

## Division of Air Quality Permit Application Submittal

Please find attached a permit application for :

[Company Name; Facility Location]

- DAQ Facility ID (for existing facilities only):
- Current 45CSR13 and 45CSR30 (Title V) permits associated with this process (for existing facilities only):
  
- Type of NSR Application (check all that apply):
  - Construction
  - Modification
  - Class I Administrative Update
  - Class II Administrative Update
  - Relocation
  - Temporary
  - Permit Determination
  
- Type of 45CSR30 (TITLE V) Application:
  - Title V Initial
  - Title V Renewal
  - Administrative Amendment\*\*
  - Minor Modification\*\*
  - Significant Modification\*\*
  - Off Permit Change

**\*\*If the box above is checked, include the Title V revision information as ATTACHMENTS to the combined NSR/Title V application.**
  
- Payment Type:
  - Credit Card (Instructions to pay by credit card will be sent in the Application Status email.)
  - Check (Make checks payable to: WVDEP – Division of Air Quality)  
Mail checks to:  
WVDEP – DAQ – Permitting  
Attn: NSR Permitting Secretary  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304
  
- If the permit writer has any questions, please contact (all that apply):
  - Responsible Official/Authorized Representative
    - Name:
    - Email:
    - Phone Number:
  - Company Contact
    - Name:
    - Email:
    - Phone Number:
  - Consultant
    - Name:
    - Email:
    - Phone Number:

**Please wait until DAQ emails you the Facility ID Number and Permit Application Number. Please add these identifiers to your check or cover letter with your check.**

# TITLE V PERMIT RENEWAL APPLICATION



**Comet Compressor Station #43**

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# 1. INTRODUCTION

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Equitrans, LP (Equitrans) operates a natural gas transmission facility near Bridgeport, West Virginia referred to as the Comet Compressor Station #43 (Comet Station). The Comet Station is currently operating in accordance with West Virginia Department of Environmental Protection (WVDEP) Division of Air Quality Title V operating permit R30-09100013-2016, last issued on February 18, 2016.

The current Title V permit expires February 18, 2021. Equitrans is submitting this timely and complete permit renewal application by the renewal submission deadline of August 18, 2020, (i.e., 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 (CSR) §45-30-4.1.a.3. Presuming WVDEP finds this application administratively complete, Equitrans may continue to operate the Comet 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.

There were minor updates to the facility since the last Title V permit was issued. These include:

- ▶ Replacement of the existing emergency generator with a new unit (155 hp) authorized under Registration No. G60-C097, which needs to be incorporated into the revised Title V permit, and
- ▶ Addition of a small radiant heater (0.08 MMBtu/hr) fired with natural gas.

## 1.1 Facility Description

The Comet Compressor Station #43 is a natural gas transmission facility covered by Standard Industrial Classification (SIC) 4922. The station has the potential to operate seven (7) days per week, twenty-four (24) hours per day. The station consists of one (1) 600-hp natural gas fired internal combustion reciprocating engine (RICE), two (2) 300-hp and two (2) 330-hp hp natural gas fired RICE, one (1) 155-hp electric generating RICE, one (1) 2.25 MMBtu/hr heating boiler, one 0.03 MMBtu/hr hot water heater, two (2) 15-hp electric-driven compressors, six (6) tanks of various sizes and piping and components.

A description of each source category is included below. A process flow diagram is included as Attachment C.

### 1.1.1 Compressor Engines

The Comet Station includes five (5) natural gas-fired reciprocating engines used to power reciprocating compressors that move the compressed natural gas through pipelines. One (1) of these engines (C-005) is a 2-stroke, lean-burn engine rated for 600 hp. Two (2) of the other engines (C-007 and C-008) are 2-stroke, lean-burn engines rated for 330 hp each. The remaining two (2) engines (C-006 and C-009) are 2-stroke, lean-burn engines rated for 300 hp each. The function of the reciprocating compressors is to raise the discharge pressure of the gas in the pipeline to overcome the effect of frictional losses in the pipeline upstream of the station, in order to maintain the required suction pressure at the next station downstream or at various downstream delivery points.

### 1.1.2 Storage Tanks

The Comet Station operates six (6) storage tanks, which include a 1,000 gallon pipeline condensate tank (Tank 1), a 1,500 gallon pipeline condensate tank (Tank 2), a 1,500 gallon new oil tank (Tank 3), a 500

gallon used oil tank (Tank 4), a 3,000 gallon antifreeze (ethylene glycol) tank (Tank 5), and a 4,000 gallon sump tank (Tank 6).

### 1.1.3 Miscellaneous Sources

Additional combustion sources at the station include a natural gas-fired emergency generator engine (four-stroke rich-burn engine, rated at 155 hp), a small natural gas-fired boiler for comfort heating (rated at 2.25 MMBtu/hr), a small natural gas-fired hot water heater (rated at 0.03 MMBtu/hr), a small natural gas-fired radiant heater (rated at 0.08 MMBtu/hr), and piping and components.

## 1.2 Application Organization

This Title V permit renewal application is organized as follows:

- ▶ Section 2 contains an overview of regulatory applicability for the Comet Station;
- ▶ Section 3 contains emission source calculations discussion;
- ▶ Section 4 contains the required WVDEP application forms;
- ▶ Appendix A contains an area map;
- ▶ Appendix B contains a plot plan;
- ▶ Appendix C contains a process flow diagram;
- ▶ Appendix D contains the WVDEP Title V equipment table;
- ▶ Appendix E contains a WVDEP emission unit form for each emission unit at the Comet Station; and
- ▶ Appendix F contains site-wide emission calculations.

## 2. EMISSION SOURCE CALCULATIONS

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

Emissions from the Comet Compressor Station will result from natural gas combustion in the compressor engines, generator engine, boiler, and heaters. Emissions will also result from the operation of the storage tanks. The methods by which emissions from each of these sources has been calculated are summarized in this section.

- ▶ **Compressor Engines:** Potential emissions of nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), sulfur dioxides (SO<sub>2</sub>), particulate matter (PM), volatile organic compounds (VOC), and hazardous air pollutants (HAPs) are calculated using U.S. EPA's AP-42 factors for natural gas-fired engines<sup>1</sup> for the corresponding engine burn type. Potential GHG emissions have been calculated using the relevant emission factors for natural gas combustion from 40 CFR 98, Subpart C. When needed to estimate emissions, calculations assume a site-specific heat content of natural gas.
- ▶ **Generator Engine:** Potential emissions of NO<sub>x</sub>, CO, and VOC were calculated using vendor information. Remaining criteria and HAP emissions are calculated using U.S. EPA's AP-42 factors for natural gas-fired engines for the corresponding engine burn type. Potential GHG emissions have been calculated using the relevant emission factors for natural gas combustion from 40 CFR 98, Subpart C. When needed to estimate emissions, calculations assume a site-specific heat content of natural gas
- ▶ **Boiler and Heaters:** Potential emissions of all criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas combustion equipment.<sup>2</sup> Potential GHG emissions have been calculated using the relevant emission factors for natural gas combustion from 40 CFR 98, Subpart C.
- ▶ **Storage Tanks:** Potential emissions of VOC, HAP and GHGs from the storage tanks have been estimated. Emissions from the oil tanks and the antifreeze tank have been estimated using EPA's TANKS 4.0.9d software to evaluate working and breathing losses from the tanks. Emissions from the pipeline condensate tanks and sump tank have been estimated using E&P TANK v2.0 software which includes flashing, working, and breathing losses.
- ▶ **Fugitives:** Potential emissions of VOC, HAP and GHGs from piping components (connectors, flanges, etc.), pneumatic controllers and compressor blowdowns have been estimated using the relevant equations in 40 CFR 98, Subpart W and standard conversion methodology and factors.

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<sup>1</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 3.2, *Natural Gas-Fired Reciprocating Engine*, July 2000.

<sup>2</sup> U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 1.4, *Natural Gas Combustion*, Supplement D, July 1998.

## 3. REGULATORY APPLICABILITY

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This section documents the applicability determinations made for Federal and State air quality regulations. Regulations potentially applicable to Comet are detailed in the “Applicable Requirements” sections of forms provided by the WVDEP contained in Section 4 of this report.

Additional details on applicability for several regulations are presented in this section. Specifically, the remainder of this section summarizes the air permitting requirements and key air quality regulations that apply to the operation of the Comet Station. Applicability and/or non-applicability of the following regulatory programs are addressed:

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

This review is presented to supplement and/or add clarification to the information provided in the WVDEP Title V application forms. In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the Comet 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 Comet Station. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

### 3.1 Prevention of Significant Deterioration Source Classification

Federal construction permitting programs regulate new sources of attainment pollutants under Prevention of Significant Deterioration (PSD) and new sources of non-attainment pollutants under Non-Attainment New Source Review (NNSR). PSD and NNSR regulations apply when a major source makes a change, such as installing new equipment or modifying existing equipment, and a significant increase in emissions results from the change. The Comet Station is located in Taylor County, which is classified as attainment<sup>3</sup>. The Comet Station is a minor source with respect to the NSR program as all regulated pollutants are less than the major source threshold. Because the Title V permit renewal process is not intended to accommodate any changes or modifications to the facility that are not currently permitted at the facility, NSR/PSD permitting is not triggered by this activity but could be by future activities at the site.

### 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 45 CSR 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 combination of HAP, and 100 tpy of all other regulated pollutants. The potential emissions of at least one regulated pollutant exceed the corresponding threshold(s) at this facility. Therefore, the Comet Station is classified as

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<sup>3</sup> <https://www3.epa.gov/airquality/greenbook/ancl.html#WV> as of May 31, 2020.

a major source for Title V purposes. The Comet Station currently operates under Title V operating permit No. R30-09100013-2016. This renewal application is being submitted to meet the requirements of the Title V program.

### 3.3 New Source Performance Standards

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

- ▶ Subparts D/Da/Db/Dc – Steam Generating Units
- ▶ Subparts K/Ka/Kb – Storage Vessels for Petroleum Liquids/Volatile Organic Liquids
- ▶ Subpart KKK – Equipment Leaks of VOC from Onshore Natural Gas Processing Plants
- ▶ Subpart LLL – Onshore Natural Gas Processing: SO<sub>2</sub> Emissions
- ▶ Subpart IIII – Stationary Compression Ignition Internal Combustion Engines
- ▶ Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engine
- ▶ Subpart OOOO – Crude Oil and Natural Gas Production, Transmission, and Distribution
- ▶ Subpart OOOOa – Crude Oil and Natural Gas Facilities

#### 3.3.1 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 Comet Station does not have any steam generating units greater than 10 MMBtu/hr, therefore the requirements of these subparts do not apply.

#### 3.3.2 NSPS Subparts K, Ka, and Kb – Storage Vessels for Petroleum Liquids/Volatile Organic Liquids

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. Both Subparts K and Ka apply to storage tanks with a capacity greater than 40,000 gallons. 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). All tanks at the Comet Station were installed in (or later than) 1996 and have a capacity of 4,000 gallons or less. As such, Subparts K, Ka, and Kb do not apply to the storage tanks at the Comet Station.

#### 3.3.3 NSPS Subpart KKK – Equipment Leaks of VOC from Onshore Natural Gas Processing Plants

A natural gas processing plant is defined as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both. Although this subpart includes requirements for compressors and storage tanks, it only applies to those units located at a processing plant. The operations at the Comet Station do not meet the definition of a processing plant. Therefore, the requirements of this subpart do not apply to the emission units at the Comet Station.

### **3.3.4 NSPS Subpart LLL – Onshore Natural Gas Processing: SO<sub>2</sub> Emissions**

This subpart applies to each sweetening unit, and each sweetening unit followed by a sulfur recovery unit, at a natural gas processing plant. The Comet Station does not meet the definition of a natural gas processing facility, nor does the station include a sweetening unit. Therefore, the requirements of this subpart do not apply.

### **3.3.5 NSPS Subpart IIII – Stationary Compression Ignition Internal Combustion Engines**

This Subpart applies to manufacturers, owners, and operators of stationary compression ignition internal combustion engines (ICE) that have been constructed, reconstructed, or modified after various dates, the earliest of which is July 11, 2005. All of the engines at the Comet Station, including the emergency generator, are spark ignition IC engines, and therefore the requirements of this subpart do not apply.

### **3.3.6 NSPS Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines**

This subpart applies to manufacturers, owners, and operators of stationary spark ignition internal combustion engines (ICE) that have been constructed, reconstructed, or modified after various dates, the earliest of which is June 12, 2006.

All of the compressor engines at the Comet Station, were installed prior to 2006 (latest installation date is 1995) and have not been modified or reconstructed, and therefore the requirements of this subpart do not apply to the compressor engines.

The emergency generator engine is a 4-stroke rich burn, spark ignition engine manufactured after July 1, 2008, and as such is subject to this subpart. The engine is certified to meet the emission standards in Table 1 of Subpart JJJJ. Equitrans is subject to the compliance requirements in 60.4243(a)(1) and (b)(1), the operating restrictions in 60.4243(d) and the applicable recordkeeping requirements in 60.4245(a)(1)-(3).

### **3.3.7 NSPS Subpart OOOO – Natural Gas Production, Transmission, and Storage**

Subpart OOOO, 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 on or before September 18, 2015.

The only source in one of the categories whose construction commenced during the applicability dates of Subpart OOOO is the used oil tank (Tank 4). However, this tank does not meet the definition of a 'storage vessel' under §60.5430. No sources have been reconstructed or modified since the applicability date of the rule. Therefore, the requirements of this subpart do not apply.

### **3.3.8 NSPS Subpart OOOOa – Crude Oil and Natural Gas Facilities**

Subpart OOOOa, Standards of Performance for Crude Oil and Natural Facilities, applies to affected facilities that commenced construction, reconstruction, or modification after September 18, 2015. There are no sources for which construction commenced after the applicability date of Subpart OOOOa and no sources have been reconstructed or modified since the applicability date of the rule. Therefore, the requirements of this subpart do not apply.

### 3.3.9 Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. The applicability of a particular NSPS to the Comet Station can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable.

## 3.4 National Emission Standards for Hazardous Air Pollutants

Regulatory requirements for facilities subject to NESHAP standards, otherwise known 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. The Comet Station is an area source of HAP. Besides 40 CFR 63 Subpart A (NESHAP Subpart A), which is similar to 40 CFR 60 Subpart A (NSPS Subpart A), the following NESHAPs could potentially apply to the Comet Station:

- ▶ Subpart HH – Oil and Natural Gas Production Facilities
- ▶ Subpart HHH – Natural Gas Transmission and Storage Facilities
- ▶ Subpart KKK – Equipment Leaks of VOC from Onshore Natural Gas Processing Plants
- ▶ Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE)
- ▶ Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters
- ▶ Subpart JJJJJ – Industrial, Commercial, and Institutional Boilers

### 3.4.1 40 CFR 63 Subpart HH – Oil and Natural Gas Production Facilities

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

### 3.4.2 40 CFR 63 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. The Comet Station is an area source of HAP. Therefore, the requirements of this subpart do not apply to the Comet Station.

### 3.4.3 40 CFR 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines

This NESHAP applies to stationary reciprocating combustion engines (RICE) at major and area sources of HAP. The Comet Station is an area source of HAP.

The five (5) compressor engines at the Comet Station were installed between 1947 and 1980 and have not been reconstructed or modified. The units are classified as 2-stroke, lean-burn, non-emergency units. As such, these units are subject to the requirements for existing, 2-stroke, lean-burn, non-emergency, spark ignition (SI) units 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 appropriate work practice standards in 40 CFR §63.6603 for the correct classification of engine and maintain records to show these standards have been met. Work practice standards include changing the oil and filter, inspecting spark plugs and replacing as

necessary and inspecting all hoses and belts and replacing as necessary at intervals specified in the regulation. The compressor engines are operated and maintained in accordance with manufacturer's recommendations, fulfilling the requirements of Table 6 of Subpart ZZZZ.

The emergency generator engine is subject to NSPS Subpart JJJJ. As such, meeting the requirements of Subpart JJJJ meets with requirements of Subpart ZZZZ, per 63.6590(c)(1).

#### **3.4.4 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters**

This MACT standard applies to industrial, commercial, and institutional boilers and process heaters of various sizes and fuel types at major sources of HAP. As the Comet Station is an area source of HAP, the requirements of this subpart do not apply.

#### **3.4.5 NESHAP Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers (Area Source Boiler MACT)**

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources. The only sources at the Comet Station that potentially fall under this subpart are a hot water heater, radiant heater, and a heating boiler. However, gas-fired boilers and hot water heaters are specifically exempt from this subpart. Therefore, the requirements of this subpart do not apply.

### **3.5 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 where existing Title V permit requirements may not be considered sufficient.

Under the general applicability criteria, this regulation only applies to emission units that use a control device to achieve compliance with an emission limit and whose pre-controlled emission levels exceed the major source thresholds under the Title V operating permit program. Because CAM has not been triggered through prior permitting of the facility, CAM is subject for review during this Title V permit renewal. Accordingly, for a subject unit whose pre-controlled emissions are more than the corresponding Title V major source threshold and is not otherwise exempt, a CAM plan must be submitted with this renewal application.

There are no units at the Comet Compressor Station which utilize active control devices. As such, the Comet Station is not subject to CAM regulations.

### **3.6 West Virginia SIP Regulations**

The Comet Station is currently permitted under the regulations contained in West Virginia's Title 45 Legislative Rule Department of Environmental Protection Office of Air Quality (WVDEP regulations). A federal operating permit must be issued by the agency upon determination that the facility can reasonably be expected to comply with the WVDEP regulations and all applicable federal requirements. This section of the

application highlights applicability of specific West Virginia SIP regulations that may apply to the Comet Station.

### **3.6.1 45 CSR 2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers**

According to 45 CSR 2-3:

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

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 boiler and hot water heater 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.

In addition, according to 45 CSR 2-4:

*No person shall cause, suffer, allow or permit the discharge of particulate matter into the open air from all fuel burning units located at one plant, measured in terms of pounds per hour in excess of the amount determined [according to fuel burning unit type].*

Visible emissions are not expected since only natural gas is combusted in the applicable units, and emissions from sources that burn natural gas have low variability. Therefore, visual emissions checks and recordkeeping will be adequate to demonstrate compliance. Since the boiler (BLR01) and heaters have maximum design heat inputs of less than 10 MMBtu/hr (each), these units are exempt from the monitoring, recordkeeping, and reporting (MRR) requirements in accordance with 45 CSR 2-11.

### **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 station is generally subject to this requirement. Equitrans will operate all equipment and control devices in a manner as to avoid causing or contributing to an objectionable odor at any location occupied by the public.

### **3.6.3 45 CSR 6: To Prevent and Control Air Pollution from Combustion of Refuse**

According to 45 CSR 6-3.1:

*The open burning of refuse by any person is prohibited except for [the exemptions listed in this section].*

The Comet Station does not meet any of the exemptions in 45 CSR 6-3.1 and is therefore subject to the requirements of this section. The Comet Station will adhere to the prohibition of open burning.

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

According to 45 CSR 10-3:

*No person shall cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from all stacks located at one plant, measured in terms of pounds per hour, in excess...of the product of 3.2 and the total design heat inputs for such units discharging through those stacks in million BTU's per hour.*

This rule applies to specific emission sources that are listed by name in the rule, to sulfuric acid manufacturing plants, and to sources that combust any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet. The Comet Station does not combust gas with a concentration of hydrogen sulfide above this threshold; therefore, this rule does not apply.

### **3.6.5 45 CSR 11: Prevention of Air Pollution Emergency Episodes**

According to 45 CSR 11-5.1:

*Any person responsible for the operation of a source of air pollutants emitting 100 tons per year or more in a region classified Priority I or II for any pollutant, shall prepare standby plans for reducing the emission of air pollutants during periods of an Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency.*

The Comet Station is located in West Virginia Air Quality Control Region 6 (USEPA AQCR 235). According to Table A of 45 CSR 11, this region is classified as Priority I for particulates and Priority III for all other pollutants. Since the Comet Station does not have the potential to emit 100 tpy or more of particulate emissions, the station is not required to develop a standby plan unless requested to do so by the Secretary.

### **3.6.6 45 CSR 13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, And Procedures for Evaluation**

According to 45 CSR 13-5:

*No person shall cause, suffer, allow or permit the construction, modification, relocation and operation of any stationary source to be commenced without notifying the Secretary of such intent and obtaining a permit to construct, modify, relocate and operate the stationary source as required in this rule or any other applicable rule promulgated by the Secretary.*

This rule establishes procedures for permitting and reporting of stationary sources. Equitrans will continue to comply with the requirements of this rule by complying with the applicable general provisions in the facility's existing operating permit.

### **3.6.7 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. Applicability of these rules is discussed above.

### **3.6.8 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 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.

### **3.6.9 45 CSR 21: To Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds**

45 CSR 21 applies only to sources located in Putnam County, Kanawha County, Cabell County, Wayne County, and Wood County, West Virginia. The Comet Station is located in Taylor County. Therefore, the requirements of this section do not apply to the station.

### **3.6.10 45 CSR 22: Air Quality Management Fee Program**

This regulation establishes a program to collect fees for certificates to operate and for permits to construct, modify or relocate sources of air pollution. Equitrans will continue to comply with this rule by paying all required permitting fees.

### **3.6.11 45 CSR 30: Requirements for Operating Permits**

According to 45 CSR 30-3:

*On and after the effective date of the operating program, no person shall violate any requirement of a permit issued under this rule nor shall any person operate any of the following sources, except in compliance with a permit issued under this rule.*

The Comet Station is subject to the requirement for an operating permit. The station's Title V permit (R30-09100013-2016) was issued under this rule and this renewal application satisfies the application requirements of 45 CSR 30. Also, under this rule, the Comet Station is subject to operating under the requirements set forth in the issued Title V permit.

### **3.6.12 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. Applicability of these rules is discussed above.

### **3.6.13 Non-Applicability of Other Sip Rules**

A thorough examination of the West Virginia SIP rule applicability to the Comet 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 Comet Station.

## 4. WVDEP TITLE V GENERAL APPLICATION FORM

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<b>11. Mailing Address</b>		
Street or P.O. Box: 2200 Energy Drive		
City: Canonsburg	State: PA	Zip: 15317
Telephone Number: (412) 395-5592	Fax Number:	

<b>12. Facility Location</b>		
Street: 783 Meadland Road	City: Bridgeport	County: Taylor
UTM Easting: 572.56 km	UTM Northing: 4352.11 km	Zone: <input checked="" type="checkbox"/> 17 or <input type="checkbox"/> 18
<b>Directions:</b> From Interstate 79, take exit 124 for WV-279/Jerry Dove Dr toward US-50 E (0.4 mi). Turn left at CR-707 E/FBI Center Rd/WV-279 E and continue to follow WV-279 E (2.9 mi). Turn left at US-50 (3.2 mi). Turn left at CR-3/Meadland Rd (0.3 mi). Comet Station is on left.		
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). Pennsylvania Ohio	
Is facility located within 100 km of a Class I Area <sup>1</sup> ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  If no, do emissions impact a Class I Area <sup>1</sup> ? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, name the area(s). Otter Creek Wilderness Area Dolly Sods Wilderness Area	
<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> Jack Mackin		<b>Title:</b> Vice President –Operations
<b>Street or P.O. Box:</b> 2200 Energy Drive		
<b>City:</b> Canonsburg	<b>State:</b> PA	<b>Zip:</b> 15317
<b>Telephone Number:</b> (412) 395-3907	<b>Fax Number:</b>	
<b>E-mail address:</b> JaMackin@equitransmidstream.com		
<b>Environmental Contact:</b> Sara Huber		<b>Title:</b> Environmental Coordinator
<b>Street or P.O. Box:</b> 2200 Energy Drive		
<b>City:</b> Canonsburg	<b>State:</b> PA	<b>Zip:</b> 15317
<b>Telephone Number:</b> (412) 395-5592	<b>Fax Number:</b>	
<b>E-mail address:</b> shuber@equitransmidstream.com		
<b>Application Preparer:</b> Thomas Muscenti		<b>Title:</b> Regional Manager
<b>Company:</b> Trinity Consultants		
<b>Street or P.O. Box:</b> 4500 Brooktree Road, Suite 310		
<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 storage and transmission	48621	4922

**Provide a general description of operations.**

The Comet Compressor Station #43 is a natural gas transmission facility covered by Standard Industrial Classification (SIC) 4922. The station has the potential to operate seven (7) days per week, twenty-four (24) hours per day. The station consists of one (1) 600-hp natural gas fired reciprocating internal combustion engine (RICE), two (2) 300-hp and two (2) 330-hp hp natural gas fired RICE, one (1) 155-hp electric generating RICE, one (1) 2.25 MMBtu/hr heating boiler, one 0.03 MMBtu/hr hot water heater, one 0.08 MMBtu/hr radiant heater, two (1) 15-hp electric-driven compressors, six (6) tanks of various sizes and piping and components.

- 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 type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input checked="" type="checkbox"/> NESHAP (45CSR34)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input checked="" type="checkbox"/> Section 111 NSPS	<input 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/Reqs.	<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 checked="" 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)	

<b>19. Non Applicability Determinations</b>
<p><b>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.</b></p> <p>Please see the regulatory applicability discussion in Section 3 of the Project Report.</p>
<input checked="" type="checkbox"/> 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).

All references to a TV Permit Condition in section 20 refer to Permit Number R30-09100013-2016 condition numbers.

<b>Open Burning:</b>	45CSR§6-3.1	(TV Permit Condition 3.1.1)
<b>Open Burning Exemptions:</b>	45CSR§6-3.2	(TV Permit Condition 3.1.2)
<b>Asbestos:</b>	40CFR61 & 45CSR15	(TV Permit Condition 3.1.3)
<b>Odor:</b>	45CSR§4-3.1	(TV Permit Condition 3.1.4)
<b>Standby Plan for Reducing Emissions:</b>	45CSR§11-5.2	(TV Permit Condition 3.1.5)
<b>Emission Inventory:</b>	W. Va. Code §22-5-4(a)(14)	(TV Permit Condition 3.1.6)
<b>Ozone-depleting Substances:</b>	40CFR 82, Subpart F	(TV Permit Condition 3.1.7)
<b>Risk Management Plan:</b>	40CFR68	(TV Permit Condition 3.1.8)
<b>Fugitive Particulate Matter:</b>	45CSR§17-3.1	(TV Permit Condition 3.1.9)

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.)

**Open Burning:** Open burning shall be prohibited (45CSR§6-3.1, TV Permit Condition 3.1.1).

**Open Burning Exemptions:** Notification will be sent if open burning occurs (45CSR§6-3.2, TV Permit Condition 3.1.2)

**Asbestos:** Must notify the Secretary at least ten working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary per notification requirements of 40 CFR §61.145(b)(3)(i). Prior to demolition or construction, buildings will be inspected for asbestos (TV Permit Condition 3.1.3)

**Odor:** Permittee shall prohibit the emission any pollutant(s) which may cause objectionable odor in a public location (45CSR§4-3.1, TV Permit Condition 3.1.4).

**Standby Plan for Reducing Emissions:** If requested by the Supervisor, permittee shall prepare a standby plan (45CSR§11.5-2, TV Permit Condition 3.1.5).

**Emission Inventory:** Permittee shall submit, on an annual basis, an emission inventory in accordance with the submittal requirements of the Division of Air Quality (W. Va. Code §22-5-4(a)(14), TV Permit Condition 3.1.6).

**Ozone-Depleting Substances:** Permittee will prohibit the maintenance, service, repair, or disposal of appliance containing ozone-depleting substances (40 CFR§§82.154 and 82.156, TV Permit Condition 3.1.7.a).

**Risk Management Plan:** Should the facility become subject 40 CFR 68, the owner/operator will submit a risk management plan (40 CFR 68, TV Permit Condition 3.1.8).

**Fugitive Particulate Matter:** Fugitive particulate matter is not permitted to be emitted over the property boundary (45CSR§17-3.1, TV Permit Condition 3.1.9). Any request for variance (less than 10 days) shall be submitted to the Director (45CSR§17-5.1). Any violation greater than 10 days will require the submission of a control program to the Director (45CSR§17-4.1).

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.

<b>Stack Testing:</b>	WV Code §22-5-4(a)(15) and 45CSR13	(TV Permit Condition 3.3.1)
<b>Monitoring Information:</b>	45CSR§30-5.1.c.2.A	(TV Permit Condition 3.4.1)
<b>Retention of Records:</b>	45CSR§5.1.c.2.B	(TV Permit Condition 3.4.2)
<b>Odors:</b>	45CSR§30-5.1.c	(TV Permit Condition 3.4.3)
<b>Responsible Official:</b>	45CSR§§30-4.4	(TV Permit Condition 3.5.1)
<b>Confidential Treatment:</b>	45CSR§30-5.1.c.3.E	(TV Permit Condition 3.5.2)
<b>Certified Emissions Statement:</b>	45CSR§30-8	(TV Permit Condition 3.5.4)
<b>Compliance Certification:</b>	45CSR§30-5.3.e	(TV Permit Condition 3.5.5)
<b>Semi-Annual Monitoring Reports:</b>	45CSR§30-5.1.c.3.A	(TV Permit Condition 3.5.6)

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.)

**Stack Testing:** Stack testing is conducted in accordance with R30-09100013-2011 and the Secretary may option to witness any stack testing (TV Permit Condition 3.3.1). The Secretary may approve or specific additional or alternative testing (TV Permit Conditions 3.3.1.a and 3.3.1.b). All stack testing shall be conducted in accordance with approved test protocols. Protocols shall be submitted to the Secretary in writing at least 30 days prior to testing for approval. The Secretary must be notified 15 days prior to testing (TV Permit Condition 3.3.1.c). WV Code §22-5-4(a)(15) and 45CSR13.

**Monitoring Information:** Permittee shall keep records of monitoring information including: date and place of sampling, date of analyses, company performing analyses, analytical techniques or methods, and operating conditions at time of sampling (45CSR§30-5.1.c.2.A, TV Permit Condition 3.4.1).

**Retention of Records:** Permittee shall retain records of all required monitoring data and support information for at least 5 years (45CSR§30.5.1.c.2.B, TV Permit Condition 3.4.2).

**Odors:** Permittee shall maintain a record of all odor complaints received, any investigation performed in response, and any responsive actions taken (45CSR§30-5.1.c, TV Permit Condition 3.4.3).

**Responsible Official:** Any application form, report, or compliance certification required by permit to be submitted to the DAQ or USEPA shall contain a certification by the responsible official (45CSR§30-4.4, 45CSR§5.1.c.3.D, TV Permit Condition 3.5.1).

**Confidential Treatment:** Permittee may request confidential treatment for the submission of reporting (45CSR§30-5.1.c.3.E, TV Permit Condition 3.5.2).

**Certified Emissions Statement:** Permittee shall submit a certified emissions statement and pay fees on an annual basis (45CSR§30-8, TV Permit Condition 3.5.4).

**Compliance Certification:** The permittee shall certify compliance with the conditions of this permit annually on the forms provided by the DAQ (45CSR§30-5.3.e, TV Permit Condition 3.5.5)

**Semi-Annual Monitoring Reports:** Permittee shall submit semi-annual reports of any required monitoring (45CSR§30-5.1.c.3.A, TV Permit Condition 3.5.6).

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.

**Supplemental Reports:** 45CSR§30-5.1.c.3.C (TV Permit Condition 3.5.8.a)  
**Reporting Deviations:** 45CSR§30-5.1.c.3.B (TV Permit Condition 3.5.8.b)  
**New Applicable Requirements:** 45CSR§30-4.3.h.1.B (TV Permit Condition 3.5.9)  
**Emergency Operating Scenario:** 45CSR§30-12.7 (TV Permit Condition 3.8)

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.)

**Supplemental Reports:** Any deviation resulting in an emergency or upset condition shall be reported by telephone or fax within one working day. A written report of such deviation shall be submitted and certified within 10 days of deviation (TV Permit Condition 3.5.8.a.1). Any deviation posing an imminent and substantial danger to public health, safety, or the environment shall be reported to the Secretary immediately by telephone or fax. A written report of such deviation shall be submitted and certified within 10 days of deviation (TV Permit Condition 3.5.8.a.2). (45CSR§30-5.1.c.3.C).

**Reporting Deviations:** In reporting deviations, permittee shall include probable cause for deviation and any corrective action or preventative measures taken (45CSR30-5.1.c.3.B).

**New Applicable Requirements:** If any applicable requirement is promulgated during the term of the permit, the permittee will meet such requirements on a timely basis (45CSR§30-4.3.h.1.B).

**Emergency Operating Scenario:** Provide written notification of engine replacement due to emergency to the Director within 5 days of replacement (45CSR§30-12.7, TV Permit Condition 3.8.e).

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

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

**21. Active Permits/Consent Orders**

Permit or Consent Order Number	Date of Issuance MM/DD/YYYY	List any Permit Determinations that Affect the Permit (if any)
R30-09100013-2016	02/18/2016	
G60-C097	11/30/2017	
	/ /	
	/ /	



**Section 3: Facility-Wide Emissions**

<b>23. Facility-Wide Emissions Summary [Tons per Year]</b>	
Criteria Pollutants	Potential Emissions
Carbon Monoxide (CO)	31.11
Nitrogen Oxides (NO <sub>x</sub> )	246.94
Lead (Pb)	<0.01
Particulate Matter (PM <sub>2.5</sub> ) <sup>1</sup>	3.83
Particulate Matter (PM <sub>10</sub> ) <sup>1</sup>	3.83
Total Particulate Matter (TSP)	3.83
Sulfur Dioxide (SO <sub>2</sub> )	0.05
Volatile Organic Compounds (VOC)	11.47
Hazardous Air Pollutants <sup>2</sup>	Potential Emissions
Total HAP ( <i>see Emission Calculations for individual HAPs</i> )	6.23
Regulated Pollutants other than Criteria and HAP	Potential Emissions
CO <sub>2</sub> e	16,840

<sup>1</sup>PM<sub>2.5</sub> and PM<sub>10</sub> are components of TSP.  
<sup>2</sup>For HAPs that are also considered PM or VOCs, emissions should be included in both the HAPs section and the Criteria Pollutants section.

**Section 4: Insignificant Activities**

<b>24. Insignificant Activities (Check all that apply)</b>	
<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. CO2 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 – 2.25 MMBtu/hr boiler</u></p> <p><u>1 – 0.03 MMBtu/hr hot water heater</u></p> <p><u>1 – 0.08 MMBtu/hr radiant heater</u></p> <p><u>1 – 1,000 gallon pipeline condensate tank</u></p> <p><u>1 – 1,500 gallon pipeline condensate tank</u></p> <p><u>1 – 1,500 gallon new oil tank</u></p> <p><u>1 – 500 gallon used oil tank</u></p> <p><u>1 – 3,000 gallon antifreeze (ethylene glycol) tank</u></p> <p><u>1 – 4,000 gallon sump tank</u></p> <p>Please see attached Emissions Calculations (Attachment F) for specific criteria pollutant values.</p>

<b>24. Insignificant Activities (Check all that apply)</b>	
<input checked="" 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><u>VOC emissions from leaking components (connectors, flanges, etc.), pneumatic controllers and compressor blowdowns</u></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 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.

<b>24. Insignificant Activities (Check all that apply)</b>	
<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 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 checked="" type="checkbox"/>	43. Process water filtration systems and demineralizers.
<input 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 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 checked="" 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 Title V Major Source Threshold Level, refer to the <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for CAM applicability. Fill out and provide these forms, if applicable, for each Pollutant Specific Emission Unit (PSEU) 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: Jack Mackin

Title: Vice President –Operations

**Responsible official's signature:**

Signature: \_\_\_\_\_



Signature Date: \_\_\_\_\_

8-11-2020

(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)                |
| <input type="checkbox"/>            | ATTACHMENT G: Air Pollution Control Device Form(s)          |
| <input type="checkbox"/>            | ATTACHMENT H: Compliance Assurance Monitoring (CAM) Form(s) |

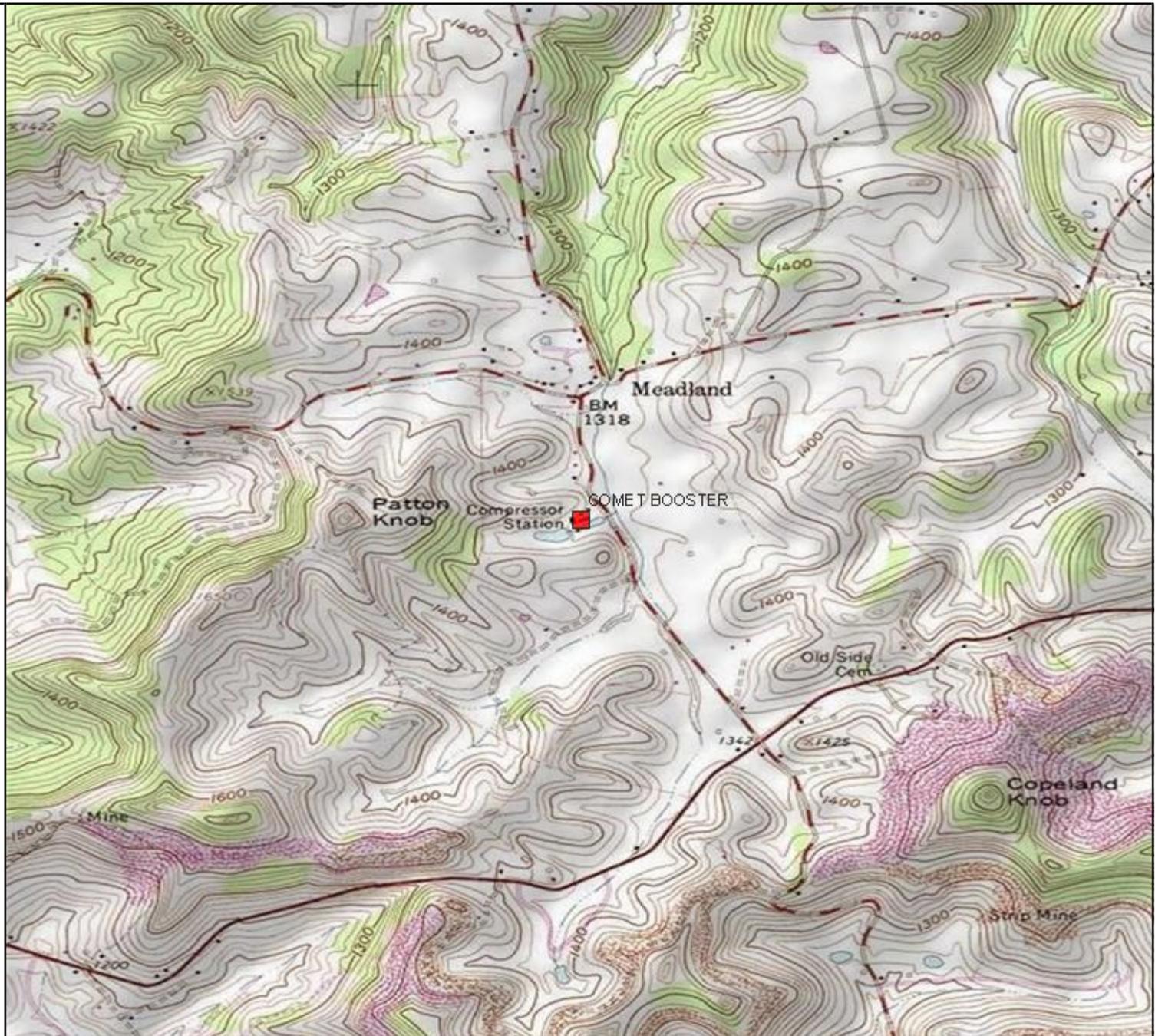
*All of the required forms and additional information can be found and downloaded from, the DEP website at [www.dep.wv.gov/daq](http://www.dep.wv.gov/daq), requested by phone (304) 926-0475, and/or obtained through the mail.*

## APPENDIX A. AREA MAP

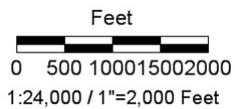
---

Legend

■ Compressor Stations



**Title: Comet - Area Map**



DISCLAIMER: ALL INFORMATION DEPICTED ON THIS MAP PROVIDED BY EQT (SAID TERM SHALL MEAN EQT PRODUCTION OR EQT MIDSTREAM, DEPENDING ON WHICH EQT ENTITY PROVIDED THE MAP) IS FOR INFORMATION PURPOSES ONLY AND SHALL BE TREATED AS CONFIDENTIAL INFORMATION AND SHALL ONLY BE USED FOR THE SOLE PURPOSE FOR WHICH IT WAS PROVIDED. ANY OTHER USE OF THIS MAP, OR THE INFORMATION INCLUDED THEREON, IS STRICTLY PROHIBITED. THE EXACT LOCATION OF THE FACILITIES (INCLUDING BUT NOT LIMITED TO WELLS, PIPELINES, STRUCTURES, FACILITIES, LEASE BOUNDARIES OR ANY OTHER INFORMATION) SHOWN ON THIS MAP SHALL NOT BE RELIED UPON FOR THE SPECIFIC LOCATION OF THE FACILITIES; AND THE PARTIES AGREE THAT THE INFORMATION SHOWN ON THE MAP MAY NOT HAVE BEEN PLACED ON THE MAP USING SURVEY LINES OR GPS COORDINATES. EQT MAKES NO EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY AS TO THE ACCURACY OF THE MAP, OR THE INFORMATION SHOWN THEREON, THE SPECIFIC LOCATION OF ANY OF THE INFORMATION, INCLUDING ANY WELL, PIPELINE, STRUCTURE, FACILITY OR LEASE BOUNDARY, SHOULD BE DETERMINED BY A FIELD SURVEY PERFORMED BY A LICENSED SURVEYOR UPON CONSULTATION WITH EQT. THIS MAP MAY NOT BE COPIED OR OTHERWISE MADE AVAILABLE TO ANY OTHER PARTY IN PAPER OR ELECTRONIC FORMAT WITHOUT WRITTEN CONSENT FROM EQT. RECIPIENT EXPRESSLY AGREES THAT ITS USE AND/OR RETAINER OF THIS MAP SHALL BE DEEMED ITS AGREEMENT TO THE TERMS SET FORTH ABOVE.

**APPENDIX B. PLOT PLAN**

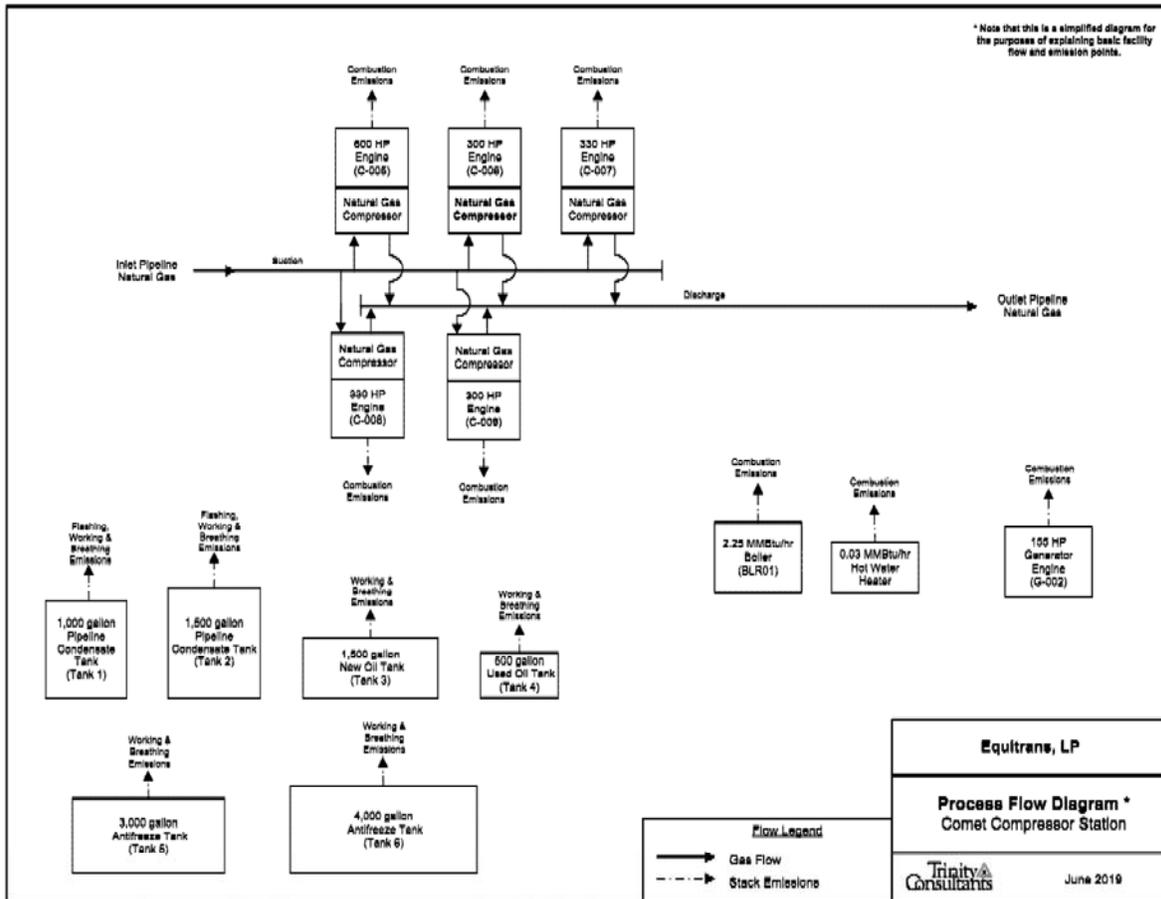
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# AERIAL PLOT PLAN



## APPENDIX C. PROCESS FLOW DIAGRAM

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## APPENDIX D. WVDEP EQUIPMENT TABLE

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**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-005	N/A	C-005	Reciprocating Engine/Integral Compressor; Ajax DPC-600, 76441	600 HP	1980
C-006	N/A	C-006	Reciprocating Engine/Integral Compressor; Cooper Bessemer GMX6,41708	300 HP	1947
C-007	N/A	C-007	Reciprocating Engine/Internal Compressor; Cooper Bessemer GMX6, 42055; this engine has been derated to 300 HP	330 HP	1949
C-008	N/A	C-008	Reciprocating Engine/Internal Compressor; Cooper Bessemer GMX6,42056; this engine has been derated to 300 HP	330 HP	1949
C-009	N/A	C-009	Reciprocating Engine/Internal Compressor; Clark RA32,22259	300 HP	1961
G-002	N/A	G-002	Reciprocating Engine/Generator; Kohler, 100REZGD	155 HP	2018
011	N/A	011	Three Phase Electric Compressor; US Electrical Motors/Division of Emerson; A933A	15 HP	1998
012	N/A	011	Three Phase Electric Compressor; US Electrical Motors/Division of Emerson; A933A	15 HP	1998
BLR01	N/A	BLR01	Heating Boiler	2.25 MMBtu/hr	1988
Tank1	N/A	Tank1	Tank containing pipeline condensate	1,000 gallon	1996
Tank 2	N/A	Tank 2	Tank containing pipeline condensate	1,500 gallon	1996
Tank 3	N/A	Tank 3	Tank containing new oil	1,500 gallon	1996
Tank 4	N/A	Tank 4	Tank containing used oil	500 gallon	2011
Tank 5	N/A	Tank 5	Anti-freeze (Ethylene Glycol) Tank	3,000 gallon	2009
Tank 6	N/A	Tank 6	Sump Tank	4,000 gallon	2009

<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.

## APPENDIX E. WVDEP EMISSION UNIT FORMS

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## ATTACHMENT E - Emission Unit Form

***Emission Unit Description***

<b>Emission unit ID number:</b> C-005	<b>Emission unit name:</b> C-005	<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.):**  
Natural Gas Fired Reciprocating Engine; 600 hp

<b>Manufacturer:</b> Ajax	<b>Model number:</b> DPC-600	<b>Serial number:</b> 76441
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<b>Construction date:</b> 1980	<b>Installation date:</b> 1980	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
600 hp

<b>Maximum Hourly Throughput:</b> 0.00498 MMScf/hr	<b>Maximum Annual Throughput:</b> 43.6 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 600 hp	<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.**  
Natural Gas

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.97	8.62
Nitrogen Oxides (NO <sub>x</sub> )	16.17	70.81
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.25	1.08
Particulate Matter (PM <sub>10</sub> )	0.25	1.08
Total Particulate Matter (TSP)	0.25	1.08
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.61	2.68
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.40	1.77
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	600	2,628
<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>To calculate potential emissions, AP-42 factors were taken from Chapter 3.2, Table 3.2-1 (Uncontrolled Emission Factors for 2-stroke Lean-Burn Engines, dated 7/2000). The specific fuel consumption for the engine, 8,500 Btu/hp-hr, was multiplied by the engine rating, 600 hp, and then divided by 1,000,000 Btu per MMBtu to convert to units of MMBtu/hr. The AP-42 emission factors (in lb/MMBtu) were multiplied by the engine's fuel usage (in MMBtu/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs per ton.</p> <p>To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rate in MMBtu/hr (as previously calculated) and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.</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.)

**RICE MACT:** Permittee will minimize the engine's 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 (40CFR§63.6625(h)). Permittee will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§63.6603 and Table 2d to Subpart ZZZZ of 40CFR63). Permittee will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40CFR63).

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> C-006	<b>Emission unit name:</b> C-006	<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.):**  
Natural Gas Fired Reciprocating Engine; 300 hp

<b>Manufacturer:</b> Cooper Bessemer	<b>Model number:</b> GMX6	<b>Serial number:</b> 41708
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<b>Construction date:</b> 1947	<b>Installation date:</b> 1947	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
300 hp

<b>Maximum Hourly Throughput:</b> 0.00293 MMScf/hr	<b>Maximum Annual Throughput:</b> 25.6 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
--	--

<b>Maximum design heat input and/or maximum horsepower rating:</b> 300 hp	<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.**  
Natural Gas

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.16	5.07
Nitrogen Oxides (NO <sub>x</sub> )	9.51	41.65
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.14	0.63
Particulate Matter (PM <sub>10</sub> )	0.14	0.63
Total Particulate Matter (TSP)	0.14	0.63
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.36	1.58
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.24	1.04
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	353	1,546
<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>To calculate potential emissions, AP-42 factors were taken from Chapter 3.2, Table 3.2-1 (Uncontrolled Emission Factors for 2-stroke Lean-Burn Engines, dated 7/2000). The specific fuel consumption for the engine, 10,000 Btu/hp-hr, was multiplied by the engine rating, 300 hp, and then divided by 1,000,000 Btu per MMBtu to convert to units of MMBtu/hr. The AP-42 emission factors (in lb/MMBtu) were multiplied by the engine's fuel usage (in MMBtu/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs per ton.</p> <p>To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rate in MMBtu/hr (as previously calculated) and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.</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.)

**RICE MACT:** Permittee will minimize the engine's 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 (40CFR§63.6625(h)). Permittee will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§63.6603 and Table 2d to Subpart ZZZZ of 40CFR63). Permittee will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40CFR63).

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> C-007	<b>Emission unit name:</b> C-007	<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.):**

Natural Gas Fired Reciprocating Engine; 330 hp  
NOTE: This engine has been derated to 300 hp.

<b>Manufacturer:</b> Cooper Bessemer	<b>Model number:</b> GMX6	<b>Serial number:</b> 42055
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<b>Construction date:</b> 1949	<b>Installation date:</b> 1949	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**

330 hp

<b>Maximum Hourly Throughput:</b> 0.00322 MMScf/hr	<b>Maximum Annual Throughput:</b> 28.2 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
--	--

<b>Maximum design heat input and/or maximum horsepower rating:</b> 330 hp	<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.**

Natural Gas

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.27	5.58
Nitrogen Oxides (NO <sub>x</sub> )	10.46	45.82
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.16	0.70
Particulate Matter (PM <sub>10</sub> )	0.16	0.70
Total Particulate Matter (TSP)	0.16	0.70
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.40	1.73
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.26	1.15
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	388	1,700
<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>To calculate potential emissions, AP-42 factors were taken from Chapter 3.2, Table 3.2-1 (Uncontrolled Emission Factors for 2-stroke Lean-Burn Engines, dated 7/2000). The specific fuel consumption for the engine, 10,000 Btu/hp-hr, was multiplied by the engine rating, 330 hp, and then divided by 1,000,000 Btu per MMBtu to convert to units of MMBtu/hr. The AP-42 emission factors (in lb/MMBtu) were multiplied by the engine's fuel usage (in MMBtu/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2000 lbs per ton.</p> <p>To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rate in MMBtu/hr (as previously calculated) and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.</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.)

RICE MACT: Permittee will minimize the engine's 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 (40CFR§63.6625(h)). Permittee will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§63.6603 and Table 2d to Subpart ZZZZ of 40CFR63). Permittee will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40CFR63).

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> C-008	<b>Emission unit name:</b> C-008	<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.):**

Natural Gas Fired Reciprocating Engine; 330 hp  
NOTE: This engine has been derated to 300 hp.

<b>Manufacturer:</b> Cooper Bessemer	<b>Model number:</b> GMX6	<b>Serial number:</b> 42056
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<b>Construction date:</b> 1949	<b>Installation date:</b> 1949	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**

330 hp

<b>Maximum Hourly Throughput:</b> 0.00322 MMScf/hr	<b>Maximum Annual Throughput:</b> 28.2 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 330 hp	<b>Type and Btu/hr rating of burners:</b> N/A
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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

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.27	5.58
Nitrogen Oxides (NO <sub>x</sub> )	10.46	45.82
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.16	0.70
Particulate Matter (PM <sub>10</sub> )	0.16	0.70
Total Particulate Matter (TSP)	0.16	0.70
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.40	1.73
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.26	1.15
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	388	1,700
<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>To calculate potential emissions, AP-42 factors were taken from Chapter 3.2, Table 3.2-1 (Uncontrolled Emission Factors for 2-stroke Lean-Burn Engines, dated 7/2000). The specific fuel consumption for the engine, 10,000 Btu/hp-hr, was multiplied by the engine rating, 330 hp, and then divided by 1,000,000 Btu per MMBtu to convert to units of MMBtu/hr. The AP-42 emission factors (in lb/MMBtu) were multiplied by the engine's fuel usage (in MMBtu/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2000 lbs per ton.</p> <p>To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rate in MMBtu/hr (as previously calculated) and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.</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.)

**RICE MACT:** Permittee will minimize the engine's 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 (40CFR§63.6625(h)). Permittee will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§63.6603 and Table 2d to Subpart ZZZZ of 40CFR63). Permittee will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40CFR63).

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> C-009	<b>Emission unit name:</b> C-009	<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.):**  
Natural Gas Fired Reciprocating Engine; 300 hp

<b>Manufacturer:</b> Clark	<b>Model number:</b> RA32	<b>Serial number:</b> 22259
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<b>Construction date:</b> 1961	<b>Installation date:</b> 1961	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
300 hp

<b>Maximum Hourly Throughput:</b> 0.00293 MMScf/hr	<b>Maximum Annual Throughput:</b> 25.6 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 300 hp	<b>Type and Btu/hr rating of burners:</b> N/A
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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

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.16	5.07
Nitrogen Oxides (NO <sub>x</sub> )	9.51	41.65
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.14	0.63
Particulate Matter (PM <sub>10</sub> )	0.14	0.63
Total Particulate Matter (TSP)	0.14	0.63
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	0.01
Volatile Organic Compounds (VOC)	0.36	1.58
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.24	1.04
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	353	1,546
<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>To calculate potential emissions, AP-42 factors were taken from Chapter 3.2, Table 3.2-1 (Uncontrolled Emission Factors for 2-stroke Lean-Burn Engines, dated 7/2000). The specific fuel consumption for the engine, 10,000 Btu/hp-hr, was multiplied by the engine rating, 300 hp, and then divided by 1,000,000 Btu per MMBtu to convert to units of MMBtu/hr. The AP-42 emission factors (in lb/MMBtu) were multiplied by the engine's fuel usage (in MMBtu/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2000 lbs per ton.</p> <p>To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rate in MMBtu/hr (as previously calculated) and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.</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.)

RICE MACT: Permittee will minimize the engine's 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 (40CFR§63.6625(h)). Permittee will comply with applicable work practice standards: change oil and filter every 4,320 hours of operation or annually, whichever comes first; inspect spark plugs every 4,320 hours of operation or annually, whichever comes first; and inspect all hoses and belts every 4,320 hours of operation or annually, whichever comes first and replace as necessary (40CFR§63.6603 and Table 2d to Subpart ZZZZ of 40CFR63). Permittee will also operate and maintain the engine in accordance with manufacturer's suggestions and maintain records showing that all work practices have been met (40CFR63).

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> G-002	<b>Emission unit name:</b> G-002	<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.):**  
Natural Gas Fired Generator; 155 hp

<b>Manufacturer:</b> Kohler	<b>Model number:</b> 100REZGD	<b>Serial number:</b>
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<b>Construction date:</b> 2015	<b>Installation date:</b> 2018	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
155 hp

<b>Maximum Hourly Throughput:</b> 0.00228 MMScf/hr	<b>Maximum Annual Throughput:</b> 1.1 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 500 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> N/A (RICE engine)  <input type="checkbox"/> Indirect Fired <input type="checkbox"/> Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 155 hp	<b>Type and Btu/hr rating of burners:</b> N/A
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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

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	1.37	0.34
Nitrogen Oxides (NO <sub>x</sub> )	0.68	0.17
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	0.03	0.01
Particulate Matter (PM <sub>10</sub> )	0.03	0.01
Total Particulate Matter (TSP)	0.01	<0.01
Sulfur Dioxide (SO <sub>2</sub> )	<0.01	<0.01
Volatile Organic Compounds (VOC)	0.37	0.09
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
Total HAPs	0.05	0.01
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2e</sub>	167	42
<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>See Section 3.</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.

40 CFR 60 Subpart JJJJ  
40 CFR 63 Subpart ZZZZ (compliance demonstrated through compliance with Subpart JJJJ)  
G60-C097

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.)

The emergency generator engine is a 4-stroke rich burn, spark ignition engine manufactured after July 1, 2008, and as such is subject to 40 CFR 60 Subpart JJJJ. The engine is certified to meet the emission standards in Table 1 of Subpart JJJJ. Equitrans is subject to the compliance requirements in 60.4243(a)(1) and (b)(1), the operating restrictions in 60.4243(d) and the applicable recordkeeping requirements in 60.4245(a)(1)-(3).

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> 011	<b>Emission unit name:</b> 011	<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.):**  
Three Phase Electric Compressor; 15 hp

<b>Manufacturer:</b> US Electrical Motors/Division of Emerson	<b>Model number:</b> A933A	<b>Serial number:</b> N/A
<b>Construction date:</b> 1998	<b>Installation date:</b> 1998	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
15 hp

<b>Maximum Hourly Throughput:</b> N/A	<b>Maximum Annual Throughput:</b> N/A	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> ___Yes ___X___ No	<b>If yes, is it?</b> ___ Indirect Fired ___ Direct Fired
--	--

<b>Maximum design heat input and/or maximum horsepower rating:</b> 15 hp	<b>Type and Btu/hr rating of burners:</b> N/A
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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.**

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
N/A			

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	N/A	N/A
Nitrogen Oxides (NO <sub>x</sub> )	N/A	N/A
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	N/A	N/A
Particulate Matter (PM <sub>10</sub> )	N/A	N/A
Total Particulate Matter (TSP)	N/A	N/A
Sulfur Dioxide (SO <sub>2</sub> )	N/A	N/A
Volatile Organic Compounds (VOC)	N/A	N/A
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
N/A		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
N/A		
N/A		
N/A		
<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>  No emissions expected, electric unit.		

*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.

N/A

\_\_\_\_ 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.)

N/A

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> 012	<b>Emission unit name:</b> 012	<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.):**  
Three Phase Electric Compressor; 15 hp

<b>Manufacturer:</b> US Electrical Motors/Division of Emerson	<b>Model number:</b> A933A	<b>Serial number:</b> N/A
<b>Construction date:</b> 1998	<b>Installation date:</b> 1998	<b>Modification date(s):</b> N/A

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
15 hp

<b>Maximum Hourly Throughput:</b> N/A	<b>Maximum Annual Throughput:</b> N/A	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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> ___Yes ___X No	<b>If yes, is it?</b> ___ Indirect Fired ___ Direct Fired
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<b>Maximum design heat input and/or maximum horsepower rating:</b> 15 hp	<b>Type and Btu/hr rating of burners:</b> N/A
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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.**

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
N/A			

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	N/A	N/A
Nitrogen Oxides (NO <sub>x</sub> )	N/A	N/A
Lead (Pb)	N/A	N/A
Particulate Matter (PM <sub>2.5</sub> )	N/A	N/A
Particulate Matter (PM <sub>10</sub> )	N/A	N/A
Total Particulate Matter (TSP)	N/A	N/A
Sulfur Dioxide (SO <sub>2</sub> )	N/A	N/A
Volatile Organic Compounds (VOC)	N/A	N/A
Hazardous Air Pollutants	Potential Emissions	
	PPH	TPY
N/A		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
N/A		
N/A		
N/A		
<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>  No emissions expected, electric unit.		

*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.

N/A

\_\_\_\_ 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.)

N/A

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> BLR01	<b>Emission unit name:</b> BLR01	<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.):**  
Heating Boiler; 2.25 MMBtu/hr

<b>Manufacturer:</b> N/A	<b>Model number:</b> N/A	<b>Serial number:</b> N/A
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<b>Construction date:</b> 1988	<b>Installation date:</b> 1988	<b>Modification date(s):</b> N/A
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**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
2.25 MMBtu/hr

<b>Maximum Hourly Throughput:</b> 0.00220 MMScf/hr	<b>Maximum Annual Throughput:</b> 19.2 MMScf/yr	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 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 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> 2.25 MMBtu/hr	<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.**  
Natural Gas

**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	H <sub>2</sub> S < 1.0 gr/100 scf		1,025 BTU/scf

**Emissions Data**

Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	0.18	0.81
Nitrogen Oxides (NO <sub>x</sub> )	0.22	0.96
Lead (Pb)	<0.01	<0.01
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	
	PPH	TPY
Total HAP	<0.01	0.02
For individual HAPs, see Attachment F – Emission Calculations		
Regulated Pollutants other than Criteria and HAP	Potential Emissions	
	PPH	TPY
CO <sub>2</sub> e	265	1,159

**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.).**

To calculate potential emissions, AP-42 factors were taken from Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3 (External Combustion Sources – Natural Gas Combustion, dated 7/1998). The fuel consumption for the boiler, 2.25 MMBtu/hr was divided by the source specific higher heating value, 1,025 Btu/scf, to find the maximum fuel consumption in MMscf/hr. The AP-42 emission factors (in lb/MMscf) were multiplied by the boiler's fuel usage (in MMscf/hr as previously calculated) to get potential emissions in pounds per hour. To determine tons per year, the pounds per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs per ton.

To calculate greenhouse gas emissions, emission factors for natural gas combustion from 40 CFR Part 98, Subpart C were used. These emission factors (in kg/MMBtu) were multiplied by the fuel usage rating in MMBtu/hr and multiplied by 2.2046 lb/kg to get the pound per hour emission rate. To determine tons per year, the pound per hour value was multiplied by 8,760 hours per year and divided by 2,000 lbs/ton.

**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.

N/A

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.)

N/A

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> N/A	<b>Emission unit name:</b> Fugitives	<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.):**  
Fugitive venting at facility due to piping components (connectors, flanges, etc.), pneumatic controllers and compressor blowdowns

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

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
N/A

<b>Maximum Hourly Throughput:</b> N/A	<b>Maximum Annual Throughput:</b> N/A	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 8,760 hours per year
--	--	--

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

<b>Does this emission unit combust fuel?</b> ___Yes ___X___ No	<b>If yes, is it?</b>  ___ 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
N/A			

<b><i>Emissions Data</i></b>		
Criteria Pollutants	Potential Emissions	
	PPH	TPY
Carbon Monoxide (CO)	<b>See attached Emissions Calculations (Attachment F) for all values</b>	
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)		
Hazardous Air Pollutants		
N/A		
Regulated Pollutants other than Criteria and HAP		
N/A		
N/A		
N/A		
<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>		

**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.

N/A

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.)

N/A

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 (Storage Tanks)***

<b>Emission unit ID number:</b> Tank 1, Tank 2, Tank3, Tank4, Tank 5 and Tank 6	<b>Emission unit name:</b> Tank 1, Tank 2, Tank3, Tank4, Tank 5 and Tank 6	<b>List any control devices associated with this emission unit:</b> N/A
---	--	--

**Provide a description of the emission unit (type, method of operation, design parameters, etc.):**  
Pipeline Condensate Tank, Pipeline Condensate Tank, New Oil Tank, Used Oil Tank, Antifreeze Tank, and Sump Tank

<b>Manufacturer:</b> N/A	<b>Model number:</b> N/A	<b>Serial number:</b> N/A
-----------------------------	-----------------------------	------------------------------

<b>Construction date:</b> 1996, 1996, 1996, 2011, 2009 and 2009	<b>Installation date:</b> 1996, 1996, 1996, 2011, 2009 and 2009	<b>Modification date(s):</b> N/A
--	--	-------------------------------------

**Design Capacity (examples: furnaces - tons/hr, tanks - gallons):**  
1,000 gallons, 1,500 gallons, 1,500 gallons, 500 gallons, 3,000 gallons, and 4,000 gallons

<b>Maximum Hourly Throughput:</b> Varies	<b>Maximum Annual Throughput:</b> Varies	<b>Maximum Operating Schedule:</b> 24 hours per day, 7 days per week, 8,760 hours per year
---	---	---

***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> ___ 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
N/A			

<b>Emissions Data</b>			
Criteria Pollutants	Potential Emissions		
	PPH	TPY	
Carbon Monoxide (CO)	<b>See attached Emissions Calculations (Attachment F) for all values</b>		
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)			
Hazardous Air Pollutants			
N/A			
Regulated Pollutants other than Criteria and HAP			
N/A			
N/A			
N/A			
<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>  E&P TANK v2.0 (tanks with potential for flashing, working and breathing losses) EPA Tanks 4.0.9d (tanks with potential for working and breathing losses)			

***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.

N/A

\_\_\_\_ 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.)

N/A

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.

## APPENDIX F. EMISSION CALCULATIONS

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Company Name: **Equitrans, LP**  
 Facility Name: **Comet Compressor Station #43**  
 Project Description: **Title V Permit Renewal Application**

**TABLE 1: EMISSIONS SUMMARY**

Pollutant	Engine #5 (C-005)		Engine #6 (C-006)		Engine #7 (C-007)		Engine #8 (C-008)		Engine #9 (C-009)		Generator (G-002)		Boiler (B1R01)		Hot Water Heater		Radiant Heater		Storage Tanks		Fugitives		Site-Wide TOTAL			
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)												
Carbon Monoxide (CO)	1.97	8.62	1.16	5.07	1.27	5.58	1.27	5.58	1.16	5.07	1.37	0.34	0.18	0.81	0.00	0.01	0.01	0.03	---	---	---	---	---	---	8.39	31.11
Nitrogen Oxides (NO <sub>x</sub> )	16.17	70.81	9.51	41.65	10.46	45.82	10.46	45.82	9.51	41.65	0.68	0.17	0.22	0.96	0.00	0.01	0.01	0.03	---	---	---	---	---	---	57.02	246.94
Lead (Pb)	---	---	---	---	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.00	0.00
Particulate Matter (PM <sub>2.5</sub> )	0.25	1.08	0.14	0.63	0.16	0.70	0.16	0.70	0.14	0.63	0.03	0.01	0.02	0.07	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.90	3.83
Particulate Matter (PM <sub>10</sub> )	0.25	1.08	0.14	0.63	0.16	0.70	0.16	0.70	0.14	0.63	0.03	0.01	0.02	0.07	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.90	3.83
Total Particulate Matter (TSP)	0.25	1.08	0.14	0.63	0.16	0.70	0.16	0.70	0.14	0.63	0.01	0.00	0.02	0.07	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.89	3.83
Sulfur Dioxide (SO <sub>2</sub> )	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.01	0.05
Volatile Organic Compounds (VOC)	0.61	2.68	0.36	1.58	0.40	1.73	0.40	1.73	0.36	1.58	0.37	0.09	0.01	0.05	0.00	0.00	0.00	0.00	0.29	1.26	0.17	0.76	0.01	0.01	2.97	11.47
Total HAPs	0.40	1.77	0.24	1.04	0.26	1.15	0.26	1.15	0.24	1.04	0.05	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.01	---	---	1.46	6.23
Carbon Dioxide (CO <sub>2</sub> )	597	2,613	351	1,537	386	1,691	386	1,691	351	1,537	167	42	263	1,153	4	15	9	41	0	0	0	1	---	---	2,513	10,320
Methane (CH <sub>4</sub> )	0.01	0.05	0.01	0.03	0.01	0.03	0.01	0.03	0.01	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.21	59	260.16	---	---	59.49	260.57
Nitrous Oxide (N <sub>2</sub> O)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.00	0.02
Carbon Equivalent Emissions (CO <sub>2</sub> e) <sup>a</sup>	597	2,616	351	1,539	386	1,693	386	1,693	351	1,539	167	42	263	1,154	4	15	9	41	1	5	1,485	6,505	4,002	16,840		

<sup>a</sup> Carbon equivalent emissions (CO<sub>2</sub>e) are based on the following Global Warming Potentials

Carbon Dioxide (CO<sub>2</sub>): 1  
 Methane (CH<sub>4</sub>): 25  
 Nitrous Oxide (N<sub>2</sub>O): 298

Company Name: Equitrans, IP  
 Facility Name: Comet Compressor Station #43  
 Project Description: Title V Permit Renewal Application

TABLE 2: HAP SUMMARY

Pollutant	Engine #5 (C-005)		Engine #6 (C-006)		Engine #7 (C-007)		Engine #8 (C-008)		Engine #9 (C-009)		Generator #1a (G-002)		Boiler (BLR01)		Hot Water Heater		Radiant Heater		Storage Tanks		Fugitives		Site-Wide TOTAL				
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)											
<b>HAPs:</b>																											
Acetaldehyde	3.96E-02	1.73E-01	2.33E-02	1.02E-01	2.56E-02	1.12E-01	2.56E-02	1.12E-01	2.33E-02	1.02E-01	3.97E-03	9.93E-04	---	---	---	---	---	---	---	---	---	---	---	1.41E-01	6.03E-01		
Acrolein	3.97E-02	1.74E-01	2.33E-02	1.02E-01	2.57E-02	1.12E-01	2.57E-02	1.12E-01	2.33E-02	1.02E-01	3.74E-03	9.36E-04	---	---	---	---	---	---	---	---	---	---	---	1.41E-01	6.04E-01		
Benzene	9.89E-03	4.33E-02	5.82E-03	2.55E-02	6.40E-03	2.80E-02	6.40E-03	2.80E-02	5.82E-03	2.55E-02	2.25E-03	5.62E-04	4.61E-06	2.02E-05	6.15E-08	2.69E-07	1.64E-07	7.18E-07	---	---	---	---	---	---	3.66E-02	1.51E-01	
Biphenyl	2.01E-05	8.82E-05	1.19E-05	5.19E-05	1.30E-05	5.71E-05	1.30E-05	5.71E-05	1.19E-05	5.19E-05	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6.99E-05	3.06E-04	
1,3-Butadiene	4.18E-03	1.83E-02	2.46E-03	1.08E-02	2.71E-03	1.19E-02	2.71E-03	1.19E-02	2.46E-03	1.08E-02	9.44E-04	2.36E-04	---	---	---	---	---	---	---	---	---	---	---	---	1.55E-02	6.38E-02	
Carbon Tetrachloride	3.10E-04	1.36E-03	1.82E-04	7.98E-04	2.00E-04	8.77E-04	2.00E-04	8.77E-04	1.82E-04	7.98E-04	2.52E-05	6.30E-06	---	---	---	---	---	---	---	---	---	---	---	---	1.10E-03	4.71E-03	
Chlorobenzene	2.26E-04	9.92E-04	1.33E-04	5.83E-04	1.47E-04	6.42E-04	1.47E-04	6.42E-04	1.33E-04	5.83E-04	1.84E-05	4.59E-06	---	---	---	---	---	---	---	---	---	---	---	---	8.04E-04	3.45E-03	
Chloroform	2.40E-04	1.05E-03	1.41E-04	6.19E-04	1.55E-04	6.81E-04	1.55E-04	6.81E-04	1.41E-04	6.19E-04	1.95E-05	4.88E-06	---	---	---	---	---	---	---	---	---	---	---	---	8.53E-04	3.66E-03	
Dichlorobenzene	---	---	---	---	---	---	---	---	---	---	---	---	2.63E-06	1.15E-05	3.51E-08	1.54E-07	9.37E-08	4.10E-07	---	---	---	---	---	---	2.76E-06	1.21E-05	
1,3-Dichloropropene	2.23E-04	9.78E-04	1.31E-04	5.76E-04	1.45E-04	6.33E-04	1.45E-04	6.33E-04	1.31E-04	5.76E-04	1.81E-05	4.52E-06	---	---	---	---	---	---	---	---	---	---	---	---	7.93E-04	3.40E-03	
Ethylbenzene	5.51E-04	2.41E-03	3.24E-04	1.42E-03	3.56E-04	1.56E-03	3.56E-04	1.56E-03	3.24E-04	1.42E-03	3.53E-05	8.83E-06	---	---	---	---	---	---	---	---	---	---	---	---	1.95E-03	8.38E-03	
Ethylene Dibromide	3.74E-04	1.64E-03	2.20E-04	9.64E-04	2.42E-04	1.06E-03	2.42E-04	1.06E-03	2.20E-04	9.64E-04	3.03E-05	7.58E-06	---	---	---	---	---	---	---	---	---	---	---	---	---	1.33E-03	5.70E-03
Formaldehyde	2.82E-01	1.23E+00	1.66E-01	7.25E-01	1.82E-01	7.98E-01	1.82E-01	7.98E-01	1.66E-01	7.25E-01	2.92E-02	7.30E-03	1.65E-04	7.21E-04	2.20E-06	9.61E-06	5.85E-06	2.56E-05	---	---	---	---	---	---	1.01E+00	4.29E+00	
Methanol	1.26E-02	5.54E-02	7.44E-03	3.26E-02	8.18E-03	3.58E-02	8.18E-03	3.58E-02	7.44E-03	3.26E-02	4.36E-03	1.09E-03	---	---	---	---	---	---	---	---	---	---	---	---	4.83E-02	1.93E-01	
Methylene Chloride	7.50E-04	3.28E-03	4.41E-04	1.93E-03	4.85E-04	2.12E-03	4.85E-04	2.12E-03	4.41E-04	1.93E-03	5.87E-05	1.47E-05	---	---	---	---	---	---	---	---	---	---	---	---	2.66E-03	1.14E-02	
n-Hexane	2.27E-03	9.94E-03	1.34E-03	5.85E-03	1.47E-03	6.43E-03	1.47E-03	6.43E-03	1.34E-03	5.85E-03	---	---	3.95E-03	1.73E-02	5.27E-05	2.31E-04	1.40E-04	6.15E-04	---	---	---	---	---	---	1.20E-02	5.27E-02	
Perylene	2.53E-08	1.11E-07	1.49E-08	6.53E-08	1.64E-08	7.18E-08	1.64E-08	7.18E-08	1.49E-08	6.53E-08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	8.80E-08	3.85E-07
Phenol	2.15E-04	9.40E-04	1.26E-04	5.53E-04	1.39E-04	6.09E-04	1.39E-04	6.09E-04	1.26E-04	5.53E-04	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	7.45E-04	3.26E-03
Styrene	2.79E-04	1.22E-03	1.64E-04	7.20E-04	1.81E-04	7.92E-04	1.81E-04	7.92E-04	1.64E-04	7.20E-04	1.69E-05	4.24E-06	---	---	---	---	---	---	---	---	---	---	---	---	---	9.87E-04	4.25E-03
1,1,2,2-Tetrachloroethane	3.38E-04	1.48E-03	1.99E-04	8.71E-04	2.19E-04	9.58E-04	2.19E-04	9.58E-04	1.99E-04	8.71E-04	3.60E-05	9.01E-06	---	---	---	---	---	---	---	---	---	---	---	---	---	1.21E-03	5.15E-03
Toluene	4.91E-03	2.15E-02	2.89E-03	1.27E-02	3.18E-03	1.39E-02	3.18E-03	1.39E-02	2.89E-03	1.27E-02	7.94E-04	1.99E-04	7.46E-06	3.27E-05	9.95E-08	4.36E-07	2.65E-07	1.16E-06	---	---	---	---	---	---	---	1.78E-02	7.49E-02
1,1,2-Trichloroethane 2,2,4-	2.69E-04	1.18E-03	1.58E-04	6.92E-04	1.74E-04	7.62E-04	1.74E-04	7.62E-04	1.58E-04	6.92E-04	2.18E-05	5.45E-06	---	---	---	---	---	---	---	---	---	---	---	---	---	9.55E-04	4.09E-03
Trimethylpentane Vinyl Chloride	4.31E-03	1.89E-02	2.54E-03	1.11E-02	2.79E-03	1.22E-02	2.79E-03	1.22E-02	2.54E-03	1.11E-02	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.50E-02	6.56E-02
Chloride	1.26E-04	5.52E-04	7.41E-05	3.25E-04	8.15E-05	3.57E-04	8.15E-05	3.57E-04	7.41E-05	3.25E-04	1.02E-05	2.56E-06	---	---	---	---	---	---	---	---	---	---	---	---	---	4.47E-04	1.92E-03
Xylene	1.37E-03	5.99E-03	8.04E-04	3.52E-03	8.84E-04	3.87E-03	8.84E-04	3.87E-03	8.04E-04	3.52E-03	2.78E-04	6.94E-05	---	---	---	---	---	---	---	---	---	---	---	---	---	5.02E-03	2.08E-02

Company Name: Equitrans, IP  
 Facility Name: Comet Compressor Station #43  
 Project Description: Title V Permit Renewal Application

TABLE 2: HAP SUMMARY

Pollutant	Engine #5 (C-005)		Engine #6 (C-006)		Engine #7 (C-007)		Engine #8 (C-008)		Engine #9 (C-009)		Generator #1a (G-002)		Boiler (B1R01)		Hot Water Heater		Radiant Heater		Storage Tanks		Fugitives		Site-Wide TOTAL		
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)									
<b>Polycyclic Organic Matter:</b>																									
Acenaphthene	6.78E-06	2.97E-05	3.99E-06	1.75E-05	4.39E-06	1.92E-05	4.39E-06	1.92E-05	3.99E-06	1.75E-05	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	2.35E-05	1.03E-04	
Acenaphthylene	1.62E-05	7.08E-05	9.51E-06	4.17E-05	1.05E-05	4.58E-05	1.05E-05	4.58E-05	9.51E-06	4.17E-05	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	5.61E-05	2.46E-04	
Anthracene	3.66E-06	1.60E-05	2.15E-06	9.43E-06	2.37E-06	1.04E-05	2.37E-06	1.04E-05	2.15E-06	9.43E-06	---	---	5.27E-09	2.31E-08	7.02E-11	3.08E-10	1.87E-10	8.20E-10	---	---	---	---	1.27E-05	5.57E-05	
Benzo(a)anthracene	1.71E-06	7.51E-06	1.01E-06	4.42E-06	1.11E-06	4.86E-06	1.11E-06	4.86E-06	1.01E-06	4.42E-06	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	5.95E-06	2.61E-05	
Benzo(a)pyrene	2.90E-08	1.27E-07	1.70E-08	7.46E-08	1.87E-08	8.21E-08	1.87E-08	8.21E-08	1.70E-08	7.46E-08	---	---	2.63E-09	1.15E-08	3.51E-11	1.54E-10	9.37E-11	4.10E-10	---	---	---	---	1.03E-07	4.52E-07	
Benzo(b)fluoranthene	4.34E-08	1.90E-07	2.55E-08	1.12E-07	2.81E-08	1.23E-07	2.81E-08	1.23E-07	2.55E-08	1.12E-07	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	1.55E-07	6.78E-07	
Benzo(e)pyrene	1.19E-07	5.23E-07	7.02E-08	3.07E-07	7.72E-08	3.38E-07	7.72E-08	3.38E-07	7.02E-08	3.07E-07	---	---	---	---	---	---	---	---	---	---	---	---	4.14E-07	1.81E-06	
Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene	1.26E-07	5.54E-07	7.44E-08	3.26E-07	8.18E-08	3.58E-07	8.18E-08	3.58E-07	7.44E-08	3.26E-07	---	---	2.63E-09	1.15E-08	3.51E-11	1.54E-10	9.37E-11	4.10E-10	---	---	---	---	4.42E-07	1.93E-06	
Dibenzo(a,h)anthracene	2.17E-08	9.52E-08	1.28E-08	5.60E-08	1.41E-08	6.16E-08	1.41E-08	6.16E-08	1.28E-08	5.60E-08	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	7.95E-08	3.48E-07	
7,12-Dimethylbenz(a)anthracene	3.43E-06	1.50E-05	2.02E-06	8.83E-06	2.22E-06	9.71E-06	2.22E-06	9.71E-06	2.02E-06	8.83E-06	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	1.19E-05	5.21E-05	
Fluoranthene	---	---	---	---	---	---	---	---	---	---	---	---	2.63E-09	1.15E-08	3.51E-11	1.54E-10	9.37E-11	4.10E-10	---	---	---	---	2.76E-09	1.21E-08	
Fluorene	1.84E-06	8.06E-06	1.08E-06	4.74E-06	1.19E-06	5.22E-06	1.19E-06	5.22E-06	1.08E-06	4.74E-06	---	---	3.51E-08	1.54E-07	4.68E-10	2.05E-09	1.25E-09	5.47E-09	---	---	---	---	3.68E-08	1.61E-07	
Indeno(1,2,3-c,d)pyrene	8.62E-06	3.78E-05	5.07E-06	2.22E-05	5.58E-06	2.44E-05	5.58E-06	2.44E-05	5.07E-06	2.22E-05	---	---	6.59E-09	2.88E-08	8.78E-11	3.85E-10	2.34E-10	1.03E-09	---	---	---	---	6.40E-06	2.80E-05	
3-Methylchloranthrene	5.06E-08	2.22E-07	2.98E-08	1.30E-07	3.28E-08	1.44E-07	3.28E-08	1.44E-07	2.98E-08	1.30E-07	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	2.99E-05	1.31E-04	
2-Methylnaphthalene	---	---	---	---	---	---	---	---	---	---	---	---	3.95E-09	1.73E-08	5.27E-11	2.31E-10	1.40E-10	6.15E-10	---	---	---	---	1.80E-07	7.88E-07	
Naphthalene	1.09E-04	4.78E-04	6.42E-05	2.81E-04	7.06E-05	3.09E-04	7.06E-05	3.09E-04	6.42E-05	2.81E-04	---	---	5.27E-08	2.31E-07	7.02E-10	3.08E-09	1.87E-09	8.20E-09	---	---	---	---	4.14E-09	1.82E-08	
PAH	4.91E-04	2.15E-03	2.89E-04	1.27E-03	3.18E-04	1.39E-03	3.18E-04	1.39E-03	2.89E-04	1.27E-03	1.38E-04	3.46E-05	1.34E-06	5.86E-06	1.79E-08	7.82E-08	4.76E-08	2.09E-07	---	---	---	---	1.84E-03	7.51E-03	
Phenanthrene	---	---	---	---	---	---	---	---	---	---	2.01E-04	5.02E-05	---	---	---	---	---	---	---	---	---	---	2.01E-04	5.02E-05	
Pyrene	1.80E-05	7.89E-05	1.06E-05	4.64E-05	1.16E-05	5.10E-05	1.16E-05	5.10E-05	1.06E-05	4.64E-05	---	---	3.73E-08	1.63E-07	4.98E-10	2.18E-09	1.33E-09	5.81E-09	---	---	---	---	6.25E-05	2.74E-04	
<b>Metals:</b>	2.98E-06	1.30E-05	1.75E-06	7.67E-06	1.93E-06	8.44E-06	1.93E-06	8.44E-06	1.75E-06	7.67E-06	---	---	1.10E-08	4.81E-08	1.46E-10	6.41E-10	3.90E-10	1.71E-09	---	---	---	---	1.03E-05	4.53E-05	
Arsenic	---	---	---	---	---	---	---	---	---	---	---	---	4.39E-07	1.92E-06	5.85E-09	2.56E-08	1.56E-08	6.84E-08	---	---	---	---	4.60E-07	2.02E-06	
Beryllium	---	---	---	---	---	---	---	---	---	---	---	---	2.63E-08	1.15E-07	3.51E-10	1.54E-09	9.37E-10	4.10E-09	---	---	---	---	2.76E-08	1.21E-07	
Cadmium	---	---	---	---	---	---	---	---	---	---	---	---	2.41E-06	1.06E-05	3.22E-08	1.41E-07	8.59E-08	3.76E-07	---	---	---	---	2.53E-06	1.11E-05	
Chromium	---	---	---	---	---	---	---	---	---	---	---	---	3.07E-06	1.35E-05	4.10E-08	1.79E-07	1.09E-07	4.79E-07	---	---	---	---	3.22E-06	1.41E-05	
Cobalt	---	---	---	---	---	---	---	---	---	---	---	---	1.84E-07	8.08E-07	2.46E-09	1.08E-08	6.56E-09	2.87E-08	---	---	---	---	1.93E-07	8.47E-07	
Lead	---	---	---	---	---	---	---	---	---	---	---	---	1.10E-06	4.81E-06	1.46E-08	6.41E-08	3.90E-08	1.71E-07	---	---	---	---	1.15E-06	5.04E-06	
Manganese	---	---	---	---	---	---	---	---	---	---	---	---	8.34E-07	3.65E-06	1.11E-08	4.87E-08	2.97E-08	1.30E-07	---	---	---	---	8.75E-07	3.83E-06	
Mercury	---	---	---	---	---	---	---	---	---	---	---	---	5.71E-07	2.50E-06	7.61E-09	3.33E-08	2.03E-08	8.89E-08	---	---	---	---	5.99E-07	2.62E-06	
Nickel	---	---	---	---	---	---	---	---	---	---	---	---	4.61E-06	2.02E-05	6.15E-08	2.69E-07	1.64E-07	7.18E-07	---	---	---	---	4.84E-06	2.12E-05	
Selenium	---	---	---	---	---	---	---	---	---	---	---	---	5.27E-08	2.31E-07	7.02E-10	3.08E-09	1.87E-09	8.20E-09	---	---	---	---	5.53E-08	2.42E-07	
<b>TOTAL HAP:</b>	<b>0.40</b>	<b>1.77</b>	<b>0.24</b>	<b>1.04</b>	<b>0.26</b>	<b>1.15</b>	<b>0.26</b>	<b>1.15</b>	<b>0.24</b>	<b>1.04</b>	<b>0.05</b>	<b>0.01</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.03</b>	<b>0.00</b>	<b>0.01</b>	<b>1.46</b>	<b>6.23</b>	

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 3: ENGINE #5 (C-005)**

Source Designation:	Compressor
Manufacturer:	Ajax
Model No.:	DPC-600 (76441)
Year Installed:	1980
Stroke Cycle:	2-stroke
Type of Burn:	Lean burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Rated Horsepower (bhp):	600
Heat Input (MMBtu/hr)	5.10
Specific Fuel Consumption (Btu/bhp-hr)	8,500
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00498
Maximum Fuel Consumption at 100% Load (MMscf/yr):	43.6

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	44,676

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	3.17E+00	lb/MMBtu
CO <sup>a</sup>	3.86E-01	lb/MMBtu
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
VOC <sup>a</sup>	1.20E-01	lb/MMBtu
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	1.62E+01	7.08E+01
CO	1.97E+00	8.62E+00
SO <sub>2</sub>	3.00E-03	1.31E-02
Total Particulate Matter (TSP)	2.46E-01	1.08E+00
PM <sub>10</sub> (Filterable + Condensable)	2.46E-01	1.08E+00
PM <sub>2.5</sub> (Filterable + Condensable)	2.46E-01	1.08E+00
VOC	6.12E-01	2.68E+00
CO <sub>2</sub>	5.97E+02	2.61E+03
CH <sub>4</sub>	1.12E-02	4.92E-02
N <sub>2</sub> O	1.12E-03	4.92E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 3: ENGINE #5 (C-005)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	7.76E-03	3.96E-02	1.73E-01
Acrolein	7.78E-03	3.97E-02	1.74E-01
Benzene	1.94E-03	9.89E-03	4.33E-02
Biphenyl	3.95E-06	2.01E-05	8.82E-05
1,3-Butadiene	8.20E-04	4.18E-03	1.83E-02
Carbon Tetrachloride	6.07E-05	3.10E-04	1.36E-03
Chlorobenzene	4.44E-05	2.26E-04	9.92E-04
Chloroform	4.71E-05	2.40E-04	1.05E-03
1,3-Dichloropropene	4.38E-05	2.23E-04	9.78E-04
Ethylbenzene	1.08E-04	5.51E-04	2.41E-03
Ethylene Dibromide	7.34E-05	3.74E-04	1.64E-03
Formaldehyde	5.52E-02	2.82E-01	1.23E+00
Methanol	2.48E-03	1.26E-02	5.54E-02
Methylene Chloride	1.47E-04	7.50E-04	3.28E-03
n-Hexane	4.45E-04	2.27E-03	9.94E-03
Perylene	4.97E-09	2.53E-08	1.11E-07
Phenol	4.21E-05	2.15E-04	9.40E-04
Styrene	5.48E-05	2.79E-04	1.22E-03
Toluene	9.63E-04	4.91E-03	2.15E-02
1,1,2,2-Tetrachloroethane	6.63E-05	3.38E-04	1.48E-03
1,1,2-Trichloroethane	5.27E-05	2.69E-04	1.18E-03
2,2,4-Trimethylpentane	8.46E-04	4.31E-03	1.89E-02
Vinyl Chloride	2.47E-05	1.26E-04	5.52E-04
Xylene	2.68E-04	1.37E-03	5.99E-03
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.33E-06	6.78E-06	2.97E-05
Acenaphthylene	3.17E-06	1.62E-05	7.08E-05
Anthracene	7.18E-07	3.66E-06	1.60E-05
Benz(a)anthracene	3.36E-07	1.71E-06	7.51E-06
Benzo(a)pyrene	5.68E-09	2.90E-08	1.27E-07
Benzo(b)fluoranthene	8.51E-09	4.34E-08	1.90E-07
Benzo(e)pyrene	2.34E-08	1.19E-07	5.23E-07
Benzo(g,h,i)perylene	2.48E-08	1.26E-07	5.54E-07
Benzo(k)fluoranthene	4.26E-09	2.17E-08	9.52E-08
Chrysene	6.72E-07	3.43E-06	1.50E-05
Fluoranthene	3.61E-07	1.84E-06	8.06E-06
Fluorene	1.69E-06	8.62E-06	3.78E-05
Indeno(1,2,3-c,d)pyrene	9.93E-09	5.06E-08	2.22E-07
2-Methylnaphthalene	2.14E-05	1.09E-04	4.78E-04
Naphthalene	9.63E-05	4.91E-04	2.15E-03
Phenanthrene	3.53E-06	1.80E-05	7.89E-05
Pyrene	5.84E-07	2.98E-06	1.30E-05
<b>Total HAP</b>		<b>0.40</b>	<b>1.77</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-stroke Lean-burn Engines," Supplement F, July 2000.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 4: ENGINE #6 (C-006)**

Source Designation:	Compressor
Manufacturer:	Cooper Bessemer
Model No.:	GMX-6 (41708)
Year Installed:	1947
Stroke Cycle:	2-stroke
Type of Burn:	Lean Burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Rated Horsepower (bhp):	300
Heat Input (MMBtu/hr)	3.00
Specific Fuel Consumption (Btu/bhp-hr)	10,000
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00293
Maximum Fuel Consumption at 100% Load (MMscf/yr):	25.6

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	26,280

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	3.17E+00	lb/MMBtu
CO <sup>a</sup>	3.86E-01	lb/MMBtu
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
VOC <sup>a</sup>	1.20E-01	lb/MMBtu
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	9.51E+00	4.17E+01
CO	1.16E+00	5.07E+00
SO <sub>2</sub>	1.76E-03	7.73E-03
Total Particulate Matter (TSP)	1.45E-01	6.35E-01
PM <sub>10</sub> (Filterable + Condensable)	1.45E-01	6.35E-01
PM <sub>2.5</sub> (Filterable + Condensable)	1.45E-01	6.35E-01
VOC	3.60E-01	1.58E+00
CO <sub>2</sub>	3.51E+02	1.54E+03
CH <sub>4</sub>	6.61E-03	2.90E-02
N <sub>2</sub> O	6.61E-04	2.90E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 4: ENGINE #6 (C-006)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	7.76E-03	2.33E-02	1.02E-01
Acrolein	7.78E-03	2.33E-02	1.02E-01
Benzene	1.94E-03	5.82E-03	2.55E-02
Biphenyl	3.95E-06	1.19E-05	5.19E-05
1,3-Butadiene	8.20E-04	2.46E-03	1.08E-02
Carbon Tetrachloride	6.07E-05	1.82E-04	7.98E-04
Chlorobenzene	4.44E-05	1.33E-04	5.83E-04
Chloroform	4.71E-05	1.41E-04	6.19E-04
1,3-Dichloropropene	4.38E-05	1.31E-04	5.76E-04
Ethylbenzene	1.08E-04	3.24E-04	1.42E-03
Ethylene Dibromide	7.34E-05	2.20E-04	9.64E-04
Formaldehyde	5.52E-02	1.66E-01	7.25E-01
Methanol	2.48E-03	7.44E-03	3.26E-02
Methylene Chloride	1.47E-04	4.41E-04	1.93E-03
n-Hexane	4.45E-04	1.34E-03	5.85E-03
Perylene	4.97E-09	1.49E-08	6.53E-08
Phenol	4.21E-05	1.26E-04	5.53E-04
Styrene	5.48E-05	1.64E-04	7.20E-04
Toluene	9.63E-04	2.89E-03	1.27E-02
1,1,2,2-Tetrachloroethane	6.63E-05	1.99E-04	8.71E-04
1,1,2-Trichloroethane	5.27E-05	1.58E-04	6.92E-04
2,2,4-Trimethylpentane	8.46E-04	2.54E-03	1.11E-02
Vinyl Chloride	2.47E-05	7.41E-05	3.25E-04
Xylene	2.68E-04	8.04E-04	3.52E-03
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.33E-06	3.99E-06	1.75E-05
Acenaphthylene	3.17E-06	9.51E-06	4.17E-05
Anthracene	7.18E-07	2.15E-06	9.43E-06
Benz(a)anthracene	3.36E-07	1.01E-06	4.42E-06
Benzo(a)pyrene	5.68E-09	1.70E-08	7.46E-08
Benzo(b)fluoranthene	8.51E-09	2.55E-08	1.12E-07
Benzo(e)pyrene	2.34E-08	7.02E-08	3.07E-07
Benzo(g,h,i)perylene	2.48E-08	7.44E-08	3.26E-07
Benzo(k)fluoranthene	4.26E-09	1.28E-08	5.60E-08
Chrysene	6.72E-07	2.02E-06	8.83E-06
Fluoranthene	3.61E-07	1.08E-06	4.74E-06
Fluorene	1.69E-06	5.07E-06	2.22E-05
Indeno(1,2,3-c,d)pyrene	9.93E-09	2.98E-08	1.30E-07
2-Methylnaphthalene	2.14E-05	6.42E-05	2.81E-04
Naphthalene	9.63E-05	2.89E-04	1.27E-03
Phenanthrene	3.53E-06	1.06E-05	4.64E-05
Pyrene	5.84E-07	1.75E-06	7.67E-06
<b>Total HAP</b>		<b>0.24</b>	<b>1.04</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-stroke Lean-burn Engines," Supplement F, July 2000.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 5: ENGINE #7 (C-007)**

Source Designation:	Compressor
Manufacturer:	Cooper Bessemer
Model No.:	GMX-6 (42055)
Year Installed:	1949
Stroke Cycle:	2-stroke
Type of Burn:	Lean burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Rated Horsepower (bhp):	330
Heat Input (MMBtu/hr)	3.30
Specific Fuel Consumption (Btu/bhp-hr)	10,000
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00322
Maximum Fuel Consumption at 100% Load (MMscf/yr):	28.2

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	28,908

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	3.17E+00	lb/MMBtu
CO <sup>a</sup>	3.86E-01	lb/MMBtu
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
VOC <sup>a</sup>	1.20E-01	lb/MMBtu
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	1.05E+01	4.58E+01
CO	1.27E+00	5.58E+00
SO <sub>2</sub>	1.94E-03	8.50E-03
Total Particulate Matter (TSP)	1.59E-01	6.98E-01
PM <sub>10</sub> (Filterable + Condensable)	1.59E-01	6.98E-01
PM <sub>2.5</sub> (Filterable + Condensable)	1.59E-01	6.98E-01
VOC	3.96E-01	1.73E+00
CO <sub>2</sub>	3.86E+02	1.69E+03
CH <sub>4</sub>	7.28E-03	3.19E-02
N <sub>2</sub> O	7.28E-04	3.19E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 5: ENGINE #7 (C-007)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	7.76E-03	2.56E-02	1.12E-01
Acrolein	7.78E-03	2.57E-02	1.12E-01
Benzene	1.94E-03	6.40E-03	2.80E-02
Biphenyl	3.95E-06	1.30E-05	5.71E-05
1,3-Butadiene	8.20E-04	2.71E-03	1.19E-02
Carbon Tetrachloride	6.07E-05	2.00E-04	8.77E-04
Chlorobenzene	4.44E-05	1.47E-04	6.42E-04
Chloroform	4.71E-05	1.55E-04	6.81E-04
1,3-Dichloropropene	4.38E-05	1.45E-04	6.33E-04
Ethylbenzene	1.08E-04	3.56E-04	1.56E-03
Ethylene Dibromide	7.34E-05	2.42E-04	1.06E-03
Formaldehyde	5.52E-02	1.82E-01	7.98E-01
Methanol	2.48E-03	8.18E-03	3.58E-02
Methylene Chloride	1.47E-04	4.85E-04	2.12E-03
n-Hexane	4.45E-04	1.47E-03	6.43E-03
Perylene	4.97E-09	1.64E-08	7.18E-08
Phenol	4.21E-05	1.39E-04	6.09E-04
Styrene	5.48E-05	1.81E-04	7.92E-04
Toluene	9.63E-04	3.18E-03	1.39E-02
1,1,2,2-Tetrachloroethane	6.63E-05	2.19E-04	9.58E-04
1,1,2-Trichloroethane	5.27E-05	1.74E-04	7.62E-04
2,2,4-Trimethylpentane	8.46E-04	2.79E-03	1.22E-02
Vinyl Chloride	2.47E-05	8.15E-05	3.57E-04
Xylene	2.68E-04	8.84E-04	3.87E-03
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.33E-06	4.39E-06	1.92E-05
Acenaphthylene	3.17E-06	1.05E-05	4.58E-05
Anthracene	7.18E-07	2.37E-06	1.04E-05
Benz(a)anthracene	3.36E-07	1.11E-06	4.86E-06
Benzo(a)pyrene	5.68E-09	1.87E-08	8.21E-08
Benzo(b)fluoranthene	8.51E-09	2.81E-08	1.23E-07
Benzo(e)pyrene	2.34E-08	7.72E-08	3.38E-07
Benzo(g,h,i)perylene	2.48E-08	8.18E-08	3.58E-07
Benzo(k)fluoranthene	4.26E-09	1.41E-08	6.16E-08
Chrysene	6.72E-07	2.22E-06	9.71E-06
Fluoranthene	3.61E-07	1.19E-06	5.22E-06
Fluorene	1.69E-06	5.58E-06	2.44E-05
Indeno(1,2,3-c,d)pyrene	9.93E-09	3.28E-08	1.44E-07
2-Methylnaphthalene	2.14E-05	7.06E-05	3.09E-04
Naphthalene	9.63E-05	3.18E-04	1.39E-03
Phenanthrene	3.53E-06	1.16E-05	5.10E-05
Pyrene	5.84E-07	1.93E-06	8.44E-06
<b>Total HAP</b>		<b>0.26</b>	<b>1.15</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-stroke Lean-burn Engines," Supplement F, July 2000.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 6: ENGINE #8 (C-008)**

Source Designation:	Compressor
Manufacturer:	Cooper Bessemer
Model No.:	GMX-6 (42056)
Year Installed:	1949
Stroke Cycle:	2-stroke
Type of Burn:	Lean Burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Rated Horsepower (bhp):	330
Heat Input (MMBtu/hr)	3.30
Specific Fuel Consumption (Btu/bhp-hr)	10,000
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00322
Maximum Fuel Consumption at 100% Load (MMscf/yr):	28.2

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	28,908

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	3.17E+00	lb/MMBtu
CO <sup>a</sup>	3.86E-01	lb/MMBtu
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
VOC <sup>a</sup>	1.20E-01	lb/MMBtu
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	1.05E+01	4.58E+01
CO	1.27E+00	5.58E+00
SO <sub>2</sub>	1.94E-03	8.50E-03
Total Particulate Matter (TSP)	1.59E-01	6.98E-01
PM <sub>10</sub> (Filterable + Condensable)	1.59E-01	6.98E-01
PM <sub>2.5</sub> (Filterable + Condensable)	1.59E-01	6.98E-01
VOC	3.96E-01	1.73E+00
CO <sub>2</sub>	3.86E+02	1.69E+03
CH <sub>4</sub>	7.28E-03	3.19E-02
N <sub>2</sub> O	7.28E-04	3.19E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 6: ENGINE #8 (C-008)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	7.76E-03	2.56E-02	1.12E-01
Acrolein	7.78E-03	2.57E-02	1.12E-01
Benzene	1.94E-03	6.40E-03	2.80E-02
Biphenyl	3.95E-06	1.30E-05	5.71E-05
1,3-Butadiene	8.20E-04	2.71E-03	1.19E-02
Carbon Tetrachloride	6.07E-05	2.00E-04	8.77E-04
Chlorobenzene	4.44E-05	1.47E-04	6.42E-04
Chloroform	4.71E-05	1.55E-04	6.81E-04
1,3-Dichloropropene	4.38E-05	1.45E-04	6.33E-04
Ethylbenzene	1.08E-04	3.56E-04	1.56E-03
Ethylene Dibromide	7.34E-05	2.42E-04	1.06E-03
Formaldehyde	5.52E-02	1.82E-01	7.98E-01
Methanol	2.48E-03	8.18E-03	3.58E-02
Methylene Chloride	1.47E-04	4.85E-04	2.12E-03
n-Hexane	4.45E-04	1.47E-03	6.43E-03
Perylene	4.97E-09	1.64E-08	7.18E-08
Phenol	4.21E-05	1.39E-04	6.09E-04
Styrene	5.48E-05	1.81E-04	7.92E-04
Toluene	9.63E-04	3.18E-03	1.39E-02
1,1,2,2-Tetrachloroethane	6.63E-05	2.19E-04	9.58E-04
1,1,2-Trichloroethane	5.27E-05	1.74E-04	7.62E-04
2,2,4-Trimethylpentane	8.46E-04	2.79E-03	1.22E-02
Vinyl Chloride	2.47E-05	8.15E-05	3.57E-04
Xylene	2.68E-04	8.84E-04	3.87E-03
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.33E-06	4.39E-06	1.92E-05
Acenaphthylene	3.17E-06	1.05E-05	4.58E-05
Anthracene	7.18E-07	2.37E-06	1.04E-05
Benz(a)anthracene	3.36E-07	1.11E-06	4.86E-06
Benzo(a)pyrene	5.68E-09	1.87E-08	8.21E-08
Benzo(b)fluoranthene	8.51E-09	2.81E-08	1.23E-07
Benzo(e)pyrene	2.34E-08	7.72E-08	3.38E-07
Benzo(g,h,i)perylene	2.48E-08	8.18E-08	3.58E-07
Benzo(k)fluoranthene	4.26E-09	1.41E-08	6.16E-08
Chrysene	6.72E-07	2.22E-06	9.71E-06
Fluoranthene	3.61E-07	1.19E-06	5.22E-06
Fluorene	1.69E-06	5.58E-06	2.44E-05
Indeno(1,2,3-c,d)pyrene	9.93E-09	3.28E-08	1.44E-07
2-Methylnaphthalene	2.14E-05	7.06E-05	3.09E-04
Naphthalene	9.63E-05	3.18E-04	1.39E-03
Phenanthrene	3.53E-06	1.16E-05	5.10E-05
Pyrene	5.84E-07	1.93E-06	8.44E-06
<b>Total HAP</b>		<b>0.26</b>	<b>1.15</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-stroke Lean-burn Engines," Supplement F, July 2000.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 7: ENGINE #9 (C-009)**

Source Designation:	Compressor
Manufacturer:	Clark
Model No.:	RA-32 (22259)
Year Installed:	1961
Stroke Cycle:	2-stroke
Type of Burn:	Lean Burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Rated Horsepower (bhp):	300
Heat Input (MMBtu/hr)	3.00
Specific Fuel Consumption (Btu/bhp-hr)	10,000
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00293
Maximum Fuel Consumption at 100% Load (MMscf/yr):	25.6

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	26,280

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	3.17E+00	lb/MMBtu
CO <sup>a</sup>	3.86E-01	lb/MMBtu
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	4.83E-02	lb/MMBtu
VOC <sup>a</sup>	1.20E-01	lb/MMBtu
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	9.51E+00	4.17E+01
CO	1.16E+00	5.07E+00
SO <sub>2</sub>	1.76E-03	7.73E-03
Total Particulate Matter (TSP)	1.45E-01	6.35E-01
PM <sub>10</sub> (Filterable + Condensable)	1.45E-01	6.35E-01
PM <sub>2.5</sub> (Filterable + Condensable)	1.45E-01	6.35E-01
VOC	3.60E-01	1.58E+00
CO <sub>2</sub>	3.51E+02	1.54E+03
CH <sub>4</sub>	6.61E-03	2.90E-02
N <sub>2</sub> O	6.61E-04	2.90E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 7: ENGINE #9 (C-009)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Acetaldehyde	7.76E-03	2.33E-02	1.02E-01
Acrolein	7.78E-03	2.33E-02	1.02E-01
Benzene	1.94E-03	5.82E-03	2.55E-02
Biphenyl	3.95E-06	1.19E-05	5.19E-05
1,3-Butadiene	8.20E-04	2.46E-03	1.08E-02
Carbon Tetrachloride	6.07E-05	1.82E-04	7.98E-04
Chlorobenzene	4.44E-05	1.33E-04	5.83E-04
Chloroform	4.71E-05	1.41E-04	6.19E-04
1,3-Dichloropropene	4.38E-05	1.31E-04	5.76E-04
Ethylbenzene	1.08E-04	3.24E-04	1.42E-03
Ethylene Dibromide	7.34E-05	2.20E-04	9.64E-04
Formaldehyde	5.52E-02	1.66E-01	7.25E-01
Methanol	2.48E-03	7.44E-03	3.26E-02
Methylene Chloride	1.47E-04	4.41E-04	1.93E-03
n-Hexane	4.45E-04	1.34E-03	5.85E-03
Perylene	4.97E-09	1.49E-08	6.53E-08
Phenol	4.21E-05	1.26E-04	5.53E-04
Styrene	5.48E-05	1.64E-04	7.20E-04
Toluene	9.63E-04	2.89E-03	1.27E-02
1,1,2,2-Tetrachloroethane	6.63E-05	1.99E-04	8.71E-04
1,1,2-Trichloroethane	5.27E-05	1.58E-04	6.92E-04
2,2,4-Trimethylpentane	8.46E-04	2.54E-03	1.11E-02
Vinyl Chloride	2.47E-05	7.41E-05	3.25E-04
Xylene	2.68E-04	8.04E-04	3.52E-03
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.33E-06	3.99E-06	1.75E-05
Acenaphthylene	3.17E-06	9.51E-06	4.17E-05
Anthracene	7.18E-07	2.15E-06	9.43E-06
Benz(a)anthracene	3.36E-07	1.01E-06	4.42E-06
Benzo(a)pyrene	5.68E-09	1.70E-08	7.46E-08
Benzo(b)fluoranthene	8.51E-09	2.55E-08	1.12E-07
Benzo(e)pyrene	2.34E-08	7.02E-08	3.07E-07
Benzo(g,h,i)perylene	2.48E-08	7.44E-08	3.26E-07
Benzo(k)fluoranthene	4.26E-09	1.28E-08	5.60E-08
Chrysene	6.72E-07	2.02E-06	8.83E-06
Fluoranthene	3.61E-07	1.08E-06	4.74E-06
Fluorene	1.69E-06	5.07E-06	2.22E-05
Indeno(1,2,3-c,d)pyrene	9.93E-09	2.98E-08	1.30E-07
2-Methylnaphthalene	2.14E-05	6.42E-05	2.81E-04
Naphthalene	9.63E-05	2.89E-04	1.27E-03
Phenanthrene	3.53E-06	1.06E-05	4.64E-05
Pyrene	5.84E-07	1.75E-06	7.67E-06
<b>Total HAP</b>		<b>0.24</b>	<b>1.04</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-1 "Uncontrolled Emission Factors for 2-stroke Lean-burn Engines," Supplement F, July 2000.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) x 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 8: GENERATOR (G-002)**

Source Designation:	Compressor
Manufacturer:	Kohler
Model No.:	100 REZGD
Stroke Cycle:	4-stroke
Type of Burn:	Rich burn
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Electrical Power (KW)	115
Engine Power (hp)	155
Potential Fuel Consumption (scf/hr)	1,389
Rated Horsepower (bhp):	155
Heat Input (MMBtu/hr)	1.42

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	500
Potential Fuel Consumption (MMBtu/yr):	712

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>b</sup>	2.00E+00	g/hp-hr
CO <sup>b</sup>	4.00E+00	g/hp-hr
SO <sub>2</sub> <sup>a</sup>	5.88E-04	lb/MMBtu
Total Particulate Matter (TSP) <sup>a</sup>	9.50E-03	lb/MMBtu
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	1.94E-02	lb/MMBtu
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	1.94E-02	lb/MMBtu
VOC <sup>b</sup>	1.00E+00	g/hp-hr
CO <sub>2</sub> <sup>c</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>c</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>c</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>d, e, f</sup>	(tons/yr) <sup>g</sup>
NO <sub>x</sub>	6.84E-01	1.71E-01
CO	1.37E+00	3.42E-01
SO <sub>2</sub>	8.37E-04	2.09E-04
Total Particulate Matter (TSP)	1.35E-02	3.38E-03
PM <sub>10</sub> (Filterable + Condensable)	2.76E-02	6.91E-03
PM <sub>2.5</sub> (Filterable + Condensable)	2.76E-02	6.91E-03
VOC (includes formaldehyde)	3.71E-01	9.28E-02
CO <sub>2</sub>	1.67E+02	4.16E+01
CH <sub>4</sub>	3.14E-03	7.85E-04
N <sub>2</sub> O	3.14E-04	7.85E-05

Company Name:  
 Facility Name:  
 Project Description:

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**TABLE 8: GENERATOR (G-002)**

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

Pollutant	Emission Factor (lb/MMBtu) <sup>a</sup>	Potential Emissions (lb/hr) <sup>d</sup>	Potential Emissions (tons/yr) <sup>e</sup>
<b>HAPs:</b>			
Acetaldehyde	2.79E-03	3.97E-03	9.93E-04
Acrolein	2.63E-03	3.74E-03	9.36E-04
Benzene	1.58E-03	2.25E-03	5.62E-04
1,3-Butadiene	6.63E-04	9.44E-04	2.36E-04
Carbon Tetrachloride	1.77E-05	2.52E-05	6.30E-06
Chlorobenzene	1.29E-05	1.84E-05	4.59E-06
Chloroform	1.37E-05	1.95E-05	4.88E-06
1,3-Dichloropropene	1.27E-05	1.81E-05	4.52E-06
Ethylbenzene	2.48E-05	3.53E-05	8.83E-06
Ethylene Dibromide	2.13E-05	3.03E-05	7.58E-06
Formaldehyde	2.05E-02	2.92E-02	7.30E-03
Methanol	3.06E-03	4.36E-03	1.09E-03
Methylene Chloride	4.12E-05	5.87E-05	1.47E-05
Styrene	1.19E-05	1.69E-05	4.24E-06
Toluene	5.58E-04	7.94E-04	1.99E-04
1,1,2,2-Tetrachloroethane	2.53E-05	3.60E-05	9.01E-06
1,1,2-Trichloroethane	1.53E-05	2.18E-05	5.45E-06
Vinyl Chloride	7.18E-06	1.02E-05	2.56E-06
Xylene	1.95E-04	2.78E-04	6.94E-05
<b>Polycyclic Organic Matter:</b>			
Naphthalene	9.71E-05	1.38E-04	3.46E-05
PAH	1.41E-04	2.01E-04	5.02E-05
<b>Total HAP</b>		<b>0.05</b>	<b>0.01</b>

<sup>a</sup> Emission factor from AP-42 Section 3.2, Table 3.2-3 "Uncontrolled Emission Factors for 4-stroke Rich-burn Engines," Supplement F, July 2000.

<sup>b</sup> NOx, CO, and VOC Emission factor from Manufacturer vendor sheet.

<sup>c</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

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

<sup>e</sup> Emission Rate (lb/hr) = Rated Capacity (hp) × Emission Factor (g/hp-hr) x 1 lb/453.24 g

<sup>f</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) x 2.2046 (lb/kg)

<sup>g</sup> Annual Emissions (tons/yr)<sub>Potential</sub> = (lb/hr)<sub>Emissions</sub> × (Maximum Allowable Operating Hours, 500 hr/yr) × (1 ton/2000 lb).

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
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**TABLE 9: BOILER (BIR01)**

Source Designation:	Heating Boiler
Year Installed:	1988
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Heat Input (MMBtu/hr)	2.25
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00220
Maximum Fuel Consumption at 100% Load (MMscf/yr):	19.2

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	19

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	1.00E+02	lb/MMScf
CO <sup>a</sup>	8.40E+01	lb/MMScf
SO <sub>2</sub> <sup>a</sup>	6.00E-01	lb/MMScf
Total Particulate Matter (TSP) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
VOC <sup>a</sup>	5.50E+00	lb/MMScf
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	2.20E-01	9.61E-01
CO	1.84E-01	8.08E-01
SO <sub>2</sub>	1.32E-03	5.77E-03
Total Particulate Matter (TSP)	1.67E-02	7.31E-02
PM <sub>10</sub> (Filterable + Condensable)	1.67E-02	7.31E-02
PM <sub>2.5</sub> (Filterable + Condensable)	1.67E-02	7.31E-02
VOC	1.21E-02	5.29E-02
CO <sub>2</sub>	2.63E+02	1.15E+03
CH <sub>4</sub>	4.96E-03	2.17E-02
N <sub>2</sub> O	4.96E-04	2.17E-03

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
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**TABLE 9: BOILER (BIR01)**

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

Pollutant	Emission Factor (lb/MMScf) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Benzene	2.10E-03	4.61E-06	2.02E-05
Dichlorobenzene	1.20E-03	2.63E-06	1.15E-05
Formaldehyde	7.50E-02	1.65E-04	7.21E-04
n-Hexane	1.80E+00	3.95E-03	1.73E-02
Toluene	3.40E-03	7.46E-06	3.27E-05
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.80E-06	3.95E-09	1.73E-08
Acenaphthylene	1.80E-06	3.95E-09	1.73E-08
Anthracene	2.40E-06	5.27E-09	2.31E-08
Benz(a)anthracene	1.80E-06	3.95E-09	1.73E-08
Benzo(a)pyrene	1.20E-06	2.63E-09	1.15E-08
Benzo(b)fluoranthene	1.80E-06	3.95E-09	1.73E-08
Benzo(g,h,i)perylene	1.20E-06	2.63E-09	1.15E-08
Benzo(k)fluoranthene	1.80E-06	3.95E-09	1.73E-08
Chrysene	1.80E-06	3.95E-09	1.73E-08
Dibenzo(a,h)anthracene	1.20E-06	2.63E-09	1.15E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	3.51E-08	1.54E-07
Fluoranthene	3.00E-06	6.59E-09	2.88E-08
Fluorene	2.80E-06	6.15E-09	2.69E-08
Indeno(1,2,3-c,d)pyrene	1.80E-06	3.95E-09	1.73E-08
3-Methylchloranthrene	1.80E-06	3.95E-09	1.73E-08
2-Methylnaphthalene	2.40E-05	5.27E-08	2.31E-07
Naphthalene	6.10E-04	1.34E-06	5.86E-06
Phenanthrene	1.70E-05	3.73E-08	1.63E-07
Pyrene	5.00E-06	1.10E-08	4.81E-08
<b>Metals:</b>			
Arsenic	2.00E-04	4.39E-07	1.92E-06
Beryllium	1.20E-05	2.63E-08	1.15E-07
Cadmium	1.10E-03	2.41E-06	1.06E-05
Chromium	1.40E-03	3.07E-06	1.35E-05
Cobalt	8.40E-05	1.84E-07	8.08E-07
Lead	5.00E-04	1.10E-06	4.81E-06
Manganese	3.80E-04	8.34E-07	3.65E-06
Mercury	2.60E-04	5.71E-07	2.50E-06
Nickel	2.10E-03	4.61E-06	2.02E-05
Selenium	2.40E-05	5.27E-08	2.31E-07
<b>Total HAP</b>		<b>4.15E-03</b>	<b>1.82E-02</b>

<sup>a</sup> Emission factor from AP-42 Section 1.4, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, July 1998.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

<sup>c</sup> Emission Rate (lb/hr) = Fuel Consumption (scf/hr) × Emission Factor (lb/MMScf) / 10<sup>6</sup>

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
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**TABLE 10: HOT WATER HEATER**

Source Designation:	Hot Water Heater
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Heat Input (MMBtu/hr)	0.03
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00003
Maximum Fuel Consumption at 100% Load (MMscf/yr):	0.3

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	0.3

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	1.00E+02	lb/MMScf
CO <sup>a</sup>	8.40E+01	lb/MMScf
SO <sub>2</sub> <sup>a</sup>	6.00E-01	lb/MMScf
Total Particulate Matter (TSP) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
VOC <sup>a</sup>	5.50E+00	lb/MMScf
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	2.93E-03	1.28E-02
CO	2.46E-03	1.08E-02
SO <sub>2</sub>	1.76E-05	7.69E-05
Total Particulate Matter (TSP)	2.22E-04	9.74E-04
PM <sub>10</sub> (Filterable + Condensable)	2.22E-04	9.74E-04
PM <sub>2.5</sub> (Filterable + Condensable)	2.22E-04	9.74E-04
VOC	1.61E-04	7.05E-04
CO <sub>2</sub>	3.51E+00	1.54E+01
CH <sub>4</sub>	6.61E-05	2.90E-04
N <sub>2</sub> O	6.61E-06	2.90E-05

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 10: HOT WATER HEATER**

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

Pollutant	Emission Factor (lb/MMScf) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Benzene	2.10E-03	6.15E-08	2.69E-07
Dichlorobenzene	1.20E-03	3.51E-08	1.54E-07
Formaldehyde	7.50E-02	2.20E-06	9.61E-06
n-Hexane	1.80E+00	5.27E-05	2.31E-04
Toluene	3.40E-03	9.95E-08	4.36E-07
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.80E-06	5.27E-11	2.31E-10
Acenaphthylene	1.80E-06	5.27E-11	2.31E-10
Anthracene	2.40E-06	7.02E-11	3.08E-10
Benz(a)anthracene	1.80E-06	5.27E-11	2.31E-10
Benzo(a)pyrene	1.20E-06	3.51E-11	1.54E-10
Benzo(b)fluoranthene	1.80E-06	5.27E-11	2.31E-10
Benzo(g,h,i)perylene	1.20E-06	3.51E-11	1.54E-10
Benzo(k)fluoranthene	1.80E-06	5.27E-11	2.31E-10
Chrysene	1.80E-06	5.27E-11	2.31E-10
Dibenzo(a,h)anthracene	1.20E-06	3.51E-11	1.54E-10
7,12-Dimethylbenz(a)anthracene	1.60E-05	4.68E-10	2.05E-09
Fluoranthene	3.00E-06	8.78E-11	3.85E-10
Fluorene	2.80E-06	8.20E-11	3.59E-10
Indeno(1,2,3-c,d)pyrene	1.80E-06	5.27E-11	2.31E-10
3-Methylchloranthrene	1.80E-06	5.27E-11	2.31E-10
2-Methylnaphthalene	2.40E-05	7.02E-10	3.08E-09
Naphthalene	6.10E-04	1.79E-08	7.82E-08
Phenanthrene	1.70E-05	4.98E-10	2.18E-09
Pyrene	5.00E-06	1.46E-10	6.41E-10
<b>Metals:</b>			
Arsenic	2.00E-04	5.85E-09	2.56E-08
Beryllium	1.20E-05	3.51E-10	1.54E-09
Cadmium	1.10E-03	3.22E-08	1.41E-07
Chromium	1.40E-03	4.10E-08	1.79E-07
Cobalt	8.40E-05	2.46E-09	1.08E-08
Lead	5.00E-04	1.46E-08	6.41E-08
Manganese	3.80E-04	1.11E-08	4.87E-08
Mercury	2.60E-04	7.61E-09	3.33E-08
Nickel	2.10E-03	6.15E-08	2.69E-07
Selenium	2.40E-05	7.02E-10	3.08E-09
<b>Total HAP</b>		<b>5.53E-05</b>	<b>2.42E-04</b>

<sup>a</sup> Emission factor from AP-42 Section 1.4, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, July 1998.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

<sup>c</sup> Emission Rate (lb/hr) = Fuel Consumption (scf/hr) × Emission Factor (lb/MMScf) / 10<sup>6</sup>

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
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**TABLE 11: RADIANT HEATER**

Source Designation:	Hot Water Heater
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,025
Heat Input (MMBtu/hr)	0.08
Maximum Fuel Consumption at 100% Load (MMscf/hr):	0.00008
Maximum Fuel Consumption at 100% Load (MMscf/yr):	0.7

**Operational Details:**

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMBtu/yr):	0.7

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

Pollutant	Emission Factors	Units
NO <sub>x</sub> <sup>a</sup>	1.00E+02	lb/MMScf
CO <sup>a</sup>	8.40E+01	lb/MMScf
SO <sub>2</sub> <sup>a</sup>	6.00E-01	lb/MMScf
Total Particulate Matter (TSP) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>10</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
PM <sub>2.5</sub> (Filterable + Condensable) <sup>a</sup>	7.60E+00	lb/MMScf
VOC <sup>a</sup>	5.50E+00	lb/MMScf
CO <sub>2</sub> <sup>b</sup>	5.31E+01	kg/MMBtu
CH <sub>4</sub> <sup>b</sup>	1.00E-03	kg/MMBtu
N <sub>2</sub> O <sup>b</sup>	1.00E-04	kg/MMBtu

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

Pollutant	Potential Emissions	
	(lb/hr) <sup>c, d</sup>	(tons/yr) <sup>e</sup>
NO <sub>x</sub>	7.80E-03	3.42E-02
CO	6.56E-03	2.87E-02
SO <sub>2</sub>	4.68E-05	2.05E-04
Total Particulate Matter (TSP)	5.93E-04	2.60E-03
PM <sub>10</sub> (Filterable + Condensable)	5.93E-04	2.60E-03
PM <sub>2.5</sub> (Filterable + Condensable)	5.93E-04	2.60E-03
VOC	4.29E-04	1.88E-03
CO <sub>2</sub>	9.36E+00	4.10E+01
CH <sub>4</sub>	1.76E-04	7.72E-04
N <sub>2</sub> O	1.76E-05	7.72E-05

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
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**TABLE 11: RADIANT HEATER**

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

Pollutant	Emission Factor (lb/MMScf) <sup>a</sup>	Potential Emissions (lb/hr) <sup>c</sup>	Potential Emissions (tons/yr) <sup>c</sup>
<b>HAPs:</b>			
Benzene	2.10E-03	1.64E-07	7.18E-07
Dichlorobenzene	1.20E-03	9.37E-08	4.10E-07
Formaldehyde	7.50E-02	5.85E-06	2.56E-05
n-Hexane	1.80E+00	1.40E-04	6.15E-04
Toluene	3.40E-03	2.65E-07	1.16E-06
<b>Polycyclic Organic Matter:</b>			
Acenaphthene	1.80E-06	1.40E-10	6.15E-10
Acenaphthylene	1.80E-06	1.40E-10	6.15E-10
Anthracene	2.40E-06	1.87E-10	8.20E-10
Benz(a)anthracene	1.80E-06	1.40E-10	6.15E-10
Benzo(a)pyrene	1.20E-06	9.37E-11	4.10E-10
Benzo(b)fluoranthene	1.80E-06	1.40E-10	6.15E-10
Benzo(g,h,i)perylene	1.20E-06	9.37E-11	4.10E-10
Benzo(k)fluoranthene	1.80E-06	1.40E-10	6.15E-10
Chrysene	1.80E-06	1.40E-10	6.15E-10
Dibenzo(a,h)anthracene	1.20E-06	9.37E-11	4.10E-10
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.25E-09	5.47E-09
Fluoranthene	3.00E-06	2.34E-10	1.03E-09
Fluorene	2.80E-06	2.19E-10	9.57E-10
Indeno(1,2,3-c,d)pyrene	1.80E-06	1.40E-10	6.15E-10
3-Methylchloranthrene	1.80E-06	1.40E-10	6.15E-10
2-Methylnaphthalene	2.40E-05	1.87E-09	8.20E-09
Naphthalene	6.10E-04	4.76E-08	2.09E-07
Phenanthrene	1.70E-05	1.33E-09	5.81E-09
Pyrene	5.00E-06	3.90E-10	1.71E-09
<b>Metals:</b>			
Arsenic	2.00E-04	1.56E-08	6.84E-08
Beryllium	1.20E-05	9.37E-10	4.10E-09
Cadmium	1.10E-03	8.59E-08	3.76E-07
Chromium	1.40E-03	1.09E-07	4.79E-07
Cobalt	8.40E-05	6.56E-09	2.87E-08
Lead	5.00E-04	3.90E-08	1.71E-07
Manganese	3.80E-04	2.97E-08	1.30E-07
Mercury	2.60E-04	2.03E-08	8.89E-08
Nickel	2.10E-03	1.64E-07	7.18E-07
Selenium	2.40E-05	1.87E-09	8.20E-09
<b>Total HAP</b>		<b>1.47E-04</b>	<b>6.46E-04</b>

<sup>a</sup> Emission factor from AP-42 Section 1.4, Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4, July 1998.

<sup>b</sup> Greenhouse gas emission factors are from 40 CFR Part 98 Subpart C for natural gas combustion

<sup>c</sup> Emission Rate (lb/hr) = Fuel Consumption (scf/hr) × Emission Factor (lb/MMScf) / 10<sup>6</sup>

<sup>d</sup> Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (kg/MMBtu) × 2.2046 (lb/kg)

<sup>e</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  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 12: STORAGE TANKS**

**Storage Tank Information:**

Source Designation:	Pipeline Condensate Tank	Pipeline Condensate Tank	New Oil Tank	Used Oil Tank	Antifreeze Tank	Sump Tank
Tank ID:	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5	Tank 6
Tank Capacity (gallons, each):	1,000	1,500	1,500	500	3,000	4,000
Tank Contents:	Pipeline Condensate	Pipeline Condensate	New Oil	Used Oil	Antifreeze (Ethylene Glycol)	Various Liquids
Annual Throughput (gallons/year, each):	12,000	18,000	18,000	6,000	36,000	48,000
Condensate Throughput (bbl/day, each):	0.1	0.1	N/A	N/A	N/A	0.1
Max. Annual Hours of Operation (hr/yr):	8,760	8,760	8,760	8,760	8,760	8,760

**Emissions Data - Total Emissions (Working + Breathing + Flashing):**

Pollutant	Potential Emissions											
	lbs/hr	tpy										
VOC	0.10	0.42	0.10	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.42
HAPs	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
CO <sub>2</sub>	0.00	0.00	0.00	0.00	---	---	---	---	---	---	0.00	0.00
CH <sub>4</sub>	0.02	0.07	0.02	0.07	---	---	---	---	---	---	0.02	0.07

**Notes:**

1. Conservatively assumes one turnover per month, per tank.
2. Conservatively assumes 1% condensate in tanks with potential for condensate throughput (99% water)
3. E&P TANK v2.0 software run for pipeline condensate/sump tanks includes working, breathing and flashing emissions
4. EPA TANKS 4.0.9d software run for oil tanks uses properties of fuel oil #2
5. EPA TANKS 4.0.9d does not include ethylene glycol; software run for antifreeze tank uses properties of propylene glycol

**Tank Emissions Data:**

Pollutant	Total Potential Emissions	
	lbs/hr	tpy
VOC	0.29	1.26
HAPs	0.01	0.03
CO <sub>2</sub>	0.00	0.00
CH <sub>4</sub>	0.05	0.21

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 13: FUGITIVES**

**Fugitive Component Information:**

Component Type	Component Count	Gas Leak Emission Factor		Average Gas Leak Rate (lb/hr)	Max Gas Leak Rate (tpy)	VOC Emissions (tpy)	HAP Emissions (tpy)
		(lb/hr/component)	Factor Source				
Connectors	600	4.41E-04	EPA Protocol, Table 2-4	0.26	1.39	0.00	0.00
Flanges	300	8.60E-04	EPA Protocol, Table 2-4	0.26	1.36	0.00	0.00
Open-Ended Lines	4	4.41E-03	EPA Protocol, Table 2-4	0.02	0.09	0.00	0.00
Valves	150	9.92E-03	EPA Protocol, Table 2-4	1.49	7.82	0.02	0.00
Other	10	1.94E-02	EPA Protocol, Table 2-4	0.19	1.02	0.00	0.00
<b>Total</b>				<b>2.22</b>	<b>11.68</b>	<b>0.03</b>	<b>0.00</b>

**Notes:**

1. "Other" equipment types include compressor seals, relief valves, diaphragms, drains, meters, etc
2. The component count is conservatively estimated based on the equipment at the facility
3. Conservatively assumed that maximum leak rate is 20% greater than measured average leak rate for the purposes of establishing PTE
4. VOC and HAP emissions are based on fractions of these pollutants in the site-specific gas analysis

**GHG Fugitive Emissions from Component Leaks:**

Component Type	Component Count	GHG Emission Factor		CH <sub>4</sub> Emissions (tpy)	CO <sub>2</sub> Emissions (tpy)	CO <sub>2</sub> e Emissions (tpy)
		(scf/hr/component)	Factor Source			
Connectors	600	0.004	40 CFR 98, Table W-1A	0.43	0.00	10.80
Flanges	300	0.004	40 CFR 98, Table W-1A	0.22	0.00	5.40
Open-Ended Lines	4	0.061	40 CFR 98, Table W-1A	0.04	0.00	1.10
Valves	150	0.03	40 CFR 98, Table W-1A	0.73	0.01	18.23
Other	10	0.04	40 CFR 98, Table W-1A	0.07	0.00	1.80
<b>Total</b>				<b>1.49</b>	<b>0.01</b>	<b>37.33</b>

**Notes:**

1. The component count is conservatively estimated based on the equipment at the facility
2. CH<sub>4</sub> and CO<sub>2</sub> emissions are based on fractions of these pollutants in the site-specific gas analysis
3. Emissions are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98
4. 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).

Company Name:  
 Facility Name:  
 Project Description:

Equitrans, LP  
Comet Compressor Station #43  
Title V Permit Renewal Application

**TABLE 13: FUGITIVES**

**VOC/GHG Fugitive Emissions from Pneumatic Devices:**

Component Type	Component Count	GHG Emission Factor	VOC Emissions	HAP Emissions	CH <sub>4</sub> Emissions	CO <sub>2</sub> Emissions	CO <sub>2</sub> e Emissions
		(scf/hr/component)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Pneumatic	20	13.5	0.14	0.00	48.60	0.16	1,215.10
<b>Total</b>			<b>0.14</b>	<b>0.00</b>	<b>48.60</b>	<b>0.16</b>	<b>1,215.10</b>

**Notes:**

1. The component count is conservatively estimated based on the equipment at the facility
2. VOC and HAP emissions are based on sum of the fractions of the pollutants in the site-specific gas analysis in those classifications, and are calculated in accordance with standard conversion methodology and factor
3. CH<sub>4</sub> and CO<sub>2</sub> emissions are based on fractions of these pollutants in the site-specific gas analysis, and are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98
4. 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).
5. Emission Factor for Pneumatic Devices from 40 CFR 98, Subpart W (Table W-1A, Intermittent Bleed Pneumatic Device Vents)

**VOC/GHG Fugitive Emissions from Blowdowns:**

Blowdown Type	Number of Events	Gas Volume Emitted per Event	VOC Emissions	HAP Emissions	CH <sub>4</sub> Emissions	CO <sub>2</sub> Emissions	CO <sub>2</sub> e Emissions
		(scf)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Rod Packing	5	2,014,800	0.59	0.01	206.99	0.67	5,175.44
Compressor	300	500	0.01	0.00	3.08	0.01	77.06
<b>Total</b>			<b>0.59</b>	<b>0.01</b>	<b>210.07</b>	<b>0.68</b>	<b>5,252.50</b>

**Notes:**

1. The number of compressor blowdowns assumes 5 blowdowns per compressor per month. Rod packing emissions are based on EPA Natural Gas Star factors (11.5 scf/hr/throw - 4 throws per compressor)
2. VOC and HAP emissions are based on sum of the fractions of the pollutants in the site-specific gas analysis in those classifications, and are calculated in accordance with standard conversion methodology and factor
3. CH<sub>4</sub> and CO<sub>2</sub> emissions are based on fractions of these pollutants in the site-specific gas analysis, and are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98
4. 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).
5. The gas volume per event is estimated based on facility design

**Fugitive Component Emissions Data:**

Pollutant	Atmospheric Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	0.17	0.76	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
HAPs	0.00	0.01	EPA Protocol, Table 2-4 & Site-Specific Gas Analysis
GHG (CO <sub>2</sub> e)	1,485.15	6,504.94	40 CFR 98, Table W-1A & Site-Specific Gas Analysis

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

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\* Project Setup Information

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Project File : Z:\Client\EQT Corporation\West  
 Virginia\Comet\Projects\153901.0133 Comet TV Renewal\04 Draft\2015-1002 Draft  
 Renewal App\Att F - Emission Calcs\02 E&P TANK\01  
 Files\2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks.ept  
 Flowsheet Selection : Oil Tank with Separator  
 Calculation Method : RVP Distillation  
 Control Efficiency : 100.0%  
 Known Separator Stream : Geographical Region  
 Geographical Region : All Regions in US  
 Entering Air Composition : No

Filed Name : Equitrans, LP  
 Well Name : Comet Compressor Station  
 Well ID : Pipeline Condensate/Sump Tanks  
 Date : 2015.10.06

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\* Data Input

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Separator Pressure : 300.00[psi g]  
 Separator Temperature : 80.00[F]  
 Ambient Pressure : 14.70[psi a]  
 Ambient Temperature : 80.00[F]  
 C10+ SG : 0.8820  
 C10+ MW : 296.00

-- Low Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0300
4	N2	0.0900
5	C1	8.4300
6	C2	4.2300
7	C3	5.9100
8	i-C4	5.1700
9	n-C4	6.2200
10	i-C5	8.9100
11	n-C5	4.9700
12	C6	9.1100
13	C7	11.3400
14	C8	10.3900
15	C9	5.9600
16	C10+	11.7500
17	Benzene	0.3700
18	Toluene	0.9800
19	E-Benzene	0.1500
20	Xylenes	1.1900
21	n-C6	4.8000
22	2,2,4-Tri methyl p	0.0000

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

-- Sales Oil

-----  
 Production Rate : 0.1 [bbl/day]  
 Days of Annual Operation : 365 [days/year]  
 API Gravity : 58.0  
 Reid Vapor Pressure : 10.60 [psi a]

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 \*\*\*\*\*  
 \* Calculation Results  
 \*  
 \*\*\*\*\*  
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-- Emission Summary

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Item	Uncontrolled	Uncontrolled	
Page 1			E&P TANK
	[ton/yr]	[lb/hr]	
Total HAPs	0.010	0.002	
Total HC	0.553	0.126	
VOCs, C2+	0.484	0.111	
VOCs, C3+	0.419	0.096	

Uncontrolled Recovery Info.

Vapor	28.7100	x1E-3	[MSCFD]
HC Vapor	28.5800	x1E-3	[MSCFD]
GOR	287.10		[SCF/bbl]

-- Emission Composition

-----

No	Component	Uncontrolled	Uncontrolled
		[ton/yr]	[lb/hr]
1	H2S	0.000	0.000
2	O2	0.000	0.000
3	C02	0.001	0.000
4	N2	0.001	0.000
5	C1	0.069	0.016
6	C2	0.065	0.015
7	C3	0.119	0.027
8	i-C4	0.084	0.019
9	n-C4	0.079	0.018
10	i-C5	0.065	0.015
11	n-C5	0.028	0.006
12	C6	0.020	0.005
13	C7	0.009	0.002
14	C8	0.003	0.001
15	C9	0.001	0.000
16	C10+	0.000	0.000
17	Benzene	0.001	0.000
18	Toluene	0.000	0.000
19	E-Benzene	0.000	0.000
20	Xylenes	0.000	0.000
21	n-C6	0.009	0.002
22	2,2,4-Tri methyl p	0.000	0.000
	Total	0.554	0.126

-- Stream Data

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

No. Component	MW	LP Oil	Flash Oil	Sale Oil	Flash Gas	W&S Gas
Total Emissions						
mol %		mol %	mol %	mol %	mol %	mol %
1 H2S 0.0000	34.80	0.0000	0.0000	0.0000	0.0000	0.0000
2 O2 0.0000	32.00	0.0000	0.0000	0.0000	0.0000	0.0000
3 CO2 0.1111	44.01	0.0300	0.0021	0.0000	0.1194	0.0496
4 N2 0.3332	28.01	0.0900	0.0006	0.0000	0.3763	0.0145
5 C1 31.2062	16.04	8.4300	0.2054	0.0000	34.7691	4.8646
6 C2 15.6481	30.07	4.2300	0.5879	0.0039	15.8939	13.8313
7 C3 19.5826	44.10	5.9100	2.4063	0.8494	17.1306	37.7108
8 i-C4 10.4605	58.12	5.1700	3.7204	3.2119	9.8124	15.2521
9 n-C4 9.8389	58.12	6.2200	5.2238	4.8805	9.4102	13.0089
10 i-C5 6.5447	72.15	8.9100	9.7007	9.7854	6.3777	7.7795
11 n-C5 2.7638	72.15	4.9700	5.6802	5.7866	2.6955	3.2686
12 C6 1.7547	86.16	9.1100	11.4207	11.8324	1.7100	2.0852
13 C7 0.7075	100.20	11.3400	14.6665	15.2753	0.6869	0.8605
14 C8 0.1949	114.23	10.3900	13.5756	14.1635	0.1882	0.2442
15 C9 0.0370	128.28	5.9600	7.8101	8.1523	0.0352	0.0503
16 C10+ 0.0000	166.00	11.7500	15.4190	16.0990	0.0000	0.0000
17 Benzene 0.0509	78.11	0.3700	0.4701	0.4881	0.0496	0.0610
18 Toluene 0.0363	92.13	0.9800	1.2750	1.3293	0.0351	0.0448
19 E-Benzene 0.0017	106.17	0.1500	0.1963	0.2049	0.0017	0.0022
20 Xylenes 0.0119	106.17	1.1900	1.5580	1.6260	0.0114	0.0152
21 n-C6 0.7160	86.18	4.8000	6.0812	6.3116	0.6969	0.8566
22 2,2,4-Trimethyl p 0.0000	114.24	0.0000	0.0000	0.0000	0.0000	0.0000

MW		100.95	120.35	123.46	38.83	49.76
40.13	Stream Mole Ratio	1.0000	0.7620	0.7299	0.2380	0.0322
0.2701	Heating Value	[BTU/SCF]			2218.43	2811.04
2289.04	Gas Gravity	[Gas/Air]			1.34	1.72
1.39						

Page 2-----E&P TANK

Bubble Pt. @ 100F	[psi a]	322.24	24.57	11.47
RVP @ 100F	[psi a]	79.39	15.92	10.57

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

Spec. Gravity @ 100F	0.672	0.695	0.698
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2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

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\* Project Setup Information

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Project File : Z:\Client\EQT Corporation\West  
 Virginia\Comet\Projects\153901.0133 Comet TV Renewal\04 Draft\2015-1002 Draft  
 Renewal App\Att F - Emission Calcs\02 E&P TANK\01  
 Files\2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks.ept  
 Flowsheet Selection : Oil Tank with Separator  
 Calculation Method : RVP Distillation  
 Control Efficiency : 100.0%  
 Known Separator Stream : Geographical Region  
 Geographical Region : All Regions in US  
 Entering Air Composition : No

Filed Name : Equitrans, LP  
 Well Name : Comet Compressor Station  
 Well ID : Pipeline Condensate/Sump Tanks  
 Date : 2015.10.06

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\* Data Input

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Separator Pressure : 300.00[psi g]  
 Separator Temperature : 80.00[F]  
 Ambient Pressure : 14.70[psi a]  
 Ambient Temperature : 80.00[F]  
 C10+ SG : 0.8820  
 C10+ MW : 296.00

-- Low Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0300
4	N2	0.0900
5	C1	8.4300
6	C2	4.2300
7	C3	5.9100
8	i-C4	5.1700
9	n-C4	6.2200
10	i-C5	8.9100
11	n-C5	4.9700
12	C6	9.1100
13	C7	11.3400
14	C8	10.3900
15	C9	5.9600
16	C10+	11.7500
17	Benzene	0.3700
18	Toluene	0.9800
19	E-Benzene	0.1500
20	Xylenes	1.1900
21	n-C6	4.8000
22	2,2,4-Tri methyl p	0.0000

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

-- Sales Oil

-----  
 Production Rate : 0.1 [bbl/day]  
 Days of Annual Operation : 365 [days/year]  
 API Gravity : 58.0  
 Reid Vapor Pressure : 10.60 [psi a]

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 \*\*\*\*\*  
 \* Calculation Results  
 \*  
 \*\*\*\*\*  
 \*\*\*\*\*

-- Emission Summary

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Item	Uncontrolled	Uncontrolled	
Page 1			E&P TANK
	[ton/yr]	[lb/hr]	
Total HAPs	0.010	0.002	
Total HC	0.553	0.126	
VOCs, C2+	0.484	0.111	
VOCs, C3+	0.419	0.096	

Uncontrolled Recovery Info.

Vapor	28.7100	x1E-3	[MSCFD]
HC Vapor	28.5800	x1E-3	[MSCFD]
GOR	287.10		[SCF/bbl]

-- Emission Composition

-----

No	Component	Uncontrolled	Uncontrolled
		[ton/yr]	[lb/hr]
1	H2S	0.000	0.000
2	O2	0.000	0.000
3	C02	0.001	0.000
4	N2	0.001	0.000
5	C1	0.069	0.016
6	C2	0.065	0.015
7	C3	0.119	0.027
8	i-C4	0.084	0.019
9	n-C4	0.079	0.018
10	i-C5	0.065	0.015
11	n-C5	0.028	0.006
12	C6	0.020	0.005
13	C7	0.009	0.002
14	C8	0.003	0.001
15	C9	0.001	0.000
16	C10+	0.000	0.000
17	Benzene	0.001	0.000
18	Toluene	0.000	0.000
19	E-Benzene	0.000	0.000
20	Xylenes	0.000	0.000
21	n-C6	0.009	0.002
22	2,2,4-Tri methyl p	0.000	0.000
	Total	0.554	0.126

-- Stream Data

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

No. Component	MW	LP Oil	Flash Oil	Sale Oil	Flash Gas	W&S Gas
Total Emissions						
mol %		mol %	mol %	mol %	mol %	mol %
1 H2S 0.0000	34.80	0.0000	0.0000	0.0000	0.0000	0.0000
2 O2 0.0000	32.00	0.0000	0.0000	0.0000	0.0000	0.0000
3 CO2 0.1111	44.01	0.0300	0.0021	0.0000	0.1194	0.0496
4 N2 0.3332	28.01	0.0900	0.0006	0.0000	0.3763	0.0145
5 C1 31.2062	16.04	8.4300	0.2054	0.0000	34.7691	4.8646
6 C2 15.6481	30.07	4.2300	0.5879	0.0039	15.8939	13.8313
7 C3 19.5826	44.10	5.9100	2.4063	0.8494	17.1306	37.7108
8 i-C4 10.4605	58.12	5.1700	3.7204	3.2119	9.8124	15.2521
9 n-C4 9.8389	58.12	6.2200	5.2238	4.8805	9.4102	13.0089
10 i-C5 6.5447	72.15	8.9100	9.7007	9.7854	6.3777	7.7795
11 n-C5 2.7638	72.15	4.9700	5.6802	5.7866	2.6955	3.2686
12 C6 1.7547	86.16	9.1100	11.4207	11.8324	1.7100	2.0852
13 C7 0.7075	100.20	11.3400	14.6665	15.2753	0.6869	0.8605
14 C8 0.1949	114.23	10.3900	13.5756	14.1635	0.1882	0.2442
15 C9 0.0370	128.28	5.9600	7.8101	8.1523	0.0352	0.0503
16 C10+ 0.0000	166.00	11.7500	15.4190	16.0990	0.0000	0.0000
17 Benzene 0.0509	78.11	0.3700	0.4701	0.4881	0.0496	0.0610
18 Toluene 0.0363	92.13	0.9800	1.2750	1.3293	0.0351	0.0448
19 E-Benzene 0.0017	106.17	0.1500	0.1963	0.2049	0.0017	0.0022
20 Xylenes 0.0119	106.17	1.1900	1.5580	1.6260	0.0114	0.0152
21 n-C6 0.7160	86.18	4.8000	6.0812	6.3116	0.6969	0.8566
22 2,2,4-Trimethyl p 0.0000	114.24	0.0000	0.0000	0.0000	0.0000	0.0000

MW		100.95	120.35	123.46	38.83	49.76
40.13	Stream Mole Ratio	1.0000	0.7620	0.7299	0.2380	0.0322
0.2701	Heating Value [BTU/SCF]				2218.43	2811.04
2289.04	Gas Gravity [Gas/Air]				1.34	1.72
1.39						
Page 2	-----					E&P TANK

Bubble Pt. @ 100F	[psi a]	322.24	24.57	11.47
RVP @ 100F	[psi a]	79.39	15.92	10.57

2015-1006\_EQT\_Comet\_TV\_Ren\_Cond&Sump\_Tanks

Spec. Gravity @ 100F	0.672	0.695	0.698
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**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

User Identification: New Oil Tank (Tank 3)  
City:  
State: West Virginia  
Company:  
Type of Tank: Horizontal Tank  
Description: Storage of new engine/compressor oil

**Tank Dimensions**

Shell Length (ft): 8.50  
Diameter (ft): 5.50  
Volume (gallons): 1,500.00  
Turnovers: 12.00  
Net Throughput(gal/yr): 18,000.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

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

**Breather Vent Settings**

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

Meteorological Data used in Emissions Calculations: Elkins, West Virginia (Avg Atmospheric Pressure = 13.73 psia)

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

**New Oil Tank (Tank 3) - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight		Liquid Mass Fract.	Vapor Mass Weight		Mol. Calculations	Basis for Vapor Pressure
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.		Weight	Calculations		
Distillate fuel oil no. 2	All	59.88	48.09	71.67	53.40	0.0074	0.0042	0.0095	130.0000			188.00		Option 1: VP50 = .0045 VP60 = .0074	

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

**New Oil Tank (Tank 3) - Horizontal Tank****Annual Emission Calculations**

Standing Losses (lb): 0.6991  
Vapor Space Volume (cu ft): 128.6277  
Vapor Density (lb/cu ft): 0.0002  
Vapor Space Expansion Factor: 0.0868  
Vented Vapor Saturation Factor: 0.9989

Tank Vapor Space Volume:  
Vapor Space Volume (cu ft): 128.6277  
Tank Diameter (ft): 5.5000  
Effective Diameter (ft): 7.7171  
Vapor Space Outage (ft): 2.7500  
Tank Shell Length (ft): 8.5000

Vapor Density  
Vapor Density (lb/cu ft): 0.0002  
Vapor Molecular Weight (lb/lb-mole): 130.0000  
Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 0.0074  
Daily Avg. Liquid Surface Temp. (deg. R): 519.5530  
Daily Average Ambient Temp. (deg. F): 49.0583  
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)): 10.731  
Liquid Bulk Temperature (deg. R): 513.0683  
Tank Paint Solar Absorptance (Shell): 0.8900  
Daily Total Solar Insulation Factor (Btu/sqft day): 1,193.8870

Vapor Space Expansion Factor	0.0868
Vapor Space Expansion Factor:	0.0868
Daily Vapor Temperature Range (deg. R):	47.1637
Daily Vapor Pressure Range (psia):	0.0053
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0042
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0095
Daily Avg. Liquid Surface Temp. (deg R):	519.5530
Daily Min. Liquid Surface Temp. (deg R):	507.7620
Daily Max. Liquid Surface Temp. (deg R):	531.3439
Daily Ambient Temp. Range (deg. R):	24.1833
Vented Vapor Saturation Factor	0.9989
Vented Vapor Saturation Factor:	0.9989
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0074
Vapor Space Outage (ft):	2.7500
Working Losses (lb):	0.4104
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Annual Net Throughput (gal/yr.):	18,000.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	5.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	1.1095

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

**Emissions Report for: Annual**

**New Oil Tank (Tank 3) - Horizontal Tank**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.41	0.70	1.11

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

**Identification**

User Identification: Used Oil Tank (Tank 4)  
City:  
State: West Virginia  
Company:  
Type of Tank: Horizontal Tank  
Description: Storage of used engine/compressor oil

**Tank Dimensions**

Shell Length (ft): 5.00  
Diameter (ft): 4.00  
Volume (gallons): 500.00  
Turnovers: 12.00  
Net Throughput(gal/yr): 6,000.00  
Is Tank Heated (y/n): N  
Is Tank Underground (y/n): N

**Paint Characteristics**

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

**Breather Vent Settings**

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

Meteorological Data used in Emissions Calculations: Elkins, West Virginia (Avg Atmospheric Pressure = 13.73 psia)

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

**Used Oil Tank (Tank 4) - Horizontal Tank**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Vapor Fract.	Liquid Mass Fract.	Vapor Mass Weight	Mol. Calculations	Basis for Vapor Pressure
		Avg.	Min.	Max.		Avg.	Min.	Max.						
Distillate fuel oil no. 2	All	59.88	48.09	71.67	53.40	0.0074	0.0042	0.0095	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074	

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

**Used Oil Tank (Tank 4) - Horizontal Tank****Annual Emission Calculations**

Standing Losses (lb): 0.2176  
Vapor Space Volume (cu ft): 40.0203  
Vapor Density (lb/cu ft): 0.0002  
Vapor Space Expansion Factor: 0.0868  
Vented Vapor Saturation Factor: 0.9992

Tank Vapor Space Volume:  
Vapor Space Volume (cu ft): 40.0203  
Tank Diameter (ft): 4.0000  
Effective Diameter (ft): 5.0475  
Vapor Space Outage (ft): 2.0000  
Tank Shell Length (ft): 5.0000

Vapor Density  
Vapor Density (lb/cu ft): 0.0002  
Vapor Molecular Weight (lb/b-mole): 130.0000  
Vapor Pressure at Daily Average Liquid Surface Temperature (psia): 0.0074  
Daily Avg. Liquid Surface Temp. (deg. R): 519.5530  
Daily Average Ambient Temp. (deg. F): 49.0583  
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)): 10.731  
Liquid Bulk Temperature (deg. R): 513.0683  
Tank Paint Solar Absorbance (Shell): 0.8900  
Daily Total Solar Insulation Factor (Btu/sqft day): 1,193.8870

Vapor Space Expansion Factor	0.0868
Vapor Space Expansion Factor:	0.0868
Daily Vapor Temperature Range (deg. R):	47.1637
Daily Vapor Pressure Range (psia):	0.0053
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0042
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0095
Daily Avg. Liquid Surface Temp. (deg R):	519.5530
Daily Min. Liquid Surface Temp. (deg R):	507.7620
Daily Max. Liquid Surface Temp. (deg R):	531.3439
Daily Ambient Temp. Range (deg. R):	24.1833
Vented Vapor Saturation Factor	0.9992
Vented Vapor Saturation Factor:	0.9992
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.0074
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	0.1368
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0074
Annual Net Throughput (gal/yr.):	6,000.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	0.3544

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

**Emissions Report for: Annual**

**Used Oil Tank (Tank 4) - Horizontal Tank**

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.14	0.22	0.35