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July 11, 2017

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

**Re: Equitrans, LP – Logansport Compressor Station  
Facility ID No: 103-00033  
Title V Permit R30-10300033-2013  
Application for Renewal**

Dear Mr. Durham:

Equitrans, LP (Equitrans) is submitting this Title V permit renewal application for its natural gas compressor station located in Wetzel County, West Virginia ("Logansport Compressor Station"). This station is currently operating under permit R30-103-00033-2013, issued January 15, 2013. The current permit expires on January 15, 2018 with a renewal application due date of July 15, 2017.

This permit application is being filed to renew the Title V permit at the Logansport Compressor Station. The Title V Permit Application Forms and required supporting documents in accordance with the instructions for Title V permit application forms are enclosed as outlined below:

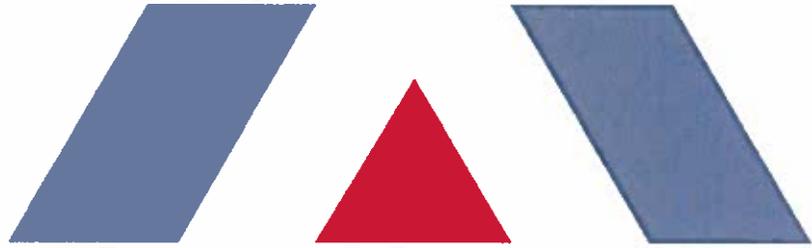
- Section 1: Introduction
- Section 2: Sample Emission Source Calculations;
- Section 3: Regulatory Discussion;
- Section 4: Title V Application Form;
- Attachment A: Area Map;
- Attachment B: Plot Plan;
- Attachment C: Process Flow Diagram;
- Attachment D: Equipment Table;
- Attachment E: Emission Unit Forms;
- Attachment F: Schedule of Compliance Forms (*Not applicable*);
- Attachment G: Air Pollution Control Device Forms (*Not applicable*);
- Attachment H: Compliance Assurance Monitoring Forms (*Not applicable*);
- Attachment I: Emissions Calculations; and

Please contact me at 412-395-3654 or via email at [msowa@eqt.com](mailto:msowa@eqt.com) if you have any questions regarding this application.

Sincerely,

A handwritten signature in blue ink that reads "Mark A. Sowa". The signature is written in a cursive style with a large initial "M".

Mark A. Sowa  
Senior Environmental Coordinator



**PROJECT REPORT**  
**Equitrans, LP > Logansport Compressor Station**

**Title V Operating Permit Renewal Application**

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June 2017

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**APPLICATION FEE**

# 1. INTRODUCTION

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Equitrans, LP (Equitrans), a subsidiary of EQT Corporation (EQT), operates a natural gas transmission facility in Smithfield, Wetzel County, West Virginia referred to as the Logansport Compressor Station (Logansport Station). The Logansport Station is currently operating in accordance with West Virginia Department of Environmental Protection (WVDEP) Title V Operating Permit No. R30-10300033-2013 (issued on January 15, 2013).

The current Title V permit expires on January 15, 2018. Equitrans is submitting this timely and complete Title V Operating Permit (TVOP) renewal application by the renewal submission deadline of July 15, 2017 (six months before the expiration of the current permit) in accordance with Series 30, Section 4.1.a.3 of the WVDEP Division of Air Quality (DAQ) Code of State Rules (C.S.R.) §45-30-4.1.a.3.

Please note that Equitrans submitted an application (R13-3371) for modification of the Dehy at the Logansport Compressor Station on May 23, 2017. The TEG Dehy rating (MMSCFD) and reboiler size (mmBtu/hr) listed below will change if R13-3371 is issued before the Title V renewal. In addition an enclosed combustor will be added as control device for the Dehy.

Presuming WVDEP finds this application administratively complete, Equitrans may continue to operate the Logansport Station under the terms of the existing Title V permit until the renewed permit is issued, even if this issuance would occur after the current permit's expiration date.

## 1.1. FACILITY AND PROJECT DESCRIPTION

The Logansport Station is a natural gas transmission facility covered under Standard Industrial Classification (SIC) Code 4922. The station has the potential to operate 24 hours per day, 7 days per week. The Logansport Station compresses and dehydrates natural gas and transports downstream along the pipeline system.

The station currently consists of the following equipment:

- > Two (2) Cooper Bessemer GMV6 compressor engines, each rated at 800 bhp;
- > Two (2) Waukesha F18GL generator engines; each rated at 265 bhp;
- > One (1) natural gas fired heating boiler, rated at 2.5 MMBtu/hr;
- > One (1) natural gas indirect fired heater, rated at 1.0 MMBtu/hr;
- > One (1) natural gas fired line heater, rated at 2.52 MMBtu/hr<sup>1</sup>;
- > One (1) triethylene glycol (TEG) dehydration unit<sup>2</sup> rated at 95 million standard cubic feet per day (MMSCFD) with associated reboiler (rated at 0.7 MMBtu/hr);
- > Five (5) miscellaneous storage tanks (7,500 gallons or less).

A process flow diagram is included as Attachment C.

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<sup>1</sup> The unit rated at 1.5 MMBtu/hr was replaced with a unit rated at 2.52 MMBtu/hr in 2013, and authorized via a Permit Determination.

<sup>2</sup> Please note that the sources 'DB Dehy' and 'BLR01' have been decommissioned. These sources have not operated for several years, and will be removed from the facility.

*"(6) Building, structure, facility, or installation means all of the pollutant emitting activities which belong to the same industrial grouping, are located on or more contiguous or adjacent properties, and are under control of the same person (or persons under common control)."*

Other additional pollutant emitting facilities should be aggregated with the Logansport Station for air permitting purposes if and only if all three elements of the "stationary source" definition above are fulfilled. The Logansport Station has been determined to be a separate stationary source with respect to permitting programs, including Title V and Prevention of Significant Deterioration, and has not been aggregated with other Equitrans assets.

The Logansport Station's site-wide potential to emit currently exceeds the Title V major source thresholds for several pollutants. Refer to Section 3 for detailed discussion regarding applicable requirements and compliance demonstration methodology.

### **1.3. TITLE V APPLICATION ORGANIZATION**

This West Virginia Initial Title V permit application is organized as follows:

- > Section 2: Sample Emission Source Calculations;
- > Section 3: Regulatory Discussion;
- > Section 4: Title V Application Form;
- > Attachment A: Area Map;
- > Attachment B: Plot Plan;
- > Attachment C: Process Flow Diagram;
- > Attachment D: Equipment Table;
- > Attachment E: Emission Unit Forms;
- > Attachment F: Schedule of Compliance Forms *(Not applicable)*;
- > Attachment G: Air Pollution Control Device Forms *(Not applicable)*;
- > Attachment H: Compliance Assurance Monitoring Forms *(Not applicable)*;
- > Attachment I: Emissions Calculations; and
- > Application Fee.

## 2. SAMPLE EMISSION SOURCE CALCULATIONS

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The characteristics of air emissions from the Logansport Station, along with the methodology for calculating emissions, are briefly described in this section of the application. Detailed emission calculations are presented in Attachment I of this application.

Emissions from the facility will result from combustion of natural gas in the compressor engines, generator engines, heaters, and reboiler. Emissions will also result from operation of the dehydrator, and fugitive emissions from component leaks. The methods by which emissions from each of these source types are summarized below. There will be no emissions increase from the existing units at the facility.

- > **Compressor Engines:** Potential emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic compounds (VOC), formaldehyde, and hazardous air pollutants (HAPs) are calculated using U.S. EPA's AP-42 factors for natural gas-fired two stroke lean burn engines.<sup>3</sup> Greenhouse gas (GHG) emissions are calculated according to 40 CFR 98 Subpart C.<sup>4</sup>
- > **Generator Engines:** Potential emissions of NO<sub>x</sub>, CO, VOC, formaldehyde, and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas-fired four stroke rich burn engines. GHG emissions are calculated according to 40 CFR 98 Subpart C.
- > **Heaters and Reboiler:** Potential emissions of criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas external combustion.<sup>5</sup> These calculations assume a site-specific heat content of natural gas. GHG emissions are calculated according to 40 CFR 98 Subpart C.
- > **TEG Dehydration Unit:** Potential emissions of HAPs, VOC, and GHGs from the dehydration unit are calculated using GRI-GLYCalc v4.0.
- > **Fugitive Emissions:** Emissions from fugitive equipment leaks are calculated using published EPA emission factors and 40 CFR Part 98, Subpart W emission factors. Emissions from blowdown events are calculated using engineering estimates of the amount of gas vented during each event. Site specific gas analyses were used to speciate VOC, HAP, and GHG emissions.

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<sup>3</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 3.2, *Natural Gas-Fired Reciprocating Engine*, July 2000.

<sup>4</sup> 40 CFR 98 Subpart C, *General Stationary Fuel combustion Sources*, Tables C-1 and C-2.

<sup>5</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, *Natural Gas Combustion*, Supplement D, July 1998.

## 3. REGULATORY DISCUSSION

This section documents the applicability determinations made for Federal and State air quality regulations. In this section, applicability or non-applicability of the following regulatory programs is addressed:

- > Prevention of Significant Deterioration (PSD) permitting;
- > Non-attainment New Source Review (NNSR) permitting;
- > Title V of the 1990 Clean Air Act Amendments;
- > Compliance Assurance Monitoring (CAM);
- > 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 Title V operating permit application forms, which fulfill the requirement to include citations and descriptions of applicable statutory and administrative code requirements.

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 Logansport 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 station. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

### 3.1. PSD AND NNSR SOURCE CLASSIFICATION

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration and new and modified sources of non-attainment pollutants under Non-Attainment New Source Review. PSD regulations apply when a new source is constructed in which emissions exceed major source thresholds, an existing minor source undergoes a modification in which emission increases exceed PSD major source thresholds, or an existing major source undergoes a modification in which emission increases exceed PSD significant emission rates. The Logansport Station is considered an existing major source with respect to PSD, and as such when undertaking modifications may be subject to NSR permit requirements. No new sources are being installed as part of this application and as such, PSD is not triggered.

NNSR regulations only apply in areas designated as non-attainment. The Logansport Station is located in Wetzel County, which is designated as attainment/unclassifiable for all criteria pollutants.<sup>6</sup> Therefore, NNSR regulations do not apply to the Logansport Station.

### 3.2. 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 West Virginia Code of State Regulations (CSR) 45-30. 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 HAP, 25 tpy of any

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<sup>6</sup> U.S. EPA Greenbook, [http://www.epa.gov/airquality/greenbook/anayo\\_wv.html](http://www.epa.gov/airquality/greenbook/anayo_wv.html), as of January 30, 2015.

combination of HAP, and 100 tpy of all other regulated pollutants.<sup>7</sup> The potential emissions of NO<sub>x</sub> exceed the respective major source thresholds for Title V. Therefore, the Logansport Station is a major source with respect to the Title V Program. The Logansport Station currently operates under Title V Permit No. R30-10300033-2013. This renewal application is being submitted to meet the requirements of the Title V program.

### **3.3. COMPLIANCE ASSURANCE MONITORING**

Under 40 CFR 64, the Compliance Assurance Monitoring (CAM) regulations, facilities are required to prepare and submit monitoring plans for certain emissions units with the initial or renewal Title V operating permit application. CAM Plans are intended to provide an on-going and reasonable assurance of compliance with emission limits for sources that utilize active control devices. Equitrans addressed CAM applicability in the previous Title V renewal application. There have been no changes since the last renewal application which would trigger a CAM review.

### **3.4. NEW SOURCE PERFORMANCE STANDARDS**

New Source Performance Standards, 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 facility.

#### **3.4.1. NSPS Subparts D, Da, Db, and Dc - Steam Generating Units**

These subparts apply to steam generating units of various sizes, all greater than 10 MMBtu/hr. The Logansport Station does not include any steam generating units with a heat input greater than 10 MMBtu/hr, therefore the requirements of these subparts do not apply.

#### **3.4.2. NSPS Subparts LLL and KKK - Natural Gas Processing Plants**

These subparts apply to affected facilities located at natural gas processing plants (e.g., sweetening units, fugitive components). The Logansport Station does not meet the definition of a natural gas processing facility. Therefore, the requirements of these subparts do not apply.

#### **3.4.3. NSPS Subparts IIII - Stationary Compression Ignition Internal Combustion Engines**

This subpart applies to manufacturers, owners, and operators of stationary compression ignition internal combustion engines (CI ICE) that have been constructed, reconstructed, or modified after various dates, the earliest of which is July 11, 2005. The compressor engines at the Logansport Station are spark-ignition internal combustion engines. Therefore the requirements of this subpart do not apply.

#### **3.4.4. NSPS Subpart JJJJ - Stationary Spark Ignition Internal Combustion Engines**

New Source Performance Standards 40 CFR Part 60 Subpart JJJJ (NSPS JJJJ) affects owners and operators of stationary spark ignition internal combustion engines (SI ICE) that commence construction, reconstruction or modification after June 12, 2006. Applicability dates are based on the manufacture date for new engines. The applicability dates for new

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<sup>7</sup> On June 23, 2014, the U.S Supreme Court decision in the case of *Utility Air Regulatory Group v. EPA* effectively changed the permitting procedures for GHGs under the PSD and Title V programs.

engines range from July 1, 2007 to January 1, 2009, depending upon the engine horsepower and application. All of the compressor engines and generator engines at the Logansport Station were manufactured prior to the applicability date of NSPS Subpart JJJJ. Therefore, these units will not be subject to this subpart.

### **3.4.5. NSPS Subparts K, Ka, and Kb - Storage Vessels**

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978, and Subpart Ka applies to those constructed, reconstructed, or modified prior to 1984. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m<sup>3</sup> (~19,813 gallons). The storage tanks at the Logansport Station were constructed after this date, but do not have a capacity greater than 75 m<sup>3</sup>. Therefore, Subpart Kb will not apply to the storage tanks at the Logansport Station.

### **3.4.6. NSPS Subparts OOOO and OOOOa – Crude Oil and Natural Gas Facilities**

Subparts OOOO and OOOOa – *Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution*, applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011 and before September 18, 2015 for OOOO and after September 18, 2015 for OOOOa. The equipment at the Logansport Station were installed prior to the applicability dates of both rules. Therefore, NSPS OOOO and OOOOa are not applicable.

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

NSPS are developed for particular industrial source categories. Other than NSPS developed for natural gas processing plants (Subparts OOOO) and associated equipment (Subpart K-Kb), the applicability of a particular NSPS to the Logansport Station can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

## **3.5. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS**

Regulatory requirements for facilities subject to NESHAP standards, otherwise known as Maximum Available Control Technology (MACT) Standards for source categories, are contained in 40 CFR Part 63. 40 CFR Part 61 NESHAP standards are defined for specific pollutants while Part 63 NESHAPs are defined for source categories where allowable emission limits are established on the basis of a MACT determination for a particular major source. A major source of HAP 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. Part 63 NESHAPs apply to sources in specifically regulated industrial source categories (CAA Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The Logansport Station is an area source of HAP emissions since its potential emission of HAP are less than the 10/25 tpy major threshold. The potential applicability of specific MACT standards to the Logansport Station is discussed below.

### **3.5.1. NESHAP Subpart HH - Oil and Natural Gas Production Facilities**

This MACT standard contains requirements for dehydration units, located at natural gas production facilities. Because the Logansport Station does not meet the definition of a natural gas production facility per 40 CFR §63.761. Therefore, the requirements of this subpart do not apply.

### 3.5.2. NESHAP Subpart HHH - Natural Gas Transmission and Storage Facilities

This MACT subpart applies to facilities which are major sources of HAP that transport or store natural gas prior to entering the transmission pipeline to end users as defined by 40 CFR §63.1271. Specifically, each dehydration unit at these facilities is subject to this subpart. The Logansport Station is a natural gas transmission facility and will be potentially subject to this subpart. However, the Logansport Station is an area source based on the criteria of this MACT. Therefore, the requirements of this subpart do not apply.

### 3.5.3. NESHAP Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines

This MACT subpart applies to stationary reciprocating combustion engines (RICE) at major and area sources of HAP. The Logansport Station is a minor source of HAP. The compressor engines at the Logansport Station were installed in 1953 and have not been reconstructed or modified. The units are classified as 2-stroke, lean-burn, non-emergency units with ratings of 800 hp each. As such, they are subject to the requirements for existing, 2-stroke, lean-burn, non-emergency, spark ignition (SI) units at an area source. The generators were installed in 1998 and 2000, rated for 265 hp and are classified as a 4-stroke, rich burn, non-emergency SI units at an area source. As such, the generators are subject to the requirements for existing, non-emergency, SI units less than 500 horsepower at area sources.

Per 40 CFR §63.6625(h), Equitrans will minimize the engines' time spent at idle and minimize the engines' startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. Equitrans will also comply with the work practice standards in 40 CFR §63.6603 and maintain records to show these standards have been met. Work practice standards include changing the oil and filter<sup>8</sup>, inspecting spark plugs (and replacing as necessary) and inspecting all hoses and belts (and replacing as necessary) at intervals specified in Table 2d of Subpart ZZZZ.

### 3.5.4. NESHAP Subpart JJJJJJ - Industrial, Commercial, and Institutional Boilers

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources. The reboiler and heaters at the Logansport Station are natural gas-fired and are specifically exempt from this subpart. Therefore, no sources at the Logansport Station are subject to any requirements under 40 CFR 63 Subpart JJJJJJ).

## 3.6. WEST VIRGINIA SIP REGULATIONS

The Logansport Station is potentially subject to regulations contained in the West Virginia Code of State Regulations, Chapter 45 (Code of State Regulations). The Code of State Regulations fall under two main categories: those regulations that are generally applicable (e.g., permitting requirements), and those that have specific applicability (e.g., PM standards for manufacturing equipment).

### 3.6.1. 45 CSR 2: To Prevent and Control 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 and heaters are fuel burning units and therefore must comply with this regulation. Per 45 CSR 2-3, opacity of emissions from units shall not exceed 10 percent, based on a six-minute block average. Per 45 CSR 2-4, PM emissions from the units will not exceed a level measured in lb/hr of 0.09 multiplied by the heat design inputs in MMBtu/hr.

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<sup>8</sup> Equitrans also has the option of implementing an oil analysis program per §63.6625(j) in lieu of replacing the oil at each interval.

### **3.6.2. 45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor**

According to 45 CSR 4-3:

*No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.*

The Logansport Station is generally subject to this requirement. However, due to the nature of the process at the station, production of objectionable odor from the compressor station during normal operation is unlikely.

### **3.6.3. 45 CSR 6: Control of Air Pollution from the Combustion of Refuse**

45 CSR 6 applies to activities involving incineration of refuse, 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.” There are no control devices at the facility that utilize ‘incineration’.

### **3.6.4. 45 CSR 10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides**

This rule potentially applies to fuel burning units, including glycol dehydration unit reboilers and fuel gas heaters. Per 45 CSR 10-10.1, units rated less than 10 MMBtu/hr are exempt from the SO<sub>2</sub> emission limitations and testing, monitoring, recordkeeping, and reporting requirements of this rule. The reboiler and heaters at the Logansport station are each rated less than 10 MMBtu/hr and as such are exempt from this rule.

### **3.6.5. 45 CSR 16: Standards of Performance for New Stationary Sources**

45 CSR 16-1 incorporates the federal Clean Air Act (CAA) standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. As such, by complying with all applicable requirements of 40 CFR Part 60 at the Logansport Station, Equitrans will be complying with 45 CSR 16.

### **3.6.6. 45 CSR 17: To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter**

According to 45 CSR 17-3.1:

*No person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution.*

Due to the nature of the activities at the Logansport Station, it is unlikely that fugitive particulate matter emissions will be emitted under normal operating conditions. However, Equitrans will take measures to ensure any fugitive particulate matter emissions will not cross the property boundary should any such emissions occur.

### **3.6.7. 45 CSR 21-28: Petroleum Liquid Storage in Fixed Roof Tanks**

45 CSR 21-28 applies to any fixed roof petroleum liquid storage tank with a capacity greater than 40,000 gallons located in Putnam County, Kanawha County, Cabell County, Wayne County, and Wood County. The capacity of each storage tank at Logansport is less than 40,000 gallons and the facility is not located in a listed county. Therefore, 45 CSR 21-28 does not apply to the storage tanks at this station.

### **3.6.8. 45 CSR 34: Emissions Standards for Hazardous Air Pollutants**

45 CSR 34-1 incorporates the federal Clean Air Act (CAA) national emissions standards for hazardous air pollutants (NESHAPs) as set forth in 40 CFR Parts 61 and 63 by reference. As such, by complying with all applicable requirements of 40 CFR Parts 61 and 63 at the Logansport Station, Equitrans will be complying with 45 CSR 34.

### **3.6.9. Non-Applicability of Other SIP Rules**

A thorough examination of the West Virginia SIP rules with respect to applicability at the Logansport Station reveals many SIP regulations that do not apply or impose additional requirements on operations. Such SIP rules include those specific to a particular type of industrial operation that is categorically not applicable to the Logansport Station.

## 4. TITLE V APPLICATION FORMS

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The WVDEP permit application forms contained in this application include all applicable Title V application forms including the required attachments.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

601 57th Street SE

Charleston, WV 25304

Phone: (304) 926-0475

www.dep.wv.gov/daq

INITIAL/RENEWAL TITLE V PERMIT APPLICATION - GENERAL FORMS

Section 1: General Information

<b>1. Name of Applicant (As registered with the WV Secretary of State's Office):</b> Equitrans, LP	<b>2. Facility Name or Location:</b> Logansport Compressor Station
<b>3. DAQ Plant ID No.:</b> 03-54-103-00033	<b>4. Federal Employer ID No. (FEIN):</b> 25-0724685
<b>5. Permit Application Type:</b> <input type="checkbox"/> Initial Permit (Initial Title V)                      When did operations commence? <input checked="" type="checkbox"/> Permit Renewal                                              What is the expiration date of the existing permit? January 15, 2018 <input type="checkbox"/> Update to Initial/Renewal Permit Application	
<b>6. Type of Business Entity:</b> <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Governmental Agency <input type="checkbox"/> LLC <input type="checkbox"/> Partnership <input type="checkbox"/> Limited Partnership	<b>7. Is the Applicant the:</b> <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input checked="" type="checkbox"/> Both  If the Applicant is not both the owner and operator, please provide the name and address of the other party. _____ _____ _____
<b>8. Number of onsite employees:</b>  1	
<b>9. Governmental Code:</b> <input checked="" type="checkbox"/> Privately owned and operated; 0 <input type="checkbox"/> County government owned and operated; 3 <input type="checkbox"/> Federally owned and operated; 1 <input type="checkbox"/> Municipality government owned and operated; 4 <input type="checkbox"/> State government owned and operated; 2 <input type="checkbox"/> District government owned and operated; 5	
<b>10. Business Confidentiality Claims</b>  Does this application include confidential information (per 45CSR31)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.	

<b>11. Mailing Address</b>		
Street or P.O. Box: 11462 North Fork Road		
City: Smithfield	State: WV	Zip: 26437
Telephone Number: (304) 889-2130	Fax Number: (304) 889-2908	

<b>12. Facility Location</b>		
Street: 11462 North Fork Road	City: Smithfield	County: Wetzel
UTM Easting: 538.78 km	UTM Northing: 4,378.47 km	Zone: 17 or <input type="checkbox"/> 18
<b>Directions:</b> From Smithfield, take W. Virginia 20 N for 1.1 miles and turn right onto Co Rd 7/8/Fallen Timber Run Rd. Go 3.5 miles and turn right onto Co Rd 80/Shuman Hill. Continue 1.5 miles and turn left onto Co Rd 17/17/N. Station will be 0.2 miles to the northwest.		
Portable Source? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is facility located within a nonattainment area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, for what air pollutants?	
Is facility located within 50 miles of another state? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the affected state(s). Ohio Pennsylvania	
Is facility located within 100 km of a Class I Area <sup>1</sup> ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the area(s). Otter Creek	
If no, do emissions impact a Class I Area <sup>1</sup> ? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<sup>1</sup> Class I areas include Dolly Sods and Otter Creek Wilderness Areas in West Virginia, and Shenandoah National Park and James River Face Wilderness Area in Virginia.		

<b>13. Contact Information</b>		
<b>Responsible Official:</b> Diana Charletta		<b>Title:</b> Sr. Vice President
<b>Street or P.O. Box:</b> 625 Liberty Avenue, Suite 1700		
<b>City:</b> Pittsburgh	<b>State:</b> PA	<b>Zip:</b> 15222
<b>Telephone Number:</b> ( ) -	<b>Fax Number:</b> ( ) -	
<b>E-mail address:</b> dcharletta@eqt.com		
<b>Environmental Contact:</b> Mark A. Sowa		<b>Title:</b> Sr. Environmental Coordinator
<b>Street or P.O. Box:</b> 625 Liberty Avenue, Suite 1700		
<b>City:</b> Pittsburgh	<b>State:</b> PA	<b>Zip:</b> 15222
<b>Telephone Number:</b> (412) 395-3654	<b>Fax Number:</b> ( ) -	
<b>E-mail address:</b> msowa@eqt.com		
<b>Application Preparer:</b> Tom Muscenti		<b>Title:</b> Principal Consultant
<b>Company:</b> Trinity Consultants		
<b>Street or P.O. Box:</b> 4500 Brooktree Road, Suite 103		
<b>City:</b> Wexford	<b>State:</b> PA	<b>Zip:</b> 15090
<b>Telephone Number:</b> (724) 935-2611	<b>Fax Number:</b> ( ) -	
<b>E-mail address:</b> tmuscenti@trinityconsultants.com		

**14. Facility Description**

List all processes, products, NAICS and SIC codes for normal operation, in order of priority. Also list any process, products, NAICS and SIC codes associated with any alternative operating scenarios if different from those listed for normal operation.

Process	Products	NAICS	SIC
Natural Gas Transmission Facility	Natural Gas	486210	4922

**Provide a general description of operations.**

The Logansport Compressor Station is a natural gas transmission facility that compresses natural gas and transports it downstream along the pipeline system. The facility consists of two (2) compressor engines, two (2) generator engines, one (1) TEG dehydration unit with associated reboiler, three (3) natural gas fired heaters, and five (5) miscellaneous storage tanks.

- 15. Provide an **Area Map** showing plant location as **ATTACHMENT A**.
- 16. Provide a **Plot Plan(s)**, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is located as **ATTACHMENT B**. For instructions, refer to "Plot Plan - Guidelines."
- 17. Provide a detailed **Process Flow Diagram(s)** showing each process or emissions unit as **ATTACHMENT C**. Process Flow Diagrams should show all emission units, control equipment, emission points, and their relationships.

**Section 2: Applicable Requirements**

<b>18. Applicable Requirements Summary</b>	
Instructions: Mark all applicable requirements.	
<input checked="" type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input checked="" type="checkbox"/> NESHAP (45CSR34)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS	<input checked="" type="checkbox"/> Section 112(d) MACT standards
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqts.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64)
<input type="checkbox"/> CAIR NO <sub>x</sub> Annual Trading Program (45CSR39)	<input type="checkbox"/> CAIR NO <sub>x</sub> Ozone Season Trading Program (45CSR40)
<input type="checkbox"/> CAIR SO <sub>2</sub> Trading Program (45CSR41)	

## 19. Non Applicability Determinations

List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.

40 CFR part 60 Subpart Dc – The boilers at the Logansport station are below 10 MMBtu/hr.

40 CFR part 60 Subpart GG – There are no turbines at Logansport Station.

40 CFR part 60 Subparts K, Ka – All tanks at the Logansport Station are less than 40,000 gallons in capacity.

40 CFR part 60 Subpart KKK – Logansport Station is not engaged in the extraction of natural gas liquids from field gas or in the fractionation of mixed natural gas liquids to natural gas products.

40 CFR part 60 Subpart LLL – There are no sweetening units at Logansport Station.

40 CFR part 60 Subpart IIII – The engines at Logansport Station are not stationary compression ignition (CI) internal combustion engines (ICE).

40 CFR part 63 Subpart HHH – According to §63.1270(a), this subpart applies to owners and operators of natural gas transmission and storage facilities that transport or store 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), and that are major sources of hazardous air pollutants (HAP) emissions as defined in §63.1271. Subpart HHH defines a “major source” as having the same meaning as in §63.2, except that: (1) Emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units, whether or not such units are in a contiguous area or under common control; and (2) Emissions from processes, operations, and equipment that are not part of the same facility, as defined in this section, shall not be aggregated.

The potential to emit of any single HAP is less than 10 tpy and the aggregate HAPs are less than 25 tpy. Therefore, the natural gas transmission and storage facility at the Logansport Station is not major for HAPs as defined in 40 C.F.R. §63.1270 and §63.2; consequently, Subpart HHH does not apply to the natural gas transmission and storage facility located at the Logansport Station.

Permit Shield

**19. Non Applicability Determinations (Continued) - Attach additional pages as necessary.**

**List all requirements which the source has determined not applicable and for which a permit shield is requested. The listing shall also include the rule citation and the reason why the shield applies.**

45 CSR 21: The Logansport Compressor Station is not located in Cabell, Kanawha, Putnam, Wayne, nor Wood counties.

45 CSR 27 - Natural gas is included as a petroleum product and contains less than 5% benzene by weight.

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

Permit Shield

**20. Facility-Wide Applicable Requirements**

List all facility-wide applicable requirements. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements).

- 45CSR§6-3.1 Open Burning, R30 Permit Condition 3.1.1.
- 45CSR§6-3.2 Open Burning Exemptions R30 Permit Condition 3.1.2.
- 45CSR§61.145(b) and 45CSR§34 Asbestos, R30 Permit Condition 3.1.3.
- 45CSR§4-3.1 Odor, R30 Permit Condition 3.1.4.
- 45CSR§11-5.2 Standby Plan for Reducing Emissions, R30 Permit Condition 3.1.5.
- 45CSR§17-3-1 Particulate Matter Emissions

Permit Shield

For all facility-wide applicable requirements listed above, provide monitoring/testing / recordkeeping / reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

- WV Code §22-5-4(a)(14-15) and 45CSR13 Stack Testing, R30 Permit Condition 3.3.
- Retention of Records, R30 Permit Condition 3.4.2
- 45CSR§4 Odors, R30 Permit Condition 3.4.3.
- Reporting Requirements, R30 Permit Condition 3.5.

Are you in compliance with all facility-wide applicable requirements?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

**20. Facility-Wide Applicable Requirements (Continued) - Attach additional pages as necessary.**

**List all facility-wide applicable requirements. For each applicable requirement, include the rule citation and/or permit with the condition number.**

Permit Shield

**For all facility-wide applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number and/or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)**

**Are you in compliance with all facility-wide applicable requirements?**  Yes  No

**If no, complete the Schedule of Compliance Form as ATTACHMENT F.**





Section 4: Insignificant Activities

24. Insignificant Activities (Check all that apply)	
<input checked="" type="checkbox"/>	1. Air compressors and pneumatically operated equipment, including hand tools.
<input type="checkbox"/>	2. Air contaminant detectors or recorders, combustion controllers or shutoffs.
<input checked="" type="checkbox"/>	3. Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumer, and which may include, but not be limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
<input checked="" type="checkbox"/>	4. Bathroom/toilet vent emissions.
<input checked="" type="checkbox"/>	5. Batteries and battery charging stations, except at battery manufacturing plants.
<input type="checkbox"/>	6. Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents. Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.
<input type="checkbox"/>	7. Blacksmith forges.
<input checked="" type="checkbox"/>	8. Boiler water treatment operations, not including cooling towers.
<input checked="" type="checkbox"/>	9. Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
<input type="checkbox"/>	10. CO <sub>2</sub> lasers, used only on metals and other materials which do not emit HAP in the process.
<input checked="" type="checkbox"/>	11. Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
<input checked="" type="checkbox"/>	12. Combustion units designed and used exclusively for comfort heating that use liquid petroleum gas or natural gas as fuel.
<input checked="" type="checkbox"/>	13. Comfort air conditioning or ventilation systems not used to remove air contaminants generated by or released from specific units of equipment.
<input type="checkbox"/>	14. Demineralized water tanks and demineralizer vents.
<input type="checkbox"/>	15. Drop hammers or hydraulic presses for forging or metalworking.
<input type="checkbox"/>	16. Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.
<input type="checkbox"/>	17. Emergency (backup) electrical generators at residential locations.
<input type="checkbox"/>	18. Emergency road flares.
<input checked="" type="checkbox"/>	<p>19. Emission units which do not have any applicable requirements and which emit criteria pollutants (CO, NO<sub>x</sub>, SO<sub>2</sub>, VOC and PM) into the atmosphere at a rate of less than 1 pound per hour and less than 10,000 pounds per year aggregate total for each criteria pollutant from all emission units.</p> <p>Please specify all emission units for which this exemption applies along with the quantity of criteria pollutants emitted on an hourly and annual basis:</p> <p><u>1 – 300 gallon separator triethylene glycol tank</u></p> <p><u>1 – 7,500 gallon pipeline condensate storage tank</u></p> <p><u>1 – 1,500 gallon new oil storage tank</u></p> <p><u>1 – 3,000 gallon ethylene glycol storage tank</u></p> <p><u>1 – 2,000 gallon used oil storage tank</u></p> <p><u>VOC emissions from leaking valves, compressors, and connectors.</u></p> <p>_____</p> <p>_____</p>

<b>24. Insignificant Activities (Check all that apply)</b>	
<input type="checkbox"/>	<p>20. Emission units which do not have any applicable requirements and which emit hazardous air pollutants into the atmosphere at a rate of less than 0.1 pounds per hour and less than 1,000 pounds per year aggregate total for all HAPs from all emission sources. This limitation cannot be used for any source which emits dioxin/furans nor for toxic air pollutants as per 45CSR27.</p> <p>Please specify all emission units for which this exemption applies along with the quantity of hazardous air pollutants emitted on an hourly and annual basis:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<input type="checkbox"/>	21. Environmental chambers not using hazardous air pollutant (HAP) gases.
<input type="checkbox"/>	22. Equipment on the premises of industrial and manufacturing operations used solely for the purpose of preparing food for human consumption.
<input type="checkbox"/>	23. Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
<input checked="" type="checkbox"/>	24. Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
<input type="checkbox"/>	25. Equipment used for surface coating, painting, dipping or spray operations, except those that will emit VOC or HAP.
<input checked="" type="checkbox"/>	26. Fire suppression systems.
<input type="checkbox"/>	27. Firefighting equipment and the equipment used to train firefighters.
<input type="checkbox"/>	28. Flares used solely to indicate danger to the public.
<input checked="" type="checkbox"/>	29. Fugitive emission related to movement of passenger vehicle provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.
<input type="checkbox"/>	30. Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.
<input checked="" type="checkbox"/>	31. Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.
<input type="checkbox"/>	32. Humidity chambers.
<input type="checkbox"/>	33. Hydraulic and hydrostatic testing equipment.
<input type="checkbox"/>	34. Indoor or outdoor kerosene heaters.
<input checked="" type="checkbox"/>	35. Internal combustion engines used for landscaping purposes.
<input type="checkbox"/>	36. Laser trimmers using dust collection to prevent fugitive emissions.
<input type="checkbox"/>	37. Laundry activities, except for dry-cleaning and steam boilers.
<input checked="" type="checkbox"/>	38. Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.
<input type="checkbox"/>	39. Oxygen scavenging (de-aeration) of water.
<input type="checkbox"/>	40. Ozone generators.

24. Insignificant Activities (Check all that apply)	
<input checked="" type="checkbox"/>	41. Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification. (Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise requested.)
<input checked="" type="checkbox"/>	42. Portable electrical generators that can be moved by hand from one location to another. "Moved by Hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.
<input type="checkbox"/>	43. Process water filtration systems and demineralizers.
<input checked="" type="checkbox"/>	44. Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
<input checked="" type="checkbox"/>	45. Repairs or maintenance where no structural repairs are made and where no new air pollutant emitting facilities are installed or modified.
<input checked="" type="checkbox"/>	46. Routing calibration and maintenance of laboratory equipment or other analytical instruments.
<input type="checkbox"/>	47. Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants. Shock chambers.
<input type="checkbox"/>	48. Shock chambers.
<input type="checkbox"/>	49. Solar simulators.
<input type="checkbox"/>	50. Space heaters operating by direct heat transfer.
<input type="checkbox"/>	51. Steam cleaning operations.
<input type="checkbox"/>	52. Steam leaks.
<input type="checkbox"/>	53. Steam sterilizers.
<input type="checkbox"/>	54. Steam vents and safety relief valves.
<input type="checkbox"/>	55. Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.
<input checked="" type="checkbox"/>	56. Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP. Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.
<input type="checkbox"/>	57. Such other sources or activities as the Director may determine.
<input type="checkbox"/>	58. Tobacco smoking rooms and areas.
<input checked="" type="checkbox"/>	59. Vents from continuous emissions monitors and other analyzers.

**Section 5: Emission Units, Control Devices, and Emission Points**

<b>25. Equipment Table</b>
Fill out the <b>Title V Equipment Table</b> and provide it as <b>ATTACHMENT D</b> .
<b>26. Emission Units</b>
For each emission unit listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Emission Unit Form</b> as <b>ATTACHMENT E</b> .
For each emission unit not in compliance with an applicable requirement, fill out a <b>Schedule of Compliance Form</b> as <b>ATTACHMENT F</b> .
<b>27. Control Devices</b>
For each control device listed in the <b>Title V Equipment Table</b> , fill out and provide an <b>Air Pollution Control Device Form</b> as <b>ATTACHMENT G</b> .
For any control device that is required on an emission unit in order to meet a standard or limitation for which the potential pre-control device emissions of an applicable regulated air pollutant is greater than or equal to the <b>Title V Major Source Threshold Level</b> , refer to the <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for CAM applicability. Fill out and provide these forms, if applicable, for each <b>Pollutant Specific Emission Unit (PSEU)</b> as <b>ATTACHMENT H</b> .

**Section 6: Certification of Information**

**28. Certification of Truth, Accuracy and Completeness and Certification of Compliance**

*Note: This Certification must be signed by a responsible official. The original, signed in blue ink, must be submitted with the application. Applications without an original signed certification will be considered as incomplete.*

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

I certify that I am a responsible official (as defined at 45CSR§30-2.38) and am accordingly authorized to make this submission on behalf of the owners or operators of the source described in this document and its attachments. I certify under penalty of law that I have personally examined and am familiar with the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine and/or imprisonment.

**b. 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.

**Responsible official (type or print)**

Name: Diana Charletta

Title: Sr. Vice President

**Responsible official's signature:**

Signature:  Signature Date: 7/10/17  
(Must be signed and dated in blue ink)

**Note: Please check all applicable attachments included with this permit application:**

<input checked="" type="checkbox"/>	ATTACHMENT A: Area Map
<input checked="" type="checkbox"/>	ATTACHMENT B: Plot Plan(s)
<input checked="" type="checkbox"/>	ATTACHMENT C: Process Flow Diagram(s)
<input checked="" type="checkbox"/>	ATTACHMENT D: Equipment Table
<input checked="" type="checkbox"/>	ATTACHMENT E: Emission Unit Form(s)
<input type="checkbox"/>	ATTACHMENT F: Schedule of Compliance Form(s) <i>(Not Applicable)</i>
<input type="checkbox"/>	ATTACHMENT G: Air Pollution Control Device Form(s) <i>(Not Applicable)</i>
<input type="checkbox"/>	ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s) <i>(Not Applicable)</i>

**All of the required forms and additional information can be found and downloaded from, the DEP website at [www.dep.vv.gov/dag](http://www.dep.vv.gov/dag), requested by phone (304) 926-0475, and/or obtained through the mail.**

# ATTACHMENT A

## Area Map

## ATTACHMENT A

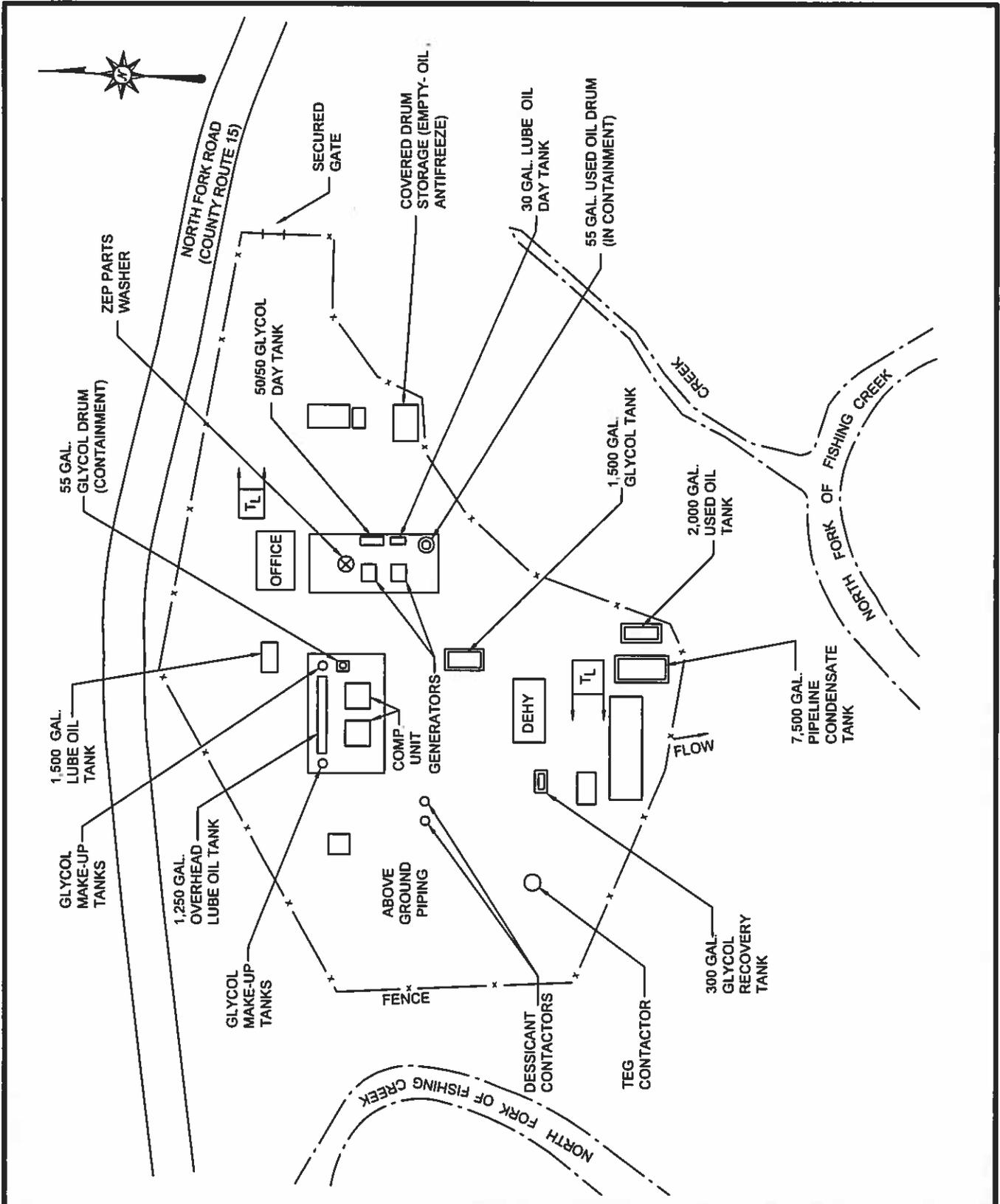


Figure 1 - Map of Logansport Compressor Station Location

UTM Northing (KM)	4,378.695
UTM Easting (KM)	538.618
Elevation (m)	269

## ATTACHMENT B

### Plot Plan



CADD FILE: NORTHERN WV.dwg	
DRAWN BY: CLC	CHECKED BY: HM
DATE: 1/15/2015	SCALE: N.T.S.

**LOGANSPORT COMPRESSOR STATION**  
**EQUITRANS, L.P.**  
**NORTHERN WEST VIRGINIA DISTRICT**

JOB NO: 04-11-0131 FIGURE No. 2



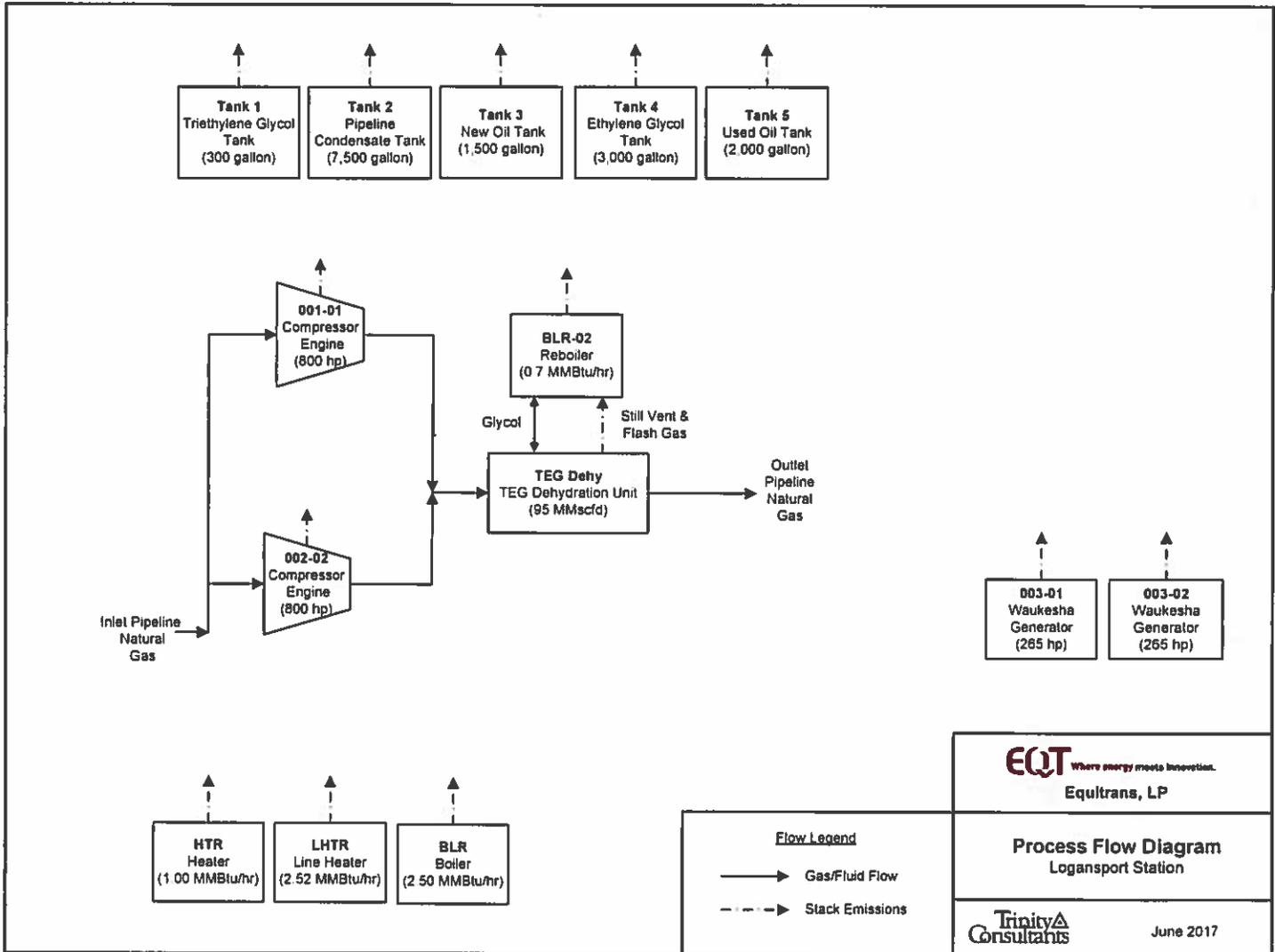
**TRIAD ENGINEERING, INC.**

www.triadeng.com

4980 TEAYS VALLEY ROAD  
SCOTT DEPOT, WV 25560

**ATTACHMENT C**

**Process Flow Diagram**



**ATTACHMENT D**

**Equipment Table**

**ATTACHMENT D - Title V Equipment Table**  
(includes all emission units at the facility except those designated as  
insignificant activities in Section 4, Item 24 of the General Forms)

Emission Point ID <sup>1</sup>	Control Device <sup>1</sup>	Emission Unit ID <sup>1</sup>	Emission Unit Description	Design Capacity	Year Installed/Modified
C-001	None	001-01	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMV6; Serial #43279	800 HP	1953
C-002	None	002-01	Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMV6; Serial #43280	800 HP	1953
G-001	None	003-01	Reciprocating Engine/Generator Waukesha F18GL	265 HP	1998
G-002	None	003-02	Reciprocating Engine/Generator Waukesha F18GL	265 HP	2000
BLR	None	BLR	Heating Boiler 2	2.5 MMBtu/hr	1991
BLR02	None	BLR02	Dehydration #2 Reboiler	0.7 MMBtu/hr	1993
HTR	None	HTR	Indirect Gas Fired Heater	1.0 MMBtu/hr	1993
LHTR	None	LHTR	Indirect Gas Fired Line Heater	2.52 MMBtu/hr	2013
TEG-Dehy	None	TEG-Dehy	TEG Dehydrator	95 MMSCFD	1993
Tank 1	None	Tank 1	Separator Triethylene Glycol Tank	300 gallon	1996
Tank 2	None	Tank 2	Pipeline Condensate	7,500 gallon	1996
Tank 3	None	Tank 3	New Oil	1,500 gallon	1996
Tank 4	None	Tank 4	Ethylene Glycol	3,000 gallon	1996
Tank 5	None	Tank 5	Used Oil	2,000 gallon	1996

<sup>1</sup>For 45CSR13 permitted sources, the numbering system used for the emission points, control devices, and emission units should be consistent with the numbering system used in the 45CSR13 permit. For grandfathered sources, the numbering system should be consistent with registrations or emissions inventory previously submitted to DAQ. For emission points, control devices, and emissions units which have not been previously labeled, use the following 45CSR13 numbering system: 1S, 2S, 3S, ... or other appropriate description for emission units, 1C, 2C, 3C, ... or other appropriate designation for control devices, 1E, 2E, 3E, ... or other appropriate designation for emission points

**ATTACHMENT E**

**Emission Unit Forms**

## ATTACHMENT E - Emission Unit Form

### *Emission Unit Description*

<b>Emission unit ID number:</b> BLR	<b>Emission unit name:</b> Heating Boiler	<b>List any control devices associated with this emission unit:</b> None
----------------------------------------	----------------------------------------------	-----------------------------------------------------------------------------

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired boiler rated at 2.5 MMBtu/hr

<b>Manufacturer:</b> Ajax	<b>Model number:</b>	<b>Serial number:</b>
<b>Construction date:</b> 1991	<b>Installation date:</b> 1991	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
2.5 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 2,246 scf/hr	<b>Maximum Annual Throughput:</b> 19.7 MMscf/year	<b>Maximum Operating Schedule:</b> 8,760 hours
---------------------------------------------------	------------------------------------------------------	---------------------------------------------------

### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b>  <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------

<b>Maximum design heat input and/or maximum horsepower rating:</b> 2.50 MMbtu/hr	<b>Type and Btu/hr rating of burners:</b> 2.50 MMbtu/hr
-------------------------------------------------------------------------------------	------------------------------------------------------------

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

Natural Gas – 2,246 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Carbon Monoxide (CO)	0.19	0.83
Nitrogen Oxides (NO <sub>x</sub> )	0.22	0.98
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	0.02	0.07
Particulate Matter (PM <sub>10</sub> )	0.02	0.07
Total Particulate Matter (TSP)	0.02	0.07

Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.01	0.05
Hazardous Air Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Formaldehyde (HCHO)	<0.01	<0.01
Total HAP	<0.01	0.02
Regulated Pollutants other than Criteria and HAP	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
CO <sub>2</sub> e	293	1,282
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

**Applicable Requirements**

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Section 3 of the Project Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

### *Emission Unit Description*

<b>Emission unit ID number:</b> 001-01	<b>Emission unit name:</b> Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMV6; Serial #43279	<b>List any control devices associated with this emission unit:</b> N/A
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired 800 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas

<b>Manufacturer:</b> Cooper-Bessemer	<b>Model number:</b> GMV6	<b>Serial number:</b> 43279
<b>Construction date:</b> 1953	<b>Installation date:</b> 1953	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 800 HP

<b>Maximum Hourly Throughput:</b> 6,110 scf/hr	<b>Maximum Annual Throughput:</b> 53.53 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hours per year
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### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 800 HP	<b>Type and Btu/hr rating of burners:</b> NA
------------------------------------------------------------------------------	-------------------------------------------------

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**  
Natural Gas – 6,110 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	2.62	11.50
Nitrogen Oxides (NO <sub>x</sub> )	21.56	94.42
Lead (Pb)	N/A	N/A

Particulate Matter (PM <sub>2.5</sub> )	0.33	1.44
Particulate Matter (PM <sub>10</sub> )	0.33	1.44
Total Particulate Matter (TSP)	0.33	1.44
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.02
Volatile Organic Compounds (VOC)	0.82	3.57
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.38	1.64
Total HAP	0.54	2.37
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	796	3,488
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

**Applicable Requirements**

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

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Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Section 3 of the Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> 002-01	<b>Emission unit name:</b> Reciprocating Engine/Integral Compressor; Cooper Bessemer Model GMV6; Serial #43280	<b>List any control devices associated with this emission unit:</b> N/A
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired 800 HP reciprocating internal combustion engine that drives a compressor for the compression of natural gas

<b>Manufacturer:</b> Cooper-Bessemer	<b>Model number:</b> GMV6	<b>Serial number:</b> 43280
<b>Construction date:</b> 1953	<b>Installation date:</b> 1953	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 800 HP

<b>Maximum Hourly Throughput:</b> 6,110 scf/hr	<b>Maximum Annual Throughput:</b> 53.53 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hours per year
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**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
<b>Maximum design heat input and/or maximum horsepower rating:</b> 800 HP	<b>Type and Btu/hr rating of burners:</b> NA

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**  
Natural Gas – 6,110 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1,113 BTU/scf

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	2.62	11.50
Nitrogen Oxides (NO <sub>x</sub> )	21.56	94.42
Lead (Pb)	N/A	N/A

Particulate Matter (PM <sub>2.5</sub> )	0.33	1.44
Particulate Matter (PM <sub>10</sub> )	0.33	1.44
Total Particulate Matter (TSP)	0.33	1.44
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.02
Volatile Organic Compounds (VOC)	0.82	3.57
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.38	1.64
Total HAP	0.54	2.37
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	796	3,488
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-1. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. *(Note: Title V permit condition numbers alone are not the underlying applicable requirements).* If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. *(Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)*

See Section 3 of the Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

### *Emission Unit Description*

<b>Emission unit ID number:</b> 003-01	<b>Emission unit name:</b> Reciprocating Engine/Generator Waukesha F18GL	<b>List any control devices associated with this emission unit:</b> N/A
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired 265 HP reciprocating internal combustion engine that drives an electric generator

<b>Manufacturer:</b> Waukesha	<b>Model number:</b> F18GL	<b>Serial number:</b> C-11936/1
<b>Construction date:</b> January 1996	<b>Installation date:</b> 1998	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):** 265 HP

<b>Maximum Hourly Throughput:</b> 1,810 scf/hr	<b>Maximum Annual Throughput:</b> 15.9 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hours per year
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### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b>  <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
<b>Maximum design heat input and/or maximum horsepower rating:</b> 265 HP	<b>Type and Btu/hr rating of burners:</b> NA

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**  
Natural Gas – 1,810 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	7.49	32.82
Nitrogen Oxides (NO <sub>x</sub> )	4.45	19.50
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.04	0.17

Particulate Matter (PM <sub>10</sub> )	0.04	0.17
Total Particulate Matter (TSP)	0.04	0.17
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.06	0.26
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.04	0.18
Total HAP	0.07	0.29
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	236	1,033
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-3. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

**Applicable Requirements**

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

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Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Section 3 of the Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

<b>Emission Unit Description</b>			
<b>Emission unit ID number:</b> 003-02	<b>Emission unit name:</b> Reciprocating Engine/Generator Waukesha F18GL	<b>List any control devices associated with this emission unit:</b> N/A	
<b>Provide a description of the emission unit (type, method of operation, design parameters, etc.):</b> One (1) natural gas fired 265 HP reciprocating internal combustion engine that drives an electric generator			
<b>Manufacturer:</b> Waukesha	<b>Model number:</b> F18GL	<b>Serial number:</b> C-93524/1	
<b>Construction date:</b> 1993	<b>Installation date:</b> 2000	<b>Modification date(s):</b> N/A	
<b>Design Capacity (examples: furnaces - tons/hr, tanks - gallons):</b> 265 HP			
<b>Maximum Hourly Throughput:</b> 1,810 scf/hr	<b>Maximum Annual Throughput:</b> 15.9 MMscf/yr	<b>Maximum Operating Schedule:</b> 8,760 hours per year	
<b>Fuel Usage Data (fill out all applicable fields)</b>			
<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired	
<b>Maximum design heat input and/or maximum horsepower rating:</b> 265 HP		<b>Type and Btu/hr rating of burners:</b> NA	
<b>List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.</b> Natural Gas – 1,810 scf/hr			
<b>Describe each fuel expected to be used during the term of the permit.</b>			
Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negligible	Negligible	1,113 BTU/scf
<b>Emissions Data</b>			
Criteria Pollutants	Potential Emissions		
	PPH	TPY	
Carbon Monoxide (CO)	7.49	32.82	
Nitrogen Oxides (NO <sub>x</sub> )	4.45	19.50	
Lead (Pb)	N/A	N/A	
Particulate Matter (PM <sub>2.5</sub> )	0.04	0.17	

Particulate Matter (PM <sub>10</sub> )	0.04	0.17
Total Particulate Matter (TSP)	0.04	0.17
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.06	0.26
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Formaldehyde	0.04	0.18
Total HAP	0.07	0.29
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	236	1,033
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria Pollutants factors are based on AP-42 Section 3.2 Table 3.2-3. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.</p>		

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

RICE MACT: 40 CFR 63 Subpart ZZZZ

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

See Section 3 of the Project Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

### *Emission Unit Description*

<b>Emission unit ID number:</b> HTR	<b>Emission unit name:</b> Indirect Fired Gas Heater	<b>List any control devices associated with this emission unit:</b> None
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired indirect heater rated at 1.0 MMBtu/hr

<b>Manufacturer:</b> Hannover	<b>Model number:</b>	<b>Serial number:</b> 4975
<b>Construction date:</b> 1993	<b>Installation date:</b> 1993	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
1.0 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 899 scf/hr	<b>Maximum Annual Throughput:</b> 7.9 MMscf/year	<b>Maximum Operating Schedule:</b> 8,760 hours
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### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input checked="" type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 1.0 MMBtu/hr	<b>Type and Btu/hr rating of burners:</b> 1.0 MMBtu/hr
------------------------------------------------------------------------------------	-----------------------------------------------------------

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

Natural Gas – 899 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Carbon Monoxide (CO)	0.08	0.33
Nitrogen Oxides (NO <sub>x</sub> )	0.09	0.39
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	0.01	0.03
Particulate Matter (PM <sub>10</sub> )	0.01	0.03
Total Particulate Matter (TSP)	0.01	0.03

Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	<0.01	0.02
Hazardous Air Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Formaldehyde (HCHO)	<0.01	<0.01
Total HAP	<0.01	0.01
Regulated Pollutants other than Criteria and HAP	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
CO <sub>2</sub> e	117	513
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

***Applicable Requirements***

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or **construction permit** with the condition number. (*Note: Title V permit condition numbers alone are not the underlying applicable requirements*). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (*Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.*)

See Section 3 of the Project Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

### *Emission Unit Description*

<b>Emission unit ID number:</b> LHTR	<b>Emission unit name:</b> Line Heater	<b>List any control devices associated with this emission unit:</b> None
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired boiler rated at 2.52 MMBtu/hr

<b>Manufacturer:</b>	<b>Model number:</b>	<b>Serial number:</b>
<b>Construction date:</b> 2013	<b>Installation date:</b> 2013	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
2.52 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 2,267 scf/hr	<b>Maximum Annual Throughput:</b> 19.9 MMscf/year	<b>Maximum Operating Schedule:</b> 8,760 hours
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### *Fuel Usage Data (fill out all applicable fields)*

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input checked="" type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 2.52 MMbtu/hr	<b>Type and Btu/hr rating of burners:</b> 2.52 MMbtu/hr
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**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

Natural Gas – 2,267 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,113 BTU/scf

### *Emissions Data*

Criteria Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Carbon Monoxide (CO)	0.19	0.83
Nitrogen Oxides (NO <sub>x</sub> )	0.23	0.99
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	0.02	0.08
Particulate Matter (PM <sub>10</sub> )	0.02	0.08
Total Particulate Matter (TSP)	0.02	0.08

Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.01	0.05
Hazardous Air Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Formaldehyde (HCHO)	<0.01	<0.01
Total HAP	<0.01	0.02
Regulated Pollutants other than Criteria and HAP	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
CO <sub>2</sub> e	295	1,294
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

**Applicable Requirements**

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Section 3 of the Project Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> BLR02	<b>Emission unit name:</b> Dehy #2 Reboiler	<b>List any control devices associated with this emission unit:</b> None
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**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
One (1) natural gas fired reboiler associated with the dehydration unit

<b>Manufacturer:</b>	<b>Model number:</b>	<b>Serial number:</b>
<b>Construction date:</b> 1993	<b>Installation date:</b> 1993	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
0.7 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 629 scf/hr	<b>Maximum Annual Throughput:</b> 5.5 MMscf/year	<b>Maximum Operating Schedule:</b> 8,760 hours
-------------------------------------------------	-----------------------------------------------------	---------------------------------------------------

**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>If yes, is it?</b> <input type="checkbox"/> Indirect Fired <input checked="" type="checkbox"/> Direct Fired
------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

<b>Maximum design heat input and/or maximum horsepower rating:</b> 0.7 MMBtu/hr	<b>Type and Btu/hr rating of burners:</b> 0.7 MMBtu/hr
------------------------------------------------------------------------------------	-----------------------------------------------------------

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

Natural Gas – 629 scf/hr

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
Natural Gas	Negl.	Negl.	1,113 BTU/scf

**Emissions Data**

Criteria Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Carbon Monoxide (CO)	0.05	0.23
Nitrogen Oxides (NO <sub>x</sub> )	0.06	0.28
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	<0.01	0.02
Particulate Matter (PM <sub>10</sub> )	<0.01	0.02
Total Particulate Matter (TSP)	<0.01	0.02

Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.02
Volatile Organic Compounds (VOC)	<0.01	0.02
Hazardous Air Pollutants	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
Formaldehyde (HCHO)	<0.01	<0.01
Total HAP	<0.01	<0.01
Regulated Pollutants other than Criteria and HAP	Potential Emissions ( <i>Each Unit</i> )	
	PPH	TPY
CO <sub>2</sub> e	82	359
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>Criteria pollutant and HAP emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, &amp; 1.4-3. Greenhouse gas emission factors from 40 CFR Part 98 Tables C-1 and C-2.</p>		

**Applicable Requirements**

List all applicable requirements for this emission unit. For each applicable requirement, include the underlying rule/regulation citation and/or construction permit with the condition number. (Note: Title V permit condition numbers alone are not the underlying applicable requirements). If an emission limit is calculated based on the type of source and design capacity or if a standard is based on a design parameter, this information should also be included.

No change from current Title V permit conditions

Permit Shield

For all applicable requirements listed above, provide monitoring/testing/recordkeeping/reporting which shall be used to demonstrate compliance. If the method is based on a permit or rule, include the condition number or citation. (Note: Each requirement listed above must have an associated method of demonstrating compliance. If there is not already a required method in place, then a method must be proposed.)

See Section 3 of the Project Report

Are you in compliance with all applicable requirements for this emission unit?  Yes  No

If no, complete the Schedule of Compliance Form as ATTACHMENT F.

## ATTACHMENT E - Emission Unit Form

**Emission Unit Description**

<b>Emission unit ID number:</b> TEG Dehy	<b>Emission unit name:</b> Dehydration Unit	<b>List any control devices associated with this emission unit:</b> None
---------------------------------------------	------------------------------------------------	-----------------------------------------------------------------------------

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
95 MMSCFD triethylene glycol dehydration unit with associated reboiler for removing water and impurities from natural gas.

<b>Manufacturer:</b> Natco	<b>Model number:</b> 5GR-700-GC6(2)	<b>Serial number:</b> N/A
<b>Construction date:</b> 1993	<b>Installation date:</b> 1993	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
95 MMSCFD

<b>Maximum Hourly Throughput:</b> 4 MMSCF	<b>Maximum Annual Throughput:</b> 35,000 MMSCF	<b>Maximum Operating Schedule:</b> 8,760 hours
----------------------------------------------	---------------------------------------------------	---------------------------------------------------

**Fuel Usage Data (fill out all applicable fields)**

<b>Does this emission unit combust fuel?</b> ___Yes <input checked="" type="checkbox"/> No	<b>If yes, is it?</b> NA  ___ Indirect Fired ___ Direct Fired
<b>Maximum design heat input and/or maximum horsepower rating:</b> N/A	<b>Type and Btu/hr rating of burners:</b> N/A

**List the primary fuel type(s) and if applicable, the secondary fuel type(s). For each fuel type listed, provide the maximum hourly and annual fuel usage for each.**

N/A

**Describe each fuel expected to be used during the term of the permit.**

Fuel Type	Max. Sulfur Content	Max. Ash Content	BTU Value
NA			

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	--	--

Nitrogen Oxides (NO <sub>x</sub> )	--	--
Lead (Pb)	--	--
Particulate Matter (PM <sub>2.5</sub> )	--	--
Particulate Matter (PM <sub>10</sub> )	--	--
Total Particulate Matter (TSP)	--	--
Sulfur Dioxide (SO <sub>2</sub> )	--	--
Volatile Organic Compounds (VOC)	0.21	0.93
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Benzene	0.02	0.09
Total HAP	0.06	0.27
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	26	114
<p><b>List the method(s) used to calculate the potential emissions (include dates of any stack tests conducted, versions of software used, source and dates of emission factors, etc.).</b></p> <p>GRI-GLYCalc v4.0</p>		

Company Name: **Exultans, L.P.**  
 Facility Name: **Logansport Compressor Station**  
 Project Description: **Title V Renewal Application**

	Logansport Station										Logansport Station Potential Emissions
	Cooper Bessemer Compressor Engine GMV6	Cooper Bessemer Compressor Engine GMV6	Waukesha F18GL Generator Engine	Waukesha F18GL Generator Engine	TEG Dehy	Dehy Associated Reboiler	Heating Boiler 2	Indirect Gas Fired Line Heater	Indirect Gas Fired Heater	Fugitive & Blowdowns	
Fuel Type	Natural Gas	Natural Gas	Natural Gas	Natural Gas	---	Natural Gas	Natural Gas	Natural Gas	Natural Gas		
Capacity	890	890	265	265	95	0.78	2.50	2.52	1.00		
Unit	HP	HP	HP	HP	MMSCFD	MMBtu/hr	MMBtu/hr	MMBtu/hr	MMBtu/hr		
Operating Hours (hrs)	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760	
# of Emission Units	1	1	1	1	1	1	1	1	1	N/A	
Pollutant	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
PM <sub>10</sub>	1.44	1.44	0.17	0.17	---	0.02	0.07	0.08	0.03	---	3.42
PM <sub>2.5</sub>	1.44	1.44	0.17	0.17	---	0.02	0.07	0.08	0.03	---	3.42
NO <sub>x</sub>	0.02	0.02	0.01	0.01	---	0.00	0.01	0.01	2.4E-01	---	0.06
CO	11.50	11.50	32.82	32.82	---	0.23	0.81	0.83	0.33	---	90.85
NO <sub>x</sub>	94.42	94.42	19.50	19.50	---	0.28	0.98	0.99	0.39	---	230.47
VOC	3.57	3.57	0.26	0.26	0.93	0.02	0.05	0.05	0.02	1.90	10.63
CO <sub>2</sub>	3,484	3,484	1,012	1,012	3	359	1,281	1,293	512	0.27	12,480
CH <sub>4</sub>	0.07	0.07	0.02	0.02	4.42	0.01	0.02	0.02	0.01	25.45	30
N <sub>2</sub> O	0.01	0.01	0.00	0.00	---	0.00	0.00	0.00	9.7E-04	---	0.02
CO <sub>2e</sub> <sup>1</sup>	3,488	3,488	1,013	1,013	114	359	1,282	1,294	513	0.37	13,240
Formaldehyde	1.64	1.64	0.18	0.18	---	0.00	0.00	0.00	0.00	---	3.65
Benzene	0.06	0.06	0.01	0.01	0.09	0.00	0.00	0.00	0.00	---	0.23
Toluene	0.03	0.03	0.00	0.00	0.11	0.00	0.00	0.00	0.00	---	0.18
Ethylbenzene	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	---	0.02
Xylene	0.01	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	---	0.05
n-Hexane	0.01	0.01	0.00	0.00	0.03	0.00	0.02	0.01	0.02	---	0.10
Total HAPs (including HCHO)	2.37	2.37	0.29	0.29	0.27	0.01	0.02	0.02	0.01	0.04	5.67

1 Conversion to CO<sub>2e</sub> based on CH<sub>4</sub> GWP = 25 and N<sub>2</sub>O GWP = 298, per 40 CFR 98  
 2 VOC includes Formaldehyde

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, L.P.  
Logansport Compressor Station  
Title V Renewal Application

**Copper Bessemer Compressor Engine (001-01) Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Cooper Bessemer
Model No.:	GMV6
Serial No.:	43279
Stroke Cycle:	2
Type of Burn:	Lean Burn
Year Installed/Date Manufactured:	1953
Fuel Used:	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	800
Specific Fuel Consumption (Btu/bhp-hr)	8,500
Maximum Fuel Consumption at 100% Load (scf/hr):	6,110
Heat Input (MMBtu/hr)	6.80
Stack Designation:	C-001

**Operational Details:**

Potential Annual Hours of Operation (hr/yr)	8,760
Potential Fuel Consumption (MMscf/yr)	53.53

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

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	3.17	lb/MMBtu
CO	0.39	lb/MMBtu
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	3.84E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.12	lb/MMBtu
CO <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	21.56	94.42
CO	2.62	11.50
SO <sub>2</sub>	0.00	0.02
PM <sub>10</sub> (Filterable)	0.26	1.14
PM <sub>2.5</sub> (Filterable)	0.26	1.14
PM Condensable	0.07	0.30
PM Total	0.33	1.44
VOC	0.82	3.57
CO <sub>2</sub>	795.44	3484.02
CH <sub>4</sub>	0.01	0.07
N <sub>2</sub> O	0.00	0.01

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Logansport Compressor Station  
Title V Renewal Application

**Copper Bessemer Compressor Engine (001-01) Emission Calculations**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acenaphthene	1.33E-06	0.000	0.000
Acenaphthylene	3.17E-06	0.000	0.000
Acetaldehyde	7.76E-03	0.053	0.231
Acrolein	7.78E-03	0.053	0.232
Benzene	1.94E-03	0.013	0.058
Benzo(b)fluoranthene	8.51E-09	0.000	0.000
Benzo(a)pyrene	5.68E-09	0.000	0.000
Benzo(g,h,i)perylene	2.48E-08	0.000	0.000
Biphenyl	3.95E-05	0.000	0.001
1,3-Butadiene	8.20E-04	0.006	0.024
Carbon Tetrachloride	6.07E-05	0.000	0.002
Chlorobenzene	4.44E-05	0.000	0.001
Chloroform	4.71E-05	0.000	0.001
Chrysene	6.72E-07	0.000	0.000
1,3-Dichloropropene	4.38E-05	0.000	0.001
Ethylbenzene	1.08E-04	0.001	0.003
Ethylene Dibromide	7.34E-05	0.000	0.002
Fluoranthene	3.61E-07	0.000	0.000
Fluorene	1.69E-06	0.000	0.000
Formaldehyde	5.52E-02	0.375	1.644
Methanol	2.48E-03	0.017	0.074
Methylene Chloride	1.47E-04	0.001	0.004
n-Hexane	4.45E-04	0.003	0.013
Phenanthrene	3.53E-06	0.000	0.000
Phenol	4.21E-05	0.000	0.001
Pyrene	5.84E-07	0.000	0.000
Styrene	5.48E-05	0.000	0.002
Toluene	9.63E-04	0.007	0.029
1,1,2,2-Tetrachloroethane	6.63E-05	0.000	0.002
Tetrachloroethane	6.63E-05	0.000	0.002
1,1,2-Trichloroethane	5.27E-05	0.000	0.002
2,2,4-Trimethylpentane	8.46E-04	0.006	0.025
Vinyl Chloride	2.47E-05	0.000	0.001
Xylene	2.68E-04	0.002	0.008
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.63E-05	0.001	0.003
2-Methylnaphthalene	2.14E-05	0.000	0.001
PAH	1.34E-04	9.11E-04	3.99E-03
<b>Total HAP</b>		<b>0.54</b>	<b>2.37</b>

<sup>a</sup> Criteria and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," July 2000. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu).

<sup>c</sup> Annual Emissions (tons/yr)<sub>potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hr/yr) × (1 ton/2000 lb).

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, L.P  
Logansport Compressor Station  
Title V Renewal Application

**Copper Bessemer Compressor Engine (002-01) Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Cooper Bessemer
Model No.:	GMV6
Serial No	43280
Stroke Cycle	2
Type of Burn:	Lean Burn
Year Installed/Date Manufactured	1953
Fuel Used	Natural Gas
Fuel High Heating Value (HHV) (Btu/scf)	1,113
Rated Horsepower (bhp)	800
Specific Fuel Consumption (Btu/bhp-hr)	8,500
Maximum Fuel Consumption at 100% Load (scf/hr)	6,110
Heat Input (MMBtu/hr)	6.80
Stack Designation:	C-002

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr)	53.53

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

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	3.17	lb/MMBtu
CO	0.39	lb/MMBtu
SO <sub>2</sub>	5.88E-04	lb/MMBtu
PM <sub>10</sub> (Filterable)	3.84E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable)	3.84E-02	lb/MMBtu
PM Condensable	9.91E-03	lb/MMBtu
PM Total	4.83E-02	lb/MMBtu
VOC	0.12	lb/MMBtu
CO <sub>2</sub>	5.31E+01	kg/MMBtu
CH <sub>4</sub>	1.00E-03	kg/MMBtu
N <sub>2</sub> O	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	21.56	94.42
CO	2.62	11.50
SO <sub>2</sub>	0.00	0.02
PM <sub>10</sub> (Filterable)	0.26	1.14
PM <sub>2.5</sub> (Filterable)	0.26	1.14
PM Condensable	0.07	0.30
PM Total	0.33	1.44
VOC	0.82	3.57
CO <sub>2</sub>	795.44	3484.02
CH <sub>4</sub>	0.01	0.07
N <sub>2</sub> O	0.00	0.01

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Logansport Compressor Station  
Title V Renewal Application

**Copper Bessemer Compressor Engine (002-01) Emission Calculations**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions	
		(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acenaphthene	1.33E-06	0.00	0.00
Acenaphthylene	3.17E-06	0.00	0.00
Acetaldehyde	7.76E-03	0.05	0.23
Acrolein	7.78E-03	0.05	0.23
Benzene	1.94E-03	0.01	0.06
Benzo(b)fluoranthene	8.51E-09	0.00	0.00
Benzo(a)pyrene	5.68E-09	0.00	0.00
Benzo(g,h,i)perylene	2.48E-08	0.00	0.00
Biphenyl	3.95E-05	0.00	0.00
1,3-Butadiene	8.20E-04	0.01	0.02
Carbon Tetrachloride	6.07E-05	0.00	0.00
Chlorobenzene	4.44E-05	0.00	0.00
Chloroform	4.71E-05	0.00	0.00
Chrysene	6.72E-07	0.00	0.00
1,3-Dichloropropene	4.38E-05	0.00	0.00
Ethylbenzene	1.08E-04	0.00	0.00
Ethylene Dibromide	7.34E-05	0.00	0.00
Fluoranthene	3.61E-07	0.00	0.00
Fluorene	1.69E-06	0.00	0.00
Formaldehyde	5.52E-02	0.38	1.64
Methanol	2.48E-03	0.02	0.07
Methylene Chloride	1.47E-04	0.00	0.00
n-Hexane	4.45E-04	0.00	0.01
Phenanthrene	3.53E-06	0.00	0.00
Phenol	4.21E-05	0.00	0.00
Pyrene	5.84E-07	0.00	0.00
Styrene	5.48E-05	0.00	0.00
Toluene	9.63E-04	0.01	0.03
1,1,2,2-Tetrachloroethane	6.63E-05	0.00	0.00
Tetrachloroethane	6.63E-05	0.00	0.00
1,1,2-Trichloroethane	5.27E-05	0.00	0.00
2,2,4-Trimethylpentane	8.46E-04	0.01	0.03
Vinyl Chloride	2.47E-05	0.00	0.00
Xylene	2.68E-04	0.00	0.01
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.63E-05	0.00	0.00
2-Methylnaphthalene	2.14E-05	0.00	0.00
PAH	1.34E-04	9.11E-04	3.99E-03
<b>Total HAP</b>		<b>5.42E-01</b>	<b>2.37E+00</b>

<sup>a</sup> Criteria pollutant and HAP emission factors from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines," July 2000. Greenhouse gas emission factors are based on 40 CFR Part 98, Subpart C, Tables C-1 and C-2 for natural gas combustion.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu)

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hr/yr) ÷ (1 ton/2000 lb).

Company Name: Equitrans, L.P.  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Waukesha Generator Engine (003-01) Emission Calculations**

<b>Source Designation:</b>	
Manufacturer:	Waukesha
Model No.:	F18GL
Serial No.:	C-11936/1
Year Installed:	1998
Engine Manufacture Date:	Jan-96
Type of Engine:	4SRB
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Rated Horsepower (bhp):	265
Heat Input (MMBtu/hr):	2.01
Specific Fuel Consumption (Btu/bhp-hr):	7,600
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00181
Maximum Fuel Consumption at 100% Load (MMscf/yr):	15.9
Stack Designation:	G-001

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	17,643

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

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	2.21	lb/MMBtu
CO	3.72	lb/MMBtu
SO <sub>2</sub>	0.00	lb/MMBtu
Total Particulate Matter (TSP)	0.02	lb/MMBtu
PM (Filterable)	0.01	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable)	0.02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable)	0.02	lb/MMBtu
VOC	0.03	lb/MMBtu
CO <sub>2</sub>	53.06	kg/MMBtu
CH <sub>4</sub>	0.00	kg/MMBtu
N <sub>2</sub> O	0.00	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	4.45	19.50
CO	7.49	32.82
SO <sub>2</sub>	0.00	0.01
Total Particulate Matter (TSP)	0.04	0.17
PM (Filterable)	0.02	0.08
PM <sub>10</sub> (Filterable + Condensable)	0.04	0.17
PM <sub>2.5</sub> (Filterable + Condensable)	0.04	0.17
VOC	0.06	0.26
CO <sub>2</sub>	235.59	1031.88
CH <sub>4</sub>	0.00	0.02
N <sub>2</sub> O	0.00	0.00

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, L.P.  
Logansport Compressor Station  
Title V Renewal Application

**Waukesha Generator Engine (003-01) Emission Calculations**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>b</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	2.79E-03	5.62E-03	2.46E-02
Acrolein	2.63E-03	5.30E-03	2.32E-02
Benzene	1.58E-03	3.18E-03	1.39E-02
1,3-Butadiene	6.63E-04	1.34E-03	5.85E-03
Carbon Tetrachloride	1.77E-05	3.56E-05	1.56E-04
Chlorobenzene	1.29E-05	2.60E-05	1.14E-04
Chloroform	1.37E-05	2.76E-05	1.21E-04
1,3-Dichloropropene	1.27E-05	2.56E-05	1.12E-04
Ethylbenzene	2.48E-05	4.99E-05	2.19E-04
Ethylene Dibromide	2.13E-05	4.29E-05	1.88E-04
Formaldehyde	2.05E-02	4.13E-02	1.81E-01
Methanol	3.06E-03	6.16E-03	2.70E-02
Methylene Chloride	4.12E-05	8.30E-05	3.63E-04
Styrene	1.19E-05	2.40E-05	1.05E-04
Toluene	5.58E-04	1.12E-03	4.92E-03
1,1,2,2-Tetrachloroethane	2.53E-05	5.10E-05	2.23E-04
1,1,2-Trichloroethane	1.53E-05	3.08E-05	1.35E-04
Vinyl Chloride	7.18E-06	1.45E-05	6.33E-05
Xylene	1.95E-04	3.93E-04	1.72E-03
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.71E-05	1.96E-04	8.57E-04
PAH	1.41E-04	2.84E-04	1.24E-03
<b>Total HAP</b>		<b>0.07</b>	<b>0.29</b>

<sup>a</sup> Criteria pollutant and HAP emission factors from AP-42 Section 3.2, "Natural Gas-fired Reciprocating Engines", Table 3.2-3 for 4-Stroke Rich Burn Engines, July 2000. Greenhouse gas emission factors are from 40 CFR Part 98 for natural gas combustion.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) \* Emission Factor (lb/MMBtu)

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> \* (Maximum Allowable Operating Hours, 8,760 hr/yr) \* (1 ton/2000 lb)

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Logansport Compressor Station  
Title V Renewal Application

**Waukesha Generator Engine (003-02) Emission Calculations**

<b>Source Designation:</b>	
Manufacturer	Waukesha
Model No.	F18GL
Serial No.	C-93524/1
Year Installed	2000
Engine Manufacture Date	1993
Type of Engine	4SRB
Fuel Used	Natural Gas
Higher Heating Value (HHV) (Btu/scf)	1,113
Rated Horsepower (bhp)	265
Heat Input (MMBtu/hr)	2.01
Specific Fuel Consumption (Btu/bhp-hr)	7,600
Maximum Fuel Consumption at 100% Load (MMscf/hr)	0.00181
Maximum Fuel Consumption at 100% Load (MMscf/yr)	15.9
Stack Designation	G-002

**Operational Details:**

Potential Annual Hours of Operation (hr/yr)	8,760
Potential Fuel Consumption (MMBtu/yr)	17,643

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

Pollutant	Emission Factors <sup>a</sup>	Units
NO <sub>x</sub>	2.21	lb/MMBtu
CO	3.72	lb/MMBtu
SO <sub>2</sub>	0.00	lb/MMBtu
Total Particulate Matter (TSP)	0.02	lb/MMBtu
PM (Filterable)	0.01	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable)	0.02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable)	0.02	lb/MMBtu
VOC	0.03	lb/MMBtu
CO <sub>2</sub>	53.06	kg/MMBtu
CH <sub>4</sub>	0.00	kg/MMBtu
N <sub>2</sub> O	0.00	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>b</sup>	(tons/yr) <sup>c</sup>
NO <sub>x</sub>	4.45	19.50
CO	7.49	32.82
SO <sub>2</sub>	0.00	0.01
Total Particulate Matter (TSP)	0.04	0.17
PM (Filterable)	0.02	0.08
PM <sub>10</sub> (Filterable + Condensable)	0.04	0.17
PM <sub>2.5</sub> (Filterable + Condensable)	0.04	0.17
VOC	0.06	0.26
CO <sub>2</sub>	235.59	1031.88
CH <sub>4</sub>	0.00	0.02
N <sub>2</sub> O	0.00	0.00

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Logansport Compressor Station  
Title V Renewal Application

**Waukesha Generator Engine (003-02) Emission Calculations**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>b</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	2.79E-03	5.62E-03	2.46E-02
Acrolein	2.63E-03	5.30E-03	2.32E-02
Benzene	1.58E-03	3.18E-03	1.39E-02
1,3-Butadiene	6.63E-04	1.34E-03	5.85E-03
Carbon Tetrachloride	1.77E-05	3.56E-05	1.56E-04
Chlorobenzene	1.29E-05	2.60E-05	1.14E-04
Chloroform	1.37E-05	2.76E-05	1.21E-04
1,3-Dichloropropene	1.27E-05	2.56E-05	1.12E-04
Ethylbenzene	2.48E-05	4.99E-05	2.19E-04
Ethylene Dibromide	2.13E-05	4.29E-05	1.88E-04
Formaldehyde	2.05E-02	4.13E-02	1.81E-01
Methanol	3.06E-03	6.16E-03	2.70E-02
Methylene Chloride	4.12E-05	8.30E-05	3.63E-04
Styrene	1.19E-05	2.40E-05	1.05E-04
Toluene	5.58E-04	1.12E-03	4.92E-03
1,1,2,2-Tetrachloroethane	2.53E-05	5.10E-05	2.23E-04
1,1,2-Trichloroethane	1.53E-05	3.08E-05	1.35E-04
Vinyl Chloride	7.18E-06	1.45E-05	6.33E-05
Xylene	1.95E-04	3.93E-04	1.72E-03
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.71E-05	1.96E-04	8.57E-04
PAH	1.41E-04	2.84E-04	1.24E-03
<b>Total HAP</b>		<b>6.53E-02</b>	<b>2.86E-01</b>

<sup>a</sup> Criteria pollutant and HAP emission factors from AP-42 Section 3.2, "Natural Gas-fired Reciprocating Engines", Table 3.2-3 for 4-Stroke Rich Burn Engines, July 2000. Greenhouse gas emission factors are from 40 CFR Part 98 for natural gas combustion.

<sup>b</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu)

<sup>c</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 8,760 hr/yr) × (1 ton/2000 lb)

**Company Name:** Equitrans, LP  
**Facility Name:** Logansport Compressor Station  
**Project Description:** Title V Renewal Application

**TEG Dehydration Unit Data Sheet**

GRI-GLYCalc Version 4.0 - REGENERATOR VENT EMISSIONS					POTENTIAL TO EMIT***	
CONTROLLED EMISSION RATES						
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)	
Carbon Dioxide	0.4530	10.872	1.9841	0.50	2.18	
Methane	0.7945	19.069	3.4801	0.87	3.83	
Ethane	0.2046	4.910	0.8962	0.23	0.99	
Propane	0.0447	1.072	0.1957	0.05	0.22	
Isobutane	0.0088	0.212	0.0387	0.01	0.04	
n-Butane	0.0148	0.355	0.0648	0.02	0.07	
Isopentane	0.0058	0.140	0.0256	0.01	0.03	
n-Pentane	0.0051	0.123	0.0224	0.01	0.02	
Cyclopentane	0.0003	0.007	0.0013	0.00	0.00	
n-Hexane	0.0041	0.099	0.0181	0.00	0.02	
Cyclohexane	0.0026	0.063	0.0114	0.00	0.01	
Other Hexanes	0.0058	0.140	0.0255	0.01	0.03	
Heptanes	0.0063	0.152	0.0277	0.01	0.03	
Methylcyclohexane	0.0057	0.136	0.0249	0.01	0.03	
2,2,4-Trimethylpentane	0.0001	0.001	0.0001	0.00	0.00	
Benzene	0.0173	0.416	0.0760	0.02	0.08	
Toluene	0.0233	0.559	0.1021	0.03	0.11	
Ethylbenzene	0.0035	0.084	0.0153	0.00	0.02	
Xylenes	0.0053	0.128	0.0233	0.01	0.03	
C8 + Heavier Hydrocarbons	0.0004	0.011	0.0019	0.00	0.00	
<b>Total Emissions</b>	<b>1.1532</b>	<b>27.677</b>	<b>5.0511</b>	<b>1.27</b>	<b>5.56</b>	
<b>Total Hydrocarbon Emissions</b>	<b>1.1532</b>	<b>27.677</b>	<b>5.0511</b>	<b>1.27</b>	<b>5.56</b>	
<b>Total VOC Emissions</b>	<b>0.1541</b>	<b>3.698</b>	<b>0.6748</b>	<b>0.17</b>	<b>0.74</b>	
<b>Total HAP Emissions</b>	<b>0.0536</b>	<b>1.287</b>	<b>0.2349</b>	<b>0.06</b>	<b>0.26</b>	

\* Based on GRI GlyCalc 4.0 runs at emission scenario of maximum rated dry gas flowrate of 95 MMscf/day and average actual operating conditions of T and P of 100°F and 400 psig, respectively and gas analysis dated 4/9/2015.

\*\*Using 0.0005% for all NIL compounds reported on extended gas analysis.

\*\*\* Potential to emit is calculated by adding 10% to GRI GlyCalc results. The 10% compliance margin will help account for variation in the extended gas analysis

**Company Name:** Equitrans, LP  
**Facility Name:** Logansport Compressor Station  
**Project Description:** Title V Renewal Application

**TEG Dehydration Unit Data Sheet**

GRI-GLYCalc Version 4.0 - FLASH TANK EMISSIONS				POTENTIAL TO EMIT***	
CONTROLLED EMISSION RATES					
Pollutant	(lbs/hr)	(lbs/day)	(tons/yr)	(lbs/hr)	(tons/yr)
Carbon Dioxide	0.1990	4.776	0.8716	0.22	0.96
Methane	0.1233	2.960	0.5402	0.14	0.59
Ethane	0.0804	1.930	0.3522	0.09	0.39
Propane	0.0182	0.437	0.0797	0.02	0.09
Isobutane	0.0038	0.091	0.0167	0.00	0.02
n-Butane	0.0061	0.146	0.0267	0.01	0.03
Isopentane	0.0025	0.061	0.0111	0.00	0.01
n-Pentane	0.0021	0.050	0.0091	0.00	0.01
Cyclopentane	0.0001	0.001	0.0002	0.00	0.00
n-Hexane	0.0014	0.033	0.0061	0.00	0.01
Cyclohexane	0.0003	0.008	0.0015	0.00	0.00
Other Hexanes	0.0023	0.055	0.0100	0.00	0.01
Heptanes	0.0016	0.037	0.0068	0.00	0.01
Methylcyclohexane	0.0007	0.016	0.0030	0.00	0.00
2,2,4-Trimethylpentane	0.0001	0.001	0.0001	0.00	0.00
Benzene	0.0003	0.007	0.0013	0.00	0.00
Toluene	0.0003	0.008	0.0014	0.00	0.00
Ethylbenzene	0.0001	0.001	0.0002	0.00	0.00
Xylenes	0.0001	0.001	0.0002	0.00	0.00
C8 + Heavier Hydrocarbons	0.0003	0.006	0.0011	0.00	0.00
<b>Total Emissions</b>	<b>0.2437</b>	<b>5.849</b>	<b>1.0675</b>	<b>0.27</b>	<b>1.17</b>
<b>Total Hydrocarbon Emissions</b>	<b>0.2437</b>	<b>5.849</b>	<b>1.0675</b>	<b>0.27</b>	<b>1.17</b>
<b>Total VOC Emissions</b>	<b>0.0400</b>	<b>0.959</b>	<b>0.1751</b>	<b>0.04</b>	<b>0.19</b>
<b>Total HAP Emissions</b>	<b>0.0021</b>	<b>0.050</b>	<b>0.0091</b>	<b>0.00</b>	<b>0.01</b>

\* Based on GRI GlyCalc 4.0 runs at emission scenario of maximum rated dry gas flowrate of 95 MMscf/day and average actual operating conditions of T and P of 100°F and 400 psig, respectively and gas analysis dated 4/9/2015.

\*\*Using 0.0005% for all NIL compounds reported on extended gas analysis.

\*\*\* Potential to emit is calculated by adding 10% to GRI GlyCalc results. The 10% compliance margin will help account for variation in the extended gas analysis

Company Name: Equitrans, L.P.  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Reboiler Emissions Calculations**

Source ID:	BLR02
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**Reboiler Fuel Information:**

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	0.7
Potential Fuel Consumption (MMBtu/yr):	6.132
Max. Fuel Consumption (MMscf/hr):	0.0006
Max. Fuel Consumption (MMscf/yr):	5.5
Max. Annual Hours of Operation (hr/yr):	8,760

**Reboiler Emissions Data:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO <sub>x</sub>	100	lb/MMScf	0.06	0.28	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	3.5E-03	0.02	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.05	0.23	AP-42, Table 1.4-1 (Jul-1998)
SO <sub>x</sub>	0.6	lb/MMScf	3.8E-04	0.00	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>10</sub>	7.6	lb/MMScf	4.8E-03	0.02	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>2.5</sub>	7.6	lb/MMScf	4.8E-03	0.02	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	4.7E-05	2.1E-04	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO <sub>2</sub> e)	See Table Below		81.98	359.08	40 CFR 98, Tables C-1 & C-2
Other (Total HAP except HCHO)	See Table Below		1.1E-03	5.0E-03	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

**Notes:**

1. PM<sub>10</sub> and PM<sub>2.5</sub> are total values (filterable + condensable).
2. GHG (CO<sub>2</sub>e) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name: Equitrans, LP  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Reboiler Emissions Calculations**

**Greenhouse Gas (GHG) & Hazardous Air Pollutant (HAP) Emissions Calculations:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
<b>GHGs:</b>					
CO <sub>2</sub>	53.06	kg/MMBtu	81.90	358.71	40 CFR 98, Tables C-1 & C-2
CH <sub>4</sub>	0.001	kg/MMBtu	0.00	0.01	40 CFR 98, Tables C-1 & C-2
N <sub>2</sub> O	0.0001	kg/MMBtu	1.5E-04	6.8E-04	40 CFR 98, Tables C-1 & C-2
<b>GHG (CO<sub>2</sub>e)</b>			<b>82</b>	<b>359</b>	
<b>Organic HAPs:</b>					
2-Methylnaphthalene	2.40E-05	lb/MMscf	1.5E-08	6.6E-08	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	1.1E-09	5.0E-09	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	1.0E-08	4.4E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	1.3E-06	5.8E-06	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	7.5E-10	3.3E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	1.1E-09	5.0E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	7.5E-10	3.3E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	1.1E-09	5.0E-09	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	1.1E-09	5.0E-09	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	7.5E-10	3.3E-09	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	7.5E-07	3.3E-06	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	1.9E-09	8.3E-09	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	1.8E-09	7.7E-09	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	1.1E-03	5.0E-03	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	1.1E-09	5.0E-09	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	3.8E-07	1.7E-06	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	1.1E-08	4.7E-08	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	3.1E-09	1.4E-08	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	2.1E-06	9.4E-06	AP-42, Table 1.4-3 (Jul-1998)
<b>Metal HAPs:</b>					
Arsenic	2.00E-04	lb/MMscf	1.3E-07	5.5E-07	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	1.20E-05	lb/MMscf	7.5E-09	3.3E-08	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	6.9E-07	3.0E-06	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	8.8E-07	3.9E-06	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	5.3E-08	2.3E-07	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	3.1E-07	1.4E-06	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	2.4E-07	1.0E-06	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	1.6E-07	7.2E-07	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	1.3E-06	5.8E-06	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	1.5E-08	6.6E-08	AP-42, Table 1.4-4 (Jul-1998)
<b>Total HAP (except HCHO)</b>			<b>1.1E-03</b>	<b>5.0E-03</b>	

Company Name: Equitrans, L.P.  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Heating Boiler 2 Emission Calculations**

Source ID:	BLR
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**Line Heater Fuel Information:**

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	2.50
Maximum Heat Input (MMBtu/yr):	21,900
Max. Fuel Consumption at 100% Load (MMBtu/yr):	0.0022
Max. Fuel Consumption at 100% Load (MMscf/yr):	19.7
Potential Annual Hours of Operation (hr/yr):	8,760

**Line Heater Emissions Data:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO <sub>x</sub>	100	lb/MMScf	0.22	0.98	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	0.01	0.05	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.19	0.83	AP-42, Table 1.4-1 (Jul-1998)
SO <sub>x</sub>	0.6	lb/MMScf	1.3E-03	5.9E-03	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>10</sub>	7.6	lb/MMScf	0.02	0.07	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>2.5</sub>	7.6	lb/MMScf	0.02	0.07	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	1.7E-04	7.4E-04	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO <sub>2</sub> e)	See Table Below		292.80	1282.44	40 CFR 98, Tables C-1 & C-2
Other (Total HAP except HCHO)	See Table Below		4.1E-03	0.02	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

**Notes:**

1. PM<sub>10</sub> and PM<sub>2.5</sub> are total values (filterable + condensable).
2. GHG (CO<sub>2</sub>e) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Logansport Compressor Station  
Title V Renewal Application

**Heating Boiler 2 Emission Calculations**

**Greenhouse Gas (GHG) & Hazardous Air Pollutant (HAP) Emissions Calculations:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
<b>GHGs:</b>					
CO <sub>2</sub>	53.06	kg/MMBtu	292.49	1281.12	40 CFR 98, Tables C-1 & C-2
CH <sub>4</sub>	0.001	kg/MMBtu	5.5E-03	2.4E-02	40 CFR 98, Tables C-1 & C-2
N <sub>2</sub> O	0.0001	kg/MMBtu	5.5E-04	2.4E-03	40 CFR 98, Tables C-1 & C-2
<b>GHG (CO<sub>2</sub>e)</b>			<b>293</b>	<b>1,282</b>	
<b>Organic HAPs:</b>					
2-Methylnaphthalene	2.40E-05	lb/MMscf	5.4E-08	2.4E-07	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	4.0E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	3.6E-08	1.6E-07	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	4.7E-06	2.1E-05	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	4.0E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	4.0E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	4.0E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	2.7E-06	1.2E-05	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	6.7E-09	3.0E-08	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	6.3E-09	2.8E-08	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	4.0E-03	1.8E-02	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	4.0E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	1.4E-06	6.0E-06	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	3.8E-08	1.7E-07	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	1.1E-08	4.9E-08	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	7.6E-06	3.3E-05	AP-42, Table 1.4-3 (Jul-1998)
<b>Metal HAPs:</b>					
Arsenic	2.00E-04	lb/MMscf	4.5E-07	2.0E-06	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	1.20E-05	lb/MMscf	2.7E-08	1.2E-07	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	2.5E-06	1.1E-05	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	3.1E-06	1.4E-05	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	1.9E-07	8.3E-07	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	1.1E-06	4.9E-06	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	8.5E-07	3.7E-06	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	5.8E-07	2.6E-06	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	4.7E-06	2.1E-05	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	5.4E-08	2.4E-07	AP-42, Table 1.4-4 (Jul-1998)
<b>Total HAP (except HCHO)</b>			<b>4.1E-03</b>	<b>0.02</b>	

Company Name: Equitrans, LP  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Indirect Gas Fired Line Heater Emission Calculations**

Source ID:	LHTR
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**Line Heater Fuel Information:**

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	2.52
Maximum Heat Input (MMBtu/yr):	22,102
MAX. Fuel Consumption at 100% Load (MMscf/yr)	0.0023
MAX. Fuel Consumption at 100% Load (MMscf/flow)	19.9
Potential Annual Hours of Operation (hr/yr):	8,760

**Line Heater Emissions Data:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO <sub>x</sub>	100	lb/MMScf	0.23	0.99	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	0.01	0.05	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.19	0.83	AP-42, Table 1.4-1 (Jul-1998)
SO <sub>x</sub>	0.6	lb/MMScf	1.4E-03	6.0E-03	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>10</sub>	7.6	lb/MMScf	0.02	0.08	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>2.5</sub>	7.6	lb/MMScf	0.02	0.08	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	1.7E-04	7.4E-04	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO <sub>2</sub> e)	See Table Below		295.50	1294.28	40 CFR 98, Tables C-1 & C-2
Other (Total HAP except HCHO)	See Table Below		4.1E-03	0.02	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

**Notes:**

1. PM<sub>10</sub> and PM<sub>2.5</sub> are total values (filterable + condensable).
2. GHG (CO<sub>2</sub>e) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298)
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name: Equitrans, LP  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Indirect Gas Fired Line Heater Emission Calculations**

**Greenhouse Gas (GHG) & Hazardous Air Pollutant (HAP) Emissions Calculations:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
<b>GHGs:</b>					
CO <sub>2</sub>	53.06	kg/MMBtu	295.19	1292.95	40 CFR 98, Tables C-1 & C-2
CH <sub>4</sub>	0.001	kg/MMBtu	5.6E-03	2.4E-02	40 CFR 98, Tables C-1 & C-2
N <sub>2</sub> O	0.0001	kg/MMBtu	5.6E-04	2.4E-03	40 CFR 98, Tables C-1 & C-2
<b>GHG (CO<sub>2</sub>e)</b>			<b>295</b>	<b>1,294</b>	
<b>Organic HAPs:</b>					
2-Methylnaphthalene	2.40E-05	lb/MMscf	5.4E-08	2.4E-07	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	4.1E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	3.6E-08	1.6E-07	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	4.8E-06	2.1E-05	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	4.1E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	4.1E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	4.1E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	2.7E-06	1.2E-05	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	6.8E-09	3.0E-08	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	6.3E-09	2.8E-08	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	4.1E-03	1.8E-02	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	4.1E-09	1.8E-08	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	1.4E-06	6.1E-06	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	3.9E-08	1.7E-07	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	1.1E-08	5.0E-08	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	7.7E-06	3.4E-05	AP-42, Table 1.4-3 (Jul-1998)
<b>Metal HAPs:</b>					
Arsenic	2.00E-04	lb/MMscf	4.5E-07	2.0E-06	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	1.20E-05	lb/MMscf	2.7E-08	1.2E-07	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	2.5E-06	1.1E-05	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	3.2E-06	1.4E-05	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	1.9E-07	8.3E-07	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	1.1E-06	5.0E-06	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	8.6E-07	3.8E-06	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	5.9E-07	2.6E-06	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	4.8E-06	2.1E-05	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	5.4E-08	2.4E-07	AP-42, Table 1.4-4 (Jul-1998)
<b>Total HAP (except HCHO)</b>			<b>4.1E-03</b>	<b>0.02</b>	

Company Name: Equitrans, LP  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Indirect Gas Fired Heater Emission Calculations**

Source ID:	HTR
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**Line Heater Fuel Information:**

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,113
Heat Input (MMBtu/hr)	1.00
Maximum Heat Input (MMBtu/yr):	8,760
MAX. Fuel Consumption at 100% Load (MMscf/yr):	0.0009
MAX. Fuel Consumption at 100% Load (scf/hr):	7.9
Potential Annual Hours of Operation (hr/yr):	8,760

**Line Heater Emissions Data:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO <sub>x</sub>	100	lb/MMScf	0.09	0.39	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	4.9E-03	0.02	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.08	0.33	AP-42, Table 1.4-1 (Jul-1998)
SO <sub>x</sub>	0.6	lb/MMScf	5.4E-04	2.4E-03	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>10</sub>	7.6	lb/MMScf	0.01	0.03	AP-42, Table 1.4-2 (Jul-1998)
PM <sub>2.5</sub>	7.6	lb/MMScf	0.01	0.03	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	6.7E-05	3.0E-04	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO <sub>2</sub> e)	See Table Below		117.12	512.98	40 CFR 98, Tables C-1 & C-2
Other (Total HAP except HCHO)	See Table Below		1.6E-03	0.01	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

**Notes:**

1. PM<sub>10</sub> and PM<sub>2.5</sub> are total values (filterable + condensable).
2. GHG (CO<sub>2</sub>e) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name: Equitrans, LP  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Indirect Gas Fired Heater Emission Calculations**

**Greenhouse Gas (GHG) & Hazardous Air Pollutant (HAP) Emissions Calculations:**

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
<b>GHGs:</b>					
CO <sub>2</sub>	53.06	kg/MMBtu	117.00	512.45	40 CFR 98, Tables C-1 & C-2
CH <sub>4</sub>	0.001	kg/MMBtu	2.2E-03	9.7E-03	40 CFR 98, Tables C-1 & C-2
N <sub>2</sub> O	0.0001	kg/MMBtu	2.2E-04	9.7E-04	40 CFR 98, Tables C-1 & C-2
<b>GHG (CO<sub>2</sub>e)</b>			<b>117</b>	<b>513</b>	
<b>Organic HAPs:</b>					
2-Methylnaphthalene	2.40E-05	lb/MMscf	2.2E-08	9.4E-08	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	1.6E-09	7.1E-09	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	1.4E-08	6.3E-08	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	1.9E-06	8.3E-06	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	1.1E-09	4.7E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	1.6E-09	7.1E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	1.1E-09	4.7E-09	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	1.6E-09	7.1E-09	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	1.6E-09	7.1E-09	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	1.1E-09	4.7E-09	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	1.1E-06	4.7E-06	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	2.7E-09	1.2E-08	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	2.5E-09	1.1E-08	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	1.6E-03	7.1E-03	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	1.6E-09	7.1E-09	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	5.5E-07	2.4E-06	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	1.5E-08	6.7E-08	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	4.5E-09	2.0E-08	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	3.1E-06	1.3E-05	AP-42, Table 1.4-3 (Jul-1998)
<b>Metal HAPs:</b>					
Arsenic	2.00E-04	lb/MMscf	1.8E-07	7.9E-07	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	1.20E-05	lb/MMscf	1.1E-08	4.7E-08	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	9.9E-07	4.3E-06	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	1.3E-06	5.5E-06	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	7.5E-08	3.3E-07	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	4.5E-07	2.0E-06	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	3.4E-07	1.5E-06	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	2.3E-07	1.0E-06	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	1.9E-06	8.3E-06	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	2.2E-08	9.4E-08	AP-42, Table 1.4-4 (Jul-1998)
<b>Total HAP (except HCHO)</b>			<b>1.6E-03</b>	<b>0.01</b>	

Company Name: Equitrans, L.P.  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Fugitive Emissions Calculations**

**Fugitive Component Information:**

Component Type	Estimated Component Count	Gas Leak Emission Factor		Average Gas Leak Rate	Max Gas Leak Rate	Potential VOC Emissions	Potential HAP Emissions
		(lb/hr/component)	Factor Source	(lb/hr)	(tpy)	(tpy)	(tpy)
Connectors	500	0.0004	EPA Protocol, Table 2-4	0.22	1.16	0.05	0.00
Flanges	340	0.001	EPA Protocol, Table 2-4	0.29	1.54	0.07	0.00
Open-Ended Lines	5	0.004	EPA Protocol, Table 2-4	0.02	0.12	0.00	0.00
Pump Seals	0	0.005	EPA Protocol, Table 2-4	<0.01	<0.01	<0.01	<0.01
Valves	75	0.010	EPA Protocol, Table 2-4	0.74	3.91	0.17	3.4E-03
Other	50	0.019	EPA Protocol, Table 2-4	0.97	5.10	0.22	0.00
<b>Total</b>				<b>2.25</b>	<b>11.82</b>	<b>0.50</b>	<b>0.01</b>

**Notes:**

1. The component type "Other" includes any equipment type other than connectors, flanges, open-ended lines, pumps and valves that have fugitive emissions
2. The component count is based on engineering estimates for the design of a Logansport Station
3. Table 2-4: Oil & Gas Production Operations Average Emission Factors, Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995
4. Assumes maximum leak rate 20% greater than measured average leak rate

**GHG Fugitive Emissions from Component Leaks:**

Component Type	Estimated Component Count	GHG Emission Factor		CH <sub>4</sub> Emissions	CO <sub>2</sub> Emissions	CO <sub>2e</sub> Emissions
		(scf/hr/component)	Factor Source	(tpy)	(tpy)	(tpy)
Connectors	500	0.004	40 CFR 98, Table W-1A	0.32	3.4E-03	8.10
Flanges	340	0.004	40 CFR 98, Table W-1A	0.22	2.3E-03	5.51
Open-Ended Lines	5	0.061	40 CFR 98, Table W-1A	0.05	5.2E-04	1.23
Pump Seals	0	13.3	40 CFR 98, Table W-1A	<0.01	<0.01	<0.01
Valves	75	0.03	40 CFR 98, Table W-1A	0.33	3.5E-03	8.20
Other	0	0.04	40 CFR 98, Table W-1A	<0.01	<0.01	<0.01
<b>Total</b>				<b>0.92</b>	<b>0.01</b>	<b>23.03</b>

**Notes:**

1. The component count is based on engineering estimates for the design of a Logansport Station
2. Table W-1 of Subpart W - Default Whole Gas Emission Factors for Onshore Production, 40 CFR 98, Subpart W, Pre-publication version, November 8, 2010
3. Calculated in accordance with Equations W-31, W-35 and W-36 in Subpart W of 40 CFR 98
4. GHG (CO<sub>2e</sub>) is carbon dioxide equivalent, which is the summation of CO<sub>2</sub> (GWP = 1) + CH<sub>4</sub> (GWP = 25) + N<sub>2</sub>O (GWP = 298)

Company Name: Equitrans, L.P.  
 Facility Name: Logansport Compressor Station  
 Project Description: Title V Renewal Application

**Fugitive Emissions Calculations**

**VOC and HAP Vented Blowdown Emissions**

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
Station ESD Vent	1	300,000	1	300,000	0.32	0.01
Filter Vessels	1	4,510	1	4,510	0.00	0.00
Dehy Contactor	1	45,000	1	45,000	0.05	0.00
Compressors	2	7,000	12	168,000	0.18	0.00
<b>Total</b>					<b>0.55</b>	<b>0.01</b>

**Notes:**  
 1 Density of natural gas 0.05 lb/ft<sup>3</sup> @ STP (www.engineeringtoolbox.com)

**GHG Vented Blowdown Emissions**

Blowdown Emissions Sources	Number of Units	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential CH <sub>4</sub> Emissions <sup>1</sup> (tpy)	Potential CO <sub>2</sub> Emissions <sup>1</sup> (tpy)	Potential CO <sub>2e</sub> Emissions (tpy)
Station ESD Vent	1	300,000	1	300,000	5.5	0.06	139
Filter Vessels	1	4,510	1	4,510	0.1	0.00	2
Dehy Contactor	1	45,000	1	45,000	0.8	0.01	21
Compressors	2	7,000	12	168,000	3.1	0.03	78
<b>Total</b>					<b>9.6</b>	<b>0.101</b>	<b>239</b>

1 Calculated in accordance with Equations W-35, and W-36 in Subpart W of 40 CFR 98

**Rod Pack Emissions**

Number of Compressors	Number of Rods Per Compressor	Leak Rate (scf/hr/rod)	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)	Potential CO <sub>2</sub> Emissions (tpy)	Potential CH <sub>4</sub> Emissions (tpy)	Potential CO <sub>2e</sub> Emissions (tpy)
2	4	11.5	805,920	0.85	0.02	0.16	14.97	374.35
<b>Total</b>				<b>0.85</b>	<b>0.02</b>	<b>0.16</b>	<b>14.97</b>	<b>374.35</b>

**Notes:**  
 1 Assumes a density of natural gas of 0.05 lb/scf  
 2 Leak rate from https://www3.epa.gov/gasstar/documents/ll\_rodpack.pdf

**Fugitive Component Emissions Data:**

Pollutant	Atmospheric Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	0.43	1.90	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
HAPs	0.01	0.04	EPA Protocol, Table 2-4 and Site-Specific Gas Analysis
GHG (CO <sub>2e</sub> )	145	637	40 CFR 98, Table W-1A and Site-Specific Gas Analysis

**Company Name:** Equitrans, L.P.  
**Facility Name:** Logansport Compressor Station  
**Project Description:** Title V Renewal Application

**Site-Specific Gas Analysis**

**Sample Location:** Logansport Gas Analysis  
**Sample Date:** 4/9/2015  
**HHV (Btu/scf):** 1,113

Constituent	Natural Gas Stream Speciation (Vol. %)	Molecular Weight	Molar Weight	Average Weight Fraction	Natural Gas Stream Speciation (Wt. %)
Carbon Dioxide	0.3357%	44.01	1.48E-01	0.01	0.81%
Nitrogen	0.3752%	28.01	1.05E-01	0.01	0.578%
Methane	87.2979%	16.04	1.40E+01	0.77	77.037%
Ethane	10.4818%	30.07	3.15E+00	0.17	17.341%
Propane	1.0668%	44.10	4.70E-01	0.03	2.588%
Isobutane	0.1287%	58.12	7.48E-02	0.00	0.412%
n-Butane	0.1733%	58.12	1.01E-01	0.01	0.554%
Isopentane	0.0531%	72.15	3.83E-02	0.00	0.211%
n-Pentane	0.0377%	72.15	2.72E-02	0.00	0.150%
Cyclopentane	0.0006%	70.18	4.21E-04	0.00	0.002%
n-Hexane	0.0154%	86.18	1.33E-02	0.00	0.073%
Cyclohexane	0.0024%	84.16	2.02E-03	0.00	0.011%
Other Hexanes	0.0288%	86.18	2.48E-02	0.00	0.137%
Heptanes	0.0106%	100.21	1.06E-02	0.00	0.058%
Methylcyclohexane	0.0037%	98.19	3.63E-03	0.00	0.020%
2,2,4-Trimethylpentane	0.0001%	114.23	1.14E-04	0.00	0.001%
Benzene	0.0016%	78.11	1.25E-03	0.00	0.007%
Toluene	0.0012%	92.14	1.11E-03	0.00	0.006%
Ethylbenzene	0.0001%	106.17	1.06E-04	0.00	0.001%
Xylenes	0.0001%	106.16	1.06E-04	0.00	0.001%
C8 + Heavies	0.0001%	114.23	1.14E-04	0.00	0.001%
Totals			18.18	1.00	100%

TOC (Total)	99.30%		98.61%
VOC (Total)	1.52%		4.23%
HAP (Total)	0.02%		0.09%

## GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Logansport TEG Dehy  
 File Name: Z:\Client\EQT Corporation\West Virginia\Logansport\Projects\173901.00XX Title  
 V Renewal Application\03 Draft\2017-0614 Draft TV Renewal App\Att I - Emission  
 Calcs\2017-0616 EQT Logansport\_TV\_Ren\_DeHy v1.1.ddf  
 Date: June 16, 2017

## DESCRIPTION:

Description: Gas analysis dated 4/9/2015

Annual Hours of Operation: 8760.0 hours/yr

## EMISSIONS REPORTS:

## CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.7945	19.069	3.4801
Ethane	0.2046	4.910	0.8962
Propane	0.0447	1.072	0.1957
Isobutane	0.0088	0.212	0.0387
n-Butane	0.0148	0.355	0.0648
Isopentane	0.0058	0.140	0.0256
n-Pentane	0.0051	0.123	0.0224
Cyclopentane	0.0003	0.007	0.0013
n-Hexane	0.0041	0.099	0.0181
Cyclohexane	0.0026	0.063	0.0114
Other Hexanes	0.0058	0.140	0.0255
Heptanes	0.0063	0.152	0.0277
Methylcyclohexane	0.0057	0.136	0.0249
2,2,4-Trimethylpentane	<0.0001	0.001	0.0001
Benzene	0.0173	0.416	0.0760
Toluene	0.0233	0.559	0.1021
Ethylbenzene	0.0035	0.084	0.0153
Xylenes	0.0053	0.128	0.0233
C8+ Heavies	0.0004	0.011	0.0019
<b>Total Emissions</b>	<b>1.1532</b>	<b>27.677</b>	<b>5.0511</b>
<b>Total Hydrocarbon Emissions</b>	<b>1.1532</b>	<b>27.677</b>	<b>5.0511</b>
<b>Total VOC Emissions</b>	<b>0.1541</b>	<b>3.698</b>	<b>0.6748</b>
<b>Total HAP Emissions</b>	<b>0.0536</b>	<b>1.287</b>	<b>0.2349</b>
<b>Total BTEX Emissions</b>	<b>0.0495</b>	<b>1.187</b>	<b>0.2167</b>

## UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	15.8907	381.378	69.6014
Ethane	4.0921	98.210	17.9233
Propane	0.8934	21.442	3.9132
Isobutane	0.1766	4.238	0.7735
n-Butane	0.2961	7.105	1.2967
Isopentane	0.1169	2.805	0.5119
n-Pentane	0.1025	2.460	0.4490
Cyclopentane	0.0059	0.142	0.0259

n-Hexane	0.0825	1.981	0.3615
Cyclohexane	0.0522	1.253	0.2287
Other Hexanes	0.1163	2.791	0.5094
Heptanes	0.1264	3.035	0.5538
Methylcyclohexane	0.1135	2.725	0.4973
2,2,4-Trimethylpentane	0.0006	0.014	0.0026
Benzene	0.3470	8.327	1.5197
Toluene	0.4662	11.189	2.0420
Ethylbenzene	0.0699	1.677	0.3060
Xylenes	0.1065	2.555	0.4664
C8+ Heavies	0.0089	0.213	0.0389
-----			
Total Emissions	23.0642	553.541	101.0211
Total Hydrocarbon Emissions	23.0642	553.541	101.0211
Total VOC Emissions	3.0814	73.953	13.4964
Total HAP Emissions	1.0726	25.743	4.6981
Total BTEX Emissions	0.9895	23.748	4.3340

## FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.1233	2.960	0.5402
Ethane	0.0804	1.930	0.3522
Propane	0.0182	0.437	0.0797
Isobutane	0.0038	0.091	0.0167
n-Butane	0.0061	0.146	0.0267
Isopentane	0.0025	0.061	0.0111
n-Pentane	0.0021	0.050	0.0091
Cyclopentane	0.0001	0.001	0.0002
n-Hexane	0.0014	0.033	0.0061
Cyclohexane	0.0003	0.008	0.0015
Other Hexanes	0.0023	0.055	0.0100
Heptanes	0.0016	0.037	0.0068
Methylcyclohexane	0.0007	0.016	0.0030
2,2,4-Trimethylpentane	<0.0001	<0.001	0.0001
Benzene	0.0003	0.007	0.0013
Toluene	0.0003	0.008	0.0014
Ethylbenzene	<0.0001	0.001	0.0002
Xylenes	<0.0001	0.001	0.0002
C8+ Heavies	0.0003	0.006	0.0011
-----			
Total Emissions	0.2437	5.849	1.0675
Total Hydrocarbon Emissions	0.2437	5.849	1.0675
Total VOC Emissions	0.0400	0.959	0.1751
Total HAP Emissions	0.0021	0.050	0.0091
Total BTEX Emissions	0.0007	0.016	0.0030

## FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	2.4669	59.205	10.8048
Ethane	1.6083	38.599	7.0444
Propane	0.3640	8.736	1.5943
Isobutane	0.0762	1.829	0.3337
n-Butane	0.1218	2.923	0.5334
Isopentane	0.0508	1.218	0.2224

n-Pentane	0.0417	1.002	0.1828
Cyclopentane	0.0011	0.026	0.0047
n-Hexane	0.0278	0.667	0.1217
Cyclohexane	0.0068	0.162	0.0296
Other Hexanes	0.0457	1.097	0.2002
Heptanes	0.0310	0.745	0.1359
Methylcyclohexane	0.0135	0.323	0.0590
2,2,4-Trimethylpentane	0.0002	0.006	0.0010
Benzene	0.0058	0.140	0.0255
Toluene	0.0064	0.154	0.0282
Ethylbenzene	0.0007	0.017	0.0030
Xylenes	0.0007	0.017	0.0031
C8+ Heavies	0.0052	0.125	0.0229
-----			
Total Emissions	4.8746	116.990	21.3507
Total Hydrocarbon Emissions	4.8746	116.990	21.3507
Total VOC Emissions	0.7994	19.186	3.5014
Total HAP Emissions	0.0417	1.000	0.1826
Total BTEX Emissions	0.0137	0.328	0.0598

## COMBINED REGENERATOR VENT/FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.9179	22.029	4.0203
Ethane	0.2850	6.840	1.2484
Propane	0.0629	1.509	0.2754
Isobutane	0.0126	0.303	0.0554
n-Butane	0.0209	0.501	0.0915
Isopentane	0.0084	0.201	0.0367
n-Pentane	0.0072	0.173	0.0316
Cyclopentane	0.0003	0.008	0.0015
n-Hexane	0.0055	0.132	0.0242
Cyclohexane	0.0029	0.071	0.0129
Other Hexanes	0.0081	0.194	0.0355
Heptanes	0.0079	0.189	0.0345
Methylcyclohexane	0.0064	0.152	0.0278
2,2,4-Trimethylpentane	<0.0001	0.001	0.0002
Benzene	0.0176	0.423	0.0773
Toluene	0.0236	0.567	0.1035
Ethylbenzene	0.0035	0.085	0.0155
Xylenes	0.0054	0.129	0.0235
C8+ Heavies	0.0007	0.017	0.0031
-----			
Total Emissions	1.3969	33.527	6.1186
Total Hydrocarbon Emissions	1.3969	33.527	6.1186
Total VOC Emissions	0.1940	4.657	0.8499
Total HAP Emissions	0.0557	1.337	0.2440
Total BTEX Emissions	0.0502	1.204	0.2197

## COMBINED REGENERATOR VENT/FLASH GAS EMISSION CONTROL REPORT:

Component	Uncontrolled tons/yr	Controlled tons/yr	% Reduction
Methane	80.4063	4.0203	95.00
Ethane	24.9676	1.2484	95.00

Propane	5.5075	0.2754	95.00
Isobutane	1.1072	0.0554	95.00
n-Butane	1.8301	0.0915	95.00
Isopentane	0.7342	0.0367	95.00
n-Pentane	0.6318	0.0316	95.00
Cyclopentane	0.0306	0.0015	95.00
n-Hexane	0.4832	0.0242	95.00
Cyclohexane	0.2583	0.0129	95.00
Other Hexanes	0.7096	0.0355	95.00
Heptanes	0.6897	0.0345	95.00
Methylcyclohexane	0.5563	0.0278	95.00
2,2,4-Trimethylpentane	0.0037	0.0002	95.00
Benzene	1.5452	0.0773	95.00
Toluene	2.0701	0.1035	95.00
Ethylbenzene	0.3091	0.0155	95.00
Xylenes	0.4695	0.0235	95.00
C8+ Heavies	0.0618	0.0031	95.00
-----			
Total Emissions	122.3718	6.1186	95.00
Total Hydrocarbon Emissions	122.3718	6.1186	95.00
Total VOC Emissions	16.9979	0.8499	95.00
Total HAP Emissions	4.8807	0.2440	95.00
Total BTEX Emissions	4.3938	0.2197	95.00

## EQUIPMENT REPORTS:

## COMBUSTION DEVICE

Ambient Temperature: 60.00 deg. F  
 Excess Oxygen: 15.00 %  
 Combustion Efficiency: 95.00 %  
 Supplemental Fuel Requirement: 2.84e-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

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Calculated Absorber Stages: 2.78  
 Specified Dry Gas Dew Point: 7.00 lbs. H2O/MMSCF  
     Temperature: 100.0 deg. F  
     Pressure: 400.0 psig  
 Dry Gas Flow Rate: 95.0000 MMSCF/day  
 Glycol Losses with Dry Gas: 0.5739 lb/hr  
 Wet Gas Water Content: Saturated  
 Calculated Wet Gas Water Content: 120.93 lbs. H2O/MMSCF  
 Calculated Lean Glycol Recirc. Ratio: 0.63 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	5.77%	94.23%
Carbon Dioxide	99.97%	0.03%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.99%	0.01%
Propane	99.98%	0.02%
Isobutane	99.98%	0.02%
n-Butane	99.97%	0.03%
Isopentane	99.97%	0.03%
n-Pentane	99.96%	0.04%
Cyclopentane	99.85%	0.15%
n-Hexane	99.93%	0.07%
Cyclohexane	99.73%	0.27%
Other Hexanes	99.95%	0.05%
Heptanes	99.87%	0.13%
Methylcyclohexane	99.68%	0.32%
2,2,4-Trimethylpentane	99.94%	0.06%
Benzene	97.30%	2.70%
Toluene	95.91%	4.09%
Ethylbenzene	93.64%	6.36%
Xylenes	90.32%	9.68%
C8+ Heavies	99.22%	0.78%

## FLASH TANK

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Flash Control: Combustion device  
 Flash Control Efficiency: 95.00 %  
 Flash Temperature: 190.0 deg. F  
 Flash Pressure: 65.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.96%	0.04%
Carbon Dioxide	59.23%	40.77%
Nitrogen	12.38%	87.62%
Methane	13.83%	86.17%
Ethane	27.32%	72.68%
Propane	50.60%	49.40%
Isobutane	55.19%	44.81%
n-Butane	60.26%	39.74%
Isopentane	59.67%	40.33%
n-Pentane	63.62%	36.38%
Cyclopentane	83.71%	16.29%

n-Hexane	71.10%	28.90%
Cyclohexane	88.47%	11.53%
Other Hexanes	66.37%	33.63%
Heptanes	78.81%	21.19%
Methylcyclohexane	89.49%	10.51%
2,2,4-Trimethylpentane	67.07%	32.93%
Benzene	98.42%	1.58%
Toluene	98.74%	1.26%
Ethylbenzene	99.12%	0.88%
Xylenes	99.42%	0.58%
C8+ Heavies	67.03%	32.97%

REGENERATOR

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Regenerator Stripping Gas:  
 Dry Product Gas

Stripping Gas Flow Rate: 7.0000 scfm

Component	Remaining in Glycol	Distilled Overhead
Water	3.94%	96.06%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.84%	99.16%
n-Pentane	0.79%	99.21%
Cyclopentane	0.60%	99.40%
n-Hexane	0.70%	99.30%
Cyclohexane	3.62%	96.38%
Other Hexanes	1.51%	98.49%
Heptanes	0.63%	99.37%
Methylcyclohexane	4.47%	95.53%
2,2,4-Trimethylpentane	2.24%	97.76%
Benzene	5.08%	94.92%
Toluene	8.01%	91.99%
Ethylbenzene	10.52%	89.48%
Xylenes	13.05%	86.95%
C8+ Heavies	17.99%	82.01%

STREAM REPORTS:

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WET GAS STREAM

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Temperature: 100.00 deg. F  
 Pressure: 414.70 psia  
 Flow Rate: 3.97e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----	-----	-----

Water	2.55e-001	4.80e+002
Carbon Dioxide	3.35e-001	1.54e+003
Nitrogen	3.74e-001	1.10e+003
Methane	8.71e+001	1.46e+005
Ethane	1.05e+001	3.29e+004
Propane	1.06e+000	4.91e+003
Isobutane	1.28e-001	7.80e+002
n-Butane	1.73e-001	1.05e+003
Isopentane	5.30e-002	4.00e+002
n-Pentane	3.76e-002	2.84e+002
Cyclopentane	5.98e-004	4.39e+000
n-Hexane	1.54e-002	1.38e+002
Cyclohexane	2.39e-003	2.11e+001
Other Hexanes	2.87e-002	2.59e+002
Heptanes	1.06e-002	1.11e+002
Methylcyclohexane	3.69e-003	3.79e+001
2,2,4-Trimethylpentane	9.97e-005	1.19e+000
Benzene	1.60e-003	1.30e+001
Toluene	1.20e-003	1.15e+001
Ethylbenzene	9.97e-005	1.11e+000
Xylenes	9.97e-005	1.11e+000
C8+ Heavies	9.97e-005	1.78e+000
-----		
Total Components	100.00	1.90e+005

DRY GAS STREAM

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Temperature: 100.00 deg. F  
 Pressure: 414.70 psia  
 Flow Rate: 3.96e+006 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----		
Water	1.47e-002	2.77e+001
Carbon Dioxide	3.36e-001	1.54e+003
Nitrogen	3.75e-001	1.10e+003
Methane	8.73e+001	1.46e+005
Ethane	1.05e+001	3.29e+004
Propane	1.07e+000	4.91e+003
Isobutane	1.29e-001	7.80e+002
n-Butane	1.73e-001	1.05e+003
Isopentane	5.31e-002	3.99e+002
n-Pentane	3.77e-002	2.84e+002
Cyclopentane	5.99e-004	4.38e+000
n-Hexane	1.54e-002	1.38e+002
Cyclohexane	2.39e-003	2.10e+001
Other Hexanes	2.88e-002	2.59e+002
Heptanes	1.06e-002	1.11e+002
Methylcyclohexane	3.69e-003	3.78e+001
2,2,4-Trimethylpentane	9.99e-005	1.19e+000
Benzene	1.56e-003	1.27e+001
Toluene	1.15e-003	1.11e+001
Ethylbenzene	9.36e-005	1.04e+000
Xylenes	9.03e-005	1.00e+000
C8+ Heavies	9.92e-005	1.76e+000
-----		
Total Components	100.00	1.90e+005

## LEAN GLYCOL STREAM

Temperature: 100.00 deg. F  
Flow Rate: 4.70e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)
TEG	9.93e+001	2.63e+003
Water	7.00e-001	1.85e+001
Carbon Dioxide	1.84e-012	4.88e-011
Nitrogen	7.82e-014	2.07e-012
Methane	3.63e-018	9.62e-017
Ethane	3.94e-008	1.04e-006
Propane	1.13e-009	3.00e-008
Isobutane	1.93e-010	5.10e-009
n-Butane	2.87e-010	7.60e-009
Isopentane	2.38e-005	6.29e-004
n-Pentane	2.17e-005	5.74e-004
Cyclopentane	1.24e-006	3.27e-005
n-Hexane	1.81e-005	4.81e-004
Cyclohexane	7.08e-005	1.88e-003
Other Hexanes	5.13e-005	1.36e-003
Heptanes	2.77e-005	7.32e-004
Methylcyclohexane	1.94e-004	5.13e-003
2,2,4-Trimethylpentane	4.09e-007	1.08e-005
Benzene	6.99e-004	1.85e-002
Toluene	1.53e-003	4.05e-002
Ethylbenzene	3.10e-004	8.20e-003
Xylenes	6.03e-004	1.60e-002
C8+ Heavies	7.20e-005	1.91e-003
Total Components	100.00	2.65e+003

## RICH GLYCOL STREAM

Temperature: 100.00 deg. F  
Pressure: 414.70 psia  
Flow Rate: 5.59e+000 gpm  
NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)
TEG	8.45e+001	2.62e+003
Water	1.52e+001	4.71e+002
Carbon Dioxide	1.58e-002	4.88e-001
Nitrogen	6.67e-004	2.07e-002
Methane	9.24e-002	2.86e+000
Ethane	7.14e-002	2.21e+000
Propane	2.38e-002	7.37e-001
Isobutane	5.49e-003	1.70e-001
n-Butane	9.89e-003	3.06e-001
Isopentane	4.06e-003	1.26e-001
n-Pentane	3.70e-003	1.15e-001
Cyclopentane	2.11e-004	6.55e-003
n-Hexane	3.10e-003	9.61e-002
Cyclohexane	1.89e-003	5.86e-002
Other Hexanes	4.39e-003	1.36e-001
Heptanes	4.73e-003	1.46e-001

Methylcyclohexane	4.14e-003	1.28e-001
2,2,4-Trimethylpentane	2.33e-005	7.23e-004
Benzene	1.19e-002	3.70e-001
Toluene	1.65e-002	5.12e-001
Ethylbenzene	2.54e-003	7.87e-002
Xylenes	3.97e-003	1.23e-001
C8+ Heavies	5.11e-004	1.58e-002
-----		
Total Components	100.00	3.10e+003

## FLASH TANK OFF GAS STREAM

-----

Temperature: 190.00 deg. F  
 Pressure: 79.70 psia  
 Flow Rate: 9.03e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
-----		
Water	4.60e+000	1.97e-001
Carbon Dioxide	1.90e+000	1.99e-001
Nitrogen	2.72e-001	1.81e-002
Methane	6.46e+001	2.47e+000
Ethane	2.25e+001	1.61e+000
Propane	3.47e+000	3.64e-001
Isobutane	5.51e-001	7.62e-002
n-Butane	8.81e-001	1.22e-001
Isopentane	2.96e-001	5.08e-002
n-Pentane	2.43e-001	4.17e-002
Cyclopentane	6.40e-003	1.07e-003
n-Hexane	1.36e-001	2.78e-002
Cyclohexane	3.37e-002	6.76e-003
Other Hexanes	2.23e-001	4.57e-002
Heptanes	1.30e-001	3.10e-002
Methylcyclohexane	5.77e-002	1.35e-002
2,2,4-Trimethylpentane	8.76e-004	2.38e-004
Benzene	3.14e-002	5.83e-003
Toluene	2.93e-002	6.43e-003
Ethylbenzene	2.76e-003	6.96e-004
Xylenes	2.80e-003	7.08e-004
C8+ Heavies	1.29e-002	5.22e-003
-----		
Total Components	100.00	5.29e+000

## FLASH TANK GLYCOL STREAM

-----

Temperature: 190.00 deg. F  
 Flow Rate: 5.58e+000 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)
-----			
TEG	8.47e+001	2.62e+003	846711.
Water	1.52e+001	4.71e+002	152119.
Carbon Dioxide	9.35e-003	2.89e-001	94.
Nitrogen	8.27e-005	2.56e-003	1.
Methane	1.28e-002	3.96e-001	128.
Ethane	1.95e-002	6.04e-001	195.
Propane	1.21e-002	3.73e-001	121.
Isobutane	3.03e-003	9.38e-002	30.

n-Butane	5.97e-003	1.85e-001	60.
Isopentane	2.43e-003	7.51e-002	24.
n-Pentane	2.36e-003	7.30e-002	24.
Cyclopentane	1.77e-004	5.48e-003	2.
n-Hexane	2.21e-003	6.83e-002	22.
Cyclohexane	1.68e-003	5.19e-002	17.
Other Hexanes	2.92e-003	9.02e-002	29.
Heptanes	3.73e-003	1.15e-001	37.
Methylcyclohexane	3.71e-003	1.15e-001	37.
2,2,4-Trimethylpentane	1.57e-005	4.85e-004	0.
Benzene	1.18e-002	3.64e-001	118.
Toluene	1.63e-002	5.06e-001	163.
Ethylbenzene	2.52e-003	7.80e-002	25.
Xylenes	3.95e-003	1.22e-001	40.
C8+ Heavies	3.43e-004	1.06e-002	3.
-----			
Total Components	100.00	3.09e+003	1000000.

## FLASH GAS EMISSIONS

Flow Rate: 3.18e+002 scfh  
Control Method: Combustion Device  
Control Efficiency: 95.00

Component	Conc. (vol%)	Loading (lb/hr)
-----		
Water	6.22e+001	9.38e+000
Carbon Dioxide	3.64e+001	1.34e+001
Nitrogen	7.73e-002	1.81e-002
Methane	9.19e-001	1.23e-001
Ethane	3.19e-001	8.04e-002
Propane	4.93e-002	1.82e-002
Isobutane	7.83e-003	3.81e-003
n-Butane	1.25e-002	6.09e-003
Isopentane	4.20e-003	2.54e-003
n-Pentane	3.46e-003	2.09e-003
Cyclopentane	9.09e-005	5.34e-005
n-Hexane	1.93e-003	1.39e-003
Cyclohexane	4.80e-004	3.38e-004
Other Hexanes	3.17e-003	2.29e-003
Heptanes	1.85e-003	1.55e-003
Methylcyclohexane	8.19e-004	6.74e-004
2,2,4-Trimethylpentane	1.24e-005	1.19e-005
Benzene	4.46e-004	2.91e-004
Toluene	4.17e-004	3.21e-004
Ethylbenzene	3.92e-005	3.48e-005
Xylenes	3.98e-005	3.54e-005
C8+ Heavies	1.83e-004	2.61e-004
-----		
Total Components	100.00	2.30e+001

## REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F  
Pressure: 14.70 psia  
Flow Rate: 9.97e+003 scfh

Component	Conc.	Loading
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	(vol%)	(lb/hr)
Water	9.55e+001	4.52e+002
Carbon Dioxide	3.91e-002	4.53e-001
Nitrogen	1.61e-002	1.19e-001
Methane	3.77e+000	1.59e+001
Ethane	5.18e-001	4.09e+000
Propane	7.71e-002	8.93e-001
Isobutane	1.16e-002	1.77e-001
n-Butane	1.94e-002	2.96e-001
Isopentane	6.16e-003	1.17e-001
n-Pentane	5.40e-003	1.03e-001
Cyclopentane	3.21e-004	5.91e-003
n-Hexane	3.64e-003	8.25e-002
Cyclohexane	2.36e-003	5.22e-002
Other Hexanes	5.13e-003	1.16e-001
Heptanes	4.80e-003	1.26e-001
Methylcyclohexane	4.40e-003	1.14e-001
2,2,4-Trimethylpentane	2.00e-005	6.00e-004
Benzene	1.69e-002	3.47e-001
Toluene	1.92e-002	4.66e-001
Ethylbenzene	2.50e-003	6.99e-002
Xylenes	3.82e-003	1.06e-001
C8+ Heavies	1.98e-004	8.89e-003
Total Components	100.00	4.76e+002

## COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F  
 Pressure: 14.70 psia  
 Flow Rate: 2.23e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Methane	8.43e+001	7.95e-001
Ethane	1.16e+001	2.05e-001
Propane	1.72e+000	4.47e-002
Isobutane	2.59e-001	8.83e-003
n-Butane	4.34e-001	1.48e-002
Isopentane	1.38e-001	5.84e-003
n-Pentane	1.21e-001	5.13e-003
Cyclopentane	7.18e-003	2.96e-004
n-Hexane	8.15e-002	4.13e-003
Cyclohexane	5.28e-002	2.61e-003
Other Hexanes	1.15e-001	5.82e-003
Heptanes	1.07e-001	6.32e-003
Methylcyclohexane	9.84e-002	5.68e-003
2,2,4-Trimethylpentane	4.47e-004	3.00e-005
Benzene	3.78e-001	1.73e-002
Toluene	4.31e-001	2.33e-002
Ethylbenzene	5.60e-002	3.49e-003
Xylenes	8.54e-002	5.32e-003
C8+ Heavies	4.44e-003	4.44e-004
Total Components	100.00	1.15e+000

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CORROSION PRODUCTS DIVISION

# Fractional Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
Telephone: 304.624.9700 - Fax: 304.622.0981  
Website: www.msesinc.com/analysis

Analysis No: 1  
Analysis Date: 04/15/2015  
MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION				
Client:	EQT	Sample Date:	4/9/2015	
Sample Location:	Logansport Station	Sample Time:	9:45 AM	
Sample Collection Source:	Comp Sta. Piping	Collected By:	JDP, SCL, WEK, DLB	
MSES Sample Number:	N/A	Sample Pressure:	530	
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	49	
Unique Identifier:	Logansport Sta AE1	Sample Container Type:	Cylinder	
		MSES/CPD ID#	129	
		Client ID #:	N/A	
ANALYSIS REPORT				
FRACTIONAL ANALYSIS			ANALYTICAL RESULTS AT BASE CONDITIONS (CALCULATED VALUES)	
COMPONENTS	MOLE PERCENT	GPM		
METHANE	87.2979	2.80	BTU/SCF (DRY):	1112.90
ETHANE	10.4818		BTU/SCF (SATURATED):	1093.89
PROPANE	1.0668		PRESSURE (PSIA):	14.696
I-BUTANE	0.1287		TEMPERATURE (°F)	60.00
N-BUTANE	0.1733		Z FACTOR (DRY):	0.9974
I-PENTANE	0.0531		Z FACTOR (SATURATED):	0.9970
N-PENTANE	0.0377		ETHANE + GPM	3.2482
NITROGEN	0.3752		<b>SPECIFIC GRAVITIES</b> (CALCULATED VALUES)	
CARBON DIOXIDE	0.3357		IDEAL GRAVITY	0.6272
OXYGEN	0.0016		REAL GRAVITY	0.6286
HEXANES (PLUS)	0.0482	0.02		
<b>TOTAL</b>	<b>100.0000</b>			
COMMENTS				
ANALYTICAL METHODS AND VALUES				
(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography				
(2) Physical properties and values used in calculations were acquired from GPA 2145-09: Table of Physical properties for Hydrocarbons and Other Compounds of Interest to the Natural Gas Industry				

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CORROSION PRODUCTS DIVISION

# Extended Gas Analysis

## EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
 Telephone: 304.624.9700 - Fax: 304.622.0981  
 Website: www.msesinc.com/analysis

Analysis No: 1  
 Analysis Date: EQT  
 MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION			
Client:	EQT	Sample Date:	4/9/2015
Sample Location:	Logansport Station	Sample Time:	9:45 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	JDP, SCL, WEK, DLB
MSES Sample Number:	N/A	Sample Pressure:	530
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	49
Unique Identifier:	Logansport Sta AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	129
		Client ID #:	N/A

ANALYSIS REPORT			
COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
C <sub>5</sub> H <sub>10</sub> CYCLOPENTANE	Mole %	GPA 2186	0.0006
C <sub>6</sub> H <sub>12</sub> CYCLOHEXANE	Mole %	GPA 2186	0.0024
C <sub>6</sub> H <sub>14</sub> n-HEXANE	Mole %	GPA 2186	0.0154
C <sub>6</sub> H <sub>14</sub> 2 METHYLPENTANE (isohexane)	Mole %	GPA 2186	0.0138
C <sub>6</sub> H <sub>14</sub> 3 METHYLPENTANE	Mole %	GPA 2186	0.0088
C <sub>6</sub> H <sub>14</sub> 2,2 DIMETHYLBUTANE (neohexane)	Mole %	GPA 2186	0.0030
C <sub>6</sub> H <sub>14</sub> 2,3 DIMETHYLBUTANE	Mole %	GPA 2186	0.0032
C <sub>7</sub> H <sub>14</sub> METHYLCYCLOHEXANE	Mole %	GPA 2186	0.0037
C <sub>7</sub> H <sub>16</sub> n-HEPTANE	Mole %	GPA 2186	0.0106
C <sub>8</sub> H <sub>18</sub> n-OCTANE	Mole %	GPA 2186	0.0029
C <sub>8</sub> H <sub>18</sub> 2,2,4 TRIMETHYLPENTANE (isooctane)	Mole %	GPA 2186	<0.0001
C <sub>9</sub> H <sub>20</sub> n-NONANE	Mole %	GPA 2186	<0.0001
C <sub>10</sub> H <sub>22</sub> n-DECANE	Mole %	GPA 2186	<0.0001
C <sub>11</sub> H <sub>24</sub> UNDECANE	Mole %	GPA 2186	<0.0001
C <sub>12</sub> H <sub>26</sub> DODECANE	Mole %	GPA 2186	<0.0001
C <sub>13</sub> H <sub>28</sub> TRIDECANE	Mole %	GPA 2186	<0.0001
C <sub>14</sub> H <sub>30</sub> TETRADECANE	Mole %	GPA 2186	<0.0001

**ANALYTICAL METHODS AND VALUES**

(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography

(2) Limit of Detection=0.0001 Mole Percent

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CORROSION PRODUCTS DIVISION

# Aromatic Hydrocarbon Analysis

EQT

PO Drawer 190 - Clarksburg, WV 26302-0190  
Telephone: 304.624.9700 - Fax: 304.622.0981  
Website: www.msesinc.com/analysis

Analysis No: 1  
Analysis Date: 04/15/2015  
MSES Project No.: 15-049

SAMPLE COLLECTION INFORMATION			
Client:	EQT	Sample Date:	4/9/2015
Sample Location:	Logansport Station	Sample Time:	9:45 AM
Sample Collection Source:	Comp Sta. Piping	Collected By:	JDP, SCL, WEK, DLB
MSES Sample Number:	N/A	Sample Pressure:	530
Date Received at Lab:	4/10/2015	Sample Temp. (°F):	49
Unique Identifier:	Logansport Sta AE1	Sample Container Type:	Cylinder
		MSES/CPD ID#	129
		Client ID #:	N/A
ANALYSIS REPORT			
COMPONENTS	UNITS	ANALYTICAL METHODS	RESULTS
C <sub>6</sub> H <sub>6</sub> BENZENE	ppmV	GPA 2286-95	16.1
C <sub>7</sub> H <sub>8</sub> TOLUENE	ppmV	GPA 2286-95	11.2
C <sub>8</sub> H <sub>10</sub> ETHYLBENZENE	ppmV	GPA 2286-95	<0.1
C <sub>8</sub> H <sub>10</sub> XYLENE	ppmV	GPA 2286-95	<0.1
ANALYTICAL METHODS AND VALUES			
(1) Extended analysis and reporting performed following procedures outlined in GPA 2286-95: Tentative Method of Extended Analysis for Natural Gas and Similar Mixtures by Temperature Programmed Gas Chromatography			
(2) Limit of Detection = 0.1 ppmV			