, such as headache, nausea and drowsiness.

CARCINOGENICITY: Not Established.

MUTAGENICITY: Not Established.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Not Established.

TERATOGENIC EFFECTS: Not Established.

MEDICAL CONDITIONS AGGRAVATED: Benzene - Pre-existing blood system disorders, respiratory conditions, central nervous, liver, kidney, and cardio-vascular conditions may be aggravated by severe or chronic overexposure to benzene. Skin disorders may also be aggravated by exposures to benzene.

ROUTES OF ENTRY: Inhalation, skin contact, eye contact, ingestion.

TARGET ORGAN STATEMENT: May cause damage to eyes, skin and respiratory system.

CANCER STATEMENT: This product may cause cancer. Refer to Section 11 of this SDS for details.

SENSITIZATION: Not Established.

COMMENTS: ADDITIONAL MEDICAL AND TOXICOLOGICAL INFORMATION: Natural gas condensate and some of its fractions, which can contaminate produced water, have been shown to cause skin irritation, damage and even cancers when applied directly and repeatedly to skin. When laboratory animals inhale oil vapors at high concentration or ingest in repeated doses, various tumors have developed.

This product contains benzene, which can cause degeneration in blood forming bone marrow leading to anemia which may further degrade to leukemia, a type of cancer (see 29 CFR 1910.1028 of standard). Acute benzene is recognized as a human carcinogen by OSHA, NTP, ACGIH, and IARC.

3. COMPOSITION / INFORMATIO N ON INGREDIENTS

Chemical Name	Vol. %	CAS
Water	84-88	7732-18-5
Calcium Chloride	>0-1.0	10043-52-4
Potassium Chloride	>0-1.0	7447-40-7
Sodium Chloride	>0-1.0	7647-14-5
Benzene	>0-1.0	71-43-2
Toluene	>0-1.0	108-88-3
Ethyl benzene	>0-1.0	100-41-4
m-p- Xylene	>0-1.0	179601-23-1
o-Xylene	>0-1.0	95-47-6
Hexane	>0-1.0	110-54-3
Hydrogen Sulfide	>0-1.0	7783-06-4

COMMENTS: Compositions given are typical values, not specifications. Composition may vary with geographic location, geologic formation, temperature and pressure. Hydrogen sulfide composition is expressed as total sulfur content.

4. FIRST AID MEASURES

EYES: Immediately flush with large amounts of water, holding eyelids open, for at least 20 minutes. Repeat if necessary. Remove contact lenses, if present and easy to do. If pain or redness persists, seek medical attention. If eye is exposed to hot liquid, cover eyes with cloth and seek medical attention immediately.

SKIN: In case of hot liquid exposure, do not remove clothing or treat, wash only unburned area and seek medical attention immediately.

INGESTION: Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Have exposed individual rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Obtain medical assistance immediately and treat as directed by a medical professional.

INHALATION: Move victim to fresh air. Call 911, emergency medical service, or Emergency Phone Numbers(s) provided in Section 1 of this SDS. Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth methods if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.

ANTIDOTES: Not Established.

NOTES TO PHYSICIAN: No specific treatment. Treat symptomatically. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

CLINICAL TESTING & MEDICAL MONITORING FOR DELAYED EFFECTS - Not Established.

COMMENTS: CONTRAINDICATIONS - Not Established.

5. FIRE FIGHTING MEASURES

FLASH POINT: <38°C (100°F)

FLAMMABLE LIMITS: 1 to 15

AUTOIGNITION TEMPERATURE: Not Established.

FIRE FIGHTING PROCEDURES: PROTECTIVE ACTIONS TO TAKE DURING FIRE FIGHTING - Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or

safety devices; icing may occur. Persons involved in fire fighting response involving this product and its containers/packaging should refer to Section 8 of this SDS for the proper selection of exposure controls and personal protective equipment.

FIRE FIGHTING EQUIPMENT: PRECAUTIONS FOR FIRE INVOLVING TANKS OR CAR/TRAILER LOADS - Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

COMMENTS:

SPECIFIC HAZARDS THAT MAY ARISE FROM THE PRODUCT - Vapors are flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger. Sudden reaction and fire may result if product is mixed with an oxidizing agent.

FIRE EXPLOSION: This product is primarily water but can have hydrocarbon gas that can be released with the potential of a fire hazard. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Many liquids are lighter than water. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated.

SENSITIVE TO STATIC DISCHARGE: Not Established.

SENSITIVITY TO IMPACT: Not Established.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: For emergency information and procedures to follow in the case of an accidental release, call the Emergency Telephone Number(s) listed in Section 1 of this SDS. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area 50 meters (160 feet) in all directions. Evacuate building and all affected areas. Keep unauthorized personnel away. Do not touch or walk through spilled material. Stay upwind. Keep out of low areas. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of liquid for later disposal. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. Water spray may reduce vapor; but may not prevent ignition in closed spaces. A vapor suppressing foam may be used to reduce vapors. Provide sufficient ventilation in the affected area(s) and wear appropriate personal protective equipment as indicated in Section 8 when handling spill material.

LARGE SPILL: Use similar response procedures as indicated under Small Spill. Consider initial downwind evacuation for at least 100 meters (330 feet). Large releases may require the notification of local emergency response agencies. Wear self-contained breathing apparatus if conditions or air monitoring warrants.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Handle in accordance with good industrial hygiene and safety practices. These practices include but are not limited to avoiding unnecessary exposure and prompt removal of material from eyes, skin and clothing. Wash exposed skin and clothing frequently. If needed, take first aid actions as indicated in Section 4 of this SDS.

HANDLING: Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product dust or vapors. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Remove contaminated clothing immediately. Wash with soap and water after working with this product.

STORAGE: Keep in airtight container away from all heat sources. Store in a segregated and approved area. Store in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Keep container in a well-ventilated area. Ground all containers during transfer. Store away from incompatible materials. Cylinders should be separated from oxygen cylinders or other oxidizers by a minimum distance of 20 feet, or by a barrier of non-combustible material at least 5 feet high having a fire resistance rating of at least 1/2 hour. Store in the original container or an approved alternative made from compatible material. Do not store in unlabeled containers. Treat empty containers in a similar fashion as residual product may exist. Use appropriate containment to avoid environmental contamination.

STORAGE TEMPERATURE: Store containers of product in cool (between 50°F or below), well ventilated location.

STORAGE PRESSURE: Store in a room with ambient pressure.

ELECTROSTATIC ACCUMULATION HAZARD: Not Established.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)			
		EXPOSURE LIMITS	
		OSHA PEL	ACGIH TLV
Chemical Name		ppm	ppm
Calcium Chloride	TWA	N/E	N/E
	STEL	N/E	N/E
Potassium Chloride	TWA	NE	N/E
	STEL	N/E	N/E
Sodium Chloride	TWA	N/E	N/E
	STEL	N/E	N/E
Benzene	TWA	0.1	0.5
	STEL	1	2.5
Toluene	TWA	200	20
	STEL	300	N/E
Ethyl benzene	TWA	100	20
	STEL	N/E	N/E
m-p Xylene	TWA	100	100
	STEL	N/E	150
o- Xylene	TWA	100	100
	STEL	N/E	150
Hexane	TWA	500	50
	STEL	N/E	N/E
Hydrogen Sulfide	TWA	N/E	1
	STEL	20	5

Footnotes:
1. OSHA has also assigned H_2S a STEL value of 50 ppm for a 10-minute peak that may be reached only once per 8-hour shift.
C = Ceiling

ENGINEERING CONTROLS: Provide adequate general and local ventilation to maintain airborne chemical concentrations below applicable exposure limits, to prevent accumulation of flammable vapors and formation of explosive atmospheres, and to prevent formation of oxygen deficient atmospheres, especially in confined spaces. This product may release gases or vapors that can displace oxygen in enclosed areas.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Employees should be provided with and required to use splash-proof safety goggles and full face splash shields where there is any possibility of product coming in contact with eyes. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of contact lenses. Ensure that eye wash station is operable and nearby.

SKIN: Consider wearing long-sleeve, FRC, otherwise normal working clothes should be worn. Wash contaminated clothing prior to reuse. If gloves are required for job operations involving this product, wear nitrile rubber or polyvinylalcohol (PVAL) gloves.

RESPIRATORY: Respiratory protection is normally not required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Select NIOSH-approved organic vapor air-purifying respirator, SCBA or air-supplied respirator where there may be potential for overexposure.

PROTECTIVE CLOTHING: Long sleeve shirt and long pants or coveralls. Consider wearing butyl rubber apron or outerwear where splashing may occur. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.

WORK HYGIENIC PRACTICES: Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and launder before reuse. Shower after work using plenty of soap and water.

OTHER USE PRECAUTIONS: FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR DEATH CONDITIONS - A self-contained breathing apparatus with full face piece operated in a pressure-demand or other positive pressure mode is recommended for firefighting or other immediately dangerous to life and death conditions. Supplied-air respirator with full face piece and operated in pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode may also be used.

COMMENTS: EXPOSURE LIMITS & SOURCES - Refer to Section 16 Table 1 for additional exposure limits and sources for this product or its components, whichever applies.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Hydrocarbon.

APPEARANCE: Dark Brown to Black.

pH: 6 to 8

PERCENT VOLATILE: Negligible.

VAPOR PRESSURE: Not Established.

VAPOR DENSITY: 1.2 (Air = 1)

BOILING POINT: Varies widely depending on hydrocarbon content.

FREEZING POINT: < 0°C (32°F)

POUR POINT: Not Established.

FLASH POINT: Variable organic oil and dissolved gas maybe flammable.

SOLUBILITY IN WATER: Not Established.

EVAPORATION RATE: Not Established.

SPECIFIC GRAVITY: > 1.000 at 0°C (32°F)

VISCOSITY: Not Established.

COEFF. OIL/WATER: Not Established.

ODOR THRESHOLD: Not Established.

10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

STABILITY: CHEMICAL STABILITY - This product is anticipated to be stable under normal ambient storage and handling conditions of temperature and pressure.

POLYMERIZATION: This product is not anticipated to cause hazardous reactions or polymerizations under normal ambient storage and handling conditions of temperature and pressure.

CONDITIONS TO AVOID: Avoid contact with incompatible materials such as heat, open flame, other sources of ignition, and oxidizing materials such as chlorine and concentrated nitric acid.

HAZARDOUS DECOMPOSITION PRODUCTS: This product may produce carbon monoxide and carbon dioxide during decomposition.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)	INHALATION LC_{50} (rat)
Sodium Chloride	3000 mg/kg	N/E	N/E
Calcium Chloride	1000 mg/kg	2630 mg/kg	Not Established.
Xylene	5000 mg/kg	12400 mg/kg	4550 ppm (4 hours)
Hexane	25 g/kg	Not Established.	48000 ppm (4 hours)
Crude Oil	> 5000 mg/kg	> 2000 mg/kg	Not Established.
Toluene	636 mg/kg	14100 ug/kg	49 g/m^3 (4 hours)
Benzene	930 mg/kg	> 9400 ug/kg	10000 ppm (7 hours)
Ethyl benzene	<= 3500 mg/kg	<= 3500 mg/kg	<= 55000 mg/m^3
Hydrogen Sulfide	Not Established.	Not Established.	700 mg/m3 (4 hours)

EYE EFFECTS: May cause moderate to severe eye irritation.

SKIN EFFECTS: May cause mild skin irritation. Prolonged or repeated contact may result in mild irritation. May be absorbed through skin with toxic effects.

CHRONIC: This product contains benzene, which can cause degeneration in blood forming bone marrow leading to anemia, which may further degrade to leukemia, a type of cancer. Chronic exposure affects the hematopoietic system causing blood disorders including anemia and pancytopenia.

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status
Crude Oil		3	
Benzene	1	1	Carcinogen.

SENSITIZATION: This product is not expected to be a skin sensitizer.

NEUROTOXICITY: Not Established. **GENETIC**

EFFECTS: Not Established. **REPRODUCTIVE**

EFFECTS: Not Established. **TERATOG ENIC**

EFFECTS: Not Established. **MUTAGENICITY:**

Not Established.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: MOBILITY IN SOIL POTENTIAL - Not Established.

BIOACCUMULATION/ACCUMULATION: Not Established.

DISTRIBUTIO N: Do not discharge into or allow runoff to flow into sewers and natural waterways. Contain spill material and dike for proper disposal.

AQUATIC TOXICITY (ACUTE): This product is not expected to be harmful to aquatic life.

96-HOUR LC_{50}: 3930 - 5360 mg/L Pimephales promelas for calcium chloride.

48-HOUR EC_{50}: 52 mg/L for Daphnia magna for calcium chloride.

CHEMICAL FATE INFORMATION: PERSISTENCE & DEGRADABILITY - Not Established.

GENERAL COMMENTS: Any other adverse environmental effects, such as environmental fate (exposure), ozone depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and global warming potential are indicated in this section if data exists. Otherwise, this data has not been established.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: This product is not a listed hazardous waste. However, when disposed of in containers it may meet the criteria of being an ignitable waste. It is the responsibility of the user to determine if the material disposed of meets federal, state, or local criteria to be defined as a hazardous waste and dispose of accordance with applicable Federal, state and local regulations.

EMPTY CONTAINER: Offer rinsed packaging material to local recycling facilities.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATIO N)

PROPER SHIPPING NAME: Flammable liquid, n.o.s.

PRIMARY HAZARD CLASS/DIVISION: 3

UN/NA NUMBER: 1993

PACKING GROUP: II

NAERG: 128

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: Fire hazard. Immediate (acute) health hazard. Delayed (chronic) health hazard.

FIRE: Yes **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Vol. %	CAS
Benzene	>0-1.0	71-43-2

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	Vol. %	CERCLA RQ
Benzene	>0-1.0	10
Hydrogen Sulfide	>0-1.0	100

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
Sodium Chloride	7647-14-5
Calcium Chloride	10043-52-4
Crude Oil	8002-05-9
Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

CLEAN AIR ACT

Chemical Name	Vol. %	CAS
Hydrogen Sulfide	>0-1.0	7783-06-4

STATES WITH SPECIAL REQUIREMENTS

Chemical Name	Requirements
Crude Oil	Massachusetts Hazardous Substance Minnesota Hazardous Substance Pennsylvania Hazardous Substance
Benzene	CA Hazardous Substance Delaware Air Quality Management Illinois Toxic Air Contaminant Maine Hazardous Air Pollutant Massachusetts Hazardous Substance Michigan Critical Material Minnesota Hazardous Substance New Jersey RTK Hazardous Substance New York Hazardous Substance North Carolina Toxic Air Contaminant Pennsylvania Hazardous Substance Washington PELs for Air Contaminants West Virginia Toxic Air Pollutant Wisconsin Hazardous Air Containment
Hydrogen Sulfide	CA Hazardous Substance Delaware Air Quality Management Idaho Air Pollutant Massachusetts Hazardous Substance Maine Hazardous Air Pollutant Minnesota Hazardous Substance New Jersey RTK Hazardous Substance New Jersey TCPA EHS New York Hazardous Substance North Carolina Toxic Air Contaminant Pennsylvania Hazardous Substance Washington PELs for Air Contaminants Wisconsin Hazardous Air Containment

CALIFORNIA PROPOSITION 65

Chemical Name	Vol. %	Listed
Benzene	< 1	Developmental Toxicity Male Reproductive

16. OTHER INFORMATIO N

RELEVANT R-PHRASES:R36/37/38: Irritating to eyes, respiratory system and skin.
R45: May cause cancer.
R46: May cause heritable genetic damage.
R11: Highly flammable.
R36/38: Irritating to eyes and skin.
R65: Harmful: may cause lung damage if swallowed.
R12: Extremely flammable.
R26: Very toxic by inhalation.
R50: Very toxic to aquatic organisms.

PREPARED BY: SLR International Corporation

REVISION SUMMARY:

NATIONAL FIRE PROTECTION ASSOCIATION®HAZARD RATING

HEALTH:	2-Hazardous
FIRE:	3-Below 100°F (flashpoint)
REACTIVITY:	0- Stable

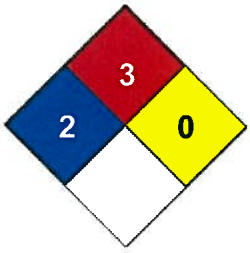
HAZARDOUS MATERIAL IDENTIFICATION SYSTEM®HAZARD RATING

HEALTH:	2*- Moderate Hazard (*Chronic)
FIRE:	3- Serious Hazard
PHYSICAL:	0- Minimal Hazard

HMIS RATING

HEALTH *	2
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	G

NFPA CODES



DATA SOURCES:

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ADDITIONAL MSDS INFORMATION:

KEY / LEGEND

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous Goods by Road
CAA - Clean Air Act
CAS - Chemical Abstracts Service Registry Number
CDG - Carriage of Dangerous Goods By Road and Rail Manual
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
EINECS - European Inventory of Existing Chemical Substances Registry Number

ERG - Emergency Response Guidebook
EPCRA - Emergency Planning and Community Right-to-Know Act
GHS - Globally Harmonized System of Classification and Labeling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
ICAO - International Civil Aviation Organization
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
N/E - Not Established
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit
PPE - Personal Protective Equipment
RCRA - Resource Conversation and Recovery Act
RID - Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ - Reportable Quantities
SARA - Superfund Amendments and Reauthorization Act of 1986
SDS - Safety Data Sheet
TCC - Tag Closed Cup
TDG - Transportation of Dangerous Goods
TLV - Threshold Limit Value
TSCA - Toxic Substance Control Act
UN/NA - United Nations / North American Number
UNECE - United Nations Economic Commission for Europe
US DOT - United States Department of Transportation
US EPA - United States Environmental Protection Agency
Vol. - Volume
WHMIS - Workplace Hazardous Materials Information System

GENERAL STATEMENTS: Other information not included anywhere else in this SDS is included in this section if, in fact, such data exists.

MANUFACTURER DISCLAIMER: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. NO WARRANTY OF MERCANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

ATTACHMENT I

EMISSION UNITS TABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 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]
RBV-1	E01	Dehydration Unit Reboiler; Afco Burners; Model # SB12-8	1984	0.30 mmBtu/hr	Modification	None
RSV-1	E02	Dehydration Unit Still Column; Rama Fabrication; Model # UK	1984	2.5 mmscf/d	Modification	None
CE-1	E03	Caterpillar G-342NA; 4SRB	1984	225 hp	(Grandfathered)	None
T01	E04	Pipeline Liquids AST	1984	2,100 gal	(Grandfathered)	None
T02	E05	Pipeline Liquids AST	1984	2,100 gal	(Grandfathered)	None
TL-1	E06	Pipeline Liquids – Truck Loading	1984	153,300 gal/yr	(Grandfathered)	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

Witcher Compressor Station,
Belle, West Virginia

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

September 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			
E01	Vertical Stack	RBV-1	AFCO Burners; Model # SB12-8	NA	NA	NA	NA	NO_X CO VOC SO_2 PM_{10} CO2e	0.03 0.02 0.01 0.00 0.00 51.90	0.13 0.11 0.01 0.00 0.01 227.31	0.03 0.02 0.01 0.00 0.00 51.90	0.13 0.11 0.01 0.00 0.01 227.31	Gas/ Vapor	EE	Can Supply Upon Request
E02	Vertical Stack	RSV-1	Rama Fabrication; Model # UK	NA	NA	NA	NA	VOC Benzene Toluene Ethylbenzene Xylene n-Hexane	12.55 0.77 1.40 0.20 2.18 0.39	54.95 3.36 6.14 0.87 9.57 1.69	12.55 0.77 1.40 0.20 2.18 0.39	54.95 3.36 6.14 0.87 9.57 1.69	Gas/ Vapor	EE	Can Supply Upon Request

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

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

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

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

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

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

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

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

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (^{0}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
E01	1.0	425	53.05	4.50	715 ft	15.0 ft	4,233.019	458.481
E02	0.5	212	6.53	0.55	715 ft	15.0 ft	4,233.019	458.481

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

ATTACHMENT K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

NOT APPLICABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

ATTACHMENT L

EMISSION UNIT DATA SHEET

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

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	E01	Dehydration Unit Reboiler; Afco Burners; Model # SB12-8	1984	Modification	0.30	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: Rama Fabrication	Model: UK
Max. Dry Gas Flow Rate: 2.5 mmscf/day	Reboiler Design Heat Input: 0.30 MMBTU/hr
Design Type: ☒ TEG ☐ DEG ☐ EG	Source Status[1]: MS
Date Installed/Modified/Removed[2]: 1984	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): 2.23 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 / E01	Reboiler Vent	AP	NO_x	0.03	0.13
		AP	CO	0.02	0.11
		AP	VOC	0.01	0.01
		AP	SO_2	0.01	0.01
		AP	PM_{10}	0.01	0.01
		AP	GHG (CO_2e)	35.10	153.75

RSV-1 / E02	Glycol Regenerator Still Vent	GRI-GlyCalc™	VOC	12.54	54.94
		GRI-GlyCalc™	Benzene	0.77	3.36
		GRI-GlyCalc™	Toluene	1.40	6.14
		GRI-GlyCalc™	Ethylbenzene	0.20	0.87
		GRI-GlyCalc™	Xylenes	2.18	9.57
		GRI-GlyCalc™	n-Hexane	0.39	1.69

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.

ATTACHMENT M

AIR POLLUTION CONTROL DEVICE SHEET(S)

NOT APPLICABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

ATTACHMENT N

SUPPORTING EMISSIONS CALCULATIONS

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

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

Criteria Pollutants

Proposed Rule 13 Permit Application Allowables - Criteria Pollutants

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Reboiler (ton/yr)	0.010	0.010	0.010	0.001	0.129	0.108	0.007	153.751
Dehy Unit (ton/yr)	-	-	-	-	-	-	54.940	73.555
Total Emissions (ton/yr)	0.010	0.010	0.010	0.001	0.129	0.108	54.947	227.306
Total Emissions (lb/hr)	0.002	0.002	0.002	0.0002	0.029	0.025	12.545	51.896

Hazardous Air Pollutants (HAPs)

Proposed Rule 13 Permit Application Allowables - HAPs

Source	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Reboiler (ton/yr)	-	0.0000	0.0000	-	-	0.0023	0.000	0.002
Dehy Unit (ton/yr)	-	3.3600	6.1420	0.8743	9.5656	1.6891	-	21.648
Total Emissions (ton/yr)	0.000	3.360	6.142	0.874	9.566	1.691	0.000	21.651
Total Emissions (lb/hr)	0.000	0.767	1.402	0.200	2.184	0.386	0.000	4.943

Criteria Pollutants

Proposed Facility Wide PTE for Title V Applicability Status Determination - Criteria Pollutants

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	CO2e
Engines (ton/yr)	0.139	0.139	0.139	0.005	15.792	26.583	0.212	836.136
Reboiler (ton/yr)	0.010	0.010	0.010	0.001	0.129	0.108	0.007	153.751
Dehydration Unit (ton/yr)	-	-	-	-	-	-	54.940	73.555
Tanks (ton/yr)	-	-	-	-	-	-	0.639	-
Truck Loading (ton/yr)	-	-	-	-	-	-	0.280	-
Fugitives (ton/yr)	-	-	-	-	-	-	0.865	20.108
Total Emissions (ton/yr)	0.148	0.148	0.148	0.006	15.921	26.691	56.943	1083.551
Total Emissions (lb/hr)	0.034	0.034	0.034	0.001	3.635	6.094	13.001	247.386

Hazardous Air Pollutants (HAPs)

Proposed Facility Wide PTE for Title V Applicability Status Determination - HAPs

Source	Acetaldehyde	Benzene	Toluene	Ethylbenzene	Xylene	n-Hexane	Formaldehyde	Total HAPs
Engines (ton/yr)	0.0199	0.0113	0.0040	0.0002	0.0014	-	0.146	0.232
Reboiler (ton/yr)	-	0.0000	0.0000	-	-	0.0023	0.000	0.002
Dehy Unit (ton/yr)	-	3.3600	6.1420	0.8743	9.5656	1.6891	-	21.648
Tanks (ton/yr)	-	-	-	-	-	-	-	-
Truck Loading (ton/yr)	-	-	-	-	-	-	-	-
Fugitives (ton/yr)	-	0.0007	0.0003	0.0001	0.0122	0.0122	-	0.025
Total Emissions (ton/yr)	0.020	3.372	6.146	0.875	9.579	1.704	0.147	21.908
Total Emissions (lb/hr)	0.005	0.770	1.403	0.200	2.187	0.389	0.033	5.002

Table 2. Reciprocating Engine / Integral Compressor Emissions (CE-1)
Caterpillar G-342NA; 4SRB
Cranberrry Pipeline Corporation - Witcher Compressor Station

Pollutant	Maximum Hourly Emissions						Annual Emissions					
	Emission Factor			PTE per Engine (lb/hr)			Emission Factor			PTE per Engine (tons/yr)		
Criteria Pollutants												
PM/PM10/PM2.5	1.94E-02	lb/MMBtu	(1)	0.032	(a)		1.94E-02	lb/MMBtu	(1)	0.14	(c)	
SO_2	0.25 grains S / 100 ft^3		(2)	0.001	(e)		0.25 grains S / 100 ft^3		(2)	0.005	(f)	
NOx	2.21E+00	lb/MMBtu	(1)	3.61	(a)		2.21E+00	lb/MMBtu	(1)	15.79	(c)	
CO	3.72E+00	lb/MMBtu	(1)	6.07	(a)		3.72E+00	lb/MMBtu	(1)	26.58	(c)	
VOC	2.96E-02	lb/MMBtu	(1)	0.05	(a)		2.96E-02	lb/MMBtu	(1)	0.21	(c)	
Hazardous Air Pollutants												
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	(1)	0.000	(a)		2.53E-05	lb/MMBtu	(1)	0.000	(c)	
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	(1)	0.000	(a)		1.53E-05	lb/MMBtu	(1)	0.000	(c)	
1,3-Butadiene	6.63E-04	lb/MMBtu	(1)	0.001	(a)		6.63E-04	lb/MMBtu	(1)	0.005	(c)	
1,3-Dichloropropene	1.27E-05	lb/MMBtu	(1)	0.000	(a)		1.27E-05	lb/MMBtu	(1)	0.000	(c)	
Acetaldehyde	2.79E-03	lb/MMBtu	(1)	0.005	(a)		2.79E-03	lb/MMBtu	(1)	0.020	(c)	
Acrolein	2.63E-03	lb/MMBtu	(1)	0.004	(a)		2.63E-03	lb/MMBtu	(1)	0.019	(c)	
Benzene	1.58E-03	lb/MMBtu	(1)	0.003	(a)		1.58E-03	lb/MMBtu	(1)	0.011	(c)	
Carbon Tetrachloride	1.77E-05	lb/MMBtu	(1)	0.000	(a)		1.77E-05	lb/MMBtu	(1)	0.000	(c)	
Chlorobenzene	1.29E-05	lb/MMBtu	(1)	0.000	(a)		1.29E-05	lb/MMBtu	(1)	0.000	(c)	
Chloroform	1.37E-05	lb/MMBtu	(1)	0.000	(a)		1.37E-05	lb/MMBtu	(1)	0.000	(c)	
Ethylbenzene	2.48E-05	lb/MMBtu	(1)	0.000	(a)		2.48E-05	lb/MMBtu	(1)	0.000	(c)	
Ethylene Dibromide	2.13E-05	lb/MMBtu	(1)	0.000	(a)		2.13E-05	lb/MMBtu	(1)	0.000	(c)	
Formaldehyde	2.05E-02	lb/MMBtu	(1)	0.033	(a)		2.05E-02	lb/MMBtu	(1)	0.146	(c)	
Methanol	3.06E-03	lb/MMBtu	(1)	0.005	(a)		3.06E-03	lb/MMBtu	(1)	0.022	(c)	
Methylene Chloride	4.12E-05	lb/MMBtu	(1)	0.000	(a)		4.12E-05	lb/MMBtu	(1)	0.000	(c)	
Naphthalene	9.71E-05	lb/MMBtu	(1)	0.000	(a)		9.71E-05	lb/MMBtu	(1)	0.001	(c)	
PAH (POM)	1.41E-04	lb/MMBtu	(1)	0.000	(a)		1.41E-04	lb/MMBtu	(1)	0.001	(c)	
Styrene	1.19E-05	lb/MMBtu	(1)	0.000	(a)		1.19E-05	lb/MMBtu	(1)	0.000	(c)	
Toluene	5.58E-04	lb/MMBtu	(1)	0.001	(a)		5.58E-04	lb/MMBtu	(1)	0.004	(c)	
Vinyl Chloride	7.16E-06	lb/MMBtu	(1)	0.000	(a)		7.16E-06	lb/MMBtu	(1)	0.000	(c)	
Xylenes	1.95E-04	lb/MMBtu	(1)	0.000	(a)		1.95E-04	lb/MMBtu	(1)	0.001	(c)	
Total HAP				**0.053**						**0.232**		
Greenhouse Gas Emissions												
CO_2	116.89	lb/MMBtu	(4)	190.70	(a)		116.89	lb/MMBtu	(4)	835.27	(c)	
CH_4	2.2E-03	lb/MMBtu	(4)	0.00	(a)		2.2E-03	lb/MMBtu	(4)	0.02	(c)	
N_2O	2.2E-04	lb/MMBtu	(4)	0.00	(a)		2.2E-04	lb/MMBtu	(4)	0.00	(c)	
$CO_2e^{(g)}$	-	-		190.90						836.14		

Calculations:

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

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

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

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

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

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

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

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

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

MAXIMUM HOURLY EMISSION INPUTS		
Engine Power Output (kW) =	168	
Engine Power Output (hp) =	225	
Number of Engines =	1	
Average BSFC (BTU/HP-hr) =	7,251	(5)
Heat Content Natural Gas(Btu/scf) =	1,020.0	(6)
Fuel Throughput (ft3/hr) =	1,599.5	(7)
PTE Hours of Operation =	8,760	

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

CO_2	1	(8)
CH_4	25	(8)
N_2O	298	(8)

Notes:

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

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

(3) Emission Factors derived from Stack Test Data

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

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

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

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

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

Table 3. TEG Dehydration Unit Reboiler Emissions (RBV-1)
AFCO Burners; Model # SB12-8
Cranberrry Pipeline Corporation - Witcher Compressor Station

Pollutant	Emission Factor			PTE per Burner (lb/hr)		PTE per Burner (ton/yr)	
Criteria Pollutants							
PM/PM10/PM2.5	7.6	lb/MMcf	(1)	0.0022	(a)	0.01	(b)
SO_2	0.25 grains S / 100ft^3		(5)	0.000	(e)	0.00	(f)
NOx	100	lb/MMcf	(2)	0.03	(a)	0.13	(b)
CO	84	lb/MMcf	(2)	0.02	(a)	0.11	(b)
VOC	5.5	lb/MMcf	(1)	0.0016	(a)	0.01	(b)
Hazardous Air Pollutants							
Arsenic	2.00E-04	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Benzene	2.10E-03	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Beryllium	1.20E-05	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Cadmium	1.10E-03	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Chromium	1.40E-03	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Cobalt	8.40E-05	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Dichlorobenzene	1.20E-03	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Formaldehyde	7.50E-02	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Hexane	1.80E+00	lb/MMcf	(4)	0.00	(a)	0.002	(b)
Lead	5.00E-04	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Manganese	3.80E-04	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Mercury	2.60E-04	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Naphthalene	6.10E-04	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Nickel	2.10E-03	lb/MMcf	(3)	0.00	(a)	0.000	(b)
PAH/POM	1.29E-03	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Selenium	2.40E-05	lb/MMcf	(3)	0.00	(a)	0.000	(b)
Toluene	3.40E-03	lb/MMcf	(4)	0.00	(a)	0.000	(b)
Total HAP				0.00		0.002	
Greenhouse Gas Emissions							
CO_2	116.89	lb/MMBtu	(6)	35.07	(c)	153.59	(d)
CH_4	2.2E-03	lb/MMBtu	(6)	0.00	(c)	0.00	(d)
N_2O	2.2E-04	lb/MMBtu	(6)	0.00	(c)	0.00	(d)
$CO_2e^{(g)}$	-	-		35.10		153.75	

Calculations:

LB/MMCF

(a) Hourly emissions (lb/hr) = Emission Factor (lb/MMcf) * Fuel Use (MMCF/yr) / Annual hours of operation (hr/yr)

(b) Annual emissions (ton/yr) = Emission Factor (lb/MMcf) * Fuel Use (MMcf/yr) * (1ton/2000lbs)

LB/MMBTU

(c) Hourly Emissions (lb/hr) = Emission Factor (lb/MMBtu) * Fuel Use (MMBtu/hr)

(d) Annual Emissions (ton/yr) = Emission Factor (lb/MMBtu) * Fuel Use (MMBtu/hr) * Hours of operation (hr/yr) * (1ton/2000lbs)

SO_2

(e) Hourly Emissions SO2 Caclulation (lb/hr) = (0.25 grain S/100ft3) * Fuel throughput (MMft3/yr) * (1000000ft3/1MMft3) / annual hours of operation (hr/yr) * (1lb/7000 grains) * (lbmol S/32.06 lb S) * (lbmol SO2/ lbmol S) *(64.07 lb SO2/lbmol SO2)

(f) Annual Emissions SO2 Caclulation (ton/yr) = (0.25 grain S/100ft3) * Fuel throughput (MMft3/yr) * (1000000ft3/1MMft3) * (1lb/7000 grains) * (lbmol S/32.06 lb S) * (lbmol SO2/ lbmol S) *(64.07 lb SO2/lbmol SO2) * (1ton/2000lbs)

EMISSION INPUTS TABLE	
Fuel Use (MMBtu/hr) =	0.3
Number of Reboilers =	1
Hours of Operation (hr/yr) =	8760
MMBtu/MMcf =	1020
PTE Fuel Use (MMft3/yr) =	2.58

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

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

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) AP-42, Chapter 5.3, Section 5.3.1

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

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

Table 4. Dehydration Unit Still Column Emissions (RSV-1)
Rama Fabrication; Model # UK
Cranberrry Pipeline Corporation - Witcher Compressor Station

Source	PTE per unit (lb/hr)	PTE per unit (lb/day)	PTE [(2)] per unit (tons/yr)
Criteria Pollutants			
VOC	12.543	301.042	54.940
Hazardous Air Pollutants			
2,2,4 - Trimethylpentane	0.004	0.094	0.017
Benzene	0.767	18.411	3.360
Toluene	1.402	33.655	6.142
Ethylbenzene	0.200	4.791	0.874
Xylenes	2.184	52.414	9.566
n-Hexane	0.386	9.255	1.689
Total HAPs	4.9424	118.6200	21.6481
Greenhouse Gas Emissions			
CO_2			-
CH_4	0.6717	16.1220	2.9422
N_2O	-	-	-
$CO_2e^{(a)}$	16.79	403.05	73.56

Calculations:

EMISSION INPUTS	
Dehy Rating (MMscf/d) =	2.5
Number of Units =	1
Hours of Operation =	8760

(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	(3)
CH_4	25	(3)
N_2O	298	(3)

Notes:

(1) When comparing gas analyses from previous wet gas samples taken at this station in years past, the gas analyses have shown substantial variation in pollutants, more specifically HAPs. In order to better account for gas variability, an average value was obtained and used for the concentrations of HAPs

(2) Emissions Calculated utilizing GRI-GLYCalc 4.0 and reflect the uncontrolled regenerator emissions

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

Table 5. Tank Emissions
Cranberrry Pipeline Corporation - Witcher 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)[a]	VOC Emissions (lb/hr)[b]	VOC Emissions (tons/yr)[c]
T01	2100	Pipeline Liquids	None	5.00	3.50E-01	(1)	638.75	0.073	0.319
T02	2100	Pipeline Liquids	None	5.00	3.50E-01	(1)	638.75	0.073	0.319
Totals							**1277.50**	**0.15**	**0.64**

Calculations:

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

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

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

Notes:

(1) VOC emission factor includes Flashing/Working/Breathing losses calculated from pressurized liquid sample (GOR= 0.35 lb VOC/bbl) direct flash measurement. The pressurized liquid sample was taken from the Putnam B6 site on 4/25/2013 and is considered to be worst case representative with respect to gas composition and pressure at the Station

Table 6. Truck Loading (TL) VOC Emissions
Cranberrry Pipeline Corporation - Witcher 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

Table 8. Fugitive Leak Emissions
Cranberrry Pipeline Corporation - Witcher 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)	**0.86**
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**
Total **n-Hexane** Released (gas service)			(2)	**0.01**
			CO2e	**20.11**

Calculations:

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

(b) Gas sample from station's gas analysis assumed to be worst case at 11 wt % VOC from 2016 wet gas measurements

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 station's gas analysis

(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

March 18, 2016

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

For: SLR International Corporation
8 Capitol Street, Suite 300
Charleston, West Virginia 25301

Sample: Cabot
Witcher
Pre-Dehy
Sampled @ 160 psig & 55 °F

Date Sampled: 02/29/2016 Job Number: 61668.011

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286

COMPONENT	MOL%	GPM
Nitrogen	0.929	
Carbon Dioxide	0.225	
Methane	77.493	
Ethane	11.550	3.071
Propane	5.291	1.449
Isobutane	0.964	0.314
n-Butane	1.784	0.559
2-2 Dimethylpropane	0.025	0.009
Isopentane	0.639	0.232
n-Pentane	0.447	0.161
Hexanes	0.465	0.191
Heptanes Plus	0.188	0.076
Totals	100.000	6.064

Computed Real Characteristics Of Heptanes Plus:

Specific Gravity	3.303	(Air=1)
Molecular Weight	95.31	
Gross Heating Value	5003	BTU/CF

Computed Real Characteristics Of Total Sample:

Specific Gravity	0.748	(Air=1)
Compressibility (Z)	0.9962	
Molecular Weight	21.58	
Gross Heating Value		
Dry Basis	1287	BTU/CF
Saturated Basis	1265	BTU/CF

Base Conditions: 14.650 PSI & 60 Deg F

Sampled By: RSJ
Analyst: HB
Processor: HB
Cylinder ID: T-5743

Certified: FESCO, Ltd. - Alice, Texas

David Dannhaus 361-661-7015

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2286
TOTAL REPORT

COMPONENT	MOL %	GPM	WT %
Nitrogen	0.929		1.206
Carbon Dioxide	0.225		0.459
Methane	77.493		57.615
Ethane	11.550	3.071	16.097
Propane	5.291	1.449	10.814
Isobutane	0.964	0.314	2.597
n-Butane	1.784	0.559	4.806
2,2 Dimethylpropane	0.025	0.009	0.084
Isopentane	0.639	0.232	2.137
n-Pentane	0.447	0.161	1.495
2,2 Dimethylbutane	0.029	0.012	0.116
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.045	0.018	0.180
2 Methylpentane	0.153	0.063	0.611
3 Methylpentane	0.083	0.034	0.332
n-Hexane	0.155	0.063	0.619
Methylcyclopentane	0.027	0.009	0.105
Benzene	0.009	0.003	0.033
Cyclohexane	0.023	0.008	0.090
2-Methylhexane	0.020	0.009	0.093
3-Methylhexane	0.018	0.008	0.084
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C7's	0.030	0.013	0.138
n-Heptane	0.021	0.010	0.098
Methylcyclohexane	0.020	0.008	0.091
Toluene	0.004	0.001	0.017
Other C8's	0.011	0.005	0.056
n-Octane	0.003	0.002	0.016
Ethylbenzene	0.000	0.000	0.000
M & P Xylenes	0.001	0.000	0.005
O-Xylene	0.000	0.000	0.000
Other C9's	0.001	0.001	0.006
n-Nonane	0.000	0.000	0.000
Other C10's	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Undecanes (11)	0.000	0.000	0.000
Totals	100.000	6.064	100.000

Computed Real Characteristics of Total Sample

Specific Gravity	0.748	(Air=1)
Compressibility (Z)	0.9962	
Molecular Weight	21.58	

Gross Heating Value

Dry Basis	1287	BTU/CF
Saturated Basis	1265	BTU/CF

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

Sample: Cabot
Witcher
Pre-Dehy
Sampled @ 160 psig & 55 °F

Date Sampled: 02/29/2016 Job Number: 61668.011

GLYCALC FORMAT

COMPONENT	MOL%	GPM	Wt %
Carbon Dioxide	0.225		0.459
Hydrogen Sulfide	----		----
Nitrogen	0.929		1.206
Methane	77.493		57.615
Ethane	11.550	3.071	16.097
Propane	5.291	1.449	10.814
Isobutane	0.964	0.314	2.597
n-Butane	1.809	0.569	4.890
Isopentane	0.639	0.232	2.137
n-Pentane	0.447	0.161	1.495
Cyclopentane	0.000	0.000	0.000
n-Hexane	0.155	0.063	0.619
Cyclohexane	0.023	0.008	0.090
Other C6's	0.310	0.127	1.239
Heptanes	0.116	0.049	0.518
Methylcyclohexane	0.020	0.008	0.091
2,2,4 Trimethylpentane	0.000	0.000	0.000
Benzene	0.009	0.003	0.033
Toluene	0.004	0.001	0.017
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.001	0.000	0.005
Octanes Plus	0.015	0.007	0.078
Totals	100.000	6.064	100.000

Real Characteristics Of Octanes Plus:

Specific Gravity	3.885	(Air=1)
Molecular Weight	112.09	
Gross Heating Value	5671	BTU/CF

Real Characteristics Of Total Sample:

Specific Gravity	0.748	(Air=1)
Compressibility (Z)	0.9962	
Molecular Weight	21.58	
Gross Heating Value		
Dry Basis	1287	BTU/CF
Saturated Basis	1265	BTU/CF

Certificate of Analysis

Number: 1030-14060605-001A

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

June 23, 2014

Nathaniel Lanham
SLR- International
8 Capitol Street
Suite 300
Charleston, WV 25301

Station Name:	Witcher	Sampled By:	JS
Station Location:	Glasgow	Sample Of:	Gas Spot
Sample Point:	Pre De-HY	Sample Date:	06/12/2014 07:40
Cylinder No:	S-029	Sample Conditions:	168 psig
Analyzed:	06/21/2014 07:26:29	Method:	GPA 2286

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	0.572	0.741		GPM TOTAL C2+	6.109
Carbon Dioxide	0.278	0.566		GPM TOTAL C3+	3.058
Methane	77.843	57.776		GPM TOTAL iC5+	0.695
Ethane	11.393	15.849	3.051		
Propane	5.298	10.808	1.462		
Iso-butane	0.979	2.633	0.321		
n-Butane	1.837	4.940	0.580		
Iso-pentane	0.667	2.226	0.244		
n-Pentane	0.485	1.619	0.176		
Hexanes Plus	0.648	2.842	0.275		
	100.000	100.000	6.109		

Physical Properties	Total	C6+
Relative Density Real Gas	0.7488	3.2556
Calculated Molecular Weight	21.62	94.29
Compressibility Factor	0.9961	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.696 psia & 60°F		
Real Gas Dry BTU	1297	5110
Water Sat. Gas Base BTU	1275	5021

Comments: H2O Mol% : 1.744 ; Wt% : 1.458

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
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Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-14060605-001A

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Sample Point:	Pre De-HY	Sample Date:	06/12/2014 07:40
Cylinder No:	S-029	Sample Conditions:	168 psig
Analyzed:	06/21/2014 07:26:29	Method:	GPA 2286

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	0.572	0.741		GPM TOTAL C2+	6.109
Carbon Dioxide	0.278	0.566		GPM TOTAL C3+	3.058
Hydrogen Sulfide	NIL	NIL		GPM TOTAL iC5+	0.695
Methane	77.843	57.776			
Ethane	11.393	15.849	3.051		
Propane	5.298	10.808	1.462		
Iso-Butane	0.979	2.633	0.321		
n-Butane	1.837	4.940	0.580		
Iso-Pentane	0.667	2.226	0.244		
n-Pentane	0.485	1.619	0.176		
Hexanes	0.301	1.209	0.124		
Heptanes Plus	0.347	1.633	0.151		
	100.000	100.000	6.109		

Physical Properties	Total	C7+
Relative Density Real Gas	0.7488	3.5338
Calculated Molecular Weight	21.62	102.35
Compressibility Factor	0.9961	
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.696 psia & 60°F		
Real Gas Dry BTU	1297	5480
Water Sat. Gas Base BTU	1275	5385

Comments: H2O Mol% : 1.744 ; Wt% : 1.458

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Certificate of Analysis

Number: 1030-14060605-001A

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Nathaniel Lanham
SLR- International
8 Capitol Street
Suite 300
Charleston, WV 25301

June 23, 2014

Station Name:	Witcher	Sampled By:	JS
Station Location:	Glasgow	Sample Of:	Gas Spot
Sample Point:	Pre De-HY	Sample Date:	06/12/2014 07:40
Cylinder No:	S-029	Sample Conditions:	168 psig
Analyzed:	06/21/2014 07:26:29	Method:	GPA 2286

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.696 psia
Nitrogen	0.572	0.741	
Methane	77.843	57.776	
Carbon Dioxide	0.278	0.566	
Hydrogen Sulfide	NIL	NIL	
Ethane	11.393	15.849	3.051
Propane	5.298	10.808	1.462
Iso-Butane	0.979	2.633	0.321
n-Butane	1.837	4.940	0.580
Iso-Pentane	0.667	2.226	0.244
n-Pentane	0.485	1.619	0.176
i-Hexanes	0.196	0.781	0.080
n-Hexane	0.105	0.428	0.044
Benzene	0.009	0.033	0.003
Cyclohexane	0.025	0.097	0.008
i-Heptanes	0.108	0.490	0.048
n-Heptane	0.039	0.186	0.018
Toluene	0.012	0.052	0.004
i-Octanes	0.088	0.433	0.039
n-Octane	0.014	0.072	0.007
Ethylbenzene	0.001	0.003	NIL
Xylenes	0.013	0.059	0.005
i-Nonanes	0.020	0.099	0.009
n-Nonane	0.004	0.022	0.002
i-Decanes	0.007	0.040	0.003
n-Decane	0.001	0.010	0.001
Undecanes	0.001	0.010	0.001
Dodecanes	0.002	0.010	0.001
Tridecanes	0.002	0.010	0.001
Tetradecanes Plus	0.001	0.007	0.001
	100.000	100.000	6.109

GPM TOTAL C2+ 6.109

Certificate of Analysis

Number: 1030-14060605-001A

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Nathaniel Lanham
SLR- International
8 Capitol Street
Suite 300
Charleston, WV 25301

June 23, 2014

Station Name:	Witcher	Sampled By:	JS
Station Location:	Glasgow	Sample Of:	Gas Spot
Sample Point:	Pre De-HY	Sample Date:	06/12/2014 07:40
Cylinder No:	S-029	Sample Conditions:	168 psig
Analyzed:	06/21/2014 07:26:29	Method:	GPA 2286

Physical Properties	**Total**	**C14+**
Calculated Molecular Weight	21.615	198.413
GPA 2172-09 Calculation:		
Calculated Gross BTU per ft³ @ 14.696 psia & 60°F		
Real Gas Dry BTU	1297.2	10728.8
Water Sat. Gas Base BTU	1275	10541.6
Relative Density Real Gas	0.7488	6.8500
Compressibility Factor	0.9961	

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

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

CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.696 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286 (MC14)	JL	06/27/12
Nitrogen	0.854	1.118				
Methane	78.776	59.137				
Carbon Dioxide	0.280	0.576				
Ethane	10.867	15.293	2.899			
Propane	4.901	10.113	1.347			
Iso Butane	0.852	2.316	0.278			
n-Butane	1.665	4.530	0.524			
Iso Pentane	0.606	2.045	0.221			
n-Pentane	0.460	1.554	0.166			
Hexanes Plus	0.739	3.318	0.314			
	100.000	100.000	5.749			

		TOTAL	C6+
Relative Density at 60 °F (air =1) Real Gas		0.74	3.3106
Calculated Molecular Weight		21.369	95.969
Compressibility Factor		0.9963	
Calculated Gross BTU per ft3 @ 14.696 psia & 60 °F			
Real Gas	Dry Basis	1279	5188
	Saturated Basis	1257.6	5098.4

Hydrocarbon Laboratory Manager

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

CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.696 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286 (MC14)	JL	06/27/12
Nitrogen	0.854	1.118				
Methane	78.776	59.137				
Carbon Dioxide	0.280	0.576				
Ethane	10.867	15.293	2.899			
Propane	4.901	10.113	1.347			
iso Butane	0.852	2.316	0.278			
n-Butane	1.665	4.530	0.524			
iso Pentane	0.606	2.045	0.221			
n-Pentane	0.460	1.554	0.166			
Hexanes	0.316	1.264	0.128			
Heptanes Plus	0.423	2.054	0.186			
	100.000	100.000	5.749			

		TOTAL	C7+
Relative Density at 60 °F (air =1) Real Gas		0.74	3.5839
Calculated Molecular Weight		21.369	104.116
Compressibility Factor		0.9963	
Calculated Gross BTU per ft3 @ 14.696 psia & 60 °F			
Real Gas	Dry Basis	1279	5555.3
	Saturated Basis	1257.6	5459.3

Hydrocarbon Laboratory Manager

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

CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	

Comments:

ANALYTICAL DATA

Components	Mol %	Wt%	GPM at 14.696 psia	Method	Lab Tech.	Date Analyzed
				GPA-2286	JL	06/27/12
Nitrogen	0.854	1.118		(MC14)		
Methane	78.776	59.137				
Carbon Dioxide	0.280	0.576				
Ethane	10.867	15.293	2.899			
Propane	4.901	10.113	1.347			
iso Butane	0.852	2.316	0.278			
n-Butane	1.665	4.530	0.524			
iso Pentane	0.606	2.045	0.221			
n-Pentane	0.460	1.554	0.166			
i-Hexanes	0.203	0.803	0.081			
n-Hexane	0.113	0.461	0.047			
Benzene	0.011	0.039	0.003			
Cyclohexane	0.026	0.104	0.009			
i-Heptanes	0.124	0.559	0.053			
n-Heptane	0.047	0.219	0.021			
Toluene	0.016	0.068	0.005			
i-Octanes	0.105	0.531	0.048			
n-Octane	0.021	0.115	0.011			
*e-Benzene	0.001	0.006	0.001			
*m,o,&p-Xylene	0.015	0.069	0.005			
i-Nonanes	0.030	0.170	0.015			
n-Nonane	0.007	0.043	0.004			
i-Decanes	0.012	0.074	0.006			
n-Decane	0.002	0.013	0.001			
Undecanes	0.002	0.013	0.001			
Dodecanes	0.002	0.016	0.002			
Tridecanes	0.001	0.009	0.001			
Tetradecanes Plus	0.001	0.006	NIL			
Totals	100.000	100.000	5.749			

Calculated Values	TOTAL	C10+
Molecular Weight	21.369	155.636
Real Dry BTU @ 14.696 psia, 60 °F	1279.0	8546.2
Real Wet BTU @ 14.696 psia, 60 °F	1257.6	8398.0
Relative Density	0.7400	5.4890

GPM's at 14.696 psia, 60 °F	5.749
Compressibility Factor	0.9963

Hydrocarbon Laboratory Manager

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

CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	

Comments:

Components	Mol %	Wt%	Method	Lab Tech.	Date Analyzed
			GPA-2286 (MC14)	JL	06/27/12
Nitrogen	0.854	1.118			
Methane	78.776	59.137			
Carbon Dioxide	0.280	0.576			
Ethane	10.867	15.293			
Propane	4.901	10.113			
I-butane	0.852	2.316			
n-Butane	1.665	4.530			
I-Pentane	0.606	2.045			
n-Pentane	0.460	1.554			
2,2-dimethylbutane	0.016	0.064			
2,3-dimethylbutane	0.014	0.055			
Cyclopentane	0.017	0.055			
2-methylpentane	0.099	0.398			
3-methylpentane	0.057	0.231			
N-Hexane	0.113	0.461			
2,2-dimethylpentane	0.005	0.022			
Methylcyclopentane	0.024	0.096			
2,4-dimethylpentane	0.007	0.033			
2,2,3-trimethylbutane	0.002	0.007			
Benzene	0.011	0.039			
3,3-dimethylpentane	0.002	0.011			
Cyclohexane	0.026	0.104			
2-methylhexane	0.030	0.139			
2,3-dimethylpentane	0.008	0.037			
1,1-dimethylcyclopentane	0.003	0.012			
3-methylhexane	0.029	0.135			
1,t3-dimethylcyclopentane	0.004	0.018			
1,c3-dimethylcyclopentane	0.005	0.025			
1,t2-dimethylcyclopentane	0.005	0.024			
N-Heptane	0.047	0.219			
Methylcyclohexane	0.048	0.221			
1,1,3-trimethylcyclopentane	0.001	0.007			
2,2-dimethylhexane	Nil	0.001			
2,5-dimethylhexane	0.003	0.014			
2,4-dimethylhexane	0.001	0.007			
ethylcyclopentane	0.004	0.019			
2,2,3-trimethylpentane	Nil	0.001			

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8820 INTERCHANGE DRIVE
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CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	
Comments:			

Components	Mol %	Wt%	Method	Lab Tech.	Date Analyzed
			GPA-2286 (MC14)	JL	06/27/12
1,t2,c3-trimethylcyclopentane	0.002	0.012			
2,3,4-trimethylpentane	0.001	0.004			
Toluene	0.016	0.068			
2,3-dimethylhexane	0.002	0.011			
2-methylheptane	0.012	0.063			
4-methylheptane	0.005	0.025			
3,4-dimethylhexane	0.001	0.005			
3-methylheptane	0.012	0.067			
1,t4-dimethylcyclohexane	0.008	0.042			
2,2,5-trimethylhexane	0.003	0.020			
1-methyl,c3-ethylcyclopentane	Nil	0.002			
1-methyl,t2-ethylcyclopentane	0.001	0.005			
2,2,4-trimethylhexane	0.001	0.005			
N-Octane	0.021	0.115			
1,t2-dimethylcyclohexane	0.001	0.006			
1,t3-dimethylcyclohexane	0.001	0.004			
1,c4-dimethylcyclohexane	0.001	0.004			
1,c2,c3-trimethylcyclopentane	0.001	0.004			
Isopropylcyclopentane	Nil	0.002			
2,3,5-trimethylhexane	Nil	0.002			
2,2-dimethylheptane	0.001	0.007			
2,4-dimethylheptane	0.001	0.004			
1-methyl,c2-ethylcyclopentane	0.001	0.004			
1,c2-dimethylcyclohexane	0.005	0.027			
2,6-dimethylheptane	0.001	0.007			
N-Propylcyclopentane	0.001	0.005			
1,c3,c5-trimethylcyclohexane	0.001	0.005			
1,1,3-trimethylcyclohexane	Nil	0.001			
2,3,3-trimethylhexane	Nil	0.001			
3,3-dimethylheptane	Nil	0.001			
Ethylbenzene	0.001	0.006			
1,t2,t4-trimethylcyclohexane	0.001	0.007			
2,3-dimethylheptane	0.001	0.004			
m-Xylene	0.006	0.028			
p-Xylene	0.006	0.028			
3,4-dimethylheptane	Nil	0.001			
2-methyloctane	0.003	0.017			
4-methyloctane	0.003	0.017			
3-methyloctane	0.004	0.023			
1,t2,c3-trimethylcyclohexane	Nil	0.001			
1,t2,c4-trimethylcyclohexane	Nil	0.001			
o-Xylene	0.003	0.013			
1,1,2-trimethylcyclohexane	0.001	0.003			
Unknown C9 naphthene	0.001	0.008			
Unknown C9 naphthene	0.001	0.004			
N-Nonane	0.007	0.043			
Unknown C10 paraffin	0.001	0.004			
Unknown C10 paraffin	0.001	0.006			
Unknown C9 naphthene	Nil	0.002			
1,c2,t3-trimethylcyclohexane	0.001	0.004			

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

CERTIFICATE OF ANALYSIS

Number : 2012060396-005A

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

Field:	Charlestown, WV.	**Report Date:**	06/27/12
Station:	Witcher	**Sample Of:**	Spot - Gas
Station No.:		**Sample Date:**	05/23/2012 10:40
Sample Point:	Pre Dehy.	**Sample Conditions:**	148 psi ,86° F
Cylinder # :	S-032	**PO / Ref. No.:**	
Comments:			

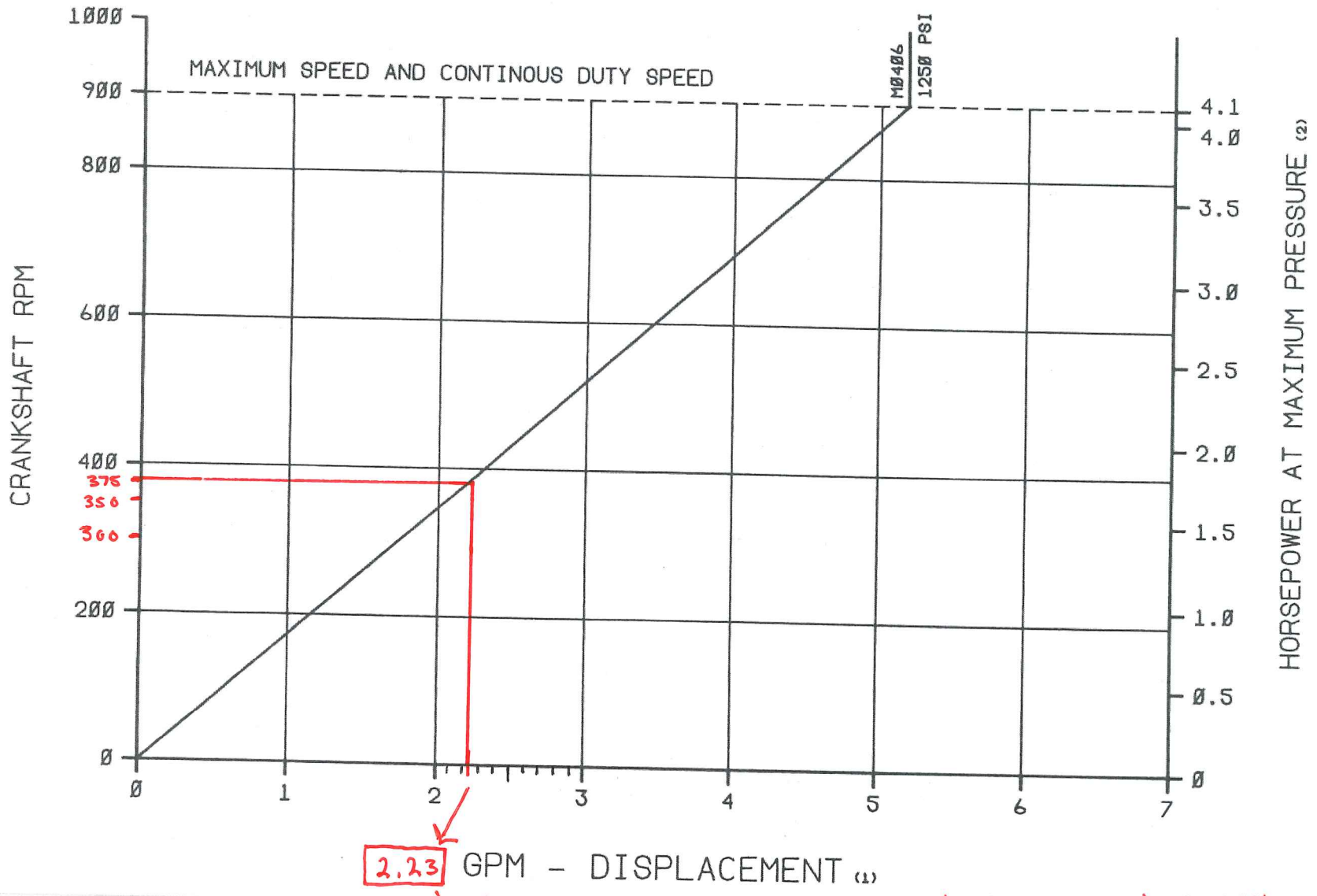
Components	Mol %	Wt%	Method	Lab Tech.	Date Analyzed
			GPA-2286 (MC14)	JL	06/27/12
1,c2,c3-trimethylcyclohexane	0.001	0.004			
Isopropylbenzene	0.002	0.011			
2,2-dimethyloctane	Nil	0.002			
N-Butylcyclopentane	Nil	0.001			
N-Propylcyclohexane	Nil	0.001			
3,3-dimethyloctane	0.001	0.005			
N-Propylbenzene	0.001	0.005			
4-methylnonane	Nil	0.003			
5-methylnonane	Nil	0.002			
1,3,5-trimethylbenzene	0.001	0.006			
2-methylnonane	0.001	0.005			
Unknown C10 aromatic	0.001	0.004			
1,2,4-trimethylbenzene	0.001	0.005			
tert-Butylbenzene	Nil	0.002			
Methylcyclooctane	Nil	0.002			
N-Decane	0.002	0.013			
Undecanes	0.002	0.013			
Dodecanes	0.002	0.016			
Tridecanes	0.001	0.009			
Tetradecanes	0.001	0.006			
	100.000	100.000			

Givens: Max RPMs - 1750
Size of Pulleys - 3"
Size of Pump - 14"

$\frac{(3 \times 1750)}{14} = \boxed{375}$ this is the maximum RPMs at which the pump can operate

M04 TRIPLEX POWER PUMP - PERFORMANCE CURVE

MAXIMUM FRAME (PLUNGER) LOAD =552 lbs.



2.23 GPM - DISPLACEMENT (1)

this is the maximum GPM this pump is capable of operating at due to RPM constraints

ATTACHMENT O

MONITORING/RECORDKEEPING/REPORTING/ TESTING PLANS

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

Monitoring

The company will at a minimum monitor hours of operation, dehy operating parameters, 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 emission limit or opacity deviations.

Testing

The wet gas to the dehy will be sampled and tested periodically to assess compliance with dehy emission limitations.

ATTACHMENT P

PUBLIC NOTICE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 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 Construction Permit, for a natural gas dehydration station located off Witcher Creek Rd. near Belle, in Kanawha County, West Virginia. The latitude and longitude coordinates are 38.24422 and -81.47447.

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

Pollutant	Tons/yr
PM/PM_{10}/$PM_{2.5}$	0.01
SO^2	0.00
NO_X	0.13
CO	0.11
VOCs	54.95
Benzene	3.36
Toluene	6.14
Ethylbenzene	0.87
Xylene	9.57
n-hexane	1.69
Total HAPs	21.65

The operations are after the fact and are the result of gas composition changes. 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 September, 2016.

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

ATTACHMENT Q

BUSINESS CONFIDENTIAL CLAIMS

NOT APPLICABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

ATTACHMENT R

AUTHORITY FORMS

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 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

TITLE V PERMIT REVISION INFORMATION

NOT APPLICABLE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

APPLICATION FEE

Rule 13 Permit Application

Witcher Compressor Station,
Belle, West Virginia

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

September 2016

CRANBERRY PIPELINE CORPORATION

62332 WVDEP - OFFICE OF AIR QUALITY

CHECK NO. 2900223882

ACCT MO/YR	VOUCHER NUMBER	INVOICE DATE	INVOICE NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
08/16	876577	08/30/16	CKREQ 08/30/16 WVD	3500.00	.00	3500.00

DESCRIPTION: OVERNTE-CHARLESTON-B. WEBSTER

TOTAL FOR CHECK 3500.00

Please Address Inquiries Regarding This Payment To: Accounts Payable, Cranberry Pipeline Corp., P.O. Box 4544, Houston, TX 77210-4544
Or Call: 1.800.434.3985

SIGN UP TO RECEIVE YOUR FUNDS ELECTRONICALLY and DETAIL VIA EMAILED PDF!
Go to http://www.cabotog.com and CLICK ON VENDOR INFO, VENDOR EFT (DIRECT DEPOSIT) and follow the instructions on the form

THIS DOCUMENT HAS A COLORED BACKGROUND AND MICROPRINTING IN THE SIGNATURE LINE. MAGNIFY TO VERIFY ORIGINAL CHECK.

CRANBERRY PIPELINE CORPORATION
PO BOX 4544, Houston, TX 77210-4544

Check Number 2900223882 56-1544/441 633681747

Check Date 9/01/16

**********3,500.00

JPMorgan Chase Bank, N.A.
Columbus, Ohio 43271

********3,500 DOLLARS ***00 CENTS

TO THE ORDER OF

WVDEP - OFFICE OF AIR QUALITY 62332
601 57TH ST SE
CHARLESTON WV 25304 2345

CRANBERRY PIPELINE CORPORATION

Scott C Schroeder

AUTHORIZED REPRESENTATIVE

ACCOUNTS PAYABLE

VOID AFTER 90 DAYS

THIS DOCUMENT CONTAINS A TRUE WATERMARK AND VISIBLE FIBERS

⑈2900223882⑈ ⑆044116443⑆ 63368174⑦