R13 PERMIT APPLICATION

Mountain Valley Pipeline, LLC

MVP BOOST

Bradshaw Compressor Station

Prepared By:

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Suite 310
Wexford, PA 15090
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November 2025

Trinity Consultants

TABLE OF CONTENTS

INTRODUCTION

Mountain Valley Pipeline, LLC (Mountain Valley) is submitting this application to the West Virginia Department of Environmental Protection (WVDEP) for the modification of an existing natural gas transmission compressor station located in Wetzel County, West Virginia (Bradshaw Compressor Station). The Bradshaw Compressor Station is currently authorized under Permit No. R13-3278B and Title V permit No. R30-10300109-2025.

1.1. Facility and Project Description

The Bradshaw Compressor Station is a natural gas transmission facility that will compress natural gas along the Mountain Valley Pipeline. The station has the potential to operate 24 hours per day, 7 days per week.

The facility currently includes the following permitted emission sources:

- Four Solar Titan 130E natural gas-fired turbines each rated at 23,378 horsepower (hp) at site-specific conditions (ISO rating at 23,470 hp each)[1];
- Fourteen Capstone C200 natural gas-fired microturbines each rated at 200 kW;
- Two natural gas-fired, fuel gas heaters each rated at 1.54 million British thermal units per hour (MMBtu/hr);
- One natural gas-fired, office building heater rated at 0.12 MMBtu/hr; and
- Two storage tanks (one for produced fluids and one for oil) with capacities less than 15,000 gallons.

Mountain Valley is proposing to authorize the following equipment:

- One Solar Titan 130E natural gas-fired turbine rated at 23,483 hp at site-specific conditions (ISO rating at 23,470 hp) with associated compressor;
- One natural gas-fired, fuel gas heater rated at 1.54 MMBtu/hr;
- One Capstone C200 natural gas-fired microturbine rated at 200 kW; and
- Associated piping, fugitive components, and equipment.

There are no other facilities located within ¼ mile of the Bradshaw Compressor Station.

1.2. R-13 Application Organization

This R-13 permit application is organized as follows:

- Section 1: Introduction
- Section 2: Emission Source Calculations;
- Section 3: R-13 Application Form;
- Attachment A: Current Business Certificate;
- Attachment B: Map;
- Attachment C: Installation and Start Up Schedule;

[1] The existing turbine ratings are being updated based on revised site-specific conditions. No changes to the turbines or emission limits are being proposed with this application.

- Attachment D: Regulatory Discussion;
- Attachment E: Plot Plan;
- Attachment F: Process Flow Diagram;
- Attachment G: Process Description;
- Attachment I: Emission Units Table;
- Attachment J: Emission Points Data Summary Sheet;
- Attachment K: Fugitive Emissions Data Summary Sheet;
- Attachment L: Emissions Unit Data Sheets;
- Attachment N: Supporting Emission Calculations;
- Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans;
- Attachment P: Public Notice;
- Attachment S: Title V Permit Revision Information; and
- Application Fee

2. EMISSION SOURCE CALCULATIONS

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

2.1 Turbines

Potential emissions of nitrogen oxides (NO_X), CO, VOC, and CH_4 are calculated using factors provided by the turbine manufacturer. Sulfur dioxide (SO_2) is calculated using U.S. EPA's AP-42 Section 3.1, Table 3.1-2a "Emission Factors for Criteria Pollutants and Greenhouse Gases from Stationary Gas Turbines". Potential emissions of particulate matter ($PM/PM_{10}/PM_{2.5}$), and formaldehyde are calculated using factors from Product Information Letters published by the turbine manufacturer. All hazardous air pollutants (HAPs), with the exception of formaldehyde, are calculated using U.S. EPA's AP-42 Section 3.1, Table 3.1-3 "Emission Factors for Hazardous Air Pollutants from Natural Gas-Fired Stationary Gas Turbines". Potential emissions of greenhouse gas pollutants (GHGs) are calculated using manufacturer's data as available (CH_4 in this case) and U.S. EPA's emission factors from 40 CFR Part 98, Subpart C for all others.

Emissions from the turbine may vary due to operational load and ambient temperature. The vendor guarantees emissions of the $SoLoNO_x$ system at and above 0°F. The vendor has also provided estimated emissions from subzero temperatures, which are expected to occur infrequently. To calculate potential emissions, the vendor guaranteed emission rates at 0°F and maximum operating load (on a lb/hr basis) were assumed continuously (i.e., 8,760 hour per year). This calculation resulted in a more conservative (i.e., higher) annual emission rate compared to assuming nominal operations below 0°F and the remainder of the year at annual average temperature.

Annual emissions also include emissions from startup and shutdown, which are calculated by multiplying emissions per startup by the number of estimated startups per year.

2.2 Heaters

Potential emissions of all criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas combustion equipment. These calculations assume a site-specific heat content. Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C. Although the operation of these sources may be intermittent, potential emissions are calculated assuming continuous operation (i.e., 8,760 hours per year).

2.3 Microturbine Generator

Potential emissions of NO_X, CO, VOC, methane, and CO_2 are calculated using manufacturer's emission data. Emissions of all other criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas internal combustion engines. These calculations use a site-specific heat content. Although one unit will provide backup power, potential emissions of all units are calculated assuming continuous operation (i.e., 8,760 hours per year).

2.4 Storage Tanks

Working, standing, and flash loss emissions of VOCs and HAPs from the produced fluids storage tank and used oil storage tank are calculated using BR&E ProMax software v6.0. Liquid loading emissions are calculated using EPA AP-42 Section 5.2 emission factors.

2.5 Fugitive Emissions

Emissions from fugitive equipment leaks are calculated using site specific component counts and EPA's Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017) Table 2-4. Emissions from blowdown events are calculated using engineering estimates of the amount of gas vented during each event. Emissions from the compressors were calculated using vendor seal emission rates or New Source Performance Standard thresholds, as applicable. Site specific gas analyses were used to speciate VOCs, HAPs, and GHG emissions for both fugitive and blowdown emissions.

3. R-13 APPLICATION FORM

The WVDEP permit application forms contained in this application include all applicable R13 application forms including the required attachments.

WEST VIRGINIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.dep.wv.gov/daq

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

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

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

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

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

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

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

Section I. General

1. Name of applicant *(as registered with the WV Secretary of State's Office):*
Mountain Valley Pipeline, LLC

2. Federal Employer ID No. ***(FEIN):***
61-1744744

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

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

5A. Applicant's mailing address:
2200 Energy Drive
Canonsburg, PA 15317

5B. Facility's present physical address:
2165 Bear Run Rd
Smithfield, WV 26437

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

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

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

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

- If **YES,** please explain: Applicant owns the site

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

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

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

11A. DAQ Plant ID No. (for existing facilities only):
103-00109

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
R30-10300109-2025 R13-3278B

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

12A.

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

From Charleston, WV take I-79 N for approximately 121 miles. Take exit 119 for US-50 toward Clarksburg/Bridgeport. Continue on US-50 W for 7 miles. Then, Turn right onto Bean Run/Gregory Run and continue for 5.8 miles. Next, turn left onto WV-20 N/State Hwy 20 and continue for 16 miles. Then, Turn right onto Mannington Rd and drive 1.2 miles. Finally, Turn left onto Bear Run Rd and continue 2.2 miles to the site.

12.B. New site address (if applicable):	12C. Nearest city or town:	12D. County:
2165 Bear Run Rd	Smithfield	Wetzel
12.E. UTM Northing (KM): 4,376.018	12F. UTM Easting (KM): 540.135	12G. UTM Zone: 17

13. Briefly describe the proposed change(s) at the facility:

Mountain Valley Pipeline, LLC is proposing to authorize one Solar Titan 130-23502S ISO rated at 23,470 bhp, one microturbine, one fuel gas heater, and updating fugitive and blowdown information for Bradshaw natural gas transmission compressor station as part of the Mountain Valley Pipeline (MVP).

14A. Provide the date of anticipated installation or change: 2027 – If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen:	14B. Date of anticipated Start-Up if a permit is granted: ASAP

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

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

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

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

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

Section II. Additional attachments and supporting documents.

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

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

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

– Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).

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

23. Provide a **Process Description** as **Attachment G.**

– Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).

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

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

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

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

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

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

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

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

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

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

☐ Absorption Systems
☐ Adsorption Systems
☐ Afterburner
☐ Baghouse
☐ Condenser
☐ Electrostatic Precipitator
☐ Flare
☐ Mechanical Collector
☐ Wet Collecting System
☐ Other Collectors, specify

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

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

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

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

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

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

☐ **YES** ☒ **NO**

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

Section III. Certification of Information

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

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

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

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

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

Certification of Truth, Accuracy, and Completeness

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

Compliance Certification

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

SIGNATURE DocuSigned by: Michael Lauderbaugh A8716FCE3A784B8... DATE: 11/3/2025 | 3:48 PM EST

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

35B. Printed name of signee: Mike Lauderbaugh		35C. Title: Vice President, EHS
35D. E-mail: regulatory@eqt.com	36E. Phone: 844-378-5263	36F. FAX:
36A. Printed name of contact person (if different from above): James Knibloe		36B. Title: Senior Environmental Engineer
36C. E-mail: james.knibloe@eqt.com	36D. Phone: 412-525-0609	36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

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

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

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

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

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

ATTACHMENT A – CURRENT BUSINESS CERTIFICATE

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE

ISSUED TO:
MOUNTAIN VALLEY PIPELINE, LLC
625 LIBERTY AVE, SUITE 1700
PITTSBURGH, PA 15222-0000

BUSINESS REGISTRATION ACCOUNT NUMBER: **2305-4787**

This certificate is issued on: **04/8/2015**

This certificate is issued by
the West Virginia State Tax Commissioner
in accordance with Chapter 11, Article 12, of the West Virginia Code

The person or organization identified on this certificate is registered to conduct business in the State of West Virginia at the location above.

This certificate is not transferrable and must be displayed at the location for which issued

This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.

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

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ATTACHMENT B – MAP

ATTACHMENT B – AREA MAP

Figure 1 – 0.25 mile Radius Map of Bradshaw Compressor Station

UTM Northing (KM): 4,376.018
UTM Easting (KM): 540.135
Elevation: ~1,500 ft

ATTACHMENT C – INSTALLATION AND START-UP SCHEDULE

Unit	Installation Schedule	Startup Schedule
Solar Titan 130E Turbine (S027) Fuel Gas Heater (S028) Microturbine (S029)	Starting 2Q 2027	June 2028

ATTACHMENT D – REGULATORY DISCUSSION

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

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

This section summarizes applicable regulatory requirements and provides determinations of non-applicability for select regulations. The proposed project does not alter the regulatory applicability for any existing sources at the station. Accordingly, only those regulations with potential relevance to the proposed changes are discussed. Regulations that are categorically non-applicable to the station's operations (e.g., NSPS Subpart J – Standards of Performance for Petroleum Refineries) are not addressed.

PSD and NNSR Source Classification

Federal construction permitting programs regulate new and modified sources of attainment pollutants under PSD and new and modified sources of non-attainment pollutants under NNSR. PSD regulations apply when a new source is constructed in which emissions exceed PSD major source thresholds, an existing minor source undergoes a modification in which emission increases exceed PSD major source thresholds, or an existing major source undergoes a modification in which emission increases exceed PSD significant emission rates. The Bradshaw Compressor Station will remain a minor source with respect to PSD because, as shown in Attachment N, the project will not increase the source's potential to emit above the applicable PSD threshold of 250 tons per year (tpy) for any NSR-regulated pollutant. As such, PSD permitting is not triggered.

NNSR regulations apply only in areas designated as non-attainment. The Bradshaw Compressor Station is located in Wetzel County, which is designated as attainment/unclassifiable for all criteria pollutants.[2] Therefore, NNSR regulations do not apply to the Bradshaw Compressor Station.

Title V Operating Permit Program

Title 40 of the Code of Federal Regulations, Part 70 (40 CFR 70) establishes the Title V operating permit program. West Virginia has incorporated the federal provisions of this program into its Title V operating permit program in West Virginia 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 NO_X and CO are above the corresponding thresholds. Therefore, the Bradshaw Compressor Station is a major source for Title V purposes. Title V operating permit revision information is provided in Attachment S.

[2] U.S. EPA Greenbook, Nonattainment Areas for Criteria Pollutants (Green Book) | US EPA, as of July 31, 2025.

New Source Performance Standards

NSPS, located in 40 CFR Part 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 potential applicability of NSPS standards to the operations at the Bradshaw Compressor Station are:

- 40 CFR Part 60 Subpart Dc – Steam Generating Units;
- 40 CFR Part 60 Subpart GG – Stationary Gas Turbines;
- 40 CFR Part 60 Subpart KKKK, KKKKa – Stationary Combustion Turbines; and
- 40 CFR Part 60 Subpart OOOO, OOOOa, OOOOb – Crude Oil and Natural Gas Facilities.

NSPS Subpart Dc – Steam Generating Units

This subpart applies to steam generating units of various sizes, all greater than 10 MMBtu/hr. The project does not include any steam generating units with a heat input greater than 10 MMBtu/hr. Therefore, the requirements of these subparts do not apply.

NSPS Subpart GG – Stationary Gas Turbines

This subpart applies to stationary gas turbines with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the lower heating value of the fuel, commencing construction after October 3, 1977. The Solar Turbines (both proposed and existing) meet this heat input threshold; however, they are subject to Subpart KKKK. Per §60.4305(b), if stationary combustion turbines are subject to Subpart KKKK, they are exempt from the requirements outlined in Subpart GG. Therefore, this rule does not apply to either the proposed or existing units.

NSPS Subpart KKKK, KKKKa – Stationary Combustion Turbines

Subpart KKKK, Standards of Performance for Stationary Combustion Turbines, applies to stationary combustion units with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the higher heating value of the fuel, and for which construction, modification, or reconstruction commenced after February 18, 2005. EPA recently proposed regulations to revise the NSPS for new, modified, or reconstructed combustion turbines under Subpart KKKKa. Under the proposed rule, combustion turbines constructed, modified, or reconstructed after December 13, 2024, must meet more stringent NOx emission standards. EPA has announced that it will issue a final Subpart KKKKa rule in November 2025. Once the rule becomes final, Mountain Valley will evaluate its applicability. Accordingly, the applicability discussion in this section is specific to Subpart KKKK.

The proposed Solar turbine for the Bradshaw Compressor Station will be subject to the NO_X emissions limitations in §60.4320(a). Turbines with a rated capacity of 50 < MMBtu/hr ≤ 850 MMBtu/hr at peak load are limited to NO_X emissions of 25 parts per million (ppm) at 15% O_2 when firing natural gas. The Solar turbine that will be installed at the station is equipped with lean pre-mix combustion technology and is guaranteed by the manufacturer to emit a maximum of 9 ppm of NO_X at 15% O_2 under variable turbine load conditions when firing natural gas. This vendor guarantee is well below the NSPS KKKK standard.

Mountain Valley will perform annual performance tests in accordance with §60.4340(a) and §60.4400 to demonstrate compliance with the NO_X emission limitations, or as an alternative, will continuously monitor the appropriate parameters to determine whether the turbine is operating in low-NO_X mode in accordance with §60.4340(b)(2)(ii) and §60.4355(a). The Solar turbine must also comply with the SO_2 emission limits

per §60.4330. Mountain Valley will comply with the SO_2 requirements by the exclusive use of natural gas which contains total potential sulfur emissions less than 0.060 lb SO_2/MMBtu heat input in accordance with §60.4330(a)(2).

The proposed microturbine generator will have a heat input (HHV) at peak load of less than 10 MMBtu/hr and are therefore exempt from the requirements of this subpart.

NSPS Subpart OOOO, OOOOa, OOOOb – Crude Oil and Natural Gas Facilities

Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Facilities, applies to affected facilities that were constructed, reconstructed, or modified after August 23, 2011, and on or before September 18, 2015. As the proposed project will be constructed outside of these applicability dates, Subpart OOOO is not applicable.

Subpart OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities, establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC), greenhouse gas (as methane), and sulfur dioxide (SO_2) emissions from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after September 18, 2015, and on or before December 6, 2022. As the proposed project will be constructed outside of these applicability dates, Subpart OOOOa is not applicable.

Subpart OOOOb applies to affected facilities in the crude oil and natural gas source category that were constructed, reconstructed, or modified after December 6, 2022. The following sections discuss the applicability of Subpart OOOOb to the proposed project. Note that EPA has recently issued an interim final rule to Subpart OOOOb extending certain compliance deadlines. EPA has also announced a future proposed rule to reconsider Subpart OOOOb. Mountain Valley will evaluate changes to applicability and requirements upon release of such rule.

Centrifugal Compressors

As part of the proposed project, one new dry seal reciprocating compressor will be subject to Subpart OOOOb. Mountain Valley will comply with the requirements as outlined in §60.5380b by either:

- Making initial and periodic measurements of volumetric flow to show it does not exceed 10 standard cubic feet per minute (scfm) per seal or changing or replacing the unit within 90 days after a measurement that exceeds 10 scfm per seal and measuring flow to confirm repair or
- Replacing the seals on or before 8,760 hours of operation after startup, or every 8,760 hours after the previous flow rate measurement, or on or before 8,760 hours of operation after the date of the most recent dry seal replacement.

Pneumatic Controllers and Pumps

There are no natural gas driven process controllers or pumps included as part of the proposed project. Therefore, Subpart OOOOb is not applicable to this equipment category for the proposed project.

Storage Vessels

The proposed project does not include construction of new tanks. Additionally, the proposed project will not result in an increase in water throughput through the existing pipeline fluids storage vessel beyond the

original potential throughput. As such, the existing storage vessels at the facility will not be modified.[3] Accordingly, Subpart OOOOb requirements for storage vessels as affected facilities are not triggered.

Fugitive Components

Subpart OOOOb standards for equipment leaks at natural gas compressor stations apply to the group of all fugitive components at a natural gas compressor station. Mountain Valley will monitor all fugitive emission components with an optical gas imaging (OGI) device and repair all sources of fugitive emissions in accordance with §60.5397b. Mountain Valley will develop a monitoring plan, conduct surveys on a quarterly basis and comply with the applicable recordkeeping and reporting requirements of the rule.

National Emission Standards for Hazardous Air Pollutants

Regulatory requirements for facilities subject to NESHAP standards, otherwise known as Maximum Available Control Technology (MACT) Standards for source categories, are contained in 40 CFR Part 63. 40 CFR Part 61 NESHAP standards are defined for specific pollutants while Part 63 NESHAPs are defined for source categories where allowable emission limits are established on the basis of a MACT determination for a particular major source. A major source of HAP is defined as having potential emissions in excess of 25 tpy for total HAP or potential emissions in excess of 10 tpy for any individual HAP. Part 63 NESHAPs apply to sources in specifically regulated industrial source categories (CAA Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type.

The proposed potential HAP emissions from the Bradshaw Compressor Station are below the major source thresholds (i.e., less than 10 tpy of individual HAP and 25 tpy of total HAP) and therefore the facility is an area source of HAP.

The potential applicability of NESHAP standards to the operations at the Bradshaw Compressor Station are:

- NESHAP Subpart HH – Oil and Natural Gas Production Facilities;
- NESHAP Subpart HHH – Natural Gas Transmission and Storage Facilities;
- NESHAP Subpart YYYY – Stationary Combustion Turbines;
- NESHAP Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers Area Sources

NESHAP Subpart HH – Oil and Natural Gas Production Facilities

This standard applies to sources at oil and natural gas production facilities that are major or area sources of HAP emissions. The Bradshaw Compressor Station is a transmission facility; therefore, this facility is not subject to Subpart HH.

NESHAP Subpart HHH – Natural Gas Transmission and Storage Facilities

This standard applies to sources at natural gas transmission and storage facilities that are major sources of HAP emissions and that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user (if there is no local distribution company). The facility is located downstream of the point of custody transfer (after processing and/or treatment in the production sector), but upstream of the distribution sector and is therefore considered part of the source category. Although the Bradshaw

[3] Note that the throughput modification definition in 60.5365b(e)(3)(ii)(D) is not effective until January 22, 2027.

Compressor Station is a transmission facility, it is an area source of HAP emissions. Therefore, it is not subject to Subpart HHH.

NESHAP Subpart YYYY – Stationary Combustion Turbines

Stationary combustion turbines located at facilities that are major sources of HAPs are potentially subject to Subpart YYYY, NESHAP for Stationary Combustion Turbines. Subpart YYYY establishes emissions and operating limitations for lean premix gas-fired, lean premix oil-fired, diffusion flame gas-fired and diffusion flame oil-fired stationary combustion turbines. The Bradshaw Compressor Station is an area source of HAP and therefore is not subject to the requirements of this subpart.

NESHAP Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers Area Sources

This standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources of HAP. The units at the Bradshaw Compressor Station are gas-fired boilers as defined by the rule and therefore are not subject, per 63.11195(e).

West Virginia SIP Regulations

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

45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Open Air Which Causes or Contributes to an Objectionable Odor or Odors

According to 45 CSR 4-3.1:

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. Mountain Valley will operate all equipment in a manner as to avoid causing or contributing to an objectionable odor at any location occupied by the public.

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

This rule establishes procedures for permitting and reporting of stationary sources. Mountain Valley will comply with the requirements of this rule by complying with the applicable general provisions in the facility's construction and operating permits.

45 CSR 16: Standards of Performance for New Stationary Sources

45 CSR 16-1 incorporates the federal Clean Air Act (CAA) standards of performance for new stationary sources set forth in 40 CFR Part 60 by reference. As noted above, the facility will comply with all applicable NSPS subparts.

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 Bradshaw Compressor Station, it is unlikely that fugitive particulate matter emissions will be emitted under normal operating conditions. However, Mountain Valley will take measures to ensure any fugitive particulate matter emissions will not cross the property boundary should any such emissions occur.

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 Bradshaw Compressor Station is located in Wetzel County. Therefore, the requirements of this section do not apply to the station.

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. Mountain Valley will comply with this rule by paying all required permitting fees.

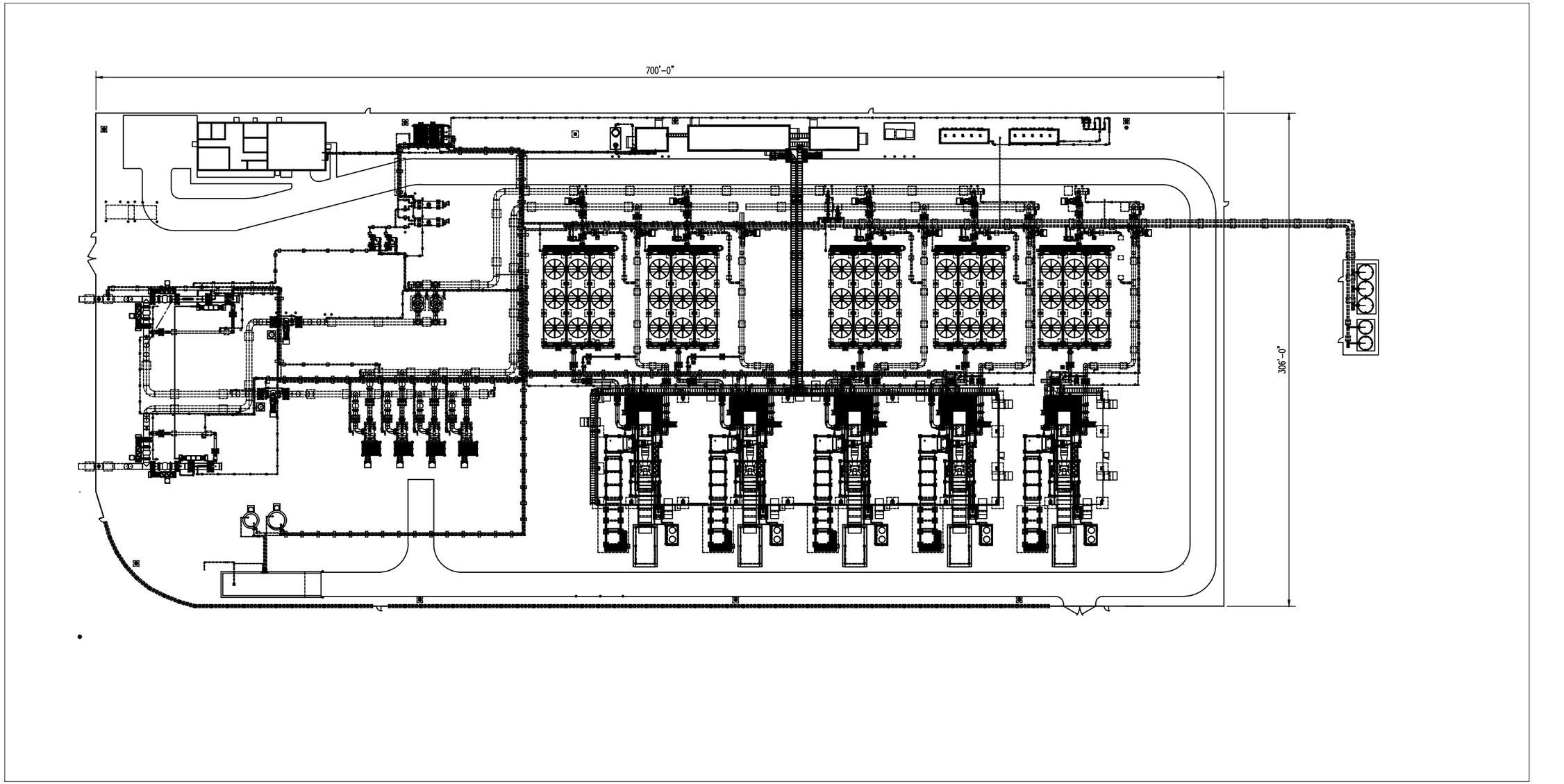
45 CSR 34: Emissions Standards for Hazardous Air Pollutants

45 CSR 34-1 incorporates the federal Clean Air Act (CAA) national emissions standards for hazardous air pollutants (NESHAPs) as set forth in 40 CFR Parts 61 and 63 by reference. As noted above, no NESHAPs are applicable to the station.

Non-Applicability of Other SIP Rules

A thorough examination of the West Virginia SIP rules with respect to applicability at the Bradshaw Compressor 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 station.

ATTACHMENT E – PLOT PLAN



REFERENCE DRAWINGS		NO.	DATE	REVISION	BY	CHK	APPD
DRAWING NUMBER	DRAWING TITLE	P	4/1/2016	ISSUED FOR BID	CET	WJJ	RLM
		P	7-10-2025	PRELIM FOR MVPX			

NO.	DATE	REVISION	BY	CHK	APPD

TO THE BEST OF MY KNOWLEDGE, ALL COMPONENTS OF THIS DRAWING ARE DESIGNED IN ACCORDANCE WITH APPLICABLE GUIDELINES AND SPECIFICATIONS

BYRON MOORE — MECHANICAL DESIGN ENGINEER — DATE

JOE HAUGHT — ELECTRICAL DESIGN ENGINEER — DATE

NOTE: ANY CHANGES TO THE DESIGN SHOWN ON THIS DRAWING MUST BE APPROVED BY THE DESIGN ENGINEER.

Mountain Valley PIPELINE, LLC

DRAWING TITLE: BRADSHAW COMPRESSOR STATION

PROJECT ID: C8953

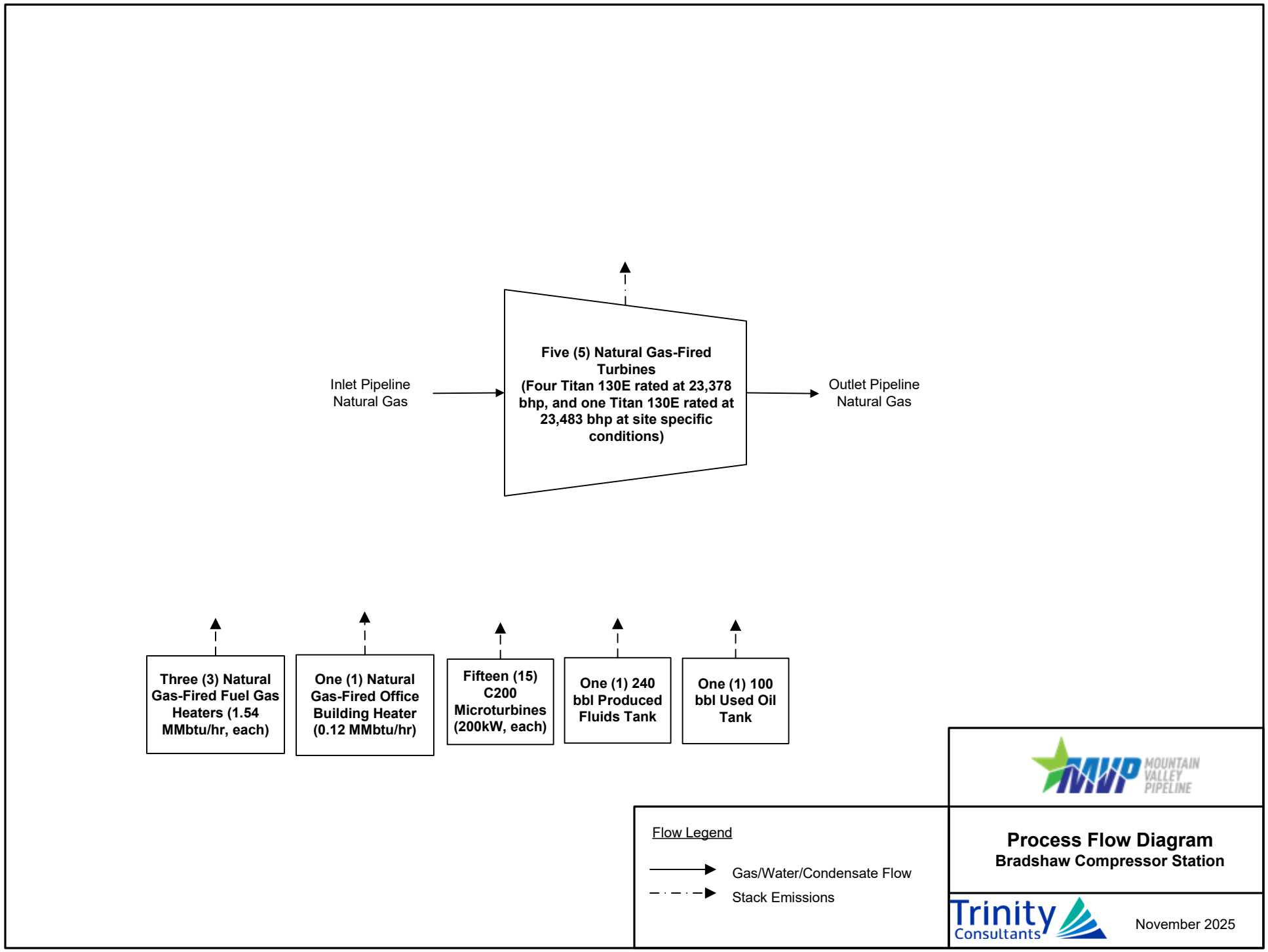
DRAWING SCALE:

FACILITY	STATE	IDENTIFICATION	SERIES	SHEET	REVISION
C	W	BRD01			#

Plotted by: Mace, Doug on: July 10, 2025 - 3:36 PM

File Path: C:\Users\doug.mace\Box\Doug Mace's Personal Folder\Z_ONE DRIVE PREPARATION\2CURRENT PROJECTS\MVP\BRADSWHAW\C-W-BRD01-1100-DKM.dwg

ATTACHMENT F – PROCESS FLOW DIAGRAM



ATTACHMENT G – PROCESS DESCRIPTION

Mountain Valley Pipeline, LLC (Mountain Valley) is submitting this application for the modification of an existing natural gas transmission compressor station located in Wetzel County, West Virginia (Bradshaw Compressor Station).

Natural gas enters the station via the transmission pipeline system and is compressed using compressors driven by one of the five natural gas-fired turbines. The compressed natural gas flows into the pipeline to be transported further along the transmission system. The station is also equipped with three fuel gas heaters, one office building heater, one produced fluids storage tank, one used oil storage tank, and fifteen natural gas-fired microturbine generators (each rated at 200 kW) providing electricity to the station. Collected water from separators, filters, etc. is sent to the produced fluids tank. Once the tank is filled, the contents are loaded into trucks for transport.

A process flow diagram is included as Attachment F.

ATTACHMENT I – EMISSION UNITS TABLE

Attachment I

Emission Units Table

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

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
S001	E001	Solar Turbine #1	2020	23,378 HP (site-specific conditions)	Existing	N/A
S002	E002	Solar Turbine #2	2020	23,378 HP (site-specific conditions)	Existing	N/A
S003	E003	Solar Turbine #3	2020	23,378 HP (site-specific conditions)	Existing	N/A
S004	E004	Solar Turbine #4	2020	23,378 HP (site-specific conditions)	Existing	N/A
S027	E027	Solar Turbine #5	TBD	23,483 HP (site-specific conditions)	Proposed (2028)	N/A
S005	E005	Microturbine Generator #1	2020	200 KW	Existing	N/A
S006	E006	Microturbine Generator #2	2020	200 KW	Existing	N/A
S007	E007	Microturbine Generator #3	2020	200 KW	Existing	N/A
S008	E008	Microturbine Generator #4	2020	200 KW	Existing	N/A
S009	E009	Microturbine Generator #5	2020	200 KW	Existing	N/A
S010	E010	Microturbine Generator #6	2020	200 KW	Existing	N/A
S011	E011	Microturbine Generator #7	2020	200 KW	Existing	N/A
S012	E012	Microturbine Generator #8	2020	200 KW	Existing	N/A
S013	E013	Microturbine Generator #9	2020	200 KW	Existing	N/A
S014	E014	Microturbine Generator #10	2020	200 KW	Existing	N/A
S015	E015	Microturbine Generator #11	2020	200 KW	Existing	N/A
S016	E016	Microturbine Generator #12	2020	200 KW	Existing	N/A
S017	E017	Microturbine Generator #13	2020	200 KW	Existing	N/A
S018	E018	Microturbine Generator #14	2020	200 KW	Existing	N/A
S029	E029	Microturbine Generator #15	TBD	200 KW	Proposed (2028)	N/A

S019	E019	Fuel Gas Heater	2020	1.54 MMBtu/hr	Existing	N/A
S020	E020	Fuel Gas Heater	2020	1.54 MMBtu/hr	Existing	N/A
S028	E028	Fuel Gas Heater	TBD	1.54 MMBtu/hr	Proposed (2028)	N/A
S021	E021	Produced Fluids Tank	2020	10,080 gallons	Existing	N/A
S022	E022	Used Oil Tank	2020	4,200 gallons	Existing	N/A
S023	E023	Office Building Heater	2020	0.12 MMBtu/hr	Existing	N/A
S024	E024	Fugitives	TBD	N/A	Revised Count (2028)	N/A
S025	E025	Liquid Loading	2020	126,000 gal/yr	Existing	N/A
S026	E026	Blowdowns	TBD	N/A	Revised Count (2028)	N/A

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

ATTACHMENT J – EMISSION POINTS DATA SUMMARY SHEET

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]	Emission Concentration [7] (ppmv or mg/m[4])
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
S001	Upward Vertical stack	E001	Solar Turbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	Gas/Vapor	O[A] O[A] O[A] O[A] O[A] O[A,B] O[A,C]	
S002	Upward Vertical stack	E002	Solar Turbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	Gas/Vapor	O[A] O[A] O[A] O[A] O[A] O[A,B] O[A,C]	
S003	Upward Vertical stack	E003	Solar Turbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	Gas/Vapor	O[A] O[A] O[A] O[A] O[A] O[A,B] O[A,C]	
S004	Upward Vertical stack	E004	Solar Turbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	9.80 9.90 1.14 0.60 2.64 0.56 20,863	42.95 45.67 5.07 2.62 11.57 2.47 91,516	Gas/Vapor	O[A] O[A] O[A] O[A] O[A] O[A,B] O[A,C]	
S027	Upward Vertical stack	E027	Solar Turbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	5.91 1.20 0.41 0.60 1.77 0.16 20,875	25.90 5.47 1.91 2.63 7.74 0.69 91,564	5.91 1.20 0.41 0.60 1.77 0.16 20,875	25.90 5.47 1.91 2.63 7.74 0.69 91,564	Gas/Vapor	O[A] O[A] O[A] O[A] O[A] O[A,B] O[A,C]	

S005	Upward Vertical Stack	E005	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S006	Upward Vertical Stack	E006	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S007	Upward Vertical Stack	E007	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S008	Upward Vertical Stack	E008	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S009	Upward Vertical Stack	E009	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S010	Upward Vertical Stack	E010	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S011	Upward Vertical Stack	E011	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S012	Upward Vertical Stack	E012	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	

S013	Upward Vertical Stack	E013	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S014	Upward Vertical Stack	E014	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S015	Upward Vertical Stack	E015	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S016	Upward Vertical Stack	E016	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S017	Upward Vertical Stack	E017	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S018	Upward Vertical Stack	E018	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S029	Upward Vertical Stack	E029	Microturbine	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 HAPs CO2e	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	0.08 0.22 0.02 0.01 0.02 <0.01 266	0.35 0.96 0.09 0.03 0.07 0.01 1,166	Gas/Vapor	O[A] O[A] O[A] O[D] O[D] O[D] O[A,C]	
S019	Upward Vertical stack	E019	Fuel Gas Heaters	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 CO2e	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	Gas/Vapor	O[F] O[F] O[F] O[F] O[F] O[C]	

S020	Upward Vertical stack	E020	Fuel Gas Heaters	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 CO2e	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	Gas/Vapor	O[F] O[F] O[F] O[F] O[F] O[C]	
S028	Upward Vertical stack	E028	Fuel Gas Heaters	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 CO2e	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	0.15 0.12 0.01 <0.01 0.01 180	0.64 0.54 0.04 <0.01 0.05 789	Gas/Vapor	O[F] O[F] O[F] O[F] O[F] O[C]	
S021	Upward Vertical Stack	E021	Produced Fluids Storage Tank	NA	NA	NA	NA	VOC HAP CO2e	<0.01 <0.01 3.00	<0.01 <0.01 15.00	<0.01 <0.01 3.00	<0.01 <0.01 15.00	Gas/Vapor	O[E]	
S022	Upward Vertical Stack	E022	Used Oil Storage Tank	NA	NA	NA	NA	VOC HAP	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	Gas/Vapor	O[E]	
S023	Upward Vertical stack	E023	Office Building Heater	NA	NA	NA	NA	NOx CO VOC SO2 PM/PM10/PM2.5 CO2e	0.01 0.01 <0.01 <0.01 <0.01 14	0.05 0.04 <0.01 <0.01 <0.01 62	0.01 0.01 <0.01 <0.01 <0.01 14	0.05 0.04 <0.01 <0.01 <0.01 62	Gas/Vapor	O[F] O[F] O[F] O[F] O[F] O[C]	
S024	Fugitives	E024	Fugitives including Haul Roads	NA	NA	NA	NA	VOC PM/PM10/PM2.5 HAP CO2e	0.14 0.03 <0.01 320	0.60 0.11 <0.01 1,401	0.14 0.03 <0.01 320	0.60 0.11 <0.01 1,401	Gas/Vapor	O[G] O[H] O[G] O[C]	
S025	Liquid Loading	E025	Liquid Loading	NA	NA	NA	NA	VOC	0.01	0.05	0.01	0.05	Gas/Vapor	O[I]	
S026	Blowdown	E026	Blowdowns including pigging	NA	NA	NA	NA	VOC HAP CO2e	4.91 0.01 11,413	21.50 0.03 49,990	4.91 0.01 11,413	21.50 0.03 49,990	Gas/Vapor	O[G] O[H] O[G] O[C]	

A- Manufacturer's specific pollutant emission factor
B- AP-42 Section 3.1, Table 3.1-3 "Emission Factors for HAPs from Natural Gas Fired Stationary Gas Turbines", April 2000, except for Formaldehyde which is manufacturer's spec.
C- 40 CFR 98, Subpart C for natural gas fired combustion.
D- AP-42 Section 3.1 Table 3.1-2a
E- BR&E ProMax software
F- AP-42 Section 1.4 Tables 1.4-1, 1.4-2 and 1.4-3, July 1998.
G- EPA Leak Protocol, Table 2-4, 40 CFR 98 Subpart W, & Site-Specific Gas Analysis
H- AP-42 Table 13.2.2-2 (Final, 11/06)
I- AP-42 Section 5.2 Table 5.2-1

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

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

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

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

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

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

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

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

ATTACHMENT K – FUGITIVES EMISSIONS DATA SUMMARY

ATTACHMENT K – FUGITIVE EMISSIONS SUMMARY SHEET

Sources of fugitive emissions may include loading operations, equipment leaks, blowdown emissions, etc.
Use extra pages for each associated source or equipment if necessary.

Source/Equipment: Fugitive Emissions

Leak Detection Method Used	☐ Audible, visual, and olfactory (AVO) inspections	☐ Infrared (FLIR) cameras	☐ Other (please describe)	☐ None required

Is the facility subject to quarterly LDAR monitoring under 40CFR60 Subpart OOOOa? ☒ Yes ☐ No. If no, why?

Component Type	Closed Vent System	Count	Source of Leak Factors (EPA, other (specify))	Stream type (gas, liquid, etc.)	Estimated Emissions (tpy)		
					VOC	HAP	GHG (CO_2e)
Pumps	☐ Yes ☒ No	---	N/A	☒ Gas ☐ Liquid ☐ Both	---	---	---
Valves	☐ Yes ☒ No	981	Protocol for Equipment Leak Emission Estimates. Table 2-4. (EPA-453/R-95-017, 1995).	☒ Gas ☐ Liquid ☒ Both	0.50	<0.01	1162.99
Safety Relief Valves	☐ Yes ☐ No	---	N/A	☒ Gas ☐ Liquid ☐ Both	---	---	---
Open Ended Lines	☐ Yes ☒ No	23	Protocol for Equipment Leak Emission Estimates. Table 2-4. (EPA-453/R-95-017, 1995).	☒ Gas ☐ Liquid ☐ Both	0.01	<0.01	12.12
Sampling Connections	☐ Yes ☐ No	---	N/A	☐ Gas ☐ Liquid ☐ Both	---	---	---
Connections (Not sampling)	☐ Yes ☒ No	2781	Protocol for Equipment Leak Emission Estimates. Table 2-4. (EPA-453/R-95-017, 1995).	☒ Gas ☐ Liquid ☐ Both	0.06	<0.01	146.53
Compressors	☐ Yes ☐ No	---	N/A	☐ Gas ☐ Liquid ☐ Both	---	---	---
Flanges	☐ Yes ☒ No	775	Protocol for Equipment Leak Emission Estimates. Table 2-4. (EPA-453/R-95-017, 1995).	☒ Gas ☐ Liquid ☐ Both	0.03	<0.01	79.63
Other[1]	☐ Yes ☐ No	---	---	☐ Gas ☐ Liquid ☐ Both	---	---	---

[1] Other equipment types may include compressor seals, relief valves, diaphragms, drains, meters, etc.

Please indicate if there are any closed vent bypasses (include component):

Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.)

ATTACHMENT L – EMISSIONS UNIT DATA SHEETS

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

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

Emission Unit ID#[1]	Emission Point ID#[2]	Emission Unit Description (manufacturer, model #)	Year Installed/ Modified	Type[3] and Date of Change	Maximum Design Heat Input (MMBTU/hr)[4]	Fuel Heating Value (BTU/scf)[5]
S019	E019	Fuel Gas Heater	2020	Existing	1.54	1052
S020	E020	Fuel Gas Heater	2020	Existing	1.54	1052
S028	E028	Fuel Gas Heater	2028	New	1.54	1052

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

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

3 New, modification, removal

4 Enter design heat input capacity in MMBtu/hr.

5 ENTER THE FUEL HEATING VALUE IN BTU/STANDARD CUBIC FOOT.

ATTACHMENT L – INTERNAL COMBUSTION ENGINE DATA SHEET

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

Emission Unit ID#[1]	S029		
Engine Manufacturer/Model	Capstone		
Manufacturers Rated bhp/rpm	268.2		
Source Status[2]	NS		
Date Installed/ Modified/Removed/Relocated[3]	2028		
Engine Manufactured /Reconstruction Date[4]	2028		
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]	☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources
Engine Type[6]	Microturbine		
APCD Type[7]	NA		
Fuel Type[8]	PQ		
H_2S (gr/100 scf)	neg		
Operating bhp/rpm	268.2		
BSFC (BTU/bhp-hr)			
Hourly Fuel Throughput	2167 ft^3/hr gal/hr	ft^3/hr gal/hr	ft^3/hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)	19 $MMft^3$/yr gal/yr	$MMft^3$/yr gal/yr	$MMft^3$/yr gal/yr
Fuel Usage or Hours of Operation Metered	Yes ☒ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

Calculation Methodology[9]	Pollutant[10]	Hourly PTE (lb/hr)[11]	Annual PTE (tons/year)[11]	Hourly PTE (lb/hr)[11]	Annual PTE (tons/year)[11]	Hourly PTE (lb/hr)[11]	Annual PTE (tons/year)[11]
MD	NO_x	0.08	0.35				
MD	CO	0.22	0.96				
MD	VOC	0.02	0.09				
AP	SO_2	0.01	0.03				
AP	PM_{10}	0.02	0.07				
AP	Formaldehyde	<0.01	0.01				
AP	Total HAPs	<0.01	0.01				
AP	GHG (CO_2e)	266	1,166				

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

2 Enter the Source Status using the following codes:

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

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

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

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

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

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

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

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

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

8 Enter the Fuel Type using the following codes:

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

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

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

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

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

ATTACHMENT L – CENTRIFUGAL COMPRESSOR DATA SHEET

Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015?

☐ Yes ☒ No

Please list:

Emission Unit ID#	Compressor Description

Are there any centrifugal compressors at this facility that commenced construction, modification or reconstruction after September 18, 2015?

☒ Yes ☐ No

Please list:

Emission Unit ID#	Compressor Description
S001	C45-3
S002	C45-3
S003	C45-3
S004	C45-3
S027	C45-3

ATTACHMENT L – BLOWDOWN AND PIGGING OPERATIONS DATA SHEET

Will there be any blowdown and pigging operations that occur at this facility?

☒ Yes ☐ No

Please list:

Type of Event	# of Events (event/yr)	Amount Vented per event (scf/event)	MW of vented gas (lb/lb-mol)	Total Emissions (ton/yr)	VOC weight fraction	VOC emissions (ton/yr)
Compressor Blowdown	80	170,000	17.6	304.92	0.01	3.25
Compressor Startup	NA	NA	NA	NA	NA	NA
Plant Shutdown	4	1,600,000	17.6	143.49	0.01	1.53
Pig Venting	16	Varies	17.6	7.61	0.01	0.08
Main Gas Filter	48	91,000	17.6	97.93	0.01	1.04

Type of Event	# of Events (event/yr)	Amount Vented per event (scf/event)	MW of vented gas (lb/lb-mol)	Total Emissions (ton/yr)	HAP weight fraction	HAP emissions (ton/yr)
Compressor Blowdown	80	170,000	17.6	304.92	<0.01	<0.01
Compressor Startup	NA	NA	NA	NA	NA	NA
Plant Shutdown	4	1,600,000	17.6	143.49	<0.01	<0.01
Pig Venting	16	Varies	17.6	7.61	<0.01	<0.01
Main Gas Filter	48	91,000	17.6	97.93	<0.01	<0.01

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): S027

1. Name or type and model of proposed affected source:

   Natural Gas-Fired Solar Titan 130E Turbine - Rated 23,483 HP at site-specific conditions. ISO rating is 23,470 HP

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

   NA

4. Name(s) and maximum amount of proposed material(s) produced per hour:

   Does not produce any materials. The turbines compress natural gas.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

   External combustion of natural gas

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Natural gas – 173,176 scf/hr

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

Natural gas with negligible H_2S and ash content.

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@ °F and psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

164.05 MMBtu/hr stationary gas turbine

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

NA

(g) Proposed maximum design heat input: 164.05 (LHV) × 10^6 BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	7	Weeks/Year	52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:

@ Unknown °F and psia

a.	NO_X	**See Emission Calculations in Attachment N**	lb/hr	grains/ACF
b.	SO_2		lb/hr	grains/ACF
c.	CO		lb/hr	grains/ACF
d.	PM_{10}		lb/hr	grains/ACF
e.	Hydrocarbons		lb/hr	grains/ACF
f.	VOCs		lb/hr	grains/ACF
g.	Pb		lb/hr	grains/ACF
h.	Specify other(s)			
	HAP		lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF
			lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING Monitor sulfur content of the fuel per 60.4360	RECORDKEEPING Maintain records of fuel consumption
REPORTING Submit report of initial compliance testing in accordance with 40 CFR 60.4375(b) within 60 days of the performance test	TESTING Annual performance testing in accordance with 40 CFR 60.4340(a) to demonstrate compliance with NOx emission limitations

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 11741 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	18.82	19.09	10.94
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.49	0.50	0.29
(gas turbine shaft pwr) lbm/hr	4.30	4.36	2.50
2 — 11633 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 20.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	18.19	18.46	10.57
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.48	0.49	0.28
(gas turbine shaft pwr) lbm/hr	4.15	4.21	2.41
3 — 11311 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 40.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	17.39	17.64	10.10
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.47	0.48	0.27
(gas turbine shaft pwr) lbm/hr	3.97	4.03	2.31

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
Job ID: **MVPx - Bradshaw**	Package Type: **CS/MD**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	**feet**	**1485**
Inlet Loss	**in H2O**	**4.0**
Exhaust Loss	**in H2O**	**4.0**
Accessory on GP Shaft	**HP**	**29.2**

		1	2	3
Engine Inlet Temperature	**deg F**	**0**	**20.0**	**40.0**
Relative Humidity	**%**	**60.0**	**60.0**	**60.0**
Driven Equipment Speed	**RPM**	**7211**	**7120**	**6979**
Specified Load	**HP**	**50.0%**	**50.0%**	**50.0%**
Net Output Power	**HP**	**11741**	**11633**	**11311**
Fuel Flow	**mmBtu/hr**	**119.34**	**115.43**	**110.52**
Heat Rate	**Btu/HP-hr**	**10164**	**9923**	**9770**
Therm Eff	**%**	**25.034**	**25.642**	**26.042**
Engine Exhaust Flow	**lbm/hr**	**391069**	**371590**	**350328**
PT Exit Temperature	**deg F**	**964**	**966**	**971**
Exhaust Temperature	**deg F**	**876**	**899**	**920**

Fuel Gas Composition (Volume Percent)

Methane (CH4)	**93.83**
Ethane (C2H6)	**5.18**
Propane (C3H8)	**0.33**
I-Butane (C4H10)	**0.02**
N-Butane (C4H10)	**0.03**
I-Pentane (C5H12)	**0.0037**
N-Pentane (C5H12)	**0.0021**
Heptane (C7H16)	**0.0001**
Octane (C8H18)	**0.0000**
Carbon Monoxide (CO)	**0.24**
Nitrogen (N2)	**0.36**
Oxygen (O2)	**0.0027**
Sulfur Dioxide (SO2)	**0.0001**
I-Hexene (C6H12)	**0.0006**
MethylCycloPentane (C6H12)	**0.0002**
CycloHexane (C6H12)	**0.0001**
MethylCycloHexane (C7H14)	**0.0001**
Benzene (C6H6)	**0.0000**
Toluene (C7H8)	**0.0000**

Fuel Gas Properties

LHV (Btu/Scf)	**947.3**	**Specific Gravity**	**0.5855**	**Wobbe Index at 60F**	**1238.0**

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 17612 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	22.91	23.24	13.31
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.40	0.40	0.23
(gas turbine shaft pwr) lbm/hr	5.23	5.31	3.04
2 — 17449 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 20.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	22.09	22.41	12.84
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.39	0.39	0.23
(gas turbine shaft pwr) lbm/hr	5.04	5.12	2.93
3 — 16967 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 40.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	21.06	21.37	12.24
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.38	0.39	0.22
(gas turbine shaft pwr) lbm/hr	4.81	4.88	2.79

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
Job ID: **MVPx - Bradshaw**	Package Type: **CS/MD**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	**feet**	**1485**
Inlet Loss	**in H2O**	**4.0**
Exhaust Loss	**in H2O**	**4.0**
Accessory on GP Shaft	**HP**	**29.2**

		1	2	3
Engine Inlet Temperature	**deg F**	**0**	**20.0**	**40.0**
Relative Humidity	**%**	**60.0**	**60.0**	**60.0**
Driven Equipment Speed	**RPM**	**8264**	**8189**	**8063**
Specified Load	**HP**	**75.0%**	**75.0%**	**75.0%**
Net Output Power	**HP**	**17612**	**17449**	**16967**
Fuel Flow	**mmBtu/hr**	**145.17**	**140.11**	**133.79**
Heat Rate	**Btu/HP-hr**	**8242**	**8029**	**7885**
Therm Eff	**%**	**30.870**	**31.689**	**32.268**
Engine Exhaust Flow	**lbm/hr**	**445174**	**426637**	**405473**
PT Exit Temperature	**deg F**	**902**	**902**	**905**
Exhaust Temperature	**deg F**	**868**	**879**	**890**

Fuel Gas Composition (Volume Percent)

Methane (CH4)	**93.83**
Ethane (C2H6)	**5.18**
Propane (C3H8)	**0.33**
I-Butane (C4H10)	**0.02**
N-Butane (C4H10)	**0.03**
I-Pentane (C5H12)	**0.0037**
N-Pentane (C5H12)	**0.0021**
Heptane (C7H16)	**0.0001**
Octane (C8H18)	**0.0000**
Carbon Monoxide (CO)	**0.24**
Nitrogen (N2)	**0.36**
Oxygen (O2)	**0.0027**
Sulfur Dioxide (SO2)	**0.0001**
I-Hexene (C6H12)	**0.0006**
MethylCycloPentane (C6H12)	**0.0002**
CycloHexane (C6H12)	**0.0001**
MethylCycloHexane (C7H14)	**0.0001**
Benzene (C6H6)	**0.0000**
Toluene (C7H8)	**0.0000**

Fuel Gas Properties

LHV (Btu/Scf)	**947.3**	**Specific Gravity**	**0.5855**	**Wobbe Index at 60F**	**1238.0**

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 23483 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	25.90	26.28	15.05
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.34	0.34	0.20
(gas turbine shaft pwr) lbm/hr	5.91	6.00	3.44
2 — 23265 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 20.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	25.18	25.54	14.63
lbm/MMBtu (Fuel LHV)	0.036	0.037	0.021
lbm/(MW-hr)	0.33	0.34	0.19
(gas turbine shaft pwr) lbm/hr	5.75	5.83	3.34
3 — 22623 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 40.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	24.49	24.84	14.23
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.33	0.34	0.19
(gas turbine shaft pwr) lbm/hr	5.59	5.67	3.25

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
Job ID: **MVPx - Bradshaw**	Package Type: **CS/MD**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	**feet**	**1485**
Inlet Loss	**in H2O**	**4.0**
Exhaust Loss	**in H2O**	**4.0**
Accessory on GP Shaft	**HP**	**29.2**

		1	2	3
Engine Inlet Temperature	**deg F**	**0**	**20.0**	**40.0**
Relative Humidity	**%**	**60.0**	**60.0**	**60.0**
Driven Equipment Speed	**RPM**	**8856**	**8856**	**8856**
Specified Load	**HP**	**FULL**	**FULL**	**FULL**
Net Output Power	**HP**	**23483**	**23265**	**22623**
Fuel Flow	**mmBtu/hr**	**164.05**	**159.58**	**155.48**
Heat Rate	**Btu/HP-hr**	**6986**	**6859**	**6873**
Therm Eff	**%**	**36.421**	**37.096**	**37.023**
Engine Exhaust Flow	**lbm/hr**	**467700**	**454739**	**440178**
PT Exit Temperature	**deg F**	**857**	**864**	**886**
Exhaust Temperature	**deg F**	**856**	**864**	**886**

Fuel Gas Composition (Volume Percent)

Methane (CH4)	**93.83**
Ethane (C2H6)	**5.18**
Propane (C3H8)	**0.33**
I-Butane (C4H10)	**0.02**
N-Butane (C4H10)	**0.03**
I-Pentane (C5H12)	**0.0037**
N-Pentane (C5H12)	**0.0021**
Heptane (C7H16)	**0.0001**
Octane (C8H18)	**0.0000**
Carbon Monoxide (CO)	**0.24**
Nitrogen (N2)	**0.36**
Oxygen (O2)	**0.0027**
Sulfur Dioxide (SO2)	**0.0001**
I-Hexene (C6H12)	**0.0006**
MethylCycloPentane (C6H12)	**0.0002**
CycloHexane (C6H12)	**0.0001**
MethylCycloHexane (C7H14)	**0.0001**
Benzene (C6H6)	**0.0000**
Toluene (C7H8)	**0.0000**

Fuel Gas Properties

LHV (Btu/Scf)	**947.3**	**Specific Gravity**	**0.5855**	**Wobbe Index at 60F**	**1238.0**

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 10809 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 60.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	16.44	16.68	9.56
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.47	0.47	0.27
(gas turbine shaft pwr) lbm/hr	3.75	3.81	2.18
2 — 10038 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 80.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	15.07	15.29	8.76
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.46	0.47	0.27
(gas turbine shaft pwr) lbm/hr	3.44	3.49	2.00
3 — 9588 HP, 50.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 90.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	14.38	14.60	8.36
lbm/MMBtu (Fuel LHV)	0.035	0.036	0.021
lbm/(MW-hr)	0.46	0.47	0.27
(gas turbine shaft pwr) lbm/hr	3.28	3.33	1.91

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
4 — **9118 HP 50.0% Load** — **Elev. 1485 ft** — **Rel. Humidity 60.0%** — **Temperature 100.0 Deg. F**			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	13.76	13.96	8.00
lbm/MMBtu (Fuel LHV)	0.035	0.036	0.020
lbm/(MW-hr)	0.46	0.47	0.27
(gas turbine shaft pwr) lbm/hr	3.14	3.19	1.83

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
Job ID: **MVPx - Bradshaw**	Package Type: **CS/MD**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	**feet**	**1485**
Inlet Loss	**in H2O**	**4.0**
Exhaust Loss	**in H2O**	**4.0**
Accessory on GP Shaft	**HP**	**29.2**

		1	2	3	4
Engine Inlet Temperature	**deg F**	**60.0**	**80.0**	**90.0**	**100.0**
Relative Humidity	**%**	**60.0**	**60.0**	**60.0**	**60.0**
Driven Equipment Speed	**RPM**	**6869**	**6666**	**6547**	**6437**
Specified Load	**HP**	**50.0%**	**50.0%**	**50.0%**	**50.0%**
Net Output Power	**HP**	**10809**	**10038**	**9588**	**9118**
Fuel Flow	**mmBtu/hr**	**104.88**	**96.78**	**92.85**	**89.42**
Heat Rate	**Btu/HP-hr**	**9703**	**9641**	**9684**	**9807**
Therm Eff	**%**	**26.224**	**26.391**	**26.275**	**25.946**
Engine Exhaust Flow	**lbm/hr**	**324341**	**295795**	**281992**	**268943**
PT Exit Temperature	**deg F**	**973**	**974**	**977**	**980**
Exhaust Temperature	**deg F**	**936**	**946**	**953**	**960**

Fuel Gas Composition (Volume Percent)

Methane (CH4)	**93.83**
Ethane (C2H6)	**5.18**
Propane (C3H8)	**0.33**
I-Butane (C4H10)	**0.02**
N-Butane (C4H10)	**0.03**
I-Pentane (C5H12)	**0.0037**
N-Pentane (C5H12)	**0.0021**
Heptane (C7H16)	**0.0001**
Octane (C8H18)	**0.0000**
Carbon Monoxide (CO)	**0.24**
Nitrogen (N2)	**0.36**
Oxygen (O2)	**0.0027**
Sulfur Dioxide (SO2)	**0.0001**
I-Hexene (C6H12)	**0.0006**
MethylCycloPentane (C6H12)	**0.0002**
CycloHexane (C6H12)	**0.0001**
MethylCycloHexane (C7H14)	**0.0001**
Benzene (C6H6)	**0.0000**
Toluene (C7H8)	**0.0000**

Fuel Gas Properties

LHV (Btu/Scf)	**947.3**	**Specific Gravity**	**0.5855**	**Wobbe Index at 60F**	**1238.0**

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 16213 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 60.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	19.86	20.16	11.54
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.38	0.38	0.22
(gas turbine shaft pwr) lbm/hr	4.54	4.60	2.64
2 — 15056 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 80.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	18.45	18.72	10.72
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.38	0.38	0.22
(gas turbine shaft pwr) lbm/hr	4.21	4.27	2.45
3 — 14381 HP, 75.0% Load, Elev. 1485 ft, Rel. Humidity 60.0%, Temperature 90.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	17.70	17.96	10.28
lbm/MMBtu (Fuel LHV)	0.035	0.036	0.021
lbm/(MW-hr)	0.38	0.38	0.22
(gas turbine shaft pwr) lbm/hr	4.04	4.10	2.35

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
4 — **13678 HP 75.0% Load** — **Elev. 1485 ft** — **Rel. Humidity 60.0%** — **Temperature 100.0 Deg. F**			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	16.91	17.16	9.83
lbm/MMBtu (Fuel LHV)	0.035	0.036	0.020
lbm/(MW-hr)	0.38	0.38	0.22
(gas turbine shaft pwr) lbm/hr	3.86	3.92	2.24

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
Job ID: **MVPx - Bradshaw**	Package Type: **CS/MD**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Match: **59F MATCH**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel System: **GAS**
	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	**feet**	**1485**
Inlet Loss	**in H2O**	**4.0**
Exhaust Loss	**in H2O**	**4.0**
Accessory on GP Shaft	**HP**	**29.2**

		1	2	3	4
Engine Inlet Temperature	**deg F**	**60.0**	**80.0**	**90.0**	**100.0**
Relative Humidity	**%**	**60.0**	**60.0**	**60.0**	**60.0**
Driven Equipment Speed	**RPM**	**7889**	**7640**	**7490**	**7329**
Specified Load	**HP**	**75.0%**	**75.0%**	**75.0%**	**75.0%**
Net Output Power	**HP**	**16213**	**15056**	**14381**	**13678**
Fuel Flow	**mmBtu/hr**	**126.67**	**118.44**	**114.21**	**109.89**
Heat Rate	**Btu/HP-hr**	**7813**	**7867**	**7941**	**8034**
Therm Eff	**%**	**32.569**	**32.345**	**32.041**	**31.669**
Engine Exhaust Flow	**lbm/hr**	**382378**	**356003**	**341850**	**327047**
PT Exit Temperature	**deg F**	**911**	**924**	**932**	**942**
Exhaust Temperature	**deg F**	**902**	**917**	**928**	**939**

Fuel Gas Composition (Volume Percent)

Methane (CH4)	**93.83**
Ethane (C2H6)	**5.18**
Propane (C3H8)	**0.33**
I-Butane (C4H10)	**0.02**
N-Butane (C4H10)	**0.03**
I-Pentane (C5H12)	**0.0037**
N-Pentane (C5H12)	**0.0021**
Heptane (C7H16)	**0.0001**
Octane (C8H18)	**0.0000**
Carbon Monoxide (CO)	**0.24**
Nitrogen (N2)	**0.36**
Oxygen (O2)	**0.0027**
Sulfur Dioxide (SO2)	**0.0001**
I-Hexene (C6H12)	**0.0006**
MethylCycloPentane (C6H12)	**0.0002**
CycloHexane (C6H12)	**0.0001**
MethylCycloHexane (C7H14)	**0.0001**
Benzene (C6H6)	**0.0000**
Toluene (C7H8)	**0.0000**

Fuel Gas Properties

LHV (Btu/Scf)	**947.3**	**Specific Gravity**	**0.5855**	**Wobbe Index at 60F**	**1238.0**

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

Customer: **EQT**	Engine Model: **TITAN 130-23502S CS/MD 59F MATCH**
Job ID: **MVPx - Bradshaw**	
Inquiry Number: **PI18-89660**	Fuel Type: **CHOICE GAS** / Water Injection: **NO**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Engine Emissions Data: **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
1 — 21618 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 60.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	23.40	23.74	13.60
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.33	0.34	0.19
(gas turbine shaft pwr) lbm/hr	5.34	5.42	3.10
2 — 20075 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 80.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	21.86	22.18	12.70
lbm/MMBtu (Fuel LHV)	0.036	0.036	0.021
lbm/(MW-hr)	0.33	0.34	0.19
(gas turbine shaft pwr) lbm/hr	4.99	5.06	2.90
3 — 19176 HP 100.0% Load — Elev. 1485 ft — Rel. Humidity 60.0% — Temperature 90.0 Deg. F			
PPMvd at 15% O2	9.00	15.00	15.00
ton/yr	21.00	21.31	12.21
lbm/MMBtu (Fuel LHV)	0.035	0.036	0.021
lbm/(MW-hr)	0.34	0.34	0.19
(gas turbine shaft pwr) lbm/hr	4.79	4.87	2.79

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer **EQT**	Engine Model **TITAN 130-23502S** **CS/MD 59F MATCH**
Job ID **MVPx - Bradshaw**	
Inquiry Number **PI18-89660**	Fuel Type **CHOICE GAS** Water Injection **NO**
Run By **Marr Cameron H** Date Run **7-Jul-25**	Engine Emissions Data **REV. 0.0**

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
4	**18237 HP 100.0% Load**	**Elev. 1485 ft**	**Rel. Humidity 60.0%**
			Temperature 100.0 Deg. F
PPMvd at 15% O2	**9.00**	**15.00**	**15.00**
ton/yr	**20.12**	**20.42**	**11.69**
lbm/MMBtu (Fuel LHV)	**0.035**	**0.036**	**0.020**
lbm/(MW-hr)	**0.34**	**0.34**	**0.20**
(gas turbine shaft pwr) lbm/hr	**4.59**	**4.66**	**2.67**

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F or -20 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F or -20 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Customer: *EQT*	Model: **TITAN 130-23502S**
	Package Type: **CS/MD**
Job ID: **MVPx - Bradshaw**	Match: **59F MATCH**
Run By: **Marr Cameron H** / Date Run: **7-Jul-25**	Fuel System: **GAS**
Engine Performance Code: **REV. 4.20.2.28.14** / Engine Performance Data: **REV. 1.0**	Fuel Type: **CHOICE GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	1485
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	29.2

		1	2	3	4
Engine Inlet Temperature	deg F	60.0	80.0	90.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	8750	8530	8396	8251
Specified Load	HP	FULL	FULL	FULL	FULL
Net Output Power	HP	21618	20075	19176	18237
Fuel Flow	mmBtu/hr	149.11	140.26	135.48	130.71
Heat Rate	Btu/HP-hr	6898	6987	7065	7167
Therm Eff	%	36.888	36.419	36.015	35.501
Engine Exhaust Flow	lbm/hr	422941	398954	384740	369979
PT Exit Temperature	deg F	902	915	926	937
Exhaust Temperature	deg F	902	915	926	937

Fuel Gas Composition (Volume Percent)

Methane (CH4)	93.83
Ethane (C2H6)	5.18
Propane (C3H8)	0.33
I-Butane (C4H10)	0.02
N-Butane (C4H10)	0.03
I-Pentane (C5H12)	0.0037
N-Pentane (C5H12)	0.0021
Heptane (C7H16)	0.0001
Octane (C8H18)	0.0000
Carbon Monoxide (CO)	0.24
Nitrogen (N2)	0.36
Oxygen (O2)	0.0027
Sulfur Dioxide (SO2)	0.0001
I-Hexene (C6H12)	0.0006
MethylCycloPentane (C6H12)	0.0002
CycloHexane (C6H12)	0.0001
MethylCycloHexane (C7H14)	0.0001
Benzene (C6H6)	0.0000
Toluene (C7H8)	0.0000

Fuel Gas Properties

LHV (Btu/Scf)	947.3	Specific Gravity	0.5855	Wobbe Index at 60F	1238.0

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Notes
Nominal Performance at Site Conditions

ATTACHMENT N – SUPPORTING EMISSION CALCULATIONS

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 1. Potential Atmospheric Emissions from Each Source at the Facility

Source	Pollutants																	
	VOC		NO_X		CO		PM_{10}		$PM_{2.5}$		SO_2		HCHO		Total HAPs		GHG (CO_2e)	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Turbine 1 (S001)	1.14	5.07	9.80	42.95	9.90	45.67	2.64	11.57	2.64	11.57	0.60	2.62	0.51	2.22	0.56	2.47	20,863	91,516
Turbine 2 (S002)	1.14	5.07	9.80	42.95	9.90	45.67	2.64	11.57	2.64	11.57	0.60	2.62	0.51	2.22	0.56	2.47	20,863	91,516
Turbine 3 (S003)	1.14	5.07	9.80	42.95	9.90	45.67	2.64	11.57	2.64	11.57	0.60	2.62	0.51	2.22	0.56	2.47	20,863	91,516
Turbine 4 (S004)	1.14	5.07	9.80	42.95	9.90	45.67	2.64	11.57	2.64	11.57	0.60	2.62	0.51	2.22	0.56	2.47	20,863	91,516
Turbine 5 (S027)	0.41	1.91	5.91	25.90	1.20	5.47	1.77	7.74	1.77	7.74	0.60	2.63	0.10	0.45	0.16	0.69	20,875	91,564
Microturbine 1 (S005)	0.02	0.09	0.08		0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 2 (S006)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 3 (S007)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 4 (S008)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 5 (S009)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 6 (S010)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 7 (S011)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 8 (S012)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 9 (S013)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 10 (S014)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 11 (S015)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 12 (S016)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 13 (S017)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 14 (S018)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Microturbine 15 (S029)	0.02	0.09	0.08	0.35	0.22	0.96	0.02	0.07	0.02	0.07	0.01	0.03	0.00	0.01	0.00	0.01	266	1,166
Fuel Gas Heater (S019)	0.01	0.04	0.15	0.64	0.12	0.54	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.01	180	789
Fuel Gas Heater (S020)	0.01	0.04	0.15	0.64	0.12	0.54	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.01	180	789
Fuel Gas Heater (S028)	0.01	0.04	0.15	0.64	0.12	0.54	0.01	0.05	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.01	180	789
Produced Fluids Tank (S021)	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00	3	15
Used Oil Tank (S022)	0.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00	--	--
Office Building Heater (S023)	0.00	0.00	0.01	0.05	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14	62
Fugitives (S024)	0.14	0.60	--	--	--	--	0.03	0.11	0.00	0.01	--	--	--	--	0.00	0.00	320	1,401
Liquid Loading (S025)	0.01	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Blowdowns (S026)	4.91	21.50	--	--	--	--	--	--	--	--	--	--	--	--	0.01	0.03	11,413	49,990
Total	**10.36**	**45.78**	**46.76**	**204.57**	**44.48**	**204.25**	**12.62**	**55.27**	**12.60**	**55.17**	**3.11**	**13.64**	**2.16**	**9.44**	**2.46**	**10.77**	**120,614**	**528,957**

Notes:

1. PM_{10} and $PM_{2.5}$ emissions are filterable + condensable.
2. Fugitive emissions include haul road emissions.
3. Global Warming Potential (40 CFR 98 Subpart A Table A-1).

CO_2	1
CH_4	28
N_2O	265

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 2. Turbine Emissions Calculations

Turbine Information:

Source ID:	S001-S004
Manufacturer:	Solar
Model No.:	Titan 130- 22402S
Fuel Used:	Natural Gas
Design Basis Fuel Lower Heating Value (Btu/scf):	979
Rated Horsepower (site-specific bhp)[1]:	23,378
Maximum Fuel Consumption (scf/hr):	172,654
Heat Input (MMBtu/hr)	169.08
Control Device:	SoloNOx Technology

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	1,512.45
Potential Startup/Shutdown Events (per year):	12

Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors	Units	Emission Factor Source
NO_X	9.800	lb/hr	Manufacturer
CO	9.900	lb/hr	Manufacturer
SO_2	3.54E-03	lb/MMBtu	AP-42, Table 3.1-2a
PM_{10}	0.016	lb/MMBtu	Manufacturer, PIL 171 Rev 5
$PM_{2.5}$	0.016	lb/MMBtu	Manufacturer, PIL 171 Rev 5
VOC	1.140	lb/hr	20% of UHC per Manufacturer
Formaldehyde	0.003	lb/MMBtu	Manufacturer, PIL 168
CO_2	122.58	lb/MMBtu	40 CFR 98, Subpart C, Table C-1
CH_4	4.560	lb/hr	80% of UHC per Manufacturer
N_2O	2.3E-04	lb/MMBtu	40 CFR 98, Subpart C, Table C-2

*Emission factors from AP-42 and Subpart C are based on HHV. To calculate a LHV emission factor, emissions are multiplied by (HHV/LHV). For AP-42 HHV is 1020 Btu/scf, for Subpart C HHV is 1026 Btu/scf. PM and HCHO emission factors are provided in HHV in the specifications and were converted to LHV using a HHV value of 1020 Btu/scf.

Pollutant Emission Rates:

Pollutant	Potential Emissions (lb/hr)[2]	(tpy)[3]
NO_X	9.80	42.95
CO	9.90	45.67
SO_2	0.60	2.62
PM_{10}	2.64	11.57
$PM_{2.5}$	2.64	11.57
VOC	1.14	5.07
Formaldehyde	0.51	2.22
CO_2	20,725	90,791
CH_4	4.56	24.26
N_2O	0.04	0.17
GHG (CO_2e)	20,863	91,516

*Annual emissions shown above include startup/shutdown events.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 2. Turbine Emissions Calculations

Hazardous Air Pollutant (HAP) Emission Rates:

Pollutant	Emission Factor (lb/MMBtu)[3]	Potential Emissions (lb/hr)[2]	Potential Emissions (tpy)[3,5]
HAPs:			
Acetaldehyde	4.17E-05	7.04E-03	3.09E-02
Acrolein	6.67E-06	1.13E-03	4.94E-03
Benzene	1.25E-05	2.11E-03	9.26E-03
1,3-Butadiene	4.48E-07	7.57E-05	3.32E-04
Propylene Oxide	2.90E-05	4.90E-03	2.15E-02
Ethylbenzene	3.33E-05	5.64E-03	2.47E-02
Toluene	1.35E-04	2.29E-02	1.00E-01
Xylene	6.67E-05	1.13E-02	4.94E-02
Naphthalene	1.35E-06	2.29E-04	1.00E-03
PAH	2.29E-06	3.87E-04	1.70E-03
Total HAP (Including HCHO)		**0.56**	**2.47**

1. The existing turbine ratings are being updated based on revised site-specific conditions. No changes to the turbines or emission limits are being proposed with this application.
2. Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu)
3. Emission Rate (tpy) = Emission Rate (lb/hr) × Hours of Operation (hr/yr) / 2000 (tons/lb) + SU/SD emissions, as applicable
4. Emission factors from AP-42 Section 3.1, Table 3.1-3 "Emission Factors for HAPs from Natural Gas Fired Stationary Gas Turbines", April 2000. Factors are based on HHV of 1020. Therefore, they were converted to LHV by multiplying by (HHV/LHV).
5. Emission calculations are based on maximum operating load of 100%, ambient temperature 0°F and site elevation. The turbine rating can vary with ambient conditions. Each Turbine is ISO rated at 23,470 HP.

Startup/Shutdown Combustion Emission Factors:

Pollutant	Startup Emissions[a] (lbs/event)	Shutdown Emissions[a] (lbs/event)	Emission Factor Source
NO_X	1.9	2.4	Manufacturer
CO	176.9	207.6	Manufacturer
VOC	2.0	2.38	20% of UHC per Manufacturer
CO_2	1161	1272	Manufacturer

[a] Each startup and shutdown event is estimated to last approximately 10 minutes, per manufacturer. Emissions were using PIL 170 Revision 5.

Pneumatic Start Venting Emissions		
Natural Gas Purged During Startup	4500	scfm
Duration of Normal Purge	4.0	min
Total Gas Purged (Per Startup)	18000	scf
VOC Purged (Per Startup)	9	lbs/startup
CO_2 Purged (Per Startup)	5	lbs/startup
CH_4 Purged (Per Startup)	715	lbs/startup
Density of natural gas:	0.04	lb/ft^3

*Current design includes electric motor starts, but pneumatic starts have been included as a conservative measure.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 3. Turbine Emissions Calculations

Turbine Information:

Source ID:	S027
Manufacturer:	Solar
Model No.:	Titan 130 - 23502S
Fuel Used:	Natural Gas
Design Basis Fuel Lower Heating Value (Btu/scf):	947
Rated Horsepower (site-specific bhp):	23,483
Maximum Fuel Consumption (scf/hr):	173,176
Heat Input (MMBtu/hr)	164.05
Control Device:	SoloNOx/Ox Cat
Oxidation Catalyst CO Control Efficiency	80%
Oxidation Catalyst VOC Control Efficiency	40%
Oxidation Catalyst HCHO Control Efficiency	80%

Operational Details:

Potential Annual Hours of Operation (hr/yr):	8,760
Potential Fuel Consumption (MMscf/yr):	1,517.03
Potential Startup/Shutdown Events (per year):	12

Manufacturer Specific Pollutant Emission Factors:

Pollutant	Emission Factors	Units	Emission Factor Source
NO_X	5.910	lb/hr	Manufacturer
CO	1.200	lb/hr	Manufacturer with catalyst control
SO_2	3.66E-03	lb/MMBtu	AP-42, Table 3.1-2a
PM_{10}	0.011	lb/MMBtu	Manufacturer, PIL 171 Rev 11
$PM_{2.5}$	0.011	lb/MMBtu	Manufacturer, PIL 171 Rev 11
VOC	0.413	lb/hr	20% of UHC per Manufacturer with catalyst control
Formaldehyde	0.001	lb/MMBtu	Manufacturer, PIL 168 with catalyst control
CO_2	126.72	lb/MMBtu	40 CFR 98, Subpart C, Table C-1
CH_4	2.752	lb/hr	80% of UHC per Manufacturer
N_2O	2.4E-04	lb/MMBtu	40 CFR 98, Subpart C, Table C-2

*Emission factors from AP-42 and Subpart C are based on HHV. To calculate a LHV emission factor, emissions are multiplied by (HHV/LHV). For AP-42 HHV is 1020 Btu/scf, for Subpart C HHV is 1026 Btu/scf. PM and HCHO emission factors are provided in HHV in the specifications and were converted to LHV using a HHV value of 1020 Btu/scf.

Pollutant Emission Rates:

Pollutant	Potential Emissions (lb/hr)[1]	(tpy)[2]
NO_X	5.91	25.90
CO	1.20	5.47
SO_2	0.60	2.63
PM_{10}	1.77	7.74
$PM_{2.5}$	1.77	7.74
VOC	0.41	1.91
Formaldehyde	0.10	0.45
CO_2	20,788	91,061
CH_4	2.75	16.34
N_2O	0.04	0.17
GHG (CO_2e)	20,875	91,564

*Annual emissions shown above include startup/shutdown events.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 3. Turbine Emissions Calculations

Hazardous Air Pollutant (HAP) Emission Rates:

Pollutant	Emission Factor (lb/MMBtu)[3]	Potential Emissions (lb/hr)[1]	Potential Emissions (tpy)[2,4]
HAPs:			
Acetaldehyde	4.31E-05	7.07E-03	3.09E-02
Acrolein	6.89E-06	1.13E-03	4.95E-03
Benzene	1.29E-05	2.12E-03	9.28E-03
1,3-Butadiene	4.63E-07	7.60E-05	3.33E-04
Propylene Oxide	2.90E-05	4.76E-03	2.08E-02
Ethylbenzene	3.45E-05	5.65E-03	2.48E-02
Toluene	1.40E-04	2.30E-02	1.01E-01
Xylene	6.89E-05	1.13E-02	4.95E-02
Naphthalene	1.40E-06	2.30E-04	1.01E-03
PAH	2.37E-06	3.89E-04	1.70E-03
Total HAP (Including HCHO)		**0.16**	**0.69**

1. Emission Rate (lb/hr) = Rated Capacity (MMBtu/hr) × Emission Factor (lb/MMBtu)
2. Emission Rate (tpy) = Emission Rate (lb/hr) × Hours of Operation (hr/yr) / 2000 (tons/lb) + SU/SD emissions, as applicable
3. Emission factors from AP-42 Section 3.1, Table 3.1-3 "Emission Factors for HAPs from Natural Gas Fired Stationary Gas Turbines", April 2000. Factors are based on HHV of 1020. Therefore, they were converted to LHV by multiplying by (HHV/LHV).
4. Emission calculations are based on maximum operating load of 100%, ambient temperature 0°F and site elevation. The turbine rating can vary with ambient conditions. Each Turbine is ISO rated at 23,470 HP

Startup/Shutdown Combustion Emission Factors:

Pollutant	Startup Emissions[a] (lbs/event)	Shutdown Emissions[a] (lbs/event)	Emission Factor Source
NO_X	1.0	1.0	Manufacturer
CO	16.0	19.0	Manufacturer
VOC	4.0	4	Manufacturer
CO_2	767	869	Manufacturer

[a] Each startup and shutdown event is estimated to last approximately 10 minutes, per manufacturer. Emissions were using PIL 170 Revision 11.

Pneumatic Start Venting Emissions		
Natural Gas Purged During Startup	4500	scfm
Duration of Normal Purge	4.0	min
Total Gas Purged (Per Startup)	18000	scf
VOC Purged (Per Startup)	9	lbs/startup
CO_2 Purged (Per Startup)	5	lbs/startup
CH_4 Purged (Per Startup)	715	lbs/startup
Density of natural gas:	0.04	lb/ft^3

*Current design includes electric motor starts, but pneumatic starts have been included as a conservative measure.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 4. Microturbine Emissions Calculations

Microturbine Unit Information:

Engine ID:	S005-S018, S029
Manufacturer:	Capstone
Model No.:	C200
Number of Units:	15

Microturbine Fuel Information:

	Per Unit
Fuel Type:	Natural Gas
Rated Electrical Power Output (kW):	200
Rated Electrical Power Output (MW):	0.2
Rated Horsepower (bhp):	268.2
Heat Input (MMBtu/hr)	2.28
Potential Fuel Consumption (MMBtu/yr):	19,973
Max. Annual Hours of Operation (hr/yr):	8,760

Microturbine Emissions Data:

Pollutant	Emission Factors	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO_X	0.40	lb/MWhe	0.08	0.35	Manufacturer's Specifications
VOC	0.10	lb/MWhe	0.02	0.09	Manufacturer's Specifications
CO	1.10	lb/MWhe	0.22	0.96	Manufacturer's Specifications
SO_X	0.0034	lb/MMBtu	0.01	0.03	AP-42, Table 3.1-2a (Apr-2000)
PM_{10}	0.0066	lb/MMBtu	0.02	0.07	AP-42, Table 3.1-2a (Apr-2000)
$PM_{2.5}$	0.0066	lb/MMBtu	0.02	0.07	AP-42, Table 3.1-2a (Apr-2000)
GHG (CO_2e)	See Table Below		266	1,166	Manufacturer's Specifications / 40 CFR 98, Table C-2
Other (Total HAP)	See Table Below		0.00	0.01	AP-42, Table 3.1-3 (Apr-2000)

Notes:

1. PM_{10} and $PM_{2.5}$ are total values (filterable + condensable).
2. GHG (CO_2e) is carbon dioxide equivalent, which is the summation of CO_2 (GWP = 1) + CH_4 (GWP = 28) + N_2O (GWP = 265).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this engine type.

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

Pollutant	Emission Factor	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
GHGs:					
CO_2	1330	lb/MWhe	266	1,165	Manufacturer's Specifications
CH_4	0.001	kg/MMBtu	0.01	0.02	40 CFR 98, Tables C-1 & C-2
N_2O	0.0001	kg/MMBtu	0.00	0.00	40 CFR 98, Tables C-1 & C-2
GHG (CO_2e)			**266**	**1,166**	
HAPs:					
1,3-Butadiene	4.3E-07	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Acetaldehyde	4.0E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Acrolein	6.4E-06	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Benzene	1.2E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Ethylbenzene	3.2E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Formaldehyde	7.1E-04	lb/MMBtu	0.00	0.01	AP-42, Table 3.1-3 (Apr-2000)
Naphthalene	1.3E-06	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
PAH	2.2E-06	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Propylene oxide	2.9E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Toluene	1.3E-04	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Xylene	6.4E-05	lb/MMBtu	0.00	0.00	AP-42, Table 3.1-3 (Apr-2000)
Total HAP			**0.002**	**0.010**	

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 5. Fuel Gas Heater Emissions Calculations

Fuel Gas Heater Information:

Source ID:	S019-S020, S028
Number of Units:	3

Fuel Gas Heater Information:

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,052
Heat Input (MMBtu/hr)	1.54
Potential Fuel Consumption (MMBtu/yr):	13,477
Max. Fuel Consumption (MMscf/hr):	0.0015
Max. Fuel Consumption (MMscf/yr):	12.8
Max. Annual Hours of Operation (hr/yr):	8,760

Fuel Gas Heater Emission:

Pollutant	Emission Factor	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO_X	100	lb/MMScf	0.15	0.64	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	0.01	0.04	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.12	0.54	AP-42, Table 1.4-1 (Jul-1998)
SO_X	0.6	lb/MMScf	0.00	0.00	AP-42, Table 1.4-2 (Jul-1998)
PM_{10}	7.6	lb/MMScf	0.01	0.05	AP-42, Table 1.4-2 (Jul-1998)
$PM_{2.5}$	7.6	lb/MMScf	0.01	0.05	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO_2e)	See Table Below		180	789	40 CFR 98, Tables C-1 & C-2
Other (Total HAP)	See Table Below		0.00	0.01	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

Notes:

1. PM_{10} and $PM_{2.5}$ are total values (filterable + condensable).
2. GHG (CO_2e) is carbon dioxide equivalent, which is the summation of CO_2 (GWP = 1) + CH_4 (GWP = 28) + N_2O (GWP = 265).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 5. Fuel Gas Heater Emissions Calculations

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

Pollutant	Emission Factor	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
GHGs:					
CO_2	53.06	kg/MMBtu	180.00	788	40 CFR 98, Table C-1
CH_4	0.001	kg/MMBtu	0.00	0.01	40 CFR 98, Table C-2
N_2O	0.0001	kg/MMBtu	0.00	0.00	40 CFR 98, Table C-2
GHG (CO_2e)			**180**	**789**	
Organic HAPs:					
2-Methylnaphthalene	2.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Acenapthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Acenapthylene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Anthracene	2.40E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benz(a)anthracene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	0.00	0.01	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Metal HAPs:					
Arsenic	2.00E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	4.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Total HAP			**0.003**	**0.01**	

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 6. Storage Tank Emissions Calculations - Produced Fluids Tank

Storage Tank Information:

Source ID:	S021
Tank Capacity (gallons):	10,080
Tank Contents:	Produced Fluids
Annual Throughput (gallons/year):	126,000
Daily Throughput (bbl/day)	8.22
Control Type:	None
Control Efficiency:	N/A
Max. Annual Hours of Operation (hr/yr):	8,760

Tank Emissions Data:

Pollutant	Uncontrolled Emissions		Controlled Emissions		Emissions Estimation Method
	lbs/hr	tpy	lbs/hr	tpy	
VOC	0.00	0.00	0.00	0.00	ProMax
HAPs	0.00	0.00	0.00	0.00	ProMax
GHG (CO2e)	3.36	14.72	3.36	14.72	ProMax

Notes:

1. GHG (CO_2e) is carbon dioxide equivalent, which is the summation of CO_2 (GWP = 1) + CH_4 (GWP = 28) + N_2O (GWP = 265).

Promax Tanks Emissions Data:

Pollutant	Total Emissions (Working + Breathing + Flashing)			Total Emissions		
	lbs/hr	lbs/yr	tpy	lbs/hr	lbs/yr	tpy
VOC	0.00	9.06	0.00	0.00	9.06	0.00
HAPs	0.00	0.19	0.00	0.00	0.19	0.00
Carbon Dioxide	0.02	148.82	0.07	0.02	148.82	0.07
Methane	0.12	1,046.30	0.52	0.12	1,046.30	0.52
GHG (CO_2e)	3.36	29,445.30	14.72	3.36	29,445.30	14.72

Notes:

1. Emissions estimated using BR&E ProMax software.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 7. Storage Tank Emissions Calculations - Used Oil Tank

Storage Tank Information:

Source ID:	S022
Tank Capacity (gallons):	4,200
Tank Contents:	Used Oil
Annual Throughput (gallons/year):	12,600
Control Type:	None
Control Efficiency:	N/A
Max. Annual Hours of Operation (hr/yr):	8,760

Tank Emissions Data:

Pollutant	Uncontrolled Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	1.22E-05	5.36E-05	ProMax
HAPs	1.22E-05	5.36E-05	ProMax
GHG (CO_2e)	N/A	N/A	N/A

ProMax Emissions Data - Used Oil Tank:

Pollutant	Working Losses	Breathing Losses	Flashing Losses	Total Emissions		
	tpy	tpy	tpy	lbs/hr	lbs/yr	tpy
VOC	3.67E-06	4.99E-05	N/A	0.00	0.11	5.36E-05
HAPs	3.67E-06	4.99E-05	N/A	0.00	0.11	5.36E-05

Notes:

1. Emissions estimated using ProMax software.
2. This tank does not contain hydrocarbons that would be expected to be flashed off at tank operating conditions.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 8. Office Building Heater Emissions Calculations

Office Building Heater Information:

Source ID:	S023
Number of Units:	1

Office Building Heater Information:

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,052
Heat Input (MMBtu/hr)	0.12
Potential Fuel Consumption (MMBtu/yr):	1,051
Max. Fuel Consumption (MMscf/hr):	0.0001
Max. Fuel Consumption (MMscf/yr):	1.0
Max. Annual Hours of Operation (hr/yr):	8,760

Office Building Heater Emission:

Pollutant	Emission Factor	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO_X	100	lb/MMScf	0.0114	0.0500	AP-42, Table 1.4-1 (Jul-1998)
VOC	5.5	lb/MMScf	0.0006	0.0027	AP-42, Table 1.4-2 (Jul-1998)
CO	84	lb/MMScf	0.0096	0.0420	AP-42, Table 1.4-1 (Jul-1998)
SO_X	0.6	lb/MMScf	0.0001	0.0003	AP-42, Table 1.4-2 (Jul-1998)
PM_{10}	7.6	lb/MMScf	0.0009	0.0038	AP-42, Table 1.4-2 (Jul-1998)
$PM_{2.5}$	7.6	lb/MMScf	0.0009	0.0038	AP-42, Table 1.4-2 (Jul-1998)
Formaldehyde (HCHO)	0.08	lb/MMScf	0.0000	0.0000	AP-42, Table 1.4-3 (Jul-1998)
GHG (CO_2e)	See Table Below		14	62	40 CFR 98, Tables C-1 & C-2
Other (Total HAP)	See Table Below		0.00	0.00	AP-42, Tables 1.4-3 & 1.4-4 (Jul-1998)

Notes:

1. PM_{10} and $PM_{2.5}$ are total values (filterable + condensable).
2. GHG (CO_2e) is carbon dioxide equivalent, which is the summation of CO_2 (GWP = 1) + CH_4 (GWP = 28) + N_2O (GWP = 265).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 8. Office Building Heater Emissions Calculations

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

Pollutant	Emission Factor	Units	Maximum Potential Emissions Per Unit		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
GHGs:					
CO_2	53.06	kg/MMBtu	14.04	61	40 CFR 98, Table C-1
CH_4	0.001	kg/MMBtu	0.00	0.00	40 CFR 98, Table C-2
N_2O	0.0001	kg/MMBtu	0.00	0.00	40 CFR 98, Table C-2
GHG (CO_2e)			**14**	**62**	
Organic HAPs:					
2-Methylnaphthalene	2.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
3-Methylchloranthrene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Acenapthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Acenapthylene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Anthracene	2.40E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benz(a)anthracene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzene	2.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(a)pyrene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Chrysene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Dichlorobenzene	1.20E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Fluoranthene	3.00E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Fluorene	2.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
n-Hexane	1.80E+00	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Indeno(1,2,3-c,d)pyrene	1.80E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Naphthalene	6.10E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Phenanthrene	1.70E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Pyrene	5.00E-06	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Toluene	3.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-3 (Jul-1998)
Metal HAPs:					
Arsenic	2.00E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Beryllium	4.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Cadmium	1.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Chromium	1.40E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Cobalt	8.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Lead	5.00E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-2 (Jul-1998)
Manganese	3.80E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Mercury	2.60E-04	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Nickel	2.10E-03	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Selenium	2.40E-05	lb/MMscf	0.00	0.00	AP-42, Table 1.4-4 (Jul-1998)
Total HAP			**0.000**	**0.00**	

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 9. Liquid Loading Emissions Calculations

Liquid Loading Information:

Parameter	Value	Description
S	1.45	saturation factor for splash loading (AP-42 Table 5.2-1)
Collection Efficiency	0.0%	
Control Efficiency	0%	
P	0.21	true vapor pressure of liquid loaded (psia) - assume octane
M	114.23	molecular weight of vapors (lb/lb-mol) - assume octane
T	516.4	temperature of liquids loaded (deg R) - TANKS Data

Description	Loading Losses	Maximum Throughput[2]	VOC Emissions	
	(lb/10^3 gal)[1]	(gal)	(lb/hr)	(tpy)
Liquids Hauling	0.8	126,000	0.01	0.05

Notes:

1. Uncontrolled Loading Losses: L_L (lb/10^3 gal) = 12.46 (SPM)/T
2. Hourly emissions assume continuous operation (i.e., 8760 hr/yr).

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 10. Fugitive Emissions Calculations

Fugitive Component Information:

Component Type	Estimated Component Count	Gas Leak Emission Factor		Average Gas Leak Rate	Max Gas Leak Rate	Potential VOC Emissions	Potential HAP Emissions
		(lb/hr/component)	Factor Source	(lb/hr)	(tpy)	(tpy)	(tpy)
Connectors	2,781	0.0004	Table 2-4	1.23	5.91	0.06	0.00
Flanges	775	0.0009	Table 2-4	0.67	3.21	0.03	0.00
Open-Ended Lines	23	0.0044	Table 2-4	0.10	0.49	0.01	0.00
Pump Seals	0	0.0053	Table 2-4	0.00	0.00	0.00	0.00
Valves	981	0.0099	Table 2-4	9.73	46.89	0.50	0.00
Other	0	0.0194	Table 2-4	0.00	0.00	0.00	0.00
Total				**11.73**	**56.50**	**0.60**	**0.00**

Notes:
1. "Other" equipment types include compressor seals, relief valves, diaphragms, drains, meters, etc.
2. The component count is based on the current design of the station plus 25% for the addition of a new turbine.
3. Conservatively assumed that maximum leak rate is 10% 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.
5. Emission factors are from EPA's Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017)

GHG Fugitive Emissions from Component Leaks:

Component Type	Estimated Component Count	Gas Leak Emission Factor		Average Gas Leak Rate	Max Gas Leak Rate	Potential CH_4 Emissions	Potential CO_2 Emissions	Potential CO_2e Emissions
		(lb/hr/component)	Factor Source	(lb/hr)	(tpy)	(tpy)	(tpy)	(tpy)
Connectors	2,781	0.0004	Table 2-4	1.23	5.91	5.23	0.04	146.53
Flanges	775	0.0009	Table 2-4	0.67	3.21	2.84	0.02	79.63
Open-Ended Lines	23	0.0044	Table 2-4	0.10	0.49	0.43	0.00	12.12
Pump Seals	0	0.0053	Table 2-4	0.00	0.00	0.00	0.00	0.00
Valves	981	0.0099	Table 2-4	9.73	46.89	41.53	0.29	1162.99
Other	0	0.0194	Table 2-4	0.00	0.00	0.00	0.00	0.00
Total				**11.73**	**56.50**	**50.03**	**0.34**	**1401.27**

Notes:
1. "Other" equipment types include compressor seals, relief valves, diaphragms, drains, meters, etc.
2. The component count is based on the current design of the station plus 25% for the addition of a new turbine.
3. Conservatively assumed that maximum leak rate is 10% greater than measured average leak rate for the purposes of establishing PTE.
4. CO2 and CH4 emissions are based on fractions of these pollutants in the site-specific gas analysis.
5. Emission factors are from EPA's Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017)

Fugitive Component Emissions Data:

Pollutant	Atmospheric Emissions	
	lbs/hr	tpy
VOC	0.14	0.60
HAPs	0.00	0.00
GHG (CO_2e)	320	1,401

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 11. Haul Road Emission Calculations

Unpaved Road Information:

Unpaved Roads: $E\ (lb/VMT) = k(s/12)^a(W/3)^b*[(365-p)/365]$

	PM		PM_{10}	$PM_{2.5}$	
k Factor (lb/VMT)	4.9		1.5	0.15	AP-42 Table 13.2.2-2 (Final, 11/06)
Silt content, s	4.8	%			AP-42 Table 13.2.2-1 (11/06), for Sand and Gravel Processing
Number of Rain Days, p	150				AP-42 Figure 13.2.1-2
a	0.7		0.9	0.9	AP-42 Table 13.2.2-2 (Final, 11/06)
b	0.45		0.45	0.45	AP-42 Table 13.2.2-2 (Final, 11/06)

Description	Weight of Empty Truck (tons)	Weight of Truck w/ Max Load (tons)	Mean Vehicle Weight (tons)	Length of Unpaved Road Traveled (mile/trip)	Trips Per Year	Mileage Per Year	Control (%)	Emissions (tpy) PM	PM_{10}	$PM_{2.5}$
Service Truck	4	4	4	0.75	365	274	0	0.24	0.06	0.01
Liquids Hauling - Vendor Fluid	12	20	16	0.75	4	3	0	0.00	0.00	0.00
Liquids Hauling - Produced Fluid	20	32	26	0.75	24	18	0	0.04	0.01	0.00
Employee Vehicles	2	2	2	0.75	365	274	0	0.17	0.04	0.00
Total Potential Emissions								**0.45**	**0.11**	**0.01**

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 12. Blowdown Emission Calculations

[1]Mole fractions of CH_4, VOC, HAP and CO_2 based on gas analysis:

CH_4:	93.83%	CO_2:	0.24%	VOC	0.39%	HAP	0.00%

[2]Weight fractions of CH_4 , VOC, HAP and CO_2 based on gas analysis:

CH_4:	88.56%	CO_2:	0.61%	VOC	1.07%	HAP	0.00%

[3] Carbon equivalent emissions (CO_2e) are based on the following Global Warming Potentials (GWP) from 40 CFR Part 98, Table A-1:

Carbon Dioxide (CO_2):	1
Methane (CH_4):	28

Emissions from Compressor Seal:

Number of Compressors[1,2]	Number of Seals Per Compressor	Leak Rate (scf/hr/compressor)	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)	Potential CO_2 Emissions (tpy)	Potential CH_4 Emissions (tpy)	Potential CO_2e Emissions (tpy)
4	--	1560	54,662,400	13.08	0.02	7.46	1,085.50	30,402
1	2	600	10,512,000	2.51	0.00	1.44	208.75	5,846
Total				**15.59**	**0.02**	**8.90**	**1,294.25**	**36,248**

1. Leak rate for existing units and seal information from Solar Turbines PIL 251. Conservatively used C45 compressor at 1500 psig suction pressure (highest leak rate). Emission factor is total for compressor
2. Leak rate for the new unit was estimated by using the max dry seal compressor leak rate from NSPS OOOOb. Emission factor is per seal.
3. Potential emissions VOC/HAP (tpy) = Gas volume vented (scf/yr) * Molar weight of natural gas (lb/lb-mol) * Weight % VOC/HAP ÷ 100 ÷ 379 (scf/lb-mol) ÷ 2,000 (lb/ton)
Sample calculation: Volume vented (scf/yr) x density of natural gas (lb/scf) x wt % VOC / 2000 lb/ton
4. GHG emissions calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98.
Sample calculation: Volume vented (scf/yr) x density of GHG (kg/scf) x mol % VOC x 2.2 lb/kg / 2000 lb/ton

VOC and HAP Vented Blowdown Emissions

Blowdown Emissions Sources	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
Station ESD Vent	1,600,000	4	6,400,000	1.53	0.00
Compressor Unit Blowdowns	170,000	80	13,600,000	3.25	0.00
Main Gas Filter Changes	91,000	48	4,368,000	1.04	0.00
Total				**5.83**	**0.01**

1. Potential emissions VOC/HAP (tpy) = Gas volume vented (scf/yr) * Molar weight of natural gas (lb/lb-mol) * Weight % VOC/HAP ÷ 100 ÷ 379 (scf/lb-mol) ÷ 2,000 (lb/ton)
Sample calculation: Volume vented (scf/yr) x density of natural gas (lb/scf) x wt % VOC / 2000 lb/ton

GHG Vented Blowdown Emissions

Blowdown Emissions Sources	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential CH_4 Emissions[1] (tpy)	Potential CO_2 Emissions[1] (tpy)	Potential CO_2e Emissions (tpy)
Station ESD Vent	1,600,000	4	6,400,000	127.09	0.87	3,559
Compressor Unit Blowdowns	170,000	80	13,600,000	270.07	1.86	7,564
Main Gas Filter Changes	91,000	48	4,368,000	86.74	0.60	2,429
Total				**483.9**	**3.33**	**13,553**

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

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 12. Blowdown Emission Calculations

Pigging Emissions:

Segment Name	Pigging Events (#/yr)	Diameter (in)	Length of pipeline (ft)	Volume of Gas Occupied in Pipeline* (acf)	Pipeline Operating Pressure (psig)	Event Duration[1] (hr/event)	Total Gas Volume per Event (scf/event)	Gas Volume to Atmosphere per Year (scf/yr)
Pig Receiver 42"	4	42	20.5	197	1,480	0.017	20,014	80,057
Pig Receiver 48"	4	48	22	276	1,480	0.017	28,054	112,215
Pig Launcher 42"	4	42	9.5	91	1,480	0.017	9,275	37,100
Pig Launcher 48"	4	48	21.6	271	1,480	0.017	27,544	110,175
Total							**84,887**	**339,547**

[1] Assumes pigging event duration of approximately 1 minute.

VOC and HAP Vented Pigging Emissions

Blowdown Emissions Sources	Vented Gas Volume Per Blowdown Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential VOC Emissions (tpy)	Potential HAP Emissions (tpy)
Pig Receiver 42"	20,014	4	80,057	0.02	0.00
Pig Receiver 48"	28,054	4	112,215	0.03	0.00
Pig Launcher 42"	9,275	4	37,100	0.01	0.00
Pig Launcher 48"	27,544	4	110,175	0.03	0.00
Total				**0.08**	**0.00**

GHG Vented Pigging Emissions

Segment Name	Vented Gas Volume Per Pigging Event (scf)	Number of Blowdown Events per year	Total Volume NG Emitted (scf/yr)	Potential CH_4 Emissions[1] (tpy)	Potential CO_2 Emissions[1] (tpy)	Potential CO_2e Emissions (tpy)
Pig Receiver 42"	20,014	4	80,057	1.59	0.01	45
Pig Receiver 48"	28,054	4	112,215	2.23	0.02	62
Pig Launcher 42"	9,275	4	37,100	0.74	0.01	21
Pig Launcher 48"	27,544	4	110,175	2.19	0.02	61
Total				**6.7**	**0.05**	**189**

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

Blowdowns Emissions Data:

Pollutant	Atmospheric Emissions		Emissions Estimation Method
	lbs/hr	tpy	
VOC	4.91	21.50	Engineering Estimates, Manufacturer Data, and Site-Specific Gas Analysis
HAPs	0.01	0.03	Engineering Estimates, Manufacturer Data, and Site-Specific Gas Analysis
GHG (CO_2e)	11,413	49,990	Engineering Estimates, Manufacturer Data, and Site-Specific Gas Analysis

Hourly emissions are annualized (i.e., assume 8,760 hours per year).

Company Name: Mountain Valley Pipeline, LLC
Facility Name: Bradshaw Compressor Station
Project Description: R13 Permit Application

TABLE 13. Site-Specific Gas Analysis

Sample Location: MVP Pipeline
HHV (Btu/scf): 1,052.08

Constituent	Natural Gas Stream Speciation (Vol. %)	Natural Gas Stream Speciation (Wt. %)	Molar Weight
Nitrogen	0.356	0.587	0.100
Oxygen	0.003	0.005	0.001
Methane	93.831	88.558	15.050
Carbon Dioxide	0.235	0.610	0.104
Ethane	5.184	9.172	1.559
Propane	0.335	0.869	0.148
Isobutane	0.020	0.067	0.011
n-Butane	0.029	0.100	0.017
Isopentane	0.004	0.016	0.003
n-Pentane	0.002	0.009	0.002
Cyclopentane	0.000	0.001	0.000
Isohexane	0.000	0.002	0.000
n-Hexane	0.000	0.001	0.000
Benzene	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000
Isoheptanes	0.000	0.000	0.000
Heptanes	0.000	0.000	0.000
Toluene	0.000	0.000	0.000
Methylcyclohexane	0.000	0.001	0.000
2,2,4 Trimethylpentane	0.000	0.000	0.000
Octanes	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000
Xylenes	0.000	0.000	0.000
Isononanes	0.000	0.000	0.000
n-Nonane	0.000	0.000	0.000
Isodecanes	0.000	0.000	0.000
n-Decane	0.000	0.000	0.000
Isoundecanes+	0.000	0.000	0.000
Totals	100.000	100.000	16.995

TOC (Total)	99.41	98.80
VOC (Total)	0.39	1.07
HAP (Total)	0.00	0.00

Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

Client Name: EQM
Location: Bradshaw
Job: Produced Water Tank Run

ProMax Filename: 2025-0722 Bradshaw PWT v1.0
ProMax Version: 6.0.24302.0
Property Stencil Name: PWT
Property Stencil Flowsheet: Flowsheet1

Emission Summary [Total]

Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs	**0.005**	0.004	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**
Methane	**0.523**	0.512	0.003	0.008	**0.000**

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Report Navigator can be activated via the ProMax Navigator Toolbar.

Bryan Research & Engineering, LLC

ProMax® 6.0

Simulation Report

Client Name: EQM
Location: Bradshaw
Job: Produced Water Tank Run

ProMax Filename: 2025-0722 Bradshaw PWT v1.0
ProMax Version: 6.0.24302.0
Property Stencil Name: Used Oil Tank
Property Stencil Flowsheet: Flowsheet1

Emission Summary [Total]

Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs	**0.000**	0.000	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**
Methane	**0.000**	0.000	0.000	0.000	**0.000**

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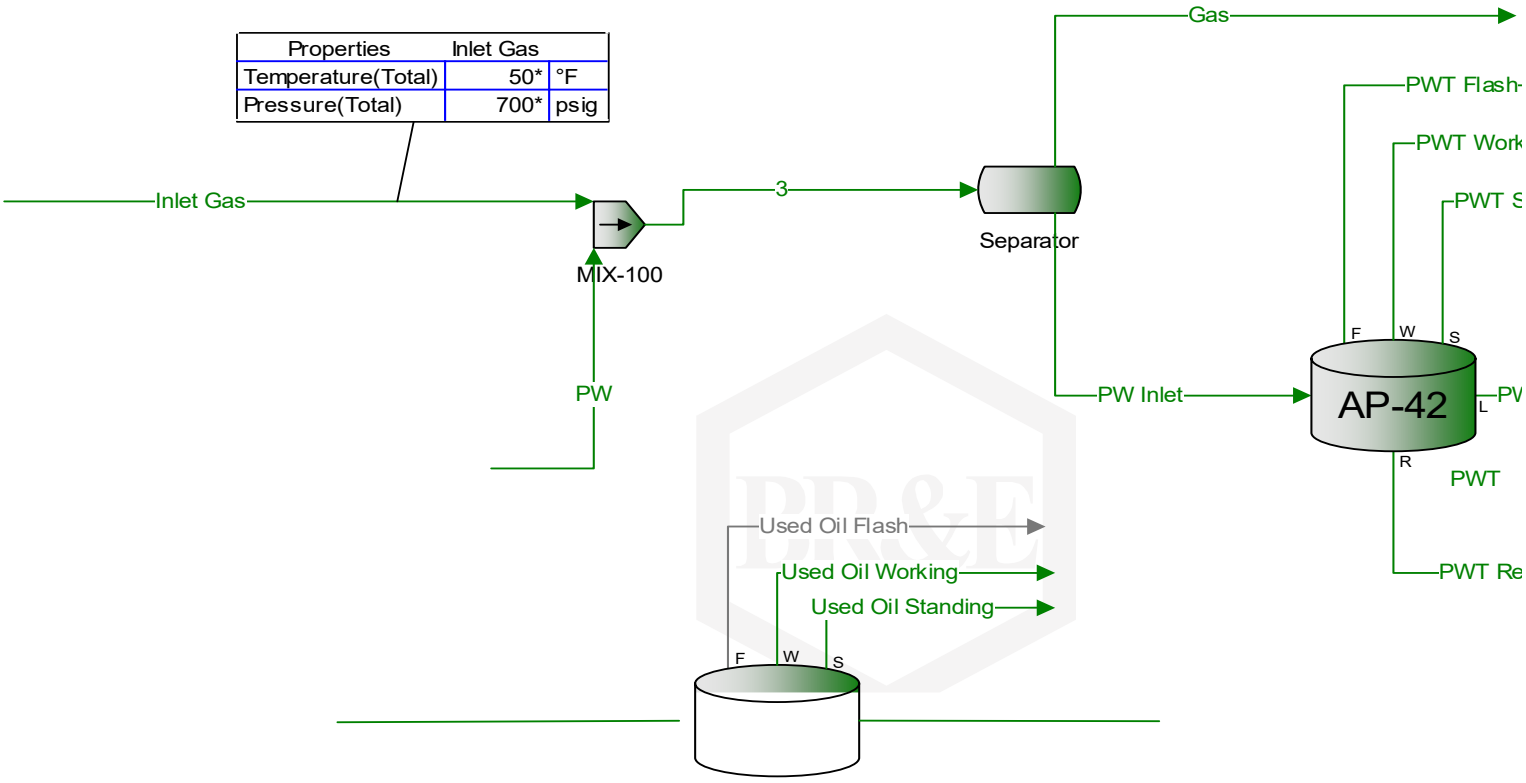
Flowsheet1

Bradshaw Storage Tank Emissions



Inlet Stream Summary				
Stream Name		Inlet Gas	PW	Used Oil
Stream Flowsheet		Flowsheet1	Flowsheet1	Flowsheet1
Temperature	°F	50.000	50.000	60.000
Pressure	psig	700.000	685.304	0.000
Standard Vapor Volumetric Flow	MSCFD	2662716.396	855.200	0.494
Standard Liquid Volumetric Flow	bbl/d	1105597.675	115.943	0.822
Vapor Fraction	(%)	100.000	0.000	0.000
Component		[Mol%]	[Mol%]	[Mol%]
Carbon Dioxide		0.235	0.000	0.000
Nitrogen		0.356	0.000	0.000
Oxygen		0.003	0.000	0.000
Methane		93.831	0.000	0.000
Ethane		5.184	0.000	0.000
Propane		0.335	0.000	0.000
Isobutane		0.020	0.000	0.000
n-Butane		0.029	0.000	0.000
i-Pentane		0.004	0.000	0.000
n-Pentane		0.002	0.000	0.000
Cyclopentane		0.000	0.000	0.000
n-Hexane		0.001	0.000	0.000
Cyclohexane		0.000	0.000	0.000
Heptane		0.000	0.000	0.000
Methylcyclohexane		0.000	0.000	0.000
2,2,4-Trimethylpentane		0.000	0.000	0.000
Benzene		0.000	0.000	0.000
Toluene		0.000	0.000	0.000
Ethylbenzene		0.000	0.000	0.000
m-Xylene		0.000	0.000	0.000
Octane		0.000	0.000	0.000
Water		0.000	100.000	0.000
Lube Oil		0.000	0.000	100.000

Flowsheet Information		
Tank Losses Block Name		PWT
Tank Losses Block Inlet Stream		PW Inlet

Tank Characteristics				
Tank Type		Vertical Cylinder		
Time Frame		Year		
Material Category		Light Organics		
Number of Tanks		1		
Shell Height	[ft]	24.000		
Diameter [ft]	[ft]	12.000		
Maximum Liquid Height	[%] | [ft]	90.000	21.600	
Average Liquid Height	[%] | [ft]	50.000	12.000	
Minimum Liquid Height	[%] | [ft]	10.000	2.400	
Sum of Increases in Liquid Level	[ft/yr]	148.803		
Tank Volume	[gal] | [bbl]	20304.644	483.444	
Insulation		Uninsulated		
Bolted or Riveted Construction		False		
Vapor Balanced Tank		False		
Paint Characteristics				
Shell Color		White		
Shell Paint Condition		Average		
Roof Color		White		
Roof Paint Condition		Average		
Roof Characteristics				
Type		Cone		
Diameter	[ft]	-		
Slope	[ft/ft]	0.063		
Breather Vent Settings				
Breather Vacuum Pressure	[psig]	-0.030		
Breather Vent Pressure	[psig]	0.030		

Loading Loss Parameters		
Cargo Carrier		Tank Truck or Rail Tank Car
Land Based Mode of Operation		Submerged Loading of a Clean Cargo Tank
Marine Based Mode of Operation		-
Control Efficiency	[%]	0.000
Truck Annual Leak Test Passed		None
Overall Reduction Efficiency	[%]	0.000

Meteorological Data				
Location		Pittsburgh, PA		
Average Atmospheric Pressure	[psia]	14.100		
Maximum Average Temperature	[°F]	60.400		
Minimum Average Temperature	[°F]	42.800		
Solar Insolation	[BTU/ft^2*day]	1170.000		
Average Wind Speed	[mph]	7.800		
Tank Conditions				
Flashing Temperature	[°F]	58.118		
Maximum Liquid Surface Temperature	[°F]	58.118		
Average Liquid Surface Temperature	[°F]	53.186		
Known Liquid Bulk Temperature?		False		
Bulk Liquid Temperature	[°F]	52.478		
Net Throughput	[bbl/day] | [bbl/yr]	8.213	2997.715	
Net Throughput Per Tank	[bbl/day] | [bbl/yr]	8.213	2997.715	
Annual Turnovers Per Tank		7.750		
Residual Liquid	[bbl/day]	8.219		
Residual Liquid Per Tank	[bbl/day]	8.219		
Raoult's Law Used for Vapor Pressure Calc?		False		
Vapor Pressure @ Minimum Liquid Surface Temperature	[psia]	12.909		
Vapor Pressure @ Maximum Liquid Surface Temperature	[psia]	14.100		
Vapor Pressure @ Average Daily Liquid Surface Temperature	[psia]	13.501		
Tank Conditions				
Heated Tank?		-		

Flowsheet Information				
Tank Losses Block Name		Used Oil Tank		
Tank Losses Block Inlet Stream		Used Oil		

Tank Characteristics				
Tank Type		Vertical Cylinder		
Time Frame		Year		
Material Category		Heavy Crude		
Number of Tanks		1		
Shell Height	[ft]	24.000		
Diameter [ft]	[ft]	12.000		
Maximum Liquid Height	[%] | [ft]	90.000	21.600	
Average Liquid Height	[%] | [ft]	50.000	12.000	
Minimum Liquid Height	[%] | [ft]	10.000	2.400	
Sum of Increases in Liquid Level	[ft/yr]	14.842		
Tank Volume	[gal] | [bbl]	20304.644	483.444	
Insulation		Uninsulated		
Bolted or Riveted Construction		False		
Vapor Balanced Tank		False		
Paint Characteristics				
Shell Color		White		
Shell Paint Condition		Average		
Roof Color		White		
Roof Paint Condition		Average		
Roof Characteristics				
Type		Cone		
Diameter	[ft]	-		
Slope	[ft/ft]	0.063		
Breather Vent Settings				
Breather Vacuum Pressure	[psig]	-0.030		
Breather Vent Pressure	[psig]	0.030		

Loading Loss Parameters		
Cargo Carrier		Tank Truck or Rail Tank Car
Land Based Mode of Operation		Submerged Loading of a Clean Cargo Tank
Marine Based Mode of Operation		-
Control Efficiency	[%]	0.000
Truck Annual Leak Test Passed		None
Overall Reduction Efficiency	[%]	0.000

Meteorological Data				
Location		Pittsburgh, PA		
Average Atmospheric Pressure	[psia]	14.100		
Maximum Average Temperature	[°F]	60.400		
Minimum Average Temperature	[°F]	42.800		
Solar Insolation	[BTU/ft^2*day]	1170.000		
Average Wind Speed	[mph]	7.800		
Tank Conditions				
Flashing Temperature	[°F]	58.118		
Maximum Liquid Surface Temperature	[°F]	58.118		
Average Liquid Surface Temperature	[°F]	53.186		
Known Liquid Bulk Temperature?		False		
Bulk Liquid Temperature	[°F]	52.478		
Net Throughput	[bbl/day] | [bbl/yr]	0.819	298.993	
Net Throughput Per Tank	[bbl/day] | [bbl/yr]	0.819	298.993	
Annual Turnovers Per Tank		0.773		
Residual Liquid	[bbl/day]	0.822		
Residual Liquid Per Tank	[bbl/day]	0.822		
Raoult's Law Used for Vapor Pressure Calc?		False		
Vapor Pressure @ Minimum Liquid Surface Temperature	[psia]	0.000		
Vapor Pressure @ Maximum Liquid Surface Temperature	[psia]	0.000		
Vapor Pressure @ Average Daily Liquid Surface Temperature	[psia]	0.000		
Tank Conditions				
Heated Tank?		-		

Emission Summary [Total]					
Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs	**0.005**	0.004	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**

Emission Summary [Per Tank]					
Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs [C3+]	**0.005**	0.004	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**

Stream Properties							
		Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
Molecular Weight	[lb/lbmol]	18.016	17.951	23.397	23.397	18.030	18.015
Net Ideal Gas Heating Value	[BTU/scf]	-	911.516	293.973	293.973	0.894	-
Standard Vapor Volumetric Flow	[scf/d]	-	75.149	1.300	3.997	0.311	-
Specific Gravity		1.001	-	-	-	-	1.000
Reid Vapor Pressure	[psi]	1.099	-	-	-	-	1.030
API Gravity		10.124	-	-	-	-	9.998
Standard Liquid Volumetric Flow	[bbl/d]	8.252	-	-	-	-	8.219

Stream Mass Flow [Total]							
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual	Total Emissions
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]
Carbon Dioxide	0.074	0.051	0.006	0.018	0.000	0.000	0.074
Nitrogen	0.002	0.002	0.000	0.000	0.000	0.000	0.002
Oxygen	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Methane	0.523	0.512	0.003	0.008	0.000	0.000	0.523
Ethane	0.071	0.068	0.001	0.002	0.000	0.000	0.071
Propane	0.004	0.004	0.000	0.000	0.000	0.000	0.004
Isobutane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Butane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
i-Pentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Water	525.279	0.011	0.006	0.017	0.003	525.245	0.034
Lube Oil	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Stream Compostion						
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
	[Mol%]	[Mol%]	[Mol%]	[Mol%]	[Mol%]	[Mol%]
Carbon Dioxide	0.006	3.191	21.108	21.108	0.000	0.000
Nitrogen	0.000	0.193	0.028	0.028	0.000	0.000
Oxygen	0.000	0.003	0.001	0.001	0.000	0.000
Methane	0.112	88.366	26.490	26.490	0.000	0.000
Ethane	0.008	6.275	3.073	3.073	0.000	0.000
Propane	0.000	0.237	0.083	0.083	0.000	0.000
Isobutane	0.000	0.010	0.003	0.003	0.000	0.000
n-Butane	0.000	0.015	0.005	0.005	0.000	0.000
i-Pentane	0.000	0.001	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.001	0.024	0.024	0.021	0.000
Toluene	0.000	0.000	0.007	0.007	0.003	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000
Water	99.874	1.709	49.178	49.178	99.976	100.000
Lube Oil	0.000	0.000	0.000	0.000	0.000	0.000
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
	[Mass%]	[Mass%]	[Mass%]	[Mass%]	[Mass%]	[Mass%]
Carbon Dioxide	0.014	7.822	39.703	39.703	0.000	0.000
Nitrogen	0.000	0.301	0.034	0.034	0.000	0.000
Oxygen	0.000	0.005	0.001	0.001	0.000	0.000
Methane	0.099	78.973	18.163	18.163	0.000	0.000
Ethane	0.013	10.512	3.949	3.949	0.000	0.000
Propane	0.001	0.581	0.157	0.157	0.000	0.000
Isobutane	0.000	0.031	0.007	0.007	0.000	0.000
n-Butane	0.000	0.049	0.012	0.012	0.000	0.000
i-Pentane	0.000	0.005	0.001	0.001	0.000	0.000
n-Pentane	0.000	0.001	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.003	0.079	0.079	0.090	0.000
Toluene	0.000	0.001	0.028	0.028	0.018	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000
Water	99.872	1.715	37.866	37.866	99.892	100.000
Lube Oil	0.000	0.000	0.000	0.000	0.000	0.000

Emission Summary [Total]					
Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs	**0.000**	0.000	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**

Emission Summary [Per Tank]					
Component Subset	**Tank Losses**	Flashing Losses	Working Losses	Standing Losses	**Loading Losses**
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	**[ton/yr]**
VOCs [C3+]	**0.000**	0.000	0.000	0.000	**0.000**
HAPs	**0.000**	0.000	0.000	0.000	**0.000**
BTEX	**0.000**	0.000	0.000	0.000	**0.000**
H2S	**0.000**	-	-	-	**-**

Stream Properties							
		Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
Molecular Weight	[lb/lbmol]	188.000	188.000	188.000	188.000	188.000	188.000
Net Ideal Gas Heating Value	[BTU/scf]	-	9169.961	9169.961	9169.961	9169.961	-
Standard Vapor Volumetric Flow	[scf/d]	-	0.000	0.000	0.001	0.000	-
Specific Gravity		0.851	-	-	-	-	0.852
Reid Vapor Pressure	[psi]	0.150	-	-	-	-	0.150
API Gravity		34.804	-	-	-	-	34.805
Standard Liquid Volumetric Flow	[bbl/d]	0.822	-	-	-	-	0.822

Stream Mass Flow [Total]							
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual	Total Emissions
	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]	[ton/yr]
Carbon Dioxide	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nitrogen	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Methane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Propane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Isobutane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Butane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
i-Pentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Water	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lube Oil	44.688	0.000	0.000	0.000	0.000	0.000	0.000

Stream Compostion						
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
	[Mol%]	[Mol%]	[Mol%]	[Mol%]	[Mol%]	[Mol%]
Carbon Dioxide	0.000	0.000	0.000	0.000	0.000	0.000
Nitrogen	0.000	0.000	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000	0.000	0.000
Methane	0.000	0.000	0.000	0.000	0.000	0.000
Ethane	0.000	0.000	0.000	0.000	0.000	0.000
Propane	0.000	0.000	0.000	0.000	0.000	0.000
Isobutane	0.000	0.000	0.000	0.000	0.000	0.000
n-Butane	0.000	0.000	0.000	0.000	0.000	0.000
i-Pentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000
Water	0.000	0.000	0.000	0.000	0.000	0.000
Lube Oil	100.000	100.000	100.000	100.000	100.000	100.000
Component	Tank Inlet	Flashing Losses	Working Losses	Standing Losses	Loading Losses	Residual
	[Mass%]	[Mass%]	[Mass%]	[Mass%]	[Mass%]	[Mass%]
Carbon Dioxide	0.000	0.000	0.000	0.000	0.000	0.000
Nitrogen	0.000	0.000	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000	0.000	0.000
Methane	0.000	0.000	0.000	0.000	0.000	0.000
Ethane	0.000	0.000	0.000	0.000	0.000	0.000
Propane	0.000	0.000	0.000	0.000	0.000	0.000
Isobutane	0.000	0.000	0.000	0.000	0.000	0.000
n-Butane	0.000	0.000	0.000	0.000	0.000	0.000
i-Pentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclopentane	0.000	0.000	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000	0.000	0.000
Cyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
Heptane	0.000	0.000	0.000	0.000	0.000	0.000
Methylcyclohexane	0.000	0.000	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.000	0.000	0.000	0.000
Toluene	0.000	0.000	0.000	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000	0.000	0.000	0.000
m-Xylene	0.000	0.000	0.000	0.000	0.000	0.000
Octane	0.000	0.000	0.000	0.000	0.000	0.000
Water	0.000	0.000	0.000	0.000	0.000	0.000
Lube Oil	100.000	100.000	100.000	100.000	100.000	100.000

ATTACHMENT O – MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS

Plan Type	Emission unit	Pollutant	Requirements	Frequency	Method of Measurement	Regulatory Reference
Monitoring, Recordkeeping	Compressor Turbine S027	NO_X	Performance test	Annual	EPA Test Methods	40 CFR 60.4400(a)
Monitoring	Compressor Turbine S027		Amount of natural gas consumed, hours of operation	Monthly	N/A	Monitoring
Recordkeeping	Compressor Turbine S027	NOx, CO, VOC	Rolling 12-month total emission calculations	Monthly	N/A	Recordkeeping
Recordkeeping	Blowdowns		Number of events and estimated volume per event rolling 12-month total	Monthly	N/A	Recordkeeping
Monitoring, Recordkeeping	Fugitives		Conduct Quarterly OGI surveys and monthly AVO surveys as specified in 40 CFR 60.5397b.	N/A	N/A	40 CFR 60.5397b
Monitoring, Recordkeeping	Compressor Turbines S027		Monitor and replace dry seals as specified in 40 CFR 60.5380b(a)(6)-(8).	N/A	N/A	40 CFR 60.5380b(a)(6)-(8)

See Attachment D for additional information.

ATTACHMENT P – PUBLIC NOTICE

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that Mountain Valley Pipeline, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a R13 Modification to the existing R13-2378B permit for a natural gas transmission compressor station (Bradshaw Compressor Station) located on Bear Run Rd 3 miles northeast of Smithfield in Wetzel County, West Virginia. The site latitude and longitude coordinates are: 39.53288 N, - 80.53298 W.

The applicant estimates the potential increase in the following Regulated Air Pollutants associated with the project:

Volatile Organic Compounds (VOC) = no increase
Nitrogen Oxides (NO_x) = 25.95 tpy
Carbon Monoxide (CO) = 6.48 tpy
Particulate Matters ($PM_{2.5}$/PM_{10}) = 7.81 tpy
Sulfur Dioxide (SO_2) = 2.66 tpy
Formaldehyde (HCHO) = 0.45 tpy
Total Hazardous Air Pollutants (HAP) = no increase
Carbon Dioxide Equivalents (CO_2e) = 124,709 tpy

Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice. Written comments will also be received via email at DEPAirQualityPermitting@WV.gov

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 41281, during normal business hours.

Dated on October 30, 2025.

By: Mountain Valley Pipeline, LLC
Mike Lauderbaugh, Vice President, EHS
2200 Energy Drive
Canonsburg, PA 15317

ATTACHMENT S – TITLE V PERMIT REVISION INFORMATION

Attachment S

Title V Permit Revision Information

1. New Applicable Requirements Summary	
Mark all applicable requirements associated with the changes involved with this permit revision:	
☒ SIP	☐ FIP
☒ Minor source NSR (45CSR13)	☐ PSD (45CSR14)
☐ NESHAP (45CSR15)	☐ Nonattainment NSR (45CSR19)
☒ Section 111 NSPS (Subpart(s)_____)	☐ Section 112(d) MACT standards (Subpart(s)_____)
☐ Section 112(g) Case-by-case MACT	☐ 112(r) RMP
☐ Section 112(i) Early reduction of HAP	☐ Consumer/commercial prod. reqts., section 183(e)
☐ Section 129 Standards/Reqts.	☐ Stratospheric ozone (Title VI)
☐ Tank vessel reqt., section 183(f)	☐ Emissions cap 45CSR§30-2.6.1
☐ NAAQS, increments or visibility (temp. sources)	☐ 45CSR27 State enforceable only rule
☐ 45CSR4 State enforceable only rule	☐ Acid Rain (Title IV, 45CSR33)
☐ Emissions Trading and Banking (45CSR28)	☐ Compliance Assurance Monitoring (40CFR64) (1)
☐ NO_x Budget Trading Program Non-EGUs (45CSR1)	☐ NO_x Budget Trading Program EGUs (45CSR26)
(1) If this box is checked, please include **Compliance Assurance Monitoring (CAM) Form(s)** for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why **Compliance Assurance Monitoring** is not applicable:	

2. Non Applicability Determinations
List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.
☐ **Permit Shield Requested** *(not applicable to Minor Modifications)*

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

3. Suggested Title V Draft Permit Language

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

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

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

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-3278B	01/03/2025	
	/ /	

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

Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-3278	03/14/2016	
R13-3278A	03/22/2021	
	/ /	

6. Change in Potential Emissions

Pollutant	Change in Potential Emissions (+ or -), TPY
Nitrogen Oxides (NOx)	25.95
Carbon Monoxide (CO)	6.48
VOC	- 1.37
Particulate Matters (PM2.5/PM10)	7.81
Sulfur Dioxide (SO_2)	2.66
Formaldehyde (HCHO)	0.45
Hazardous Air Pollutants (HAPs)	- 1.15
Hazardous Air Pollutants (HAPs)	124,709

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

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

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

i. Proposed changes do not violate any applicable requirement;
ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

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

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

(Signed):	DocuSigned by: Michael Lauderbaugh A8716FCE3A784B8... *(Please use blue ink)*	Date:	11/3/2025 | 3:48 PM EST *(Please use blue ink)*
Named (typed):	Mike Lauderbaugh	Title:	*Vice President, EHS*

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

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

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