Dominion Resource Services, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
dom.com

March 31, 2015

**BY: U.S. CERTIFIED MAIL, RETURN RECEIPT REQUESTED**
7014 3490 0000 0448 3849

William F. Durham
Director, Division of Air Quality
WVDEP
601 57th Street
Charleston, WV 25304

**RE: Dominion Transmission, Inc. – Yellow Creek Compressor Station (ID# 031-00001)**
**45 CSR 13 New Source Review Permit and Title V Operating Permit Revision**

Dear Mr. Durham:

Enclosed are one complete original and two (2) cd copies of a 45 CSR 13 permit application to replace the existing dehydration unit, associated reboiler, and the control device at Dominion Transmission, Inc.'s Yellow Creek Compressor Station in Calhoun County, West Virginia. The enclosed application also includes the Title V Operating Permit revision forms for permit R30-01300001-2011.

The public notice affidavit will be submitted to WVDEP once it is received from the newspaper.

If you require any additional information, please contact Rebekah Remick at (804) 273-3536 or via email at Rebekah.J.Remick@dom.com.

Sincerely,

Amanda Tornabene

Amanda B. Tornabene
Director, Gas Environmental Services

# R13 PERMIT APPLICATION

## Dominion Transmission, Inc. > Yellow Creek Compressor Station

**Calhoun County, West Virginia**

Prepared By:

TRINITY CONSULTANTS
102 Pickering Way.
Suite 506
Exton, PA 19341
(610) 280-3902

March 2015

Project 153902.0022

Trinity Consultants

*Environmental solutions delivered uncommonly well*

# TABLE OF CONTENTS

Dominion Transmission, Inc. (Dominion) is submitting this Rule 13 (R-13) modification permit application to the West Virginia Department of Environmental Protection (WVDEP) for the proposed modification of an existing natural gas compressor station located in Calhoun County, West Virginia (Yellow Creek Compressor Station).

## 1.1. FACILITY AND PROJECT DESCRIPTION

The Yellow Creek Compressor Station is a natural gas gathering facility covered under Standard Industrial Classification (SIC) code 4922. The facility has the potential to operate 24 hours per day, and 7 days per week. The station consists of three (3) lean burn natural gas fired compressor engines (each rated at 1,100 horsepower [hp]), two (2) natural gas fired emergency generators (each rated at 192.5 hp), one (1) triethylene glycol (TEG) dehydration unit (rated at 20 million standard cubic feet per day [MMscfd]), with an associated reboiler (rated at 2 million British thermal units per hour [MMBtu/hr]) and controlled by a flare (95% destruction efficiency), as well as nine (9) miscellaneous storage tanks and one (1) air compressor (rated at 16 horsepower [hp]).

Dominion proposes to replace the existing TEG dehydration unit with a 20 MMscfd unit, complete with new reboiler (rated at 0.75 MMBtu/hr) and controlled by a thermal oxidizer (95% destruction efficiency). The existing dehydrator, reboiler, and flare will be removed.

The purpose of the dehydration unit is to remove water from the natural gas stream using TEG. In the absorber tower, the TEG absorbs water from the gas stream. The water rich glycol then passes through a flash tank where the pressure of the rich TEG is dropped. During this process, natural gas entrained in the glycol stream is flashed off. The flash gas is routed to the station compressor suction. The water rich glycol is then heated in a reboiler where water and impurities are liberated from the glycol before it is recycled through the unit. The emissions from the dehydration regenerator vent are controlled by the thermal ozidizer. The dehydration unit has the potential to operate 8,760 hours per year, which is reflected in emission calculations.

A process flow diagram is included as Attachment F.

## 1.2. R-13 APPLICATION ORGANIZATION

This R-13 permit application is organized as follows:

- Section 2: Sample Emission Source Calculations;
- Section 3: R-13 Application Forms;
- Attachment A: Business Certificate;
- Attachment B: Map;
- Attachment C: Installation and Start Up Schedule;
- Attachment D: Regulatory Discussion;
- Attachment E: Plot Plan;
- Attachment F: Detailed Process Flow Diagram;
- Attachment G: Process Description;
- Attachment I: Emission Units Table;
- Attachment J: Emission Points Data Summary Sheet;
- Attachment K: Fugitive Emissions Data Summary Sheet;
- Attachment L: Emissions Unit Data Sheets;
- Attachment M: Air Pollution Control Device Sheet;
- Attachment N: Supporting Emission Calculations;
- Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans;
- Attachment P: Public Notice;
- Attachment S: Title V Permit Revision Information; and
- Application Fee.

# 2. SAMPLE EMISSION SOURCE CALCULATIONS

The characteristics of air emissions from the Yellow Creek Compressor Station, along with the methodology used for calculating emissions from the proposed new sources, are described in narrative form below. Detailed supporting calculations are also provided in Attachment N.

The proposed new emission sources at the Yellow Creek Compressor Station include the TEG dehydration unit, reboiler, and thermal oxidizer. As mentioned above, these are replacement units. The methodologies employed in calculating emissions from these sources have been summarized below.

- **Reboiler:** Potential emissions from the proposed natural gas fired reboiler of all criteria pollutants and hazardous air pollutants (HAPs) are calculated using U.S. Environmental Protection Agency's (EPA's) AP-42 factors for natural gas combustion equipment.[1] These calculations assume a heater heating content of natural gas of 1,000 Btu/scf. Greenhouse gas emissions are calculated according to Title 40, Part 98 of the Code of Federal Regulations (40 CFR 98) Subpart C.[2]

- **Dehydration Unit:** Potential emissions of HAPs, volatile organic compounds (VOC), and methane from the dehydration unit are calculated using GRI-GLYCalc. Emissions of other criteria pollutants are calculated for natural gas combustion in the thermal oxidizer using U.S. EPA's AP-42 factors for external combustion of natural gas.[1] Greenhouse gas emissions from combustion in the thermal oxidizer are calculated according to the procedures in 40 CFR 98 Subpart C.

[1] U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, *Natural Gas Combustion,* Supplement D, July 1998.

[2] 40 CFR 98 Subpart C, *General Stationary Fuel combustion Sources*, Tables C-1 and C-2.

# 3. R13 APPLICATION FORM

The WVDEP permit application forms contained in this application include all applicable R-13 application forms including the required attachments.

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):*
Dominion Transmission, Inc.

2. Federal Employer ID No. ***(FEIN):***
550629203

3. Name of facility *(if different from above):*
Yellow Creek Station

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

5A. Applicant's mailing address:
445 West Main Street Clarksburg, WV 26301

5B. Facility's present physical address:
H.C. 71, Box 8 Big Springs, WV 26137

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: Dominion Transmission, Inc. owns site

- If **NO,** you are not eligible for a permit for this source.

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

10. North American Industry Classification System **(NAICS)** code for the facility:
486210

11A. DAQ Plant ID No. (for existing facilities only):
0 1 3 –0 0 0 0 1

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R30-01300001-2011(SM01), R13-2614A, G60-C034

***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**.

Take Interstate 79 North to the Big Otter Exit. Take Route 16 North though Grantsville. After leaving Grantsville, travel on Route 16 North for approximately 6.1 miles to Calhoun County Route 6 (Klipstine Road). Turn right onto Route 6 and travel 1 mile; station is to the right of the road.

| 12.B. New site address (if applicable): | 12C. Nearest city or town:<br>Big Springs, WV | 12D. County:<br>Calhoun |
|---|---|---|
| 12.E. UTM Northing (KM): 4314.8 | 12F. UTM Easting (KM): 495.8 | 12G. UTM Zone: 17 |

13. Briefly describe the proposed change(s) at the facility:
Installation of replacement dehydrator, reboiler, and thermal oxidizer.

| 14A. Provide the date of anticipated installation or change: 08/01/2015<br>– If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: / / | 14B. Date of anticipated Start-Up if a permit is granted:<br>11/01/2015 |
|---|---|

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

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:
Hours Per Day 24 Days Per Week 7 Weeks Per Year52

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 Dehydration unit

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

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

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

☐ Other Collectors, specify

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

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

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

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

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

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

☐ **YES** ☒ **NO**

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

## *Section III. Certification of Information*

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

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

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

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

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

***Certification of Truth, Accuracy, and Completeness***

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

***Compliance Certification***

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

SIGNATURE _____ DATE: 03-27-15

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

| | | |
|---|---|---|
| 35B. Printed name of signee: Brian Sheppard | | 35C. Title: Vice President, Pipeline Operations |
| 35D. E-mail: brian.c.sheppard@dom.com | 36E. Phone: 304-627-3733 | 36F. FAX: 304-627-3323 |
| 36A. Printed name of contact person (if different from above): Becky Remick | | 36B. Title: Environmental Specialist III |
| 36C. E-mail: Rebekah.J.Remick@dom.com | 36D. Phone: 804-273-3536 | 36E. FAX: |

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

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

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

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

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

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

# ATTACHMENT A

## Current Business Certificate

# WEST VIRGINIA
# STATE TAX DEPARTMENT

# BUSINESS REGISTRATION CERTIFICATE

ISSUED TO:
**DOMINION TRANSMISSION INC**
**445 W MAIN ST**
**CLARKSBURG, WV 26301-2843**

BUSINESS REGISTRATION ACCOUNT NUMBER: **1038-3470**

This certificate is issued on: 06/8/2011

*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.

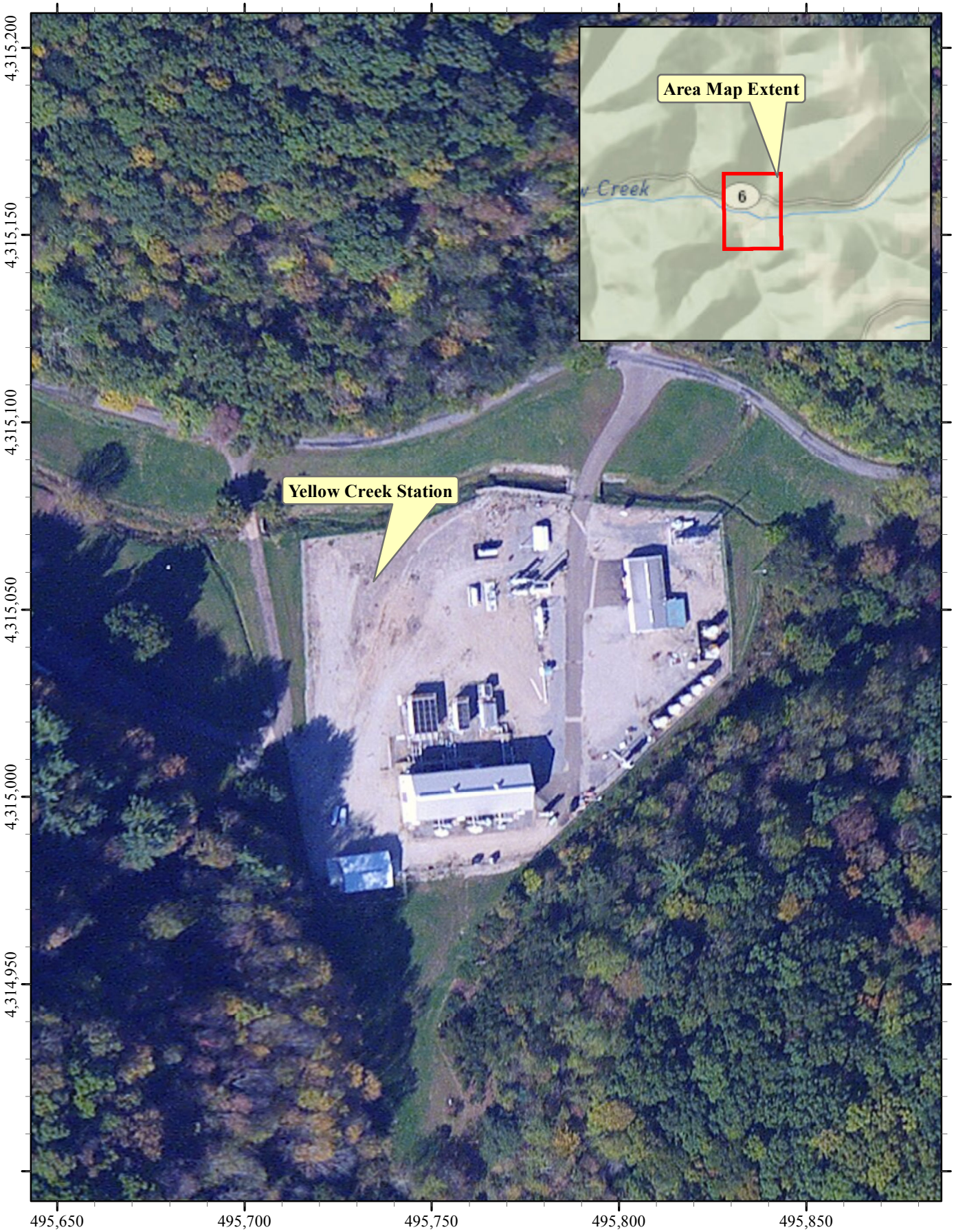
TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of this certificate displayed at every job site within West Virginia.

atL006 v.4
L0228957312

# ATTACHMENT B

## Map

Attachment B - Aerial Map - Yellow Creek Station
Dominion Transmission, Inc




All Coordinates shown in UTM Projection,
Zone 17, NAD83

Trinity Consultants

# ATTACHMENT C

## Startup and Installation Schedule

## ATTACHMENT C

### Schedule of Planned Installation and Start-Up

| Unit | Installation Schedule | Startup Schedule |
|---|---|---|
| 20 MMSCFD Dehydration Unit | 08/01/2015 | 11/01/2015 |
| Reboiler | 08/01/2015 | 11/01/2015 |
| Thermal Oxidizer | 08/01/2015 | 11/01/2015 |

# ATTACHMENT D

# Regulatory Discussion

# ATTACHMENT D – REGULATORY APPLICABILITY

This section documents the applicability determinations made for Federal and State air quality regulations. The monitoring, recordkeeping, reporting, and testing plan is presented in Attachment O. In this section, applicability or non-applicability of the following regulatory programs is addressed:

- Prevention of Significant Deterioration (PSD) permitting;
- Title V of the 1990 Clean Air Act Amendments;
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP); and
- West Virginia State Implementation Plan (SIP) regulations.

This review is presented to supplement and/or add clarification to the information provided in the West Virginia Department of Environmental Protection (WVDEP) Rule 13 (R-13) permit application forms. In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the proposed project at the Yellow Creek Compressor Station. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability specific to the operations at the Yellow Creek Compressor Station. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

## New Source Review (NSR) Source Classification

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration (PSD) and new and modified sources of non-attainment pollutants under Non-Attainment New Source Review (NNSR). The Yellow Creek Compressor Station is located in Calhoun County, West Virginia, which is designated as in attainment/unclassifiable for all pollutants. Therefore, PSD permitting is potentially applicable to the facility. PSD permitting in West Virginia is regulated under Title 45, Series 14,West Virginia Code of State Regulations (45 CSR 14).

PSD permitting applies to construction of new major stationary sources or any physical change in, or change in the method of operation of an existing major stationary source that results in a significant emissions increase. A major stationary source for PSD is defined as:

- Any source in one of the listed source categories in the definition of "major stationary source" per 45 CSR 14-2.43 with the potential-to-emit (PTE) of 100 tons per year (tpy) or more of traditionally regulated pollutants, or
- Any source not in one of the listed source categories with a PTE of 250 tpy or more of any traditionally regulated pollutant.

Natural gas compressor stations are not included in the listed source categories under 45 CSR 14-2.43, so the PSD major source threshold (MST) applicable to the Yellow Creek Compressor Station is 250 tpy. Because the existing facility-wide PTE for oxides of nitrogen ($NO_X$) and carbon monoxide (CO) are greater than 250 tpy, the Yellow Creek Compressor Station is an existing major source under PSD.

For existing major sources, PSD applicability is determined based on whether a physical change and/or a change in the method of operation results in an increase of potential air emissions above the significant emission rate (SER) of any PSD-regulated pollutant.

This project involves replacement of the existing 20 million standard cubic feet per day (MMscfd) triethylene glycol (TEG) dehydrator with an identical unit (20 MMscfd). The potential to emit for the proposed new equipment does not exceed the SER for any PSD pollutants. As such, PSD permitting is not triggered by this construction activity.

## Title V Operating Permit Program

Title 40 of the Code of Federal Regulations Part 70 (40 CFR 70) establishes the federal Title V operating permit program. West Virginia has incorporated the provisions of this federal program in its Title V operating permit program in 45 CSR30. The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single hazardous air pollutant (HAP), 25 tpy of any combination of HAPs, and 100 tpy of all other regulated pollutants.[1] The potential emissions of $NO_X$, volatile organic compounds (VOC), and CO are above the 100 tpy threshold at this facility. Therefore, the Yellow Creek Compressor Station is a major source for Title V purposes. The Yellow Creek Compressor Station currently operates under Title V permit R30-01300001-2011, issued on July 13, 2011 and modified on October 2, 2012. Attachment S provides a request for incorporation of this project (replacement of existing dehydration unit and associated flare with new dehydration unit and associated thermal oxidizer) into the Title V permit upon completion of construction.

## New Source Performance Standards

New Source Performance Standards (NSPS), located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions. Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the proposed project at the Yellow Creek Compressor Station.

### *NSPS Subparts D, Da, Db, and Dc – Industrial – Commercial – Institutional Steam Generating Units*

These subparts apply to steam generating units of various sizes, all greater than 10 MMBtu/hr. The proposed reboiler will have a rated capacity of 0.75 MMBtu/hr and therefore the requirements of these subparts do not apply.

### *NSPS Subpart OOOO—Crude Oil and Natural Gas Production, Transmission, and Distribution*

Subpart OOOO applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011. This NSPS was published in the Federal Register on August 16, 2012, with an effective date of October 15, 2012. On July 1, 2014, the EPA proposed second revisions to NSPS OOOO.

The list of potentially affected facilities includes:

- Gas wells
- Centrifugal compressors
- Reciprocating compressors
- Pneumatic controllers
- Storage vessels
- Equipment (as defined in §60.5430) located at onshore natural gas processing plants
- Sweetening units located onshore that process natural gas produced from either onshore or offshore wells

[1] EPA's Tailoring Rule had established a Title V major source threshold of 100,000 tpy of greenhouse gas pollutants or GHGs (on a carbon dioxide equivalent [$CO_2e$] basis). However, on June 23, 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA*, whereby the Court said that EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. Case No. 12-1146, decided June 23, 2014. http://www.supremecourt.gov/opinions/13pdf/12-1146_4g18.pdf.

The Yellow Creek Compressor Station is proposing to replace the dehydration unit, which is not an affected facility under this subpart. As such, Subpart OOOO is not applicable to the project.

### *Non-Applicability of All Other NSPS*

NSPS are developed for particular industrial source categories. Other than the NSPS for steam generating units (Subparts D, Da, Db, Dc) and natural gas processing plants (Subpart OOOO)detailed above, the applicability of a particular NSPS to the proposed project at the Yellow Creek Compressor Station can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed change.

## National Emission Standards for Hazardous Air Pollutants (NESHAP)

Part 63 NESHAP allowable emission limits are established on the basis of a maximum achievable control technology (MACT) determination for a particular source. A HAP major source is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. The Yellow Creek Compressor Station is an area (minor) source of HAPs since its potential emissions of HAPs are less than the 10/25 major source thresholds. NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The following NESHAP are potentially applicable to the Yellow Creek Compressor Station:

- 40 CFR Part 63 Subpart HH – Oil and Natural Gas Production Facilities
- 40 CFR Part 63 HHH – Natural Gas Transmission and Storage Facilities
- 40 CFR Part 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers – Major Sources
- 40 CFR Part 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers

The applicability of these NESHAP Subparts is discussed in the following sections.

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

This subpart applies to affected emission points that are located at facilities that are major and area sources of HAP and either process, upgrade, or store hydrocarbon liquids prior to custody transfer or that process, upgrade, or store natural gas prior to entering the natural gas transmission and storage source category. For purposes of this subpart, natural gas enters the natural gas transmission and storage source category after the natural gas processing plant, if present. As such, this subpart applies to affected units located at natural gas processing facilities and/or any production facilities upstream.

The Yellow Creek Compressor Station is an area source of HAP emissions. The station processes natural gas in its glycol dehydrator prior to the point of custody transfer to transmission pipelines and; therefore, the provisions of NESHAP Subpart HH are applicable to the Yellow Creek Compressor Station. The benzene emissions from the glycol dehydrator vents are less than 0.90 megagrams per year (1 tpy), as indicated in the emission calculations in Attachment N. Dominion is claiming the exemption specified in 40 CFR 63.764(e)(1)(ii) and therefore is not subject to the control requirements for glycol dehydration unit process vents in 40 CFR 63.675. The Deep Valley Compressor Station is only required to keep records of the actual annual average natural gas throughput (in terms of natural gas flowrate to the glycol dehydration unit per day) or actual average benzene emissions (in terms of benzene emissions per year) from the dehydrator, per 40 CFR 63.774(d)(1).

### *40 CFR 63 Subpart HHH – Natural Gas Transmission and Storage Facilities*

This standard applies to affected units natural gas transmission and storage facilities that are major sources of HAP emissions located downstream of the point of custody transfer (after processing and/or treatment in the production sector), but upstream of the distribution sector. As previously indicated, the Yellow Creek Compressor Station is a

gathering facility located upstream of the point of custody, and is an area (minor) source of HAPs; therefore, the provisions of NESHAP Subpart HHH do not apply.

### *40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers (Major Source Boiler MACT)*

This MACT standard applies to industrial, commercial, and institutional boilers and process heaters of various sizes and fuel types located at major sources of HAP. The Yellow Creek compressor station is an area source of HAP emissions, therefore this subpart does not apply.

### *40 CFR 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers (Area Source Boiler MACT)*

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types located at area sources. Gas-fired boilers are exempt from the requirements under 40 CFR 63.11195(e). Therefore, this subpart does not apply to the proposed gas fired reboiler.

### *Non-Applicability of All Other NESHAP*

Similar to NSPS, NESHAP are developed for particular industrial source categories. Other than the NESHAP developed for boilers and heaters (Subparts DDDDD, and JJJJJJ) and natural gas sector facilities (Subpart HH, HHH), the applicability of a particular NESHAP to the proposed project at the Yellow Creek Compressor Station can be readily ascertained based on the industrial source category covered. All other NESHAP are categorically not applicable to the proposed change.

## West Virginia SIP Regulations

The proposed project at the Yellow Creek Compressor Station is potentially subject to regulations contained in the West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). West Virginia regulations potentially applicable to the proposed project are discussed below. Generally applicable regulations are not discussed.

### *45 CSR 2: Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers*

45 CSR 2 applies to fuel burning units, defined as equipment burning fuel "for the primary purpose of producing heat or power by indirect heat transfer". The reboiler at the Yellow Creek Compressor Station meets this definition and is therefore potentially subject to 45 CSR 2.Per 45 CSR 2-3, opacity of emissions from the reboiler shall not exceed 10 percent based on a six minute block average. Per 45 CSR 2-11.1, the reboiler is exempt from the PM emissions limits in sections 4, 5, 6, 8, and 9 because it has a rated heat input capacity less than 10 MMBtu/hr.

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

45 CSR 6 sets forth requirements for limiting emissions from incineration which is defined as "the destruction of combustible refuse by burning in a furnace designed for that purpose. For the purposes of this rule, the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack, thermal oxidizer, or thermal catalytic oxidizer stack shall be considered incineration." The proposed thermal oxidizer meets this definition and is therefore subject to this regulation.

The thermal oxidizer will be subject to the particulate matter (PM) emission limits in 45 CSR 6-4.1. In addition, opacity from the thermal oxidizer will be limited to 20% per 45 CSR 6-4.3 except as provided in 45 CFR 6-4.4. Operating instructions will be posted as required by 45 CSR 6-4.9.

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

45 CSR 10 applies to fuel burning units, defined as equipment burning fuel "for the primary purpose of producing heat or power by indirect heat transfer". The reboiler at the Yellow Creek Compressor Station meets this definition and is therefore potentially subject to 45 CSR 10; However, per 45 CSR 10-10.1, the reboiler is exempt from the $SO_2$ emissions limits because it has a rated heat input capacity less than 10 MMBtu/hr.

### *45 CSR 13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation*

According to 45 CSR 13, *"No person shall cause, suffer, allow or permit the construction, modification, or relocation of any stationary source to be commenced without notifying the Secretary of such intent and obtaining a permit to construct, modify, or relocate the stationary source as required in this rule or any other applicable rule promulgated by the Secretary."* In compliance with this requirement, Dominion is submitting the attached permit application for the replacement of the dehydration unit at the Yellow Creek Compressor Station.

### *45 CSR 16: Standards of Performance for New Stationary Sources*

This rule adopts the standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. Potentially applicable NSPS are discussed above.

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

45 CSR 21 is intended to require reasonably available control technology for VOC sources in Putnam, Kanawha, Cabell, Wayne, and Wood Counties. As such, these requirements do not apply to VOC sources in Calhoun County.

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

West Virginia regulates the emissions of toxic air pollutant emissions through 45 CSR 27. A facility that discharges, or may discharge, a toxic pollutant into the open atmosphere in quantities greater than those delineated in Table A of this rule is required to employ Best Available Technology (BAT) on all chemical processing equipment emitting the pollutant. The TEG dehydrator meets the definition of chemical processing equipment and is potentially subject to this regulation for benzene emissions. The potential-to-emit threshold quantity listed for benzene is 1,000 pounds per year. Emissions of benzene from the TEG dehydrator are less than 1,000 pounds per year. As such, this regulation does not apply to the project at the Yellow Creek Compressor Station.

### *45 CSR 34: Emission Standards for Hazardous Air Pollutants*

This rule adopts the National Emissions Standards for Hazardous Air Pollutants (NESHAPs by reference. Potentially applicable NESHAP are discussed above.

# ATTACHMENT E

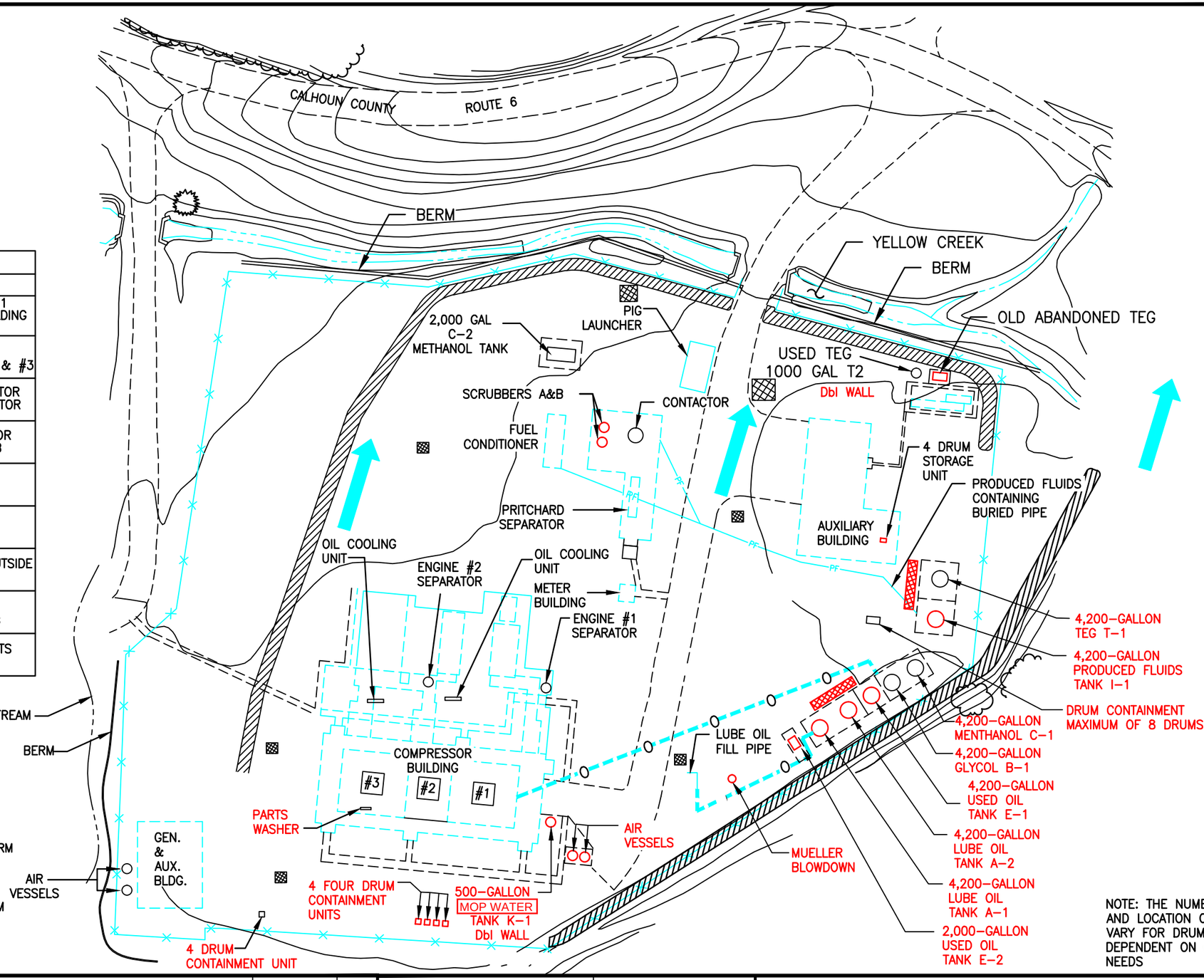
# Plot Plan

N

| OIL–CONTAINING MECHANICAL EQUIPMENT | | |
|---|---|---|
| QUANTITY | MATERIAL | LOCATION |
| 320–GALLONS | LUBE OIL CRANKCASE | COOPER ENGINE #1 COMPRESSOR BUILDING |
| 225–GALLONS (EACH) | LUBE OIL | INGERSOLL RAND COMPRESSORS #2 & #3 |
| 1786–GALLON | PRODUCED FLUIDS | SOUTH OF CONTACTOR PRITCHARD SEPARATOR |
| 1008 & 1665 GALLON | PRODUCED FLUIDS | WEST OF CONTACTOR SCRUBBERS A & B |
| 106–GALLON | PRODUCED FLUIDS | ENGINE #2 SEPARATOR |
| 66–GALLON | PRODUCED FLUIDS | ENGINE #1 SEPARATOR |
| 158–GALLONS EACH | LUBE OIL | 2 OIL COOLERS OUTSIDE BY COOLING FANS |
| 78–GALLON | SOLVENT | PARTS WASHER COMPRESSOR BLDG |
| 2–55 GALLONS EACH | USED OIL | DRUM VACUUM UNITS IN PUMPHOUSE |

LEGEND:

- ABOVEGROUND OIL CONTAINING PIPE
- UNDERGROUND OIL CONTAINING PIPE
- FLOW DIRECTION
- GRAVEL COVERD EARTHEN CONTAINMENT BERM
- CATCH BASIN
- VEGETATION/GRASS COVERED EARTHEN BERM
- OIL TRANSFER AREAS




NOTE: THE NUMBER, TYPE AND LOCATION ON SITE CAN VARY FOR DRUMS ON SITE DEPENDENT ON OPERATIONAL NEEDS

| SYM. | DATE | BY | REVISION DESCRIPTION | PRJ/TSK | APP. |
|---|---|---|---|---|---|
| 5 | 02/18/14 | DRC | REVISION PER TIM JACKSONS MARKUPS | | |
| 4 | 11/22/13 | DRC | REVISION PER TIM JACKSONS MARKUPS | | |
| 3 | 08/14/13 | DRC | REVISION PER TIM JACKSONS MARKUPS | | |
| 2 | 3/06/13 | DRC | REVISION PER TIM JACKSONS MARKUPS | | |
| 1 | 2/10/10 | JDB | RUSS EVANS MARK UPS | | |

| | | |
|---|---|---|
| SCALE | 1"=50' | DATE |
| DRAWN | SAR | 9/27/07 |
| CHECKED | | |


**Dominion Transmission, Inc.**
445 West Main St. Clarksburg, West Virginia 26301 / Phone: (304) 623–8000

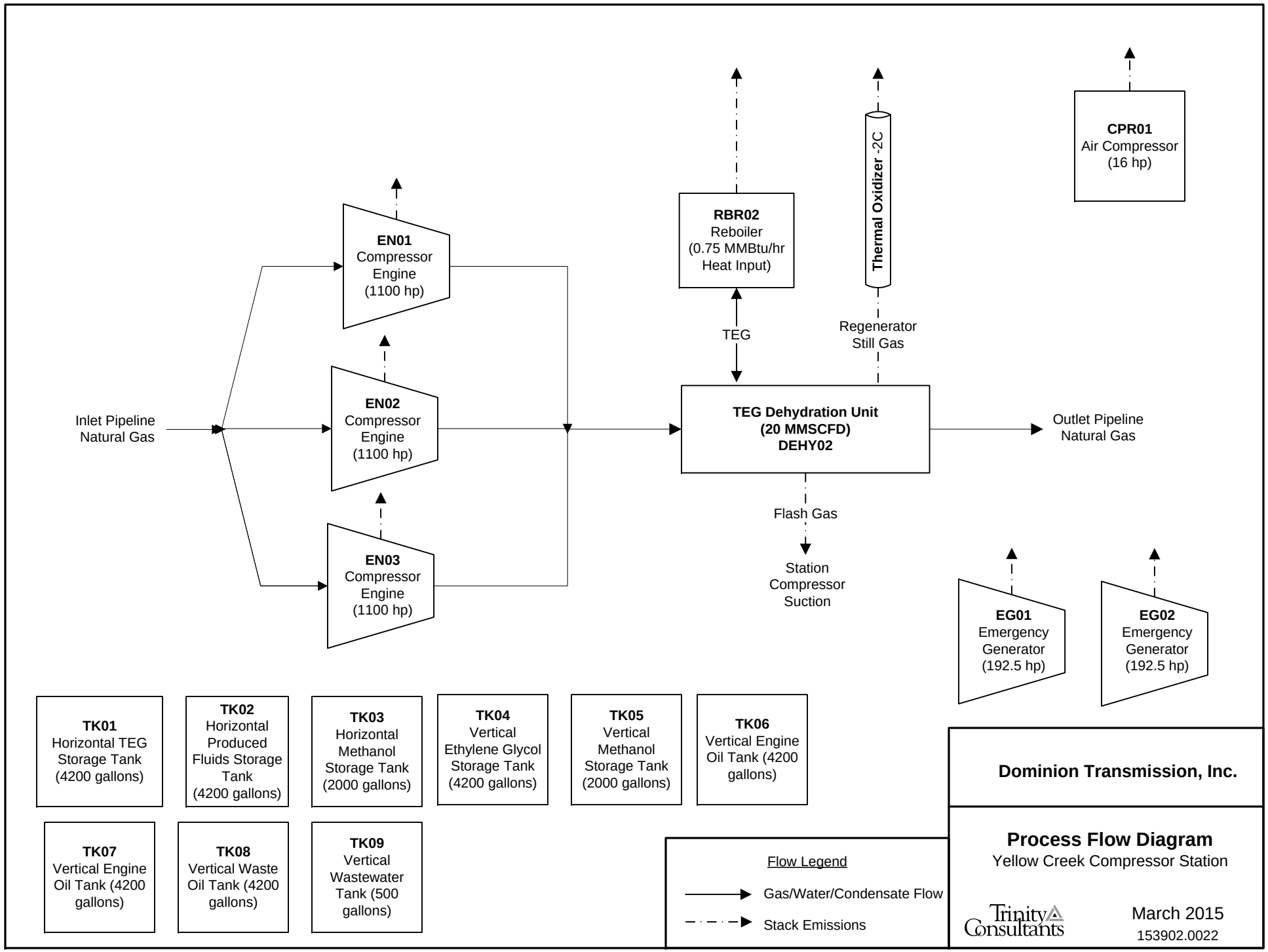

TITLE: YELLOW CREEK STATION
CALHOUN COUNTY, WEST VIRGINIA
ENVIRONMENTAL SITE PLAN

| DIR: | | GROUP | DWG. NO. | REV. |
|---|---|---|---|---|
| FILE: | PRJ/TSK: | PD | X9778 | 5 |


Printed: Feb 18, 2014 @11:55, By: dav0478, Filename: YEL_CRKb01.dwg

# ATTACHMENT F

## Detailed Process Flow Diagram


CPR01
Air Compressor
(16 hp)
RBR02
Reboiler
(0.75 MMBtu/hr
Heat Input)
Thermal Oxidizer -2C
EN01
Compressor
Engine
(1100 hp)
TEG
Regenerator
Still Gas
Inlet Pipeline
Natural Gas
EN02
Compressor
Engine
(1100 hp)
TEG Dehydration Unit
(20 MMSCFD)
DEHY02
Outlet Pipeline
Natural Gas
Flash Gas
EN03
Compressor
Engine
(1100 hp)
Station
Compressor
Suction
EG01
Emergency
Generator
(192.5 hp)
EG02
Emergency
Generator
(192.5 hp)
TK01
Horizontal TEG
Storage Tank
(4200 gallons)
TK02
Horizontal
Produced
Fluids Storage
Tank
(4200 gallons)
TK03
Horizontal
Methanol
Storage Tank
(2000 gallons)
TK04
Vertical
Ethylene Glycol
Storage Tank
(4200 gallons)
TK05
Vertical
Methanol
Storage Tank
(2000 gallons)
TK06
Vertical Engine
Oil Tank (4200
gallons)
TK07
Vertical Engine
Oil Tank (4200
gallons)
TK08
Vertical Waste
Oil Tank (4200
gallons)
TK09
Vertical
Wastewater
Tank (500
gallons)
Flow Legend
Gas/Water/Condensate Flow
Stack Emissions
Dominion Transmission, Inc.
Process Flow Diagram
Yellow Creek Compressor Station
Trinity Consultants
March 2015
153902.0022

# ATTACHMENT G

# Process Description

# ATTACHMENT G – PROCESS DESCRIPTION

Natural gas enters the station via a pipeline system and is compressed using the three (3) natural gas-fired compressor engines (identified as EN01 – EN03 and rated at 1100 hp each). The compressed natural gas stream is then processed through the triethylene glycol (TEG) dehydration unit (with associated reboiler), identified as DEHY02. The dehydration unit will introduce TEG to the gas stream in a contact tower to absorb water vapor from the gas to a level not exceeding 7 pounds per million standard cubic feet (lb/MMscf). The TEG is then sent to the natural gas-fired reboiler, rated at 0.75 MMBtu/hr heat input (RBR02). The water is evaporated from the TEG in the reboiler and discharged, and the glycol is then sent back to the contact tower for reuse. The dehydration unit is equipped with a thermal oxidizer (2C) which will control emissions from the dehydration still vent, and the emissions from the flash tank will be routed to the station compressor suction. The natural gas stream from the contact tower flows into the pipeline to be transported further along the pipeline system. The station is also equipped with nine (9) storage tanks, one (1) air compressor, and two (2) emergency backup generators, rated at 192.5 hp each.

A process flow diagram is included as Attachment F.

# ATTACHMENT I

## Emission Units Table

## 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] |
|---|---|---|---|---|---|---|
| DEHY02 | DEHY02 | Dehydration Unit (Regenerator Still) | 2015 | 20 MMSCFD | New | 2C |
| RBR02 | RBR02 | Reboiler (associated with Dehydration Unit) | 2015 | 0.75 MMbtu/hr | New | None |
| 2C | 2C | Thermal Oxidizer | 2015 | 95% Destruction Efficiency | New | None |
| DEHY01 | DEHY01 | Dehydration Unit (Regenerator Still) | 1978 | 20 MMSCFD | Removal | 1C |
| RBR01 | RBR01 | Reboiler (associated with Dehydration Unit) | 1978 | 2 MMbtu/hr | Removal | None |
| 1C | 1C | Thermal Oxidizer | 1978 | 95% Destruction Efficiency | Removal | 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

# 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 | | | |
| DEHY02 | Upward Vertical Stack | DEHY02 | Dehydration Unit (Emissions only) | 2C | Thermal Oxidizer | NA | NA | VOC<br>Total HAP<br>CO2e | 150<br>46<br>2,444 | 656<br>202<br>10,705 | 5.23<br>2.14<br>60.9 | 22.9<br>9.39<br>267 | Gas/Vapor | O[A]<br>O[A]<br>O[A,B] | |
| RBR02 | Upward Vertical Stack | RBR02 | Reboiler | NA | NA | NA | NA | NOx<br>CO<br>PM/PM10/PM2.5<br>SO2<br>VOC<br>Total HAP<br>CO2e | 0.11<br>0.09<br>0.01<br>0.001<br>0.01<br>0.002<br>129 | 0.48<br>0.41<br>0.04<br>0.003<br>0.03<br>0.009<br>566 | 0.11<br>0.09<br>0.01<br>0.001<br>0.01<br>0.002<br>129 | 0.48<br>0.41<br>0.04<br>0.003<br>0.03<br>0.009<br>566 | Gas/Vapor | O[C]<br>O[C]<br>O[C]<br>O[C]<br>O[C]<br>O[C]<br>O[D] | |
| 2C | Upward Vertical Stack | 2C | Thermal Oxidizer | NA | NA | NA | NA | NOx<br>CO<br>PM/PM10/PM2.5<br>$SO_2$<br>CO2e | N/A | N/A | 0.48<br>0.41<br>0.04<br>0.003<br>567 | 2.1<br>1.8<br>0.16<br>0.01<br>2,483 | Gas/Vapor | O[C]<br>O[C]<br>O[C]<br>O[C]<br>O[D] | |

A- GRI-GLYCalc
B- 40 CFR 98, Subpart A, global warming potentials.
C- AP Section 1.4 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 July 1998.
D- 40 CFR 98, Subpart C for natural gas fired combustion,

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

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

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

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

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

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

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

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

## Attachment J
## EMISSION POINTS DATA SUMMARY SHEET

| Table 2: Release Parameter Data | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Emission Point ID No. *(Must match Emission Units Table)* | Inner Diameter (ft.) | Exit Gas | | | Emission Point Elevation (ft) | | UTM Coordinates (km) | |
| | | Temp. ($^{o}$F) | Volumetric Flow [1] (acfm) *at operating conditions* | Velocity (fps) | Ground Level *(Height above mean sea level)* | Stack Height [2] *(Release height of emissions above ground level)* | Northing | Easting |
| RBR02 | 1.06 | 1,103 | 566.7 | 13.6 | 850 | 30 | 4,314.8 | 495.8 |
| 2C | 3 | 1,700 | 7,348 | 25 | 850 | 30 | 4,314.8 | 495.8 |
| | | | | | | | | |
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| | | | | | | | | |

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

# ATTACHMENT K

# Fugitive Emissions Data Summary Sheet

## Attachment K

## FUGITIVE EMISSIONS DATA SUMMARY SHEET

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

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

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

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

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

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

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

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

# ATTACHMENT L

## Emission Unit Data Sheet

# NATURAL GAS GLYCOL DEHYDRATION UNIT DATA SHEET

| | | | | | |
|---|---|---|---|---|---|
| General Glycol Dehydration Unit Data | | Manufacturer and Model | | Inegral | |
| | | Max Dry Gas Flow Rate (mmscf/day) | | 20 MMscf/day | |
| | | Design Heat Input (mmBtu/hr) | | 0.75 MMBtu/hr | |
| | | Design Type (DEG or TEG) | | TEG | |
| | | Source Status[2] | | NS | |
| | | Date Installed/Modified/Removed[3] | | November 2015 | |
| | | Regenerator Still Vent APCD[4] | | TO | |
| | | Fuel HV (Btu/scf) | | 1,000 | |
| | | $H_2S$ Content (gr/100 scf) | | 0 ppm | |
| | | Operation (hrs/yr) | | 8,760 | |
| Source ID #[1] | Vent | Reference[5] | Potential Emissions[6] | lbs/hr | tons/yr |
| RBR02 | Reboiler Vent | AP | $NO_X$ | 0.11 | 0.5 |
| | | AP | CO | 0.09 | 0.4 |
| | | AP | VOC | 0.006 | 0.03 |
| | | AP | $SO_2$ | 0.0007 | 0.003 |
| | | AP | $PM_{10}$ | 0.008 | 0.04 |
| DEHY02 | Glycol Regenerator Still Vent | GR | VOC | 5 | 23 |
| | | GR | Benzene | 0.08 | 0.4 |
| | | GR | Ethylbenzene | 0.05 | 0.2 |
| | | GR | Toluene | 0.4 | 1.7 |
| | | GR | Xylenes | 1.5 | 6.7 |
| | | GR | n-Hexane | 0.05 | 0.2 |

1. Enter the appropriate Source Identification 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 Unit Data Sheet* shall be completed for each, using Source Identification #s RBV-2 and RSV-2, RBV-3 and RSV-3, etc.

2. Enter the Source Status using the following codes:

   NS Construction of New Source
   MS Modification of Existing Source
   ES Existing Source
   RS Removal of Source

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

4. Enter the Air Pollution Control Device (APCD) type designation using the following codes:

   NA None
   FL Flare
   TO Thermal Oxidizer
   CD Condenser
   CC Condenser/Combustion Combination

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* to this *Glycol Dehydration Unit Data Sheet(s)*. This PTE data shall be incorporated in the *Emissions Summary Sheet*.

**Include a copy of the GRI-GLYCalc™ analysis. This includes a printout of the aggregate calculations report, which shall include emissions reports, equipment reports, and stream reports.**

***An explanation of input parameters and examples, when using GRI-GLYCalc™ is available on our website.**

**West Virginia Department of Environmental Protection**

**Division of Air Quality**

**40 CFR Part 63; Subpart HH & HHH Registration Form**

DIVISION OF AIR QUALITY : (304) 926-0475
WEB PAGE: http:\\www.wvdep.org

*Complete this form for any oil and natural gas production or natural gas transmission and storage facility that uses an affected unit under HH/HHH, whether subject or not.*

## Section A: Facility Description

Affected facility actual annual average natural gas throughput (scf/day): **20 MMscf/day**

Affected facility actual annual average hydrocarbon liquid throughput: (bbl/day): **N/A**

The affected facility processes, upgrades, or stores hydrocarbon liquids prior to custody transfer. **Yes** No

The affected facility processes, upgrades, or stores natural gas prior to the point at which natural gas (NG) enters the NG transmission and storage source category or is delivered to the end user. Yes **No**

The affected facility is: ☐ prior to a NG processing plant ☐ a NG processing plant
☐ prior to the point of custody transfer and there is no NG processing plant

The affected facility transports or stores natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company). **Yes** No

The affected facility exclusively processes, stores, or transfers black oil. Yes **No**

Initial producing gas-to-oil ratio (GOR): _____scf/bbl API gravity: _____degrees

## Section B: Dehydration Unit (if applicable) [1]

Description: **Inegral 20 MMscf/day Dehydration Unit**

| | | |
|---|---|---|
| Date of Installation: **2015** | Annual Operating Hours: **8,760** | Burner rating (MMbtu/hr): **0.75 MMBtu/hr** |
| Exhaust Stack Height (ft): **30** | Stack Diameter (ft): **3** | Stack Temp. (°F): **1,700** |

Glycol Type: ☒ TEG ☐ EG ☐ Other:

Glycol Pump Type: ☐ Electric ☒ Gas If gas, what is the volume ratio? 0.080 ACFM/gpm

Condenser installed? ☐ Yes ☒ No Exit Temp. _____ °F Condenser Pressure _____psig

Incinerator/flare installed? ☒ Yes ☐ No Destruction Eff. 95 %

Other controls installed? ☐ Yes ☒ No Describe:

Wet Gas[2]: Gas Temp.: 120 °F Gas Pressure 400 psig
(Upstream of Contact Tower) Saturated Gas? ☒ Yes ☐ No If no, water content _____ lb/MMSCF

Dry Gas: Gas Flowrate(MMSCFD) Actual _____ Design 20 MMscf/day
(Downstream of Contact Tower) Water Content 7 lb/MMSCF

Lean Glycol: Circulation rate (gpm) Actual[3] _____ Maximum[4] 3.0 gal/lb H2O
Pump make/model: **Kimray 20020SC**

Glycol Flash Tank (if applicable): Temp.: 150 °F Pressure 60 psig Vented? Yes ☐ No ☒
If no, describe vapor control:

Stripping Gas (if applicable): Source of gas: Dry Gas Rate 21.012 scfm

**Please attach the following required dehydration unit information:**

1. System map indicating the chain of custody information. See Page 43 of this document for an example of a gas flow schematic. It is not intended that the applicant provide this level of detail for all sources. The level of detail that is necessary is to establish where the custody transfer points are located. This can be accomplished by submitting a process flow diagram indicating custody transfer points and the natural gas flow. However, the DAQ reserves the right to request more detailed information in order to make the necessary decisions.
2. Extended gas analysis from the Wet Gas Stream including mole percents of $C_1$-$C_8$, benzene, ethylbenzene, toluene, xylene and n-Hexane, using Gas Processors Association (GPA) 2286 (or similar). A sample should be taken from the inlet gas line, downstream from any inlet separator, and using a manifold to remove entrained liquids from the sample and a probe to collect the sample from the center of the gas line. GPA standard 2166 reference method or a modified version of EPA Method TO-14, (or similar) should be used.
3. GRI-GLYCalc Ver. 3.0 aggregate report based on maximum Lean Glycol circulation rate and maximum throughput.
4. Detailed calculations of gas or hydrocarbon flow rate.

**Section C: Facility NESHAPS Subpart HH/HHH status**

Affected facility status: (choose only one)

- ☒ Subject to Subpart HH – Benzene Exemption Claimed
- ☐ Subject to Subpart HHH
- ☐ Not Subject because:
  - ☐ < 10/25 TPY
  - ☐ Affected facility exclusively handles black oil
  - ☐ The facility wide actual annual average NG throughput is < 650 thousand scf/day and facility wide actual annual average hydrocarbon liquid is < 250 bpd
  - ☐ No affected source is present

# ATTACHMENT M

## Air Pollution Control Device Sheet

# AIR POLLUTION CONTROL DEVICE
# Vapor Combustion Control Device Sheet

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

**IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.**

**General Information**

| 1. Control Device ID#: **2C** | 2. Installation Date: **2015** ☒ New | |
|---|---|---|
| 3. Maximum Rated Total Flow Capacity: **175,000 scf/d** | 4. Maximum Design Heat Input: **4.78 MMBtu/hr** | 5. Design Heat Content: **595 Btu/scf** |

**Control Device Information**

6. Select the type of vapor combustion control device being used: ☐ Enclosed Combustion Device ☐ Elevated Flare ☐ Ground Flare ☒ Thermal Oxidizer ☐ Completion Combustion Device

| 7. Manufacturer: **Questor Technologies Inc.** Model No.: **Q250** | 8. Hours of operation per year: **8,760** |
|---|---|

9. List the emission units whose emissions are controlled by this vapor combustion control device:
**Emission Units: DEHY02**

| 10. Emission Unit ID# | Emission Source Description: | Emission Unit ID# | Emission Source Description: |
|---|---|---|---|
| **DEHY02** | **Dehydration Unit Still** | | |
| | | | |

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

| 11. Assist Type | 12. Flare Height | 13. Tip Diameter | 14. Was the design per §60.18? |
|---|---|---|---|
| ☐ Steam - ☐ Air - ☐ Pressure - ☒ Non - | 30 ft | 36 in | ☒Yes ☐No |

**Waste Gas Information**

| 15. Maximum waste gas flow rate (scfm): | 16. Heat value of waste gas stream (BTU/ft3) | 17. Temperature of the emissions stream (°F) | 18. Exit Velocity of the emissions stream (ft/s) |
|---|---|---|---|
| **121.53 scfm** | **595 Btu/ft3** | **1,700 °F** | **25 ft/s** |

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

**Pilot Information**

| 20. Type/Grade of pilot fuel: | 21. Number of pilot lights: | 22. Fuel flow rate to pilot flame per pilot (scf/hr): | 23. Heat input per pilot (BTU/hr): | 24. Will automatic re-ignition be used? |
|---|---|---|---|---|
| **Pipeline quality Natural Gas** | **1** | **~750 scf/hr** | **60,000 Btu/hr** | ☐ Yes ☒ No |

25. If automatic re-ignition will be used, describe the method:
**N/A**

26. Describe the method of controlling flame:
**There are 3 flame cells to stop the main flame front and two (2) 2" flame arrestors on the piping from the drip pot to the burner assembly.**

| 27. Is pilot flame equipped with a monitor to detect the presence of the flame? ☒ Yes ☐ No | 28. If yes, what type? ☒ Thermocouple ☐ Infra-Red ☐ Ultra Violet ☐ Camera with monitoring control room ☐ Other, describe: |
|---|---|

| 29. Pollutant(s) Controlled | 30. % Capture Efficiency | 31. Manufacturer's Guaranteed Control Efficiency (%) |
|---|---|---|
| HC | 100 | >95 |
| VOC | 100 | >95 |
| HAP | 100 | >95 |
| | | |

32. Has the control device been tested by the manufacturer and certified?

**Pending Testing**

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

**See Attached**

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

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

Table M-1
Section 60.18 Demonstration

| Yellow Creek | |
|---|---|
| Type | Unassisted |
| Throat Diameter (inches) | 36.0 |

| GLYCalc | | 7292 | scf/h |
|---|---|---|---|
| | *INPUT* | *Compound Net* | *Mixture Net* |
| | *mole* | *Heating Value* | *Heating Value* |
| ***Compound*** | *percent* | *(Btu/scf)* | *(Btu/scf)* |
| water | 70.300 | 0 | 0.0 |
| carbon dioxide | 0.044 | 0 | 0.0 |
| nitrogen | 0.261 | 0 | 0.0 |
| methane | 18.500 | 913 | 168.9 |
| ethane | 3.610 | 1641 | 59.2 |
| propane | 1.950 | 2385 | 46.5 |
| Isobutane | 0.297 | 3105 | 9.2 |
| n-butane | 0.691 | 3113 | 21.5 |
| Isopentane | 0.192 | 3716 | 7.1 |
| n-pentane | 0.186 | 3709 | 6.9 |
| cyclopentane | 0.001 | 3516 | 0.0 |
| n-hexane | 0.064 | 4412 | 2.8 |
| cyclohexane | 0.075 | 4185 | 3.1 |
| other hexanes | 0.074 | 4870 | 3.6 |
| heptane | 0.186 | 4925 | 9.2 |
| benzene | 0.126 | 3601 | 4.5 |
| toluene | 0.510 | 4284 | 21.8 |
| ethylbenzene | 0.053 | 4977 | 2.7 |
| xylene | 1.750 | 4980 | 87.2 |
| octane (C8+) | 1.030 | 5804 | 59.8 |
| hydrogen sulfide | 0.000 | 596 | 0.0 |
| ***TOTALS:*** | 100 | | 514.2 |

**Assist gas requirements for nonassisted flare per 40 CFR 60.18(c)(3):**

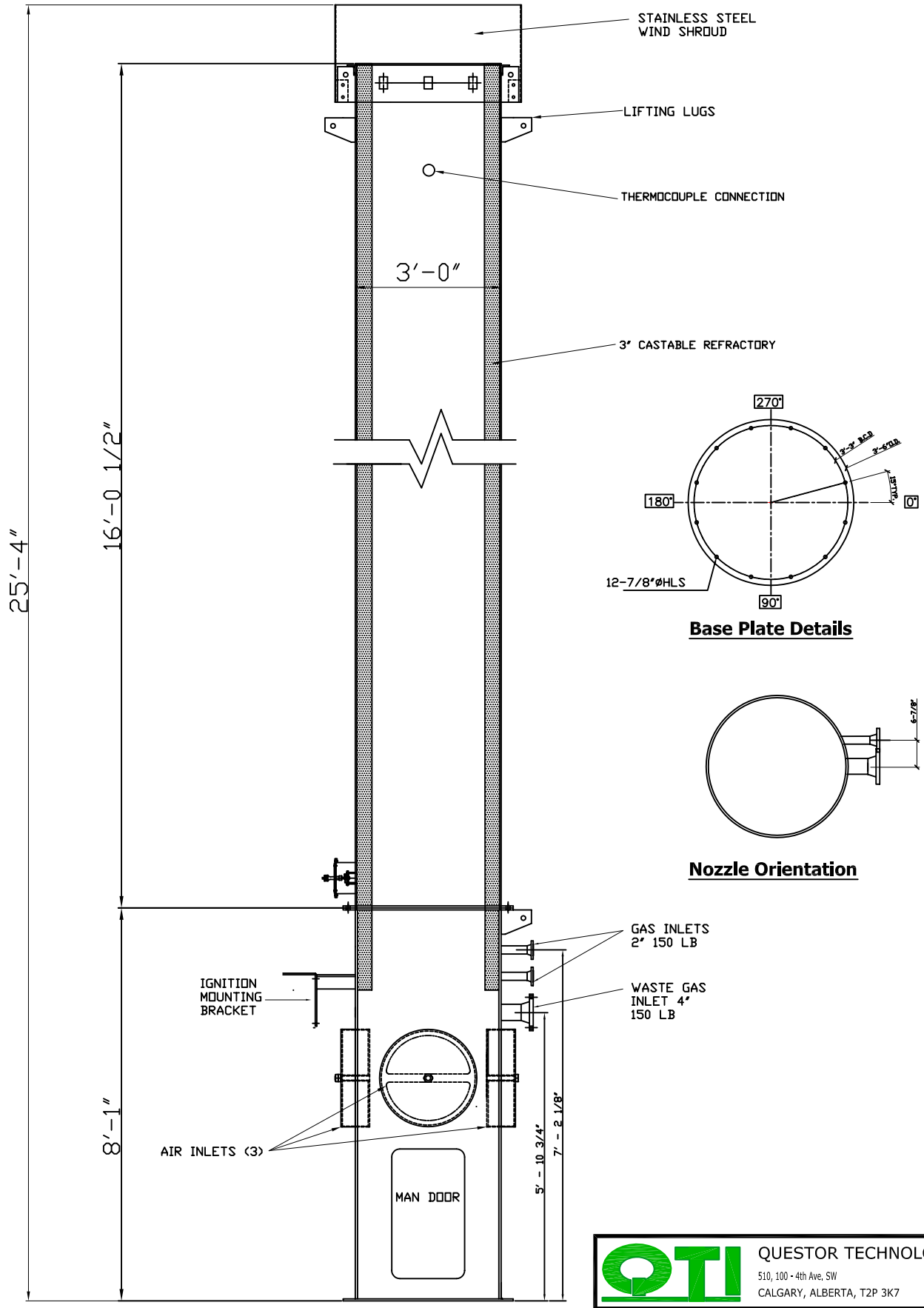
| | | |
|---|---|---|
| Minimum allowable net heating value | 200 | *Btu/scf* |
| Additional assist gas required | 0.0 | *scfh* |
| Assist (fuel) gas supplied | 0 | *scfh* |
| Composite net heating value | 516.80 | *Btu/scf* |

**Maximum allowable flare exit velocity ($V_{max}$) for nonassisted flare per 40 CFR 60.18(f)(5):**

| *Lower (Net) Heating Value* | Btu/scf | MJ/scm |
|---|---|---|
| (1000 Btu/scf = 37.3 MJ/scm) | 514 | 19.2 |
| *Vmax = 10^[(LHV+28.2)/31.7] for Vmax in m/sec and LHV in MJ/scm* | m/sec | ft/sec |
| (1 m = 3.28 ft) | 32.6 | 107.0 |
| Vmax limit based on 40 CFR 60.18(b)(4)(iii) | 32.6 | 107.0 |

**Actual flare exit velocity:**

| | | |
|---|---|---|
| Total volumetric flow *(vent gas + assist gas in scfh/3600 sec/hr)* = | 2.03 | *scf/sec* |
| Total volumetric flow at 180F & atmospheric pressure = | 2.62 | *cf/sec* |
| Flare exit cross-sectional area based on throat diameter = | 7.07 | *ft2* |
| Velocity = volumetric flow / cross-sectional area = | 0.4 | *ft/sec* |







**Base Plate Details**




**Nozzle Orientation**

ESTIMATED WEIGHT 8,500LB'S

QUESTOR TECHNOLOGY INC.
510, 100 - 4th Ave, SW
CALGARY, ALBERTA, T2P 3K7

| | | | |
|---|---|---|---|
| CUSTOMER: | | | |
| CLIENT: | LOCATION: | | |
| Q250 TYPICAL DETAILS | | | Q250 |
| DWN. BY: J.V. | DATE: /2005 | JOB#: 2005 | |
| APP. BY: D.M. | DATE: /2005 | QUOTATION | REV.#: 0 |

# QUESTOR Q250 INCINERATOR

**TECHNICAL SPECIFICATIONS**

## Design Basis

| | |
|---|---|
| Maximum throughput: | 250,000 scf/d of methane equivalent gas |
| Fuel requirement: | (varies depending upon waste gas composition) |
| Design operating temperature: | 600 to 1200 $^{o}$C |

## Questor Q250 Incinerator Detail

| | |
|---|---|
| Total height: | 25 ½ feet (7.7 meters) |
| Total weight: | 8,500 lbs (3,855 kg) |
| Foot print: | 3' - 6" OD (1.067 m) |
| Number of sections: | 1 – Stack and air induction |
| Stack material: | A36 - Refractory lined |
| Stack OD: | 36 inches (91.5 cm) |
| Stack Refractory I.D.: | 28.3 inches (71.9 cm) |
| Stack length: | 16 feet (4.9 m) |
| Stack wall thickness: | 0.25 inches (6.4 mm) |
| Air induction material: | A36 |
| Air induction OD: | 36 inches (91.5 cm) |
| Air induction length: | 8 feet (2.4 m) |
| Air induction wall thickness: | 0.50 inches (12.7 mm) |
| Wind shroud: | Stainless steel, 4' - 10 " OD |
| Flanges | A105 BWRF |
| Bolting | A335 |

## Refractory Specification

| | |
|---|---|
| Type: | 4LI |
| Thickness: | 3 inches |
| Manufacturer: | Rescocast |
| Maximum working temperature: | 2600$^{o}$F (1427$^{o}$C) |



**Questor Technology Inc.,** Suite 510, 100 - 4th Avenue SW, Calgary, Alberta, Canada, T2P 3N2 Phone: (403) 571 - 1530 Fax: (403) 571 - 1539 http://www.questortech.com/

## Gas Supply Connections

| | |
|---|---|
| Waste gas: | 4 inch RFWN |
| Pilot gas: | ¼ inch NPT |
| Fuel gas: | 1 inch RFWN |

## Combustion Air

| | |
|---|---|
| Natural draft: | 3 openings c/w flame arrestor cells (Optional) |

## Pilot Gas Burner

| | |
|---|---|
| Pilot Ignition Control: | Profire 1100, |
| Number of Igniters: | 1 |
| Capacity at 3 psi: | 1200 scf/d |

## Fuel Gas Manifold

| | |
|---|---|
| Manifold material: | Stainless steel 304 |
| Nozzle – orifice | Varies |

## Waste Gas Manifold

| | |
|---|---|
| Operating Pressure Range: | 1 – 40 psig |
| Manifold material: | Stainless steel 304 |
| Nozzle – orifice | Varies |



**Questor Technology Inc.,** Suite 510, 100 - 4th Avenue SW, Calgary, Alberta, Canada, T2P 3N2 Phone: (403) 571 - 1530 Fax: (403) 571 - 1539 http://www.questortech.com/

## Control Panel

| | |
|---|---|
| NEMA 4, local control panel: | 120 VAC heater/24 VDC controls |
| Ignition panel: | NEMA 4 x enclosure |

## Surface Preparation

| | |
|---|---|
| Sand blast: | SP6 |
| Top coat: | High temperature aluminum |

## Fuel Management System – Compliance with CSA-B149.3

| | |
|---|---|
| Stack top temperature: | Type K Thermocouple, Inconel 600 thermowell |
| Temperature transmitter: | Rosemount Type 644 with local readout and signal to PLC |
| Motor valve: | Fisher Type 119 |
| I to P converter: | Fisher Type 646 |

## Optional Equipment

| | |
|---|---|
| Inline flame arrestor: | 150 ANSI, RF, Steel body, SS cell |
| Air intake flash back arrestors: | Spiral wound aluminum |



**Questor Technology Inc.,** Suite 510, 100 - 4th Avenue SW, Calgary, Alberta, Canada, T2P 3N2 Phone: (403) 571 - 1530 Fax: (403) 571 - 1539 http://www.questortech.com/

# ATTACHMENT N

## Supporting Emission Calculations

# Yellow Creek Compressor Station

| Component | Reboiler (tpy) | Glycol Dehy (tpy) | TO (tpy) | **Total Emissions (tpy)** |
|---|---|---|---|---|
| **Criteria Pollutants** | | | | |
| $NO_X$ | 4.84E-01 | --- | 2.12 | **2.60** |
| CO | 4.06E-01 | --- | 1.78 | **2.19** |
| PM Total | 3.67E-02 | --- | 1.61E-01 | **0.20** |
| $PM_{10}$ Total | 3.67E-02 | --- | 1.61E-01 | **0.20** |
| $PM_{2.5}$ Total | 3.67E-02 | --- | --- | **0.04** |
| $SO_2$ | 2.90E-03 | --- | 1.27E-02 | **0.02** |
| VOCs | 2.66E-02 | 22.92 | --- | **22.95** |
| | | | | |
| **Greenhouse Gases** | | | | |
| $CO_2$ | 566 | --- | 2,480 | **3,046** |
| $CH_4$ | 1.07E-02 | 10.67 | 4.67E-02 | **10.72** |
| $N_2O$ | 1.07E-03 | --- | 4.67E-03 | **5.74E-03** |
| $CO_2e$ | 566 | 267 | 2,483 | **3,316** |
| | | | | |
| **Hazardous Air Pollutants** | | | | |
| Methylnaphthalene (2-) | 1.16E-07 | --- | --- | 1.16E-07 |
| Methylchloranthrene (3-) | 8.70E-09 | --- | --- | 8.70E-09 |
| Dimethybenz(a)anthracene (7,12-) | 7.74E-08 | --- | --- | 7.74E-08 |
| Acenaphthene | 8.70E-09 | --- | --- | 8.70E-09 |
| Acenaphthylene | 8.70E-09 | --- | --- | 8.70E-09 |
| Anthracene | 1.16E-08 | --- | --- | 1.16E-08 |
| Benz(a)anthracene | 8.70E-09 | --- | --- | 8.70E-09 |
| Benzene | 1.02E-05 | 3.53E-01 | --- | 3.53E-01 |
| Benzo(a)pyrene | 5.80E-09 | --- | --- | 5.80E-09 |
| Benzo(b)fluoranthene | 8.70E-09 | --- | --- | 8.70E-09 |
| Benzo(g,h,i)perylene | 5.80E-09 | --- | --- | 5.80E-09 |
| Benzo(k)fluoranthene | 8.70E-09 | --- | --- | 8.70E-09 |
| Chrysene | 8.70E-09 | --- | --- | 8.70E-09 |
| Dibenzo(a,h)anthracene | 5.80E-09 | --- | --- | 5.80E-09 |
| Dichlorobenzene | 5.80E-06 | --- | --- | 5.80E-06 |
| Fluoranthene | 1.45E-08 | --- | --- | 1.45E-08 |
| Fluorene | 1.35E-08 | --- | --- | 1.35E-08 |
| Formaldehyde | 3.63E-04 | --- | --- | 3.63E-04 |
| Hexane, n- | 8.70E-03 | 1.97E-01 | --- | 2.06E-01 |
| Indeno(1,2,3-cd)pyrene | 8.70E-09 | --- | --- | 8.70E-09 |
| Naphthalene | 2.95E-06 | --- | --- | 2.95E-06 |
| Phenanthrene | 8.22E-08 | --- | --- | 8.22E-08 |
| Pyrene | 2.42E-08 | --- | --- | 2.42E-08 |
| Toluene | 1.64E-05 | 1.68 | --- | 1.68 |
| Arsenic | 9.67E-07 | --- | --- | 9.67E-07 |
| Beryllium | 5.80E-08 | --- | --- | 5.80E-08 |
| Cadmium | 5.32E-06 | --- | --- | 5.32E-06 |
| Chromium | 6.77E-06 | --- | --- | 6.77E-06 |
| Cobalt | 4.06E-07 | --- | --- | 4.06E-07 |
| Lead | 2.42E-06 | -- | 1.06E-05 | 1.30E-05 |
| Manganese | 1.84E-06 | --- | --- | 1.84E-06 |
| Mercury | 1.26E-06 | --- | --- | 1.26E-06 |
| Nickel | 1.02E-05 | --- | --- | 1.02E-05 |
| Selenium | 1.16E-07 | --- | --- | 1.16E-07 |
| Ethylebenzene | --- | 2.03E-01 | --- | 2.03E-01 |
| Trimethylpentane (2,2,4-) | --- | 2.78E-01 | --- | 2.78E-01 |
| Xylene | --- | 6.67 | --- | 6.67 |
| Total HAP: | 9.13E-03 | 9.39 | 1.06E-05 | **9.40** |

# Yellow Creek Compressor Station
## Reboiler

| Source Designation: | |
|---|---|
| Manufacturer: | Diverse Energy Systems |
| Year Installed | 2015 |
| Fuel Used: | Natural Gas |
| Higher Heating Value (HHV) (Btu/scf): | 1,000 |
| Heat Input (MMBtu/hr) | 0.750 |
| Fuel Consumption (mmscf/hr): | 0.001 |
| Potential Annual Hours of Operation (hr/yr): | 8,760 |

**Criteria and Manufacturer Specific Pollutant Emission Rates:**

| Pollutant | Emission Factor (lb/MMscf)[a] | Potential Emissions (lb/hr)[b] | Potential Emissions (tons/yr)[c] |
|---|---|---|---|
| $NO_x$ | 100 | 0.1104 | 0.4836 |
| CO | 84 | 0.0927 | 0.4062 |
| $SO_2$ | 0.6 | 0.0007 | 0.0029 |
| PM Total | 7.6 | 0.0084 | 0.0367 |
| PM Condensable | 5.7 | 0.00629 | 0.028 |
| $PM_{10}$ (Filterable) | 1.9 | 0.00210 | 0.009 |
| $PM_{2.5}$ (Filterable) | 1.9 | 0.00210 | 0.009 |
| VOC | 5.5 | 0.0061 | 0.0266 |
| Lead | 5.00E-04 | 5.52E-07 | 2.42E-06 |
| $CO_2$[d] | 116,997 | 129.17 | 565.74 |
| $CH_4$[d] | 2.2 | 0.0024 | 0.0107 |
| $N_2O$[d] | 0.22 | 0.00024 | 0.00107 |

**Hazardous Air Pollutant (HAP) Potential Emissions:**

| Pollutant | Emission Factor (lb/MMscf)[a] | Potential Emissions (lb/hr)[b] | Potential Emissions (tons/yr)[c] |
|---|---|---|---|
| **HAPs:** | | | |
| Methylnaphthalene (2-) | 2.40E-05 | 2.65E-08 | 1.16E-07 |
| 3-Methylchloranthrene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| 7,12-Dimethylbenz(a)anthracene | 1.60E-05 | 1.77E-08 | 7.74E-08 |
| Acenaphthene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Acenaphthylene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Anthracene | 2.40E-06 | 2.65E-09 | 1.16E-08 |
| Benz(a)anthracene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Benzene | 2.10E-03 | 2.32E-06 | 1.02E-05 |
| Benzo(a)pyrene | 1.20E-06 | 1.32E-09 | 5.80E-09 |
| Benzo(b)fluoranthene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Benzo(g,h,i)perylene | 1.20E-06 | 1.32E-09 | 5.80E-09 |
| Benzo(k)fluoranthene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Chrysene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Dibenzo(a,h) anthracene | 1.20E-06 | 1.32E-09 | 5.80E-09 |
| Dichlorobenzene | 1.20E-03 | 1.32E-06 | 5.80E-06 |
| Fluoranthene | 3.00E-06 | 3.31E-09 | 1.45E-08 |
| Fluorene | 2.80E-06 | 3.09E-09 | 1.35E-08 |
| Formaldehyde | 7.50E-02 | 8.28E-05 | 3.63E-04 |
| Hexane | 1.80E+00 | 1.99E-03 | 8.70E-03 |
| Indo(1,2,3-cd)pyrene | 1.80E-06 | 1.99E-09 | 8.70E-09 |
| Naphthalene | 6.10E-04 | 6.73E-07 | 2.95E-06 |
| Phenanthrene | 1.70E-05 | 1.88E-08 | 8.22E-08 |
| Pyrene | 5.00E-06 | 5.52E-09 | 2.42E-08 |
| Toluene | 3.40E-03 | 3.75E-06 | 1.64E-05 |
| Arsenic | 2.00E-04 | 2.21E-07 | 9.67E-07 |
| Beryllium | 1.20E-05 | 1.32E-08 | 5.80E-08 |
| Cadmium | 1.10E-03 | 1.21E-06 | 5.32E-06 |
| Chromium | 1.40E-03 | 1.55E-06 | 6.77E-06 |
| Cobalt | 8.40E-05 | 9.27E-08 | 4.06E-07 |
| Manganese | 3.80E-04 | 4.20E-07 | 1.84E-06 |
| Mercury | 2.60E-04 | 2.87E-07 | 1.26E-06 |
| Nickel | 2.10E-03 | 2.32E-06 | 1.02E-05 |
| Selenium | 2.40E-05 | 2.65E-08 | 1.16E-07 |
| **Total HAP** | | **2.08E-03** | **9.13E-03** |

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, 1.4-3, & 1.4-4.

[b] Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

[c] Annual Emissions $(tons/yr)_{Potential} = (lb/hr)_{Emissions} \times$ (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

[d] GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor from Subpart C (kg/MMBtu) × (2.205 lb/kg) × HHV (Btu/scf)

**Thermal Oxidizer (2C) Emissions Calculations:**

| | | |
|---|---|---|
| **Combustor Rating** | 4.8 | MMbtu/hr |
| **Pilot Rating** | 0.06 | MMbtu/hr |
| **Higher Heating Value (HHV)** | 1,000 | btu/scf |

| Pollutant | Emission Factors [a] (lb/MMBtu) | Combustor Potential Emissions (lb/hr) | Combustor Potential Emissions (tpy) | Pilot Potential Emissions (lb/hr) | Pilot Potential Emissions (tpy) | TOTAL Potential Emissions (lb/hr) | TOTAL Potential Emissions (tpy) |
|---|---|---|---|---|---|---|---|
| $NO_x$ | 1.00E-01 | 4.78E-01 | 2.09E+00 | 6.00E-03 | 2.63E-02 | 4.84E-01 | 2.12E+00 |
| CO | 8.40E-02 | 4.02E-01 | 1.76E+00 | 5.04E-03 | 2.21E-02 | 4.07E-01 | 1.78E+00 |
| $PM/PM_{10}$ | 7.60E-03 | 3.63E-02 | 1.59E-01 | 4.56E-04 | 2.00E-03 | 3.68E-02 | 1.61E-01 |
| $SO_2$ | 6.00E-04 | 2.87E-03 | 1.26E-02 | 3.60E-05 | 1.58E-04 | 2.90E-03 | 1.27E-02 |
| Lead | 5.00E-07 | 2.39E-06 | 1.05E-05 | 3.00E-08 | 1.31E-07 | 2.42E-06 | 1.06E-05 |
| $CO_2$ [b] | 117.0 | 559.2 | 2,449.5 | 7.0 | 30.7 | 566.3 | 2,480.2 |
| $CH_4$ [b] | 2.21E-03 | 1.05E-02 | 4.62E-02 | 1.32E-04 | 5.79E-04 | 1.07E-02 | 4.67E-02 |
| $N_2O$ [b] | 2.21E-04 | 1.05E-03 | 4.62E-03 | 1.32E-05 | 5.79E-05 | 1.07E-03 | 4.67E-03 |

[a] Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2.

[b] GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

**Glycol Dehydrator Emission Calculations - GLY-CALC Output[1]**

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY

Regenerator Emissions (Controlled)

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | 2.0293 | 48.70 | 8.888 |
| Ethane | 0.7397 | 17.75 | 3.240 |
| Propane | 0.5877 | 14.10 | 2.574 |
| Isobutane | 0.1178 | 2.83 | 0.516 |
| n-Butane | 0.2739 | 6.57 | 1.200 |
| Isopentane | 0.0945 | 2.27 | 0.414 |
| n-Pentane | 0.0916 | 2.20 | 0.401 |
| Cyclopentane | 0.0004 | 0.01 | 0.002 |
| n-Hexane* | 0.0375 | 0.90 | 0.164 |
| Cyclohexane | 0.0431 | 1.03 | 0.189 |
| Other Hexanes | 0.0436 | 1.05 | 0.191 |
| Heptanes | 0.1272 | 3.05 | 0.557 |
| Methylcyclohexane | 0.0012 | 0.03 | 0.005 |
| 2,2,4-Trimethylpentane* | 0.0529 | 1.27 | 0.232 |
| Benzene* | 0.0671 | 1.61 | 0.294 |
| Toluene* | 0.3205 | 7.69 | 1.404 |
| Ethylbenzene* | 0.0387 | 0.93 | 0.170 |
| Xylenes* | 1.2698 | 30.48 | 5.562 |
| C8 + Heavier Hydrocarbons | 1.1934 | 28.64 | 5.227 |
| Total Emissions | 7.1299 | 171.12 | 31.229 |
| Total Hydrocarbon Emissions | 7.1299 | 171.12 | 31.229 |
| Total VOC Emissions | 4.3609 | 104.66 | 19.101 |
| Total HAP Emissions | 1.7865 | 42.88 | 7.825 |

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY

Flash Tank Emissions (Recycle/Recompression)

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | | 0.00 | 0.000 |
| Ethane | | 0.00 | 0.000 |
| Propane | | 0.00 | 0.000 |
| Isobutane | | 0.00 | 0.000 |
| n-Butane | | 0.00 | 0.000 |
| Isopentane | | 0.00 | 0.000 |
| n-Pentane | | 0.00 | 0.000 |
| Cyclopentane | | 0.00 | 0.000 |
| n-Hexane* | | 0.00 | 0.000 |
| Cyclohexane | | 0.00 | 0.000 |
| Other Hexanes | | 0.00 | 0.000 |
| Heptanes | | 0.00 | 0.000 |
| Methylcyclohexane | | 0.00 | 0.000 |
| 2,2,4-Trimethylpentane* | | 0.00 | 0.000 |
| Benzene* | | 0.00 | 0.000 |
| Toluene* | | 0.00 | 0.000 |
| Ethylbenzene* | | 0.00 | 0.000 |
| Xylenes* | | 0.00 | 0.000 |
| C8 + Heavier Hydrocarbons | | 0.00 | 0.000 |
| Total Emissions | 0.0000 | 0.00 | 0.000 |
| Total Hydrocarbon Emissions | 0.0000 | 0.00 | 0.000 |
| Total VOC Emissions | 0.0000 | 0.00 | 0.000 |
| Total HAP Emissions | 0.0000 | 0.00 | 0.000 |

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY[1]

Controlled Total Emission Rates (w/ safety factor)

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | 2.4352 | 58.4438 | 10.6660 |
| Ethane | 0.8876 | 21.3034 | 3.8879 |
| Propane | 0.7052 | 16.9258 | 3.0890 |
| Isobutane | 0.1414 | 3.3926 | 0.6192 |
| n-Butane | 0.3287 | 7.8883 | 1.4396 |
| Isopentane | 0.1134 | 2.7216 | 0.4967 |
| n-Pentane | 0.1099 | 2.6381 | 0.4814 |
| Cyclopentane | 0.0005 | 0.0115 | 0.0021 |
| n-Hexane* | 0.0450 | 1.0800 | 0.1971 |
| Cyclohexane | 0.0517 | 1.2413 | 0.2265 |
| Other Hexanes | 0.0523 | 1.2557 | 0.2292 |
| Heptanes | 0.1526 | 3.6634 | 0.6686 |
| Methylcyclohexane | 0.0014 | 0.0346 | 0.0063 |
| 2,2,4-Trimethylpentane* | 0.0635 | 1.5235 | 0.2780 |
| Benzene* | 0.0805 | 1.9325 | 0.3527 |
| Toluene* | 0.3846 | 9.2304 | 1.6845 |
| Ethylbenzene* | 0.0464 | 1.1146 | 0.2034 |
| Xylenes* | 1.5238 | 36.5702 | 6.6741 |
| C8 + Heavier Hydrocarbons | 1.4321 | 34.3699 | 6.2725 |
| Total Emissions | 8.5559 | 205.34 | 37.475 |
| Total Hydrocarbon Emissions | 8.5559 | 205.34 | 37.475 |
| Total VOC Emissions | 5.2331 | 125.59 | 22.921 |
| Total HAP Emissions | 2.1438 | 51.45 | 9.390 |

* HAPs

1. Based on GRI GlyCalc 4.0 run at dry gas flowrate of 20 MMscf/day and T and P of 120°F and 400 psig, respectively, controlled by a TO at 95% destruction efficiency
A safety factor of 20% is included in the total.

**Glycol Dehydrator Emission Calculations - GLY-CALC Output[1]**

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY

Regenerator Emissions (Uncontrolled)

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | 40.5851 | 974.04 | 177.763 |
| Ethane | 14.7940 | 355.06 | 64.798 |
| Propane | 11.7547 | 282.11 | 51.486 |
| Isobutane | 2.3555 | 56.53 | 10.317 |
| n-Butane | 5.4786 | 131.49 | 23.996 |
| Isopentane | 1.8900 | 45.36 | 8.278 |
| n-Pentane | 1.8321 | 43.97 | 8.025 |
| Cyclopentane | 0.0078 | 0.19 | 0.034 |
| n-Hexane* | 0.7495 | 17.99 | 3.283 |
| Cyclohexane | 0.8625 | 20.70 | 3.778 |
| Other Hexanes | 0.8727 | 20.94 | 3.822 |
| Heptanes | 2.5447 | 61.07 | 11.146 |
| Methylcyclohexane | 0.0244 | 0.59 | 0.107 |
| 2,2,4-Trimethylpentane* | 1.0573 | 25.38 | 4.631 |
| Benzene* | 1.3425 | 32.22 | 5.880 |
| Toluene* | 6.4103 | 153.85 | 28.077 |
| Ethylbenzene* | 0.7734 | 18.56 | 3.387 |
| Xylenes* | 25.3965 | 609.52 | 111.237 |
| C8 + Heavier Hydrocarbons | 23.8678 | 572.83 | 104.541 |
| Total Emissions | 142.5994 | 3422.39 | 624.585 |
| Total Hydrocarbon Emissions | 142.5994 | 3422.39 | 624.585 |
| Total VOC Emissions | 87.2203 | 2093.29 | 382.025 |
| Total HAP Emissions | 35.7295 | 857.51 | 156.495 |

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY

Flash Tank Off Gas Emissions

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | 40.8828 | 981.19 | 179.067 |
| Ethane | 17.4298 | 418.32 | 76.343 |
| Propane | 14.5660 | 349.58 | 63.799 |
| Isobutane | 2.9753 | 71.41 | 13.032 |
| n-Butane | 6.9180 | 166.03 | 30.301 |
| Isopentane | 2.3360 | 56.06 | 10.232 |
| n-Pentane | 2.2110 | 53.06 | 9.684 |
| Cyclopentane | 0.0047 | 0.11 | 0.021 |
| n-Hexane* | 0.7467 | 17.92 | 3.271 |
| Cyclohexane | 0.3263 | 7.83 | 1.429 |
| Other Hexanes | 0.9696 | 23.27 | 4.247 |
| Heptanes | 1.6904 | 40.57 | 7.404 |
| Methylcyclohexane | 0.0076 | 0.18 | 0.033 |
| 2,2,4-Trimethylpentane* | 1.0288 | 24.69 | 4.506 |
| Benzene* | 0.0842 | 2.02 | 0.369 |
| Toluene* | 0.2745 | 6.59 | 1.202 |
| Ethylbenzene* | 0.0202 | 0.48 | 0.088 |
| Xylenes* | 0.4623 | 11.10 | 2.025 |
| C8 + Heavier Hydrocarbons | 2.8899 | 69.36 | 12.658 |
| Total Emissions | 95.8241 | 2299.78 | 419.710 |
| Total Hydrocarbon Emissions | 95.8241 | 2299.78 | 419.710 |
| Total VOC Emissions | 37.5115 | 900.28 | 164.300 |
| Total HAP Emissions | 2.6167 | 62.80 | 11.461 |

GRI-GLYCalc Version 4.0 - EMISSIONS SUMMARY[1]

Controlled Total Emission Rates (w/ safety factor)

| Pollutant | (lbs/hr) | (lbs/day) | (tons/yr) |
|---|---|---|---|
| Methane | 97.7615 | 2346.2755 | 428.1953 |
| Ethane | 38.6686 | 928.0454 | 169.3683 |
| Propane | 31.5848 | 758.0362 | 138.3416 |
| Isobutane | 6.3970 | 153.5270 | 28.0187 |
| n-Butane | 14.8759 | 357.0221 | 65.1565 |
| Isopentane | 5.0712 | 121.7088 | 22.2119 |
| n-Pentane | 4.8517 | 116.4413 | 21.2505 |
| Cyclopentane | 0.0150 | 0.3600 | 0.0657 |
| n-Hexane* | 1.7954 | 43.0906 | 7.8640 |
| Cyclohexane | 1.4266 | 34.2374 | 6.2483 |
| Other Hexanes | 2.2108 | 53.0582 | 9.6831 |
| Heptanes | 5.0821 | 121.9709 | 22.2597 |
| Methylcyclohexane | 0.0384 | 0.9216 | 0.1682 |
| 2,2,4-Trimethylpentane* | 2.5033 | 60.0797 | 10.9645 |
| Benzene* | 1.7120 | 41.0890 | 7.4987 |
| Toluene* | 8.0218 | 192.5222 | 35.1353 |
| Ethylbenzene* | 0.9523 | 22.8557 | 4.1712 |
| Xylenes* | 31.0306 | 744.7334 | 135.9139 |
| C8 + Heavier Hydrocarbons | 32.1092 | 770.6218 | 140.6385 |
| Total Emissions | 286.1082 | 6866.60 | 1253.154 |
| Total Hydrocarbon Emissions | 286.1082 | 6866.60 | 1253.154 |
| Total VOC Emissions | 149.6782 | 3592.28 | 655.590 |
| Total HAP Emissions | 46.0154 | 1104.37 | 201.548 |

* HAPs

1. Based on GRI GlyCalc 4.0 run at dry gas flowrate of 20 MMscf/day and T and P of 120°F and 400 psig, respectively, controlled by a TO at 95% destruction efficiency
A safety factor of 20% is included in the total.

| Pollutant | New Units tpy | Existing Units[1] tpy | Δ PTE tpy |
|---|---|---|---|
| NOx | 2.6 | 0.5 | ~0 |
| CO | 2.2 | 0.8 | ~0 |
| PM/PM10/PM2.5 | 0.20 | 0.1 | ~0 |
| $SO_2$ | 0.02 | 0.02 | ~0 |
| VOC | 22.9 | 3.8 | 19 |
| HAP | 9.4 | 1.4 | 8 |

1. Title V Renewal Application - Yellow Creek Station - Dated February 1, 2011, Attachment E

GRI-GLYCalc VERSION 4.0 - SUMMARY OF INPUT VALUES

Case Name: Yellow Creek Compressor Station
File Name: W:\Dominion\WV - Craig_Deep Valley_Yellow Creek\153902_0022 Dominion WV Dehy Project\04 Deliverables\Yellow Creek\Attachment N - Emission Calculations\Yellow Creek Station 1300.ddf
Date: March 21, 2015

DESCRIPTION:

Description: 20 MMScf/day new TEG dehydrator

Annual Hours of Operation: 8760.0 hours/yr

WET GAS:

Temperature: 120.00 deg. F
Pressure: 400.00 psig
Wet Gas Water Content: Saturated

| Component | Conc. (vol %) |
|---|---|
| Carbon Dioxide | 0.1230 |
| Nitrogen | 1.0480 |
| Methane | 74.4410 |
| Ethane | 13.5730 |
| Propane | 6.5150 |
| Isobutane | 0.8870 |
| n-Butane | 1.8470 |
| Isopentane | 0.4910 |
| n-Pentane | 0.4200 |
| Cyclopentane | 0.0005 |
| n-Hexane | 0.0960 |
| Cyclohexane | 0.0250 |
| Other Hexanes | 0.1390 |
| Heptanes | 0.1470 |
| Methylcyclohexane | 0.0005 |
| 2,2,4-Trimethylpentane | 0.1070 |
| Benzene | 0.0050 |
| Toluene | 0.0140 |
| Ethylbenzene | 0.0010 |
| Xylenes | 0.0250 |
| C8+ Heavies | 0.0960 |

DRY GAS:

Flow Rate: 20.0 MMSCF/day
Water Content: 7.0 lbs. H2O/MMSCF

LEAN GLYCOL:

Glycol Type: TEG
Water Content: 1.0 wt% H2O
Recirculation Ratio: 3.0 gal/lb H2O

PUMP:

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

FLASH TANK:

Flash Control: Recycle/recompression
Temperature: 150.0 deg. F
Pressure: 60.0 psig

STRIPPING GAS:

Source of Gas: Dry Gas
Gas Flow Rate: 21.012 scfm

REGENERATOR OVERHEADS CONTROL DEVICE:

Control Device: Combustion Device
Destruction Efficiency: 95.0 %
Excess Oxygen: 0.0 %
Ambient Air Temperature: 0.0 deg. F

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Yellow Creek Compressor Station
File Name: P:\Yellow Creek Station_1300.ddf
Date: March 13, 2015

DESCRIPTION:

Description: 20 MMScf/day new TEG dehydrator

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

| Component | lbs/hr | lbs/day | tons/yr |
|---|---|---|---|
| Methane | 2.0293 | 48.702 | 8.8881 |
| Ethane | 0.7397 | 17.753 | 3.2399 |
| Propane | 0.5877 | 14.106 | 2.5743 |
| Isobutane | 0.1178 | 2.827 | 0.5159 |
| n-Butane | 0.2739 | 6.574 | 1.1998 |
| Isopentane | 0.0945 | 2.268 | 0.4139 |
| n-Pentane | 0.0916 | 2.198 | 0.4012 |
| Cyclopentane | 0.0004 | 0.009 | 0.0017 |
| n-Hexane | 0.0375 | 0.899 | 0.1641 |
| Cyclohexane | 0.0431 | 1.035 | 0.1889 |
| Other Hexanes | 0.0436 | 1.047 | 0.1911 |
| Heptanes | 0.1272 | 3.054 | 0.5573 |
| Methylcyclohexane | 0.0012 | 0.029 | 0.0053 |
| 2,2,4-Trimethylpentane | 0.0529 | 1.269 | 0.2316 |
| Benzene | 0.0671 | 1.611 | 0.2940 |
| Toluene | 0.3205 | 7.692 | 1.4039 |
| Ethylbenzene | 0.0387 | 0.928 | 0.1694 |
| Xylenes | 1.2698 | 30.476 | 5.5618 |
| C8+ Heavies | 1.1934 | 28.641 | 5.2271 |
| Total Emissions | 7.1300 | 171.119 | 31.2293 |
| Total Hydrocarbon Emissions | 7.1300 | 171.119 | 31.2293 |
| Total VOC Emissions | 4.3610 | 104.665 | 19.1013 |
| Total HAP Emissions | 1.7865 | 42.876 | 7.8248 |
| Total BTEX Emissions | 1.6961 | 40.707 | 7.4291 |

UNCONTROLLED REGENERATOR EMISSIONS

| Component | lbs/hr | lbs/day | tons/yr |
|---|---|---|---|
| Methane | 40.5851 | 974.042 | 177.7627 |
| Ethane | 14.7940 | 355.055 | 64.7976 |
| Propane | 11.7547 | 282.113 | 51.4856 |
| Isobutane | 2.3555 | 56.532 | 10.3171 |
| n-Butane | 5.4786 | 131.487 | 23.9964 |
| Isopentane | 1.8900 | 45.360 | 8.2781 |
| n-Pentane | 1.8321 | 43.970 | 8.0245 |
| Cyclopentane | 0.0078 | 0.188 | 0.0343 |
| n-Hexane | 0.7495 | 17.989 | 3.2830 |
| Cyclohexane | 0.8625 | 20.699 | 3.7775 |

| | | | |
|---|---|---|---|
| Other Hexanes | 0.8727 | 20.946 | 3.8226 |
| Heptanes | 2.5447 | 61.073 | 11.1457 |
| Methylcyclohexane | 0.0244 | 0.585 | 0.1067 |
| 2,2,4-Trimethylpentane | 1.0573 | 25.376 | 4.6312 |
| Benzene | 1.3425 | 32.219 | 5.8800 |
| Toluene | 6.4103 | 153.848 | 28.0772 |
| Ethylbenzene | 0.7734 | 18.562 | 3.3877 |
| Xylenes | 25.3965 | 609.516 | 111.2366 |
| C8+ Heavies | 23.8678 | 572.828 | 104.5411 |
| Total Emissions | 142.5995 | 3422.388 | 624.5858 |
| Total Hydrocarbon Emissions | 142.5995 | 3422.388 | 624.5858 |
| Total VOC Emissions | 87.2204 | 2093.290 | 382.0255 |
| Total HAP Emissions | 35.7296 | 857.510 | 156.4957 |
| Total BTEX Emissions | 33.9227 | 814.145 | 148.5815 |

FLASH GAS EMISSIONS

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

FLASH TANK OFF GAS

| Component | lbs/hr | lbs/day | tons/yr |
|---|---|---|---|
| Methane | 40.8828 | 981.188 | 179.0668 |
| Ethane | 17.4298 | 418.315 | 76.3425 |
| Propane | 14.5660 | 349.584 | 63.7992 |
| Isobutane | 2.9753 | 71.407 | 13.0317 |
| n-Butane | 6.9180 | 166.032 | 30.3008 |
| Isopentane | 2.3360 | 56.064 | 10.2317 |
| n-Pentane | 2.2110 | 53.064 | 9.6842 |
| Cyclopentane | 0.0047 | 0.112 | 0.0204 |
| n-Hexane | 0.7467 | 17.921 | 3.2706 |
| Cyclohexane | 0.3263 | 7.832 | 1.4294 |
| Other Hexanes | 0.9696 | 23.271 | 4.2469 |
| Heptanes | 1.6904 | 40.570 | 7.4039 |
| Methylcyclohexane | 0.0076 | 0.183 | 0.0334 |
| 2,2,4-Trimethylpentane | 1.0288 | 24.690 | 4.5059 |
| Benzene | 0.0842 | 2.021 | 0.3688 |
| Toluene | 0.2745 | 6.587 | 1.2022 |
| Ethylbenzene | 0.0202 | 0.484 | 0.0883 |
| Xylenes | 0.4623 | 11.094 | 2.0247 |
| C8+ Heavies | 2.8899 | 69.359 | 12.6580 |
| Total Emissions | 95.8241 | 2299.777 | 419.7094 |
| Total Hydrocarbon Emissions | 95.8241 | 2299.777 | 419.7094 |
| Total VOC Emissions | 37.5114 | 900.275 | 164.3001 |
| Total HAP Emissions | 2.6166 | 62.798 | 11.4606 |
| Total BTEX Emissions | 0.8411 | 20.186 | 3.6840 |

EQUIPMENT REPORTS:

COMBUSTION DEVICE

| | |
|---|---|
| Ambient Temperature: | 0.00 deg. F |
| Excess Oxygen: | 0.00 % |
| Combustion Efficiency: | 95.00 % |
| Supplemental Fuel Requirement: | 6.64e-001 MM BTU/hr |

| Component | Emitted | Destroyed |
|---|---|---|
| Methane | 5.00% | 95.00% |
| Ethane | 5.00% | 95.00% |
| Propane | 5.00% | 95.00% |
| Isobutane | 5.00% | 95.00% |
| n-Butane | 5.00% | 95.00% |
| Isopentane | 5.00% | 95.00% |
| n-Pentane | 5.00% | 95.00% |
| Cyclopentane | 5.00% | 95.00% |
| n-Hexane | 5.00% | 95.00% |
| Cyclohexane | 5.00% | 95.00% |
| Other Hexanes | 5.00% | 95.00% |
| Heptanes | 5.00% | 95.00% |
| Methylcyclohexane | 5.00% | 95.00% |
| 2,2,4-Trimethylpentane | 5.00% | 95.00% |
| Benzene | 5.00% | 95.00% |
| Toluene | 5.00% | 95.00% |
| Ethylbenzene | 5.00% | 95.00% |
| Xylenes | 5.00% | 95.00% |
| C8+ Heavies | 5.00% | 95.00% |

ABSORBER

| | |
|---|---|
| Calculated Absorber Stages: | 1.82 |
| Specified Dry Gas Dew Point: | 7.00 lbs. H2O/MMSCF |
| Temperature: | 120.0 deg. F |
| Pressure: | 400.0 psig |
| Dry Gas Flow Rate: | 20.0000 MMSCF/day |
| Glycol Losses with Dry Gas: | 0.3766 lb/hr |
| Wet Gas Water Content: | Saturated |
| Calculated Wet Gas Water Content: | 213.30 lbs. H2O/MMSCF |
| Specified Lean Glycol Recirc. Ratio: | 3.00 gal/lb H2O |

| Component | Remaining in Dry Gas | Absorbed in Glycol |
|---|---|---|
| Water | 3.27% | 96.73% |
| Carbon Dioxide | 99.75% | 0.25% |
| Nitrogen | 99.98% | 0.02% |
| Methane | 99.98% | 0.02% |
| Ethane | 99.93% | 0.07% |
| Propane | 99.87% | 0.13% |
| Isobutane | 99.82% | 0.18% |
| n-Butane | 99.76% | 0.24% |
| Isopentane | 99.75% | 0.25% |
| n-Pentane | 99.68% | 0.32% |
| Cyclopentane | 98.67% | 1.33% |
| n-Hexane | 99.47% | 0.53% |
| Cyclohexane | 97.71% | 2.29% |
| Other Hexanes | 99.59% | 0.41% |
| Heptanes | 98.98% | 1.02% |

| | | |
|---|---|---|
| Methylcyclohexane | 97.32% | 2.68% |
| 2,2,4-Trimethylpentane | 99.51% | 0.49% |
| Benzene | 83.64% | 16.36% |
| Toluene | 76.67% | 23.33% |
| Ethylbenzene | 66.22% | 33.78% |
| Xylenes | 55.88% | 44.12% |
| C8+ Heavies | 92.83% | 7.17% |

FLASH TANK

Flash Control: Recycle/recompression
Flash Temperature: 150.0 deg. F
Flash Pressure: 60.0 psig

| Component | Left in Glycol | Removed in Flash Gas |
|---|---|---|
| Water | 99.83% | 0.17% |
| Carbon Dioxide | 18.12% | 81.88% |
| Nitrogen | 2.06% | 97.94% |
| Methane | 2.15% | 97.85% |
| Ethane | 6.62% | 93.38% |
| Propane | 13.20% | 86.80% |
| Isobutane | 17.81% | 82.19% |
| n-Butane | 21.71% | 78.29% |
| Isopentane | 23.69% | 76.31% |
| n-Pentane | 27.50% | 72.50% |
| Cyclopentane | 59.17% | 40.83% |
| n-Hexane | 39.17% | 60.83% |
| Cyclohexane | 71.75% | 28.25% |
| Other Hexanes | 33.44% | 66.56% |
| Heptanes | 55.13% | 44.87% |
| Methylcyclohexane | 75.87% | 24.13% |
| 2,2,4-Trimethylpentane | 39.55% | 60.45% |
| Benzene | 94.35% | 5.65% |
| Toluene | 96.20% | 3.80% |
| Ethylbenzene | 97.72% | 2.28% |
| Xylenes | 98.44% | 1.56% |
| C8+ Heavies | 90.29% | 9.71% |

REGENERATOR

Regenerator Stripping Gas:
Dry Product Gas
Stripping Gas Flow Rate: 21.0120 scfm

| Component | Remaining in Glycol | Distilled Overhead |
|---|---|---|
| Water | 21.83% | 78.17% |
| Carbon Dioxide | 0.00% | 100.00% |
| Nitrogen | 0.00% | 100.00% |
| Methane | 0.00% | 100.00% |
| Ethane | 0.00% | 100.00% |
| Propane | 0.00% | 100.00% |
| Isobutane | 0.00% | 100.00% |
| n-Butane | 0.00% | 100.00% |
| Isopentane | 1.37% | 98.63% |

| | | |
|---|---|---|
| n-Pentane | 1.27% | 98.73% |
| Cyclopentane | 0.77% | 99.23% |
| n-Hexane | 1.02% | 98.98% |
| Cyclohexane | 4.21% | 95.79% |
| Other Hexanes | 2.24% | 97.76% |
| Heptanes | 0.80% | 99.20% |
| Methylcyclohexane | 5.02% | 94.98% |
| 2,2,4-Trimethylpentane | 2.97% | 97.03% |
| Benzene | 5.26% | 94.74% |
| Toluene | 8.17% | 91.83% |
| Ethylbenzene | 10.61% | 89.39% |
| Xylenes | 13.09% | 86.91% |
| C8+ Heavies | 13.09% | 86.91% |

STREAM REPORTS:

WET GAS STREAM

Temperature: 120.00 deg. F
Pressure: 414.70 psia
Flow Rate: 8.38e+005 scfh

| Component | Conc. (vol%) | Loading (lb/hr) |
|---|---|---|
| Water | 4.49e-001 | 1.79e+002 |
| Carbon Dioxide | 1.22e-001 | 1.19e+002 |
| Nitrogen | 1.04e+000 | 6.45e+002 |
| Methane | 7.41e+001 | 2.62e+004 |
| Ethane | 1.35e+001 | 8.97e+003 |
| Propane | 6.49e+000 | 6.31e+003 |
| Isobutane | 8.83e-001 | 1.13e+003 |
| n-Butane | 1.84e+000 | 2.36e+003 |
| Isopentane | 4.89e-001 | 7.79e+002 |
| n-Pentane | 4.18e-001 | 6.66e+002 |
| Cyclopentane | 4.98e-004 | 7.71e-001 |
| n-Hexane | 9.56e-002 | 1.82e+002 |
| Cyclohexane | 2.49e-002 | 4.62e+001 |
| Other Hexanes | 1.38e-001 | 2.63e+002 |
| Heptanes | 1.46e-001 | 3.24e+002 |
| Methylcyclohexane | 4.98e-004 | 1.08e+000 |
| 2,2,4-Trimethylpentane | 1.07e-001 | 2.69e+002 |
| Benzene | 4.98e-003 | 8.58e+000 |
| Toluene | 1.39e-002 | 2.83e+001 |
| Ethylbenzene | 9.96e-004 | 2.33e+000 |
| Xylenes | 2.49e-002 | 5.83e+001 |
| C8+ Heavies | 9.56e-002 | 3.59e+002 |
| Total Components | 100.00 | 4.89e+004 |

DRY GAS STREAM

Temperature: 120.00 deg. F
Pressure: 414.70 psia
Flow Rate: 8.33e+005 scfh

| Component | Conc. (vol%) | Loading (lb/hr) |
|---|---|---|
| Water | 1.47e-002 | 5.83e+000 |
| Carbon Dioxide | 1.23e-001 | 1.19e+002 |
| Nitrogen | 1.05e+000 | 6.45e+002 |
| Methane | 7.45e+001 | 2.62e+004 |
| Ethane | 1.36e+001 | 8.96e+003 |
| Propane | 6.51e+000 | 6.31e+003 |
| Isobutane | 8.86e-001 | 1.13e+003 |
| n-Butane | 1.84e+000 | 2.35e+003 |
| Isopentane | 4.90e-001 | 7.77e+002 |
| n-Pentane | 4.19e-001 | 6.64e+002 |
| Cyclopentane | 4.94e-004 | 7.60e-001 |
| n-Hexane | 9.55e-002 | 1.81e+002 |
| Cyclohexane | 2.44e-002 | 4.52e+001 |
| Other Hexanes | 1.39e-001 | 2.62e+002 |
| Heptanes | 1.46e-001 | 3.20e+002 |
| Methylcyclohexane | 4.87e-004 | 1.05e+000 |
| 2,2,4-Trimethylpentane | 1.07e-001 | 2.67e+002 |
| Benzene | 4.18e-003 | 7.18e+000 |
| Toluene | 1.07e-002 | 2.17e+001 |
| Ethylbenzene | 6.63e-004 | 1.55e+000 |
| Xylenes | 1.40e-002 | 3.26e+001 |
| C8+ Heavies | 8.92e-002 | 3.34e+002 |
| Total Components | 100.00 | 4.87e+004 |

LEAN GLYCOL STREAM

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Temperature: 120.00 deg. F
Flow Rate: 8.58e+000 gpm

| Component | Conc. (wt%) | Loading (lb/hr) |
|---|---|---|
| TEG | 9.88e+001 | 4.78e+003 |
| Water | 9.98e-001 | 4.82e+001 |
| Carbon Dioxide | 6.17e-013 | 2.98e-011 |
| Nitrogen | 2.96e-013 | 1.43e-011 |
| Methane | 3.90e-018 | 1.89e-016 |
| Ethane | 6.15e-008 | 2.97e-006 |
| Propane | 6.80e-009 | 3.29e-007 |
| Isobutane | 1.28e-009 | 6.17e-008 |
| n-Butane | 2.87e-009 | 1.38e-007 |
| Isopentane | 2.06e-004 | 9.94e-003 |
| n-Pentane | 2.21e-004 | 1.07e-002 |
| Cyclopentane | 1.07e-006 | 5.16e-005 |
| n-Hexane | 1.01e-004 | 4.88e-003 |
| Cyclohexane | 7.23e-004 | 3.49e-002 |
| Other Hexanes | 2.26e-004 | 1.09e-002 |
| Heptanes | 3.44e-004 | 1.66e-002 |
| Methylcyclohexane | 2.49e-005 | 1.20e-003 |
| 2,2,4-Trimethylpentane | 4.13e-004 | 2.00e-002 |
| Benzene | 1.53e-003 | 7.39e-002 |
| Toluene | 1.17e-002 | 5.67e-001 |
| Ethylbenzene | 1.89e-003 | 9.15e-002 |
| Xylenes | 7.90e-002 | 3.82e+000 |
| C8+ Heavies | 7.28e-002 | 3.52e+000 |

| | | |
|---|---|---|
| Total Components | 100.00 | 4.83e+003 |

RICH GLYCOL AND PUMP GAS STREAM

Temperature: 120.00 deg. F
Pressure: 414.70 psia
Flow Rate: 9.28e+000 gpm
NOTE: Stream has more than one phase.

| Component | Conc. (wt%) | Loading (lb/hr) |
|---|---|---|
| TEG | 9.23e+001 | 4.77e+003 |
| Water | 4.28e+000 | 2.21e+002 |
| Carbon Dioxide | 8.95e-003 | 4.62e-001 |
| Nitrogen | 2.00e-002 | 1.03e+000 |
| Methane | 8.09e-001 | 4.18e+001 |
| Ethane | 3.61e-001 | 1.87e+001 |
| Propane | 3.25e-001 | 1.68e+001 |
| Isobutane | 7.01e-002 | 3.62e+000 |
| n-Butane | 1.71e-001 | 8.84e+000 |
| Isopentane | 5.93e-002 | 3.06e+000 |
| n-Pentane | 5.90e-002 | 3.05e+000 |
| Cyclopentane | 2.21e-004 | 1.14e-002 |
| n-Hexane | 2.38e-002 | 1.23e+000 |
| Cyclohexane | 2.24e-002 | 1.16e+000 |
| Other Hexanes | 2.82e-002 | 1.46e+000 |
| Heptanes | 7.29e-002 | 3.77e+000 |
| Methylcyclohexane | 6.12e-004 | 3.16e-002 |
| 2,2,4-Trimethylpentane | 3.29e-002 | 1.70e+000 |
| Benzene | 2.88e-002 | 1.49e+000 |
| Toluene | 1.40e-001 | 7.22e+000 |
| Ethylbenzene | 1.71e-002 | 8.83e-001 |
| Xylenes | 5.74e-001 | 2.96e+001 |
| C8+ Heavies | 5.76e-001 | 2.98e+001 |
| Total Components | 100.00 | 5.17e+003 |

FLASH TANK OFF GAS STREAM

Temperature: 150.00 deg. F
Pressure: 74.70 psia
Flow Rate: 1.45e+003 scfh

| Component | Conc. (vol%) | Loading (lb/hr) |
|---|---|---|
| Water | 5.57e-001 | 3.85e-001 |
| Carbon Dioxide | 2.24e-001 | 3.78e-001 |
| Nitrogen | 9.41e-001 | 1.01e+000 |
| Methane | 6.65e+001 | 4.09e+001 |
| Ethane | 1.51e+001 | 1.74e+001 |
| Propane | 8.62e+000 | 1.46e+001 |
| Isobutane | 1.34e+000 | 2.98e+000 |
| n-Butane | 3.11e+000 | 6.92e+000 |
| Isopentane | 8.45e-001 | 2.34e+000 |
| n-Pentane | 7.99e-001 | 2.21e+000 |
| Cyclopentane | 1.73e-003 | 4.65e-003 |
| n-Hexane | 2.26e-001 | 7.47e-001 |

| | | |
|---|---|---|
| Cyclohexane | 1.01e-001 | 3.26e-001 |
| Other Hexanes | 2.93e-001 | 9.70e-001 |
| Heptanes | 4.40e-001 | 1.69e+000 |
| Methylcyclohexane | 2.03e-003 | 7.62e-003 |
| 2,2,4-Trimethylpentane | 2.35e-001 | 1.03e+000 |
| Benzene | 2.81e-002 | 8.42e-002 |
| Toluene | 7.77e-002 | 2.74e-001 |
| Ethylbenzene | 4.95e-003 | 2.02e-002 |
| Xylenes | 1.14e-001 | 4.62e-001 |
| C8+ Heavies | 4.43e-001 | 2.89e+000 |
| Total Components | 100.00 | 9.76e+001 |

FLASH TANK GLYCOL STREAM

Temperature: 150.00 deg. F
Flow Rate: 9.06e+000 gpm

| Component | Conc. (wt%) | Loading (lb/hr) |
|---|---|---|
| TEG | 9.41e+001 | 4.77e+003 |
| Water | 4.36e+000 | 2.21e+002 |
| Carbon Dioxide | 1.65e-003 | 8.37e-002 |
| Nitrogen | 4.20e-004 | 2.13e-002 |
| Methane | 1.78e-002 | 9.00e-001 |
| Ethane | 2.44e-002 | 1.24e+000 |
| Propane | 4.37e-002 | 2.22e+000 |
| Isobutane | 1.27e-002 | 6.45e-001 |
| n-Butane | 3.79e-002 | 1.92e+000 |
| Isopentane | 1.43e-002 | 7.25e-001 |
| n-Pentane | 1.65e-002 | 8.39e-001 |
| Cyclopentane | 1.33e-004 | 6.74e-003 |
| n-Hexane | 9.49e-003 | 4.81e-001 |
| Cyclohexane | 1.64e-002 | 8.29e-001 |
| Other Hexanes | 9.61e-003 | 4.87e-001 |
| Heptanes | 4.10e-002 | 2.08e+000 |
| Methylcyclohexane | 4.73e-004 | 2.40e-002 |
| 2,2,4-Trimethylpentane | 1.33e-002 | 6.73e-001 |
| Benzene | 2.77e-002 | 1.41e+000 |
| Toluene | 1.37e-001 | 6.94e+000 |
| Ethylbenzene | 1.70e-002 | 8.63e-001 |
| Xylenes | 5.76e-001 | 2.92e+001 |
| C8+ Heavies | 5.30e-001 | 2.69e+001 |
| Total Components | 100.00 | 5.07e+003 |

FLASH GAS EMISSIONS

Control Method: Recycle/recompression
Control Efficiency: 100.00

Note: Flash Gas Emissions are zero with the Recycle/recompression control option.

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F

Pressure: 14.70 psia
Flow Rate: 5.18e+003 scfh

| Component | Conc. (vol%) | Loading (lb/hr) |
|---|---|---|
| Water | 7.03e+001 | 1.73e+002 |
| Carbon Dioxide | 4.38e-002 | 2.63e-001 |
| Nitrogen | 2.61e-001 | 9.97e-001 |
| Methane | 1.85e+001 | 4.06e+001 |
| Ethane | 3.61e+000 | 1.48e+001 |
| Propane | 1.95e+000 | 1.18e+001 |
| Isobutane | 2.97e-001 | 2.36e+000 |
| n-Butane | 6.91e-001 | 5.48e+000 |
| Isopentane | 1.92e-001 | 1.89e+000 |
| n-Pentane | 1.86e-001 | 1.83e+000 |
| Cyclopentane | 8.19e-004 | 7.84e-003 |
| n-Hexane | 6.37e-002 | 7.50e-001 |
| Cyclohexane | 7.51e-002 | 8.62e-001 |
| Other Hexanes | 7.42e-002 | 8.73e-001 |
| Heptanes | 1.86e-001 | 2.54e+000 |
| Methylcyclohexane | 1.82e-003 | 2.44e-002 |
| 2,2,4-Trimethylpentane | 6.78e-002 | 1.06e+000 |
| Benzene | 1.26e-001 | 1.34e+000 |
| Toluene | 5.10e-001 | 6.41e+000 |
| Ethylbenzene | 5.34e-002 | 7.73e-001 |
| Xylenes | 1.75e+000 | 2.54e+001 |
| C8+ Heavies | 1.03e+000 | 2.39e+001 |
| Total Components | 100.00 | 3.17e+002 |

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
Pressure: 14.70 psia
Flow Rate: 7.61e+001 scfh

| Component | Conc. (vol%) | Loading (lb/hr) |
|---|---|---|
| Methane | 6.31e+001 | 2.03e+000 |
| Ethane | 1.23e+001 | 7.40e-001 |
| Propane | 6.64e+000 | 5.88e-001 |
| Isobutane | 1.01e+000 | 1.18e-001 |
| n-Butane | 2.35e+000 | 2.74e-001 |
| Isopentane | 6.53e-001 | 9.45e-002 |
| n-Pentane | 6.33e-001 | 9.16e-002 |
| Cyclopentane | 2.79e-003 | 3.92e-004 |
| n-Hexane | 2.17e-001 | 3.75e-002 |
| Cyclohexane | 2.55e-001 | 4.31e-002 |
| Other Hexanes | 2.52e-001 | 4.36e-002 |
| Heptanes | 6.33e-001 | 1.27e-001 |
| Methylcyclohexane | 6.18e-003 | 1.22e-003 |
| 2,2,4-Trimethylpentane | 2.31e-001 | 5.29e-002 |
| Benzene | 4.28e-001 | 6.71e-002 |
| Toluene | 1.73e+000 | 3.21e-001 |
| Ethylbenzene | 1.82e-001 | 3.87e-002 |
| Xylenes | 5.96e+000 | 1.27e+000 |
| C8+ Heavies | 3.49e+000 | 1.19e+000 |
| Total Components | 100.00 | 7.13e+000 |

# Certificate of Analysis

Number: 1030-14120716-001A

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

W. Steven Kiser
Dominion Transmission
335 US Highway 33 West
Weston , WV 26452

Dec. 23, 2014

Station Name: Yellow CK Fuel
Method: GPA 2286
Cylinder No: 5392
Analyzed: 12/20/2014 09:43:53

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 13:00
Sample Conditions: 47 psig, @ 73 °F

## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia | | |
|---|---|---|---|---|---|
| Nitrogen | 1.048 | 1.326 | | GPM TOTAL C2+ | 6.925 |
| Carbon Dioxide | 0.123 | 0.245 | | GPM TOTAL C3+ | 3.290 |
| Methane | 74.441 | 53.948 | | GPM TOTAL iC5+ | 0.618 |
| Ethane | 13.573 | 18.437 | 3.635 | | |
| Propane | 6.515 | 12.978 | 1.798 | | |
| Iso-butane | 0.887 | 2.329 | 0.291 | | |
| n-Butane | 1.847 | 4.850 | 0.583 | | |
| Iso-pentane | 0.491 | 1.600 | 0.180 | | |
| n-Pentane | 0.420 | 1.369 | 0.152 | | |
| Hexanes Plus | 0.655 | 2.918 | 0.286 | | |
| | 100.000 | 100.000 | 6.925 | | |

| Physical Properties | Total | C6+ |
|---|---|---|
| Relative Density Real Gas | 0.7672 | 3.4120 |
| Calculated Molecular Weight | 22.14 | 98.82 |
| Compressibility Factor | 0.9959 | |
| **GPA 2172-09 Calculation:** | | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | | |
| Real Gas Dry BTU | 1322 | 5331 |
| Water Sat. Gas Base BTU | 1299 | 5238 |

**Comments:** H2O Content: 7.4 #/MMCF ; H2O Mol% : 1.744 ; Wt% : 1.424
H2S 0 ppm

Hydrocarbon Laboratory Manager

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

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Dec. 23, 2014

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Method: GPA 2286
Cylinder No: 5392
Analyzed: 12/20/2014 09:43:53

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 13:00
Sample Conditions: 47 psig, @ 73 °F

## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia | | |
|---|---|---|---|---|---|
| Nitrogen | 1.048 | 1.326 | | GPM TOTAL C2+ | 6.925 |
| Carbon Dioxide | 0.123 | 0.245 | | GPM TOTAL C3+ | 3.290 |
| Methane | 74.441 | 53.948 | | GPM TOTAL iC5+ | 0.618 |
| Ethane | 13.573 | 18.437 | 3.635 | | |
| Propane | 6.515 | 12.978 | 1.798 | | |
| Iso-Butane | 0.887 | 2.329 | 0.291 | | |
| n-Butane | 1.847 | 4.850 | 0.583 | | |
| Iso-Pentane | 0.491 | 1.600 | 0.180 | | |
| n-Pentane | 0.420 | 1.369 | 0.152 | | |
| Hexanes | 0.235 | 0.921 | 0.098 | | |
| Heptanes Plus | 0.420 | 1.997 | 0.188 | | |
| | 100.000 | 100.000 | 6.925 | | |

| Physical Properties | Total | C7+ |
|---|---|---|
| Relative Density Real Gas | 0.7672 | 3.6802 |
| Calculated Molecular Weight | 22.14 | 106.59 |
| Compressibility Factor | 0.9959 | |
| **GPA 2172-09 Calculation:** | | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | | |
| Real Gas Dry BTU | 1322 | 5695 |
| Water Sat. Gas Base BTU | 1299 | 5595 |

**Comments:** H2O Content: 7.4 #/MMCF ; H2O Mol% : 1.744 ; Wt% : 1.424
H2S 0 ppm

Hydrocarbon Laboratory Manager

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

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W. Steven Kiser
Dominion Transmission
335 US Highway 33 West
Weston , WV 26452

Dec. 23, 2014

Station Name: Yellow CK Fuel
Method: GPA 2286
Cylinder No: 5392
Analyzed: 12/20/2014 09:43:53

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 13:00
Sample Conditions: 47 psig, @ 73 °F

## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia |
|---|---|---|---|
| Nitrogen | 1.048 | 1.326 | |
| Methane | 74.441 | 53.948 | |
| Carbon Dioxide | 0.123 | 0.245 | |
| Hydrogen Sulfide | NIL | NIL | |
| Ethane | 13.573 | 18.437 | 3.635 |
| Propane | 6.515 | 12.978 | 1.798 |
| Iso-Butane | 0.887 | 2.329 | 0.291 |
| n-Butane | 1.847 | 4.850 | 0.583 |
| Iso-Pentane | 0.491 | 1.600 | 0.180 |
| n-Pentane | 0.420 | 1.369 | 0.152 |
| i-Hexanes | 0.139 | 0.545 | 0.058 |
| n-Hexane | 0.096 | 0.376 | 0.040 |
| Benzene | 0.005 | 0.016 | 0.001 |
| Cyclohexane | 0.025 | 0.092 | 0.008 |
| i-Heptanes | 0.101 | 0.440 | 0.043 |
| n-Heptane | 0.046 | 0.207 | 0.021 |
| Toluene | 0.014 | 0.058 | 0.005 |
| i-Octanes | 0.107 | 0.495 | 0.046 |
| n-Octane | 0.022 | 0.114 | 0.011 |
| Ethylbenzene | 0.001 | 0.006 | NIL |
| Xylenes | 0.025 | 0.120 | 0.010 |
| i-Nonanes | 0.030 | 0.155 | 0.015 |
| n-Nonane | 0.012 | 0.069 | 0.007 |
| i-Decanes | 0.011 | 0.071 | 0.006 |
| n-Decane | 0.005 | 0.032 | 0.003 |
| Undecanes | 0.004 | 0.028 | 0.003 |
| Dodecanes | 0.004 | 0.023 | 0.002 |
| Tridecanes | 0.004 | 0.039 | 0.004 |
| Tetradecanes Plus | 0.004 | 0.032 | 0.003 |
| | 100.000 | 100.000 | 6.925 |

GPM TOTAL C2+ 6.925

# Certificate of Analysis

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335 US Highway 33 West
Weston , WV 26452

Dec. 23, 2014

Station Name: Yellow CK Fuel
Method: GPA 2286
Cylinder No: 5392
Analyzed: 12/20/2014 09:43:53

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 13:00
Sample Conditions: 47 psig, @ 73 °F

| **Physical Properties** | **Total** | **C14+** |
|---|---|---|
| Calculated Molecular Weight | 22.136 | 198.413 |
| **GPA 2172-09 Calculation:** | | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | | |
| Real Gas Dry BTU | 1321.8 | 10728.8 |
| Water Sat. Gas Base BTU | 1298.8 | 10541.6 |
| Relative Density Real Gas | 0.7672 | 6.8500 |
| Compressibility Factor | 0.9959 | |

**Comments:** H2O Content: 7.4 #/MMCF
H2S 0 ppm

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: 1030-14120716-002A

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

W. Steven Kiser
Dominion Transmission
335 US Highway 33 West
Weston , WV 26452

Dec. 23, 2014

Station Name: Yellow CK Pre Dehy
Method: GPA 2286
Cylinder No: 0129
Analyzed: 12/20/2014 09:44:57 by JD

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 12:00
Sample Conditions: 314.6 psig, @ 114.6 °F

## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia | | |
|---|---|---|---|---|---|
| Nitrogen | 1.085 | 1.398 | | GPM TOTAL C2+ | 6.597 |
| Carbon Dioxide | 0.136 | 0.275 | | GPM TOTAL C3+ | 3.040 |
| Methane | 75.423 | 55.666 | | GPM TOTAL iC5+ | 0.532 |
| Ethane | 13.283 | 18.375 | 3.557 | | |
| Propane | 6.164 | 12.505 | 1.700 | | |
| Iso-butane | 0.826 | 2.209 | 0.271 | | |
| n-Butane | 1.700 | 4.546 | 0.537 | | |
| Iso-pentane | 0.463 | 1.537 | 0.170 | | |
| n-Pentane | 0.400 | 1.328 | 0.145 | | |
| Hexanes Plus | 0.520 | 2.161 | 0.217 | | |
| | 100.000 | 100.000 | 6.597 | | |

| Physical Properties | Total | C6+ |
|---|---|---|
| Relative Density Real Gas | 0.7532 | 3.1322 |
| Calculated Molecular Weight | 21.74 | 90.72 |
| Compressibility Factor | 0.9961 | |
| **GPA 2172-09 Calculation:** | | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | | |
| Real Gas Dry BTU | 1300 | 4945 |
| Water Sat. Gas Base BTU | 1277 | 4859 |

**Comments:** H2O Content: 40 #/MMCF ; H2O Mol% : 1.744 ; Wt% : 1.450
H2S 0 ppm

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: 1030-14120716-002A

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

W. Steven Kiser
Dominion Transmission
335 US Highway 33 West
Weston , WV 26452

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## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia | | |
|---|---|---|---|---|---|
| Nitrogen | 1.085 | 1.398 | | GPM TOTAL C2+ | 6.597 |
| Carbon Dioxide | 0.136 | 0.275 | | GPM TOTAL C3+ | 3.040 |
| Methane | 75.423 | 55.666 | | GPM TOTAL iC5+ | 0.532 |
| Ethane | 13.283 | 18.375 | 3.557 | | |
| Propane | 6.164 | 12.505 | 1.700 | | |
| Iso-Butane | 0.826 | 2.209 | 0.271 | | |
| n-Butane | 1.700 | 4.546 | 0.537 | | |
| Iso-Pentane | 0.463 | 1.537 | 0.170 | | |
| n-Pentane | 0.400 | 1.328 | 0.145 | | |
| Hexanes | 0.307 | 1.191 | 0.123 | | |
| Heptanes Plus | 0.213 | 0.970 | 0.094 | | |
| | 100.000 | 100.000 | 6.597 | | |

| Physical Properties | Total | C7+ |
|---|---|---|
| Relative Density Real Gas | 0.7532 | 3.3918 |
| Calculated Molecular Weight | 21.74 | 98.23 |
| Compressibility Factor | 0.9961 | |
| **GPA 2172-09 Calculation:** | | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | | |
| Real Gas Dry BTU | 1300 | 5289 |
| Water Sat. Gas Base BTU | 1277 | 5197 |

**Comments:** H2O Content: 40 #/MMCF ; H2O Mol% : 1.744 ; Wt% : 1.450
H2S 0 ppm

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

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Method: GPA 2286
Cylinder No: 0129
Analyzed: 12/20/2014 09:44:57 by JD

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 12:00
Sample Conditions: 314.6 psig, @ 114.6 °F

## Analytical Data

| Components | Mol. % | Wt. % | GPM at 14.696 psia |
|---|---|---|---|
| Nitrogen | 1.085 | 1.398 | |
| Methane | 75.423 | 55.666 | |
| Carbon Dioxide | 0.136 | 0.275 | |
| Hydrogen Sulfide | NIL | NIL | |
| Ethane | 13.283 | 18.375 | 3.557 |
| Propane | 6.164 | 12.505 | 1.700 |
| Iso-Butane | 0.826 | 2.209 | 0.271 |
| n-Butane | 1.700 | 4.546 | 0.537 |
| Iso-Pentane | 0.463 | 1.537 | 0.170 |
| n-Pentane | 0.400 | 1.328 | 0.145 |
| i-Hexanes | 0.189 | 0.727 | 0.075 |
| n-Hexane | 0.118 | 0.464 | 0.048 |
| Benzene | 0.004 | 0.014 | 0.001 |
| Cyclohexane | 0.022 | 0.085 | 0.008 |
| i-Heptanes | 0.091 | 0.396 | 0.039 |
| n-Heptane | 0.031 | 0.142 | 0.014 |
| Toluene | 0.006 | 0.024 | 0.002 |
| i-Octanes | 0.050 | 0.252 | 0.024 |
| n-Octane | 0.005 | 0.024 | 0.002 |
| Ethylbenzene | NIL | NIL | NIL |
| Xylenes | 0.002 | 0.008 | 0.001 |
| i-Nonanes | 0.001 | 0.020 | 0.002 |
| n-Nonane | 0.001 | 0.005 | 0.001 |
| i-Decanes | NIL | NIL | NIL |
| n-Decane | NIL | NIL | NIL |
| Undecanes | NIL | NIL | NIL |
| Dodecanes | NIL | NIL | NIL |
| Tridecanes | NIL | NIL | NIL |
| Tetradecanes Plus | NIL | NIL | NIL |
| | 100.000 | 100.000 | 6.597 |

GPM TOTAL C2+ 6.597

# Certificate of Analysis

Number: 1030-14120716-002A

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

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Dec. 23, 2014

Station Name: Yellow CK Pre Dehy
Method: GPA 2286
Cylinder No: 0129
Analyzed: 12/20/2014 09:44:57 by JD

Sampled By: JS
Sample Of: Gas Spot
Sample Date: 12/08/2014 12:00
Sample Conditions: 314.6 psig, @ 114.6 °F

| **Physical Properties** | **Total** |
|---|---|
| Calculated Molecular Weight | 21.736 |
| **GPA 2172-09 Calculation:** | |
| **Calculated Gross BTU per ft³ @ 14.696 psia & 60°F** | |
| Real Gas Dry BTU | 1299.6 |
| Water Sat. Gas Base BTU | 1276.9 |
| Relative Density Real Gas | 0.7532 |
| Compressibility Factor | 0.9961 |

**Comments:** H2O Content: 40 #/MMCF
H2S 0 ppm

Hydrocarbon Laboratory Manager

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

# ATTACHMENT O

## Monitoring/Recordkeeping/Reporting/Testing Plans

## ATTACHMENT O - MONITORING, RECORDING, REPORTING, AND TESTING PLANS

| Plan Type | Emission unit | Pollutant | Requirements | Frequency | Method of Measurement | Regulatory Reference |
|---|---|---|---|---|---|---|
| Recordkeeping | Dehydration Unit | HAP | Maintain following records:<br><br>Actual annual natural gas throughput OR actual average annual benzene emissions | Annual | Station natural gas throughput flowmeter | 40 CFR 63.774(d)(1) |

# ATTACHMENT P

## Public Notice

# AIR QUALITY PERMIT NOTICE
## Notice of Application

Notice is given that Dominion Transmission, Inc. has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a modification permit (R-13) to modify the natural gas compressor station (the Yellow Creek Compressor Station) located near the Town of Big Springs, in Calhoun County, West Virginia. The site latitude and longitude coordinates are: 38.98218 N, 81.04849 W.

The applicant estimates that the change in potential to emit for the facility of the following Regulated Air Pollutants will be:

Particulate Matter (PM) = ~0 tpy
Sulfur Dioxide ($SO_2$) = ~0 tpy
Volatile Organic Compounds (VOC) = +19 tpy
Carbon Monoxide (CO) = ~0 tpy
Nitrogen Oxides (NOx) = ~0 tpy
Hazardous Air Pollutants (HAPs) = +8 tpy

Startup of operation will begin during or about November of 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57$^{th}$ 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 1242 during normal business hours.

Dated this the (Day) day of (Month), (Year).

By: Dominion Transmission, Inc.
Brian Sheppard
Vice President, Pipeline Operations
445 West Main Street
Clarksburg WV 26301

# ATTACHMENT S

# Title V Permit Revision Information

# Attachment S

## Title V Permit Revision Information

**1. New Applicable Requirements Summary**

Mark all applicable requirements associated with the changes involved with this permit revision:

| | |
|---|---|
| ☒ SIP | ☐ FIP |
| ☒ Minor source NSR (45CSR13) | ☐ PSD (45CSR14) |
| ☐ NESHAP (45CSR15) | ☐ Nonattainment NSR (45CSR19) |
| ☐ Section 111 NSPS (Subpart(s)_____) | ☒ Section 112(d) MACT standards (Subpart(s)__Subpart HH_____) |
| ☐ Section 112(g) Case-by-case MACT | ☐ 112(r) RMP |
| ☐ Section 112(i) Early reduction of HAP | ☐ Consumer/commercial prod. reqts., section 183(e) |
| ☐ Section 129 Standards/Reqts. | ☐ Stratospheric ozone (Title VI) |
| ☐ Tank vessel reqt., section 183(f) | ☐ Emissions cap 45CSR§30-2.6.1 |
| ☐ NAAQS, increments or visibility (temp. sources) | ☐ 45CSR27 State enforceable only rule |
| ☐ 45CSR4 State enforceable only rule | ☐ Acid Rain (Title IV, 45CSR33) |
| ☐ Emissions Trading and Banking (45CSR28) | ☐ Compliance Assurance Monitoring (40CFR64) (1) |
| ☐ $NO_x$ Budget Trading Program Non-EGUs (45CSR1) | ☐ $NO_x$ Budget Trading Program EGUs (45CSR26) |

(1) If this box is checked, please include **Compliance Assurance Monitoring (CAM) Form(s)** for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why **Compliance Assurance Monitoring** is not applicable:

Unit is exempt from CAM because it is subject to emission standards proposed after 11/15/90 to Section 112 of the Act (i.e., 40 CFR 63, Subpart HH)

**2. Non Applicability Determinations**

List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.

40 CFR 60, Subparts D, Da, Db, Dc, OOOO

40 CFR 63, Subparts HHH, DDDDD, JJJJJJ

45 CSR 21

45 CSR 27

See rationale for determination in Attachment D.

☐ **Permit Shield Requested** *(not applicable to Minor Modifications)*

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

**3. Suggested Title V Draft Permit Language**

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision? ☐ Yes ☒ No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

**4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision**

| Permit or Consent Order Number | Date of Issuance | Permit/Consent Order Condition Number |
|---|---|---|
| R30-01300001-2011 | 7/13/2011 | |
| R13-2614A | 06/27/2006 | |
| | / / | |

**5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision**

| Permit or Consent Order Number | Date of Issuance | Permit/Consent Order Condition Number |
|---|---|---|
| | MM/DD/YYYY | |
| | / / | |
| | / / | |

**6. Change in Potential Emissions**

| Pollutant | Change in Potential Emissions (+ or -), TPY |
|---|---|
| Nitrogen Oxides | ~ 0 |
| Carbon Dioxide | ~ 0 |
| Particulate Matter | ~ 0 |
| Sulfur Dioxide | ~ 0 |
| Volatile Organic Compounds | +19 tpy |
| Hazardous Air Pollutants | +8 tpy |

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

**7. Certification For Use Of Minor Modification Procedures** ***(Required Only for Minor Modification Requests)***

| *Note:* | *This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:* |
|---|---|

i. Proposed changes do not violate any applicable requirement;

ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;

iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;

iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;

v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;

vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

**Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.**

(Signed): _____ *(Please use blue ink)* Date: 03 / 27 / 15 *(Please use blue ink)*

Named (typed): *Brian Sheppard* Title: *Vice President, Pipeline Operations*

**Note: Please check if the following included (if applicable):**

| | |
|---|---|
| ☐ | Compliance Assurance Monitoring Form(s) |
| ☐ | Suggested Title V Draft Permit Language |

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