



April 15, 2016

CERTIFIED MAIL # 7015 1660 0000 9399 5980

Mr. William F. Durham, Director
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, West Virginia, 25304

**RE: G70B Permit Application
EQT Production Company
OXF-153 Natural Gas Production Site
Facility ID No. 017-00053**

Dear Mr. Durham,

Enclosed are two electronic copies and one original hard copy of a proposed application for a G70-B General Air Permit for the OXF-153 Natural Gas Production Well Site. The site currently operates under a G70-A General Air Permit (G70-A169). Please note that this application satisfies a requirement in Consent Order CO-R13-E-2016-04, in which EQT Production Company is required to submit an application with the equipment specified in the consent order. A legal advertisement will be published in the next few days and proof of publication will be forwarded as soon as it is received. Please contact me for payment of the application fee by credit card.

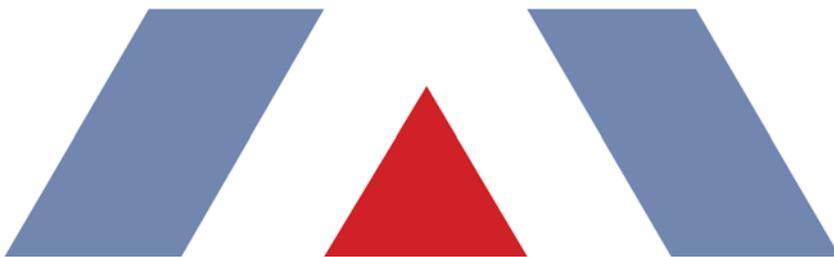
If you have any questions concerning this permit application, please contact me at (412) 395-3699 or by email at abosiljevac@eqt.com.

Sincerely,

A handwritten signature in blue ink, appearing to read 'RAB', with a large, sweeping flourish extending to the right.

Alex Bosiljevac
EQT Corporation

Enclosures



PROJECT REPORT

**EQT Production
OXF-153 Pad**

G70-B Permit Application



Where energy meets innovation.

TRINITY CONSULTANTS
4500 Brooktree Drive
Suite 103
Wexford, PA 15090
(724) 935-2611

April 2016



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1. INTRODUCTION

EQT Production Company (EQT) is submitting this Class II General Permit (G70-B) application to the West Virginia Department of Environmental Protection (WVDEP) for the construction and operation of new equipment at an natural gas production well pad, OXF-153, located in Doddridge County, West Virginia. The OXF-153 pad is currently operating under G70-A permit number G70-A169.

1.1. FACILITY AND PROJECT DESCRIPTION

The OXF-153 pad is a natural gas production facility that consists of seven (7) natural gas wells. Natural gas and liquids (including water and condensate) are extracted from deposits underneath the surface. Natural gas is transported from the well to a gas line for additional processing and compression, as necessary. The liquids produced are stored in storage vessels.

The OXF-153 pad currently consists of the following equipment:

- > Ten (10) 400 barrel (bbl) storage tanks for condensate/water (produced fluids) controlled by one (1) existing combustor rated at 11.66 MMBtu/hr;
- > One (1) 140 bbl storage tank for sand and produced fluids from the sand separator (vapors from this tank may be controlled by combustors but are not represented as controlled in this application);
- > Seven (7) line heaters, six (6) rated at 1.54 MMBtu/hr (heat input) and one (1) rated at 0.77 MMBtu/hr;
- > Three (3) thermoelectric generators (TEGs), each rated at 0.013 MMBtu/hr (heat input);
- > Produced fluid truck loading; and
- > Associated piping and components.

This application seeks to permit the following equipment at the OXF-153 pad:

- > One low pressure separator and associated 1.15 MMbtu/hr heater;
- > One vapor recovery unit (VRU) powered by a natural gas fired 110 horsepower (hp) engine; and
- > One new combustor rated at 11.66 MMBtu/hr.

A process flow diagram is included as Attachment D.

1.2. SOURCE STATUS

WVDEP must make stationary source determinations on a case-by-case basis using the guidance under the Clean Air Act (CAA) and EPA's and WVDEP's implementing regulations. The definition of stationary source in 40 CFR 51.166(b) includes the following:

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

Other additional pollutant emitting facilities should be aggregated with the OXF-153 Pad for air permitting purposes if, and only if, all three elements of the “stationary source” definition above are fulfilled.

WVDEP determined that the OXF-153 pad is a separate stationary source when the current permit was issued. There are no Marcellus facilities within a quarter-mile radius of the OXF-153 Pad. The nearest wellpad, OXF-134, is located approximately 4,250 feet north of OXF-153. Therefore, the OXF-153 pad should continue to be considered a separate stationary source with respect to permitting programs, including Title V and Prevention of Significant Deterioration (PSD). As discussed in this application, the facility is a minor source of air emissions with respect to New Source Review (NSR) and Title V permitting.

1.3. G70-B APPLICATION ORGANIZATION

This West Virginia Code of State Regulations, Title 45 (CSR) Series 13 (45 CSR 13) G70-B permit application is organized as follows:

- > Section 2: Sample Emission Source Calculations;
- > Section 3: Regulatory Discussion;
- > Section 4: G70-B Application Form;
- > Attachment A: Single Source Determination;
- > Attachment B: Siting Criteria Waiver **(Not Applicable)**;
- > Attachment C: Business Certificate;
- > Attachment D: Process Flow Diagram;
- > Attachment E: Process Description;
- > Attachment F: Plot Plan;
- > Attachment G: Area Map;
- > Attachment H: Applicability Form;
- > Attachment I: Emission Units Table;
- > Attachment J: Fugitive Emissions Summary Sheet;
- > Attachment K: Gas Well Data Sheet;
- > Attachment L: Storage Vessel Data Sheet;
- > Attachment M: Heaters Data Sheet;
- > Attachment N: Engines Data Sheet;
- > Attachment O: Truck Loading Data Sheet;
- > Attachment P: Glycol Dehydrator Data Sheet **(Not Applicable)**;
- > Attachment Q: Pneumatic Controller Data Sheet **(Not Applicable)**;
- > Attachment R: Air Pollution Control Device Data Sheet;
- > Attachment S: Emission Calculations;
- > Attachment T: Emission Summary Sheet;
- > Attachment U: Class I Legal Advertisement; and
- > Attachment V: General Permit Registration Application Fee.

2. SAMPLE EMISSION SOURCE CALCULATIONS

The characteristics of air emissions from the natural gas production operations, along with the methodology for calculating emissions, are briefly described in this section of the application. Detailed emission calculations are presented in Attachment S of this application.

Emissions from this project will result from natural gas combustion in the line heaters, low pressure separator heater, combustors and TEGs, as well as storage of organic liquids in storage tanks and loading of organic liquids into tank trucks. In addition, fugitive emissions will result from component leaks from the operation of the station. The methods by which emissions from each of these source types, as well as the existing source types, are calculated are summarized below.

- > **Line Heaters, Low Pressure Separator Heater, Enclosed Combustors and TEGs:** Potential emissions of criteria pollutants and hazardous air pollutants (HAPs) are calculated using U.S. EPA's AP-42 factors for natural gas external combustion.¹ These calculations assume a site-specific heat content of natural gas. Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C.²
- > **VRU Engine:** Potential emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) are calculated using vendor emission factors. Remaining criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 factors for natural gas fired engines.³ These calculations assume a site-specific heat content of natural gas. Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C.
- > **Fugitive Equipment Leaks:** Emissions of VOC and HAPs from leaking equipment components have been estimated using facility estimated component counts and types along with emission factors from the *Protocol for Equipment Leak Emission Estimates, EPA 453/R-95-017, November 1995*. Emission factors used are based on average measured TOC from component types indicated. Greenhouse gas emissions from component leaks are calculated according to the procedures in 40 CFR 98 Subpart W.⁴
- > **Storage Tanks:** Working, breathing and flashing emissions of VOC and HAPs from the storage tanks at the facility are calculated using Bryan Research & Engineering ProMax® Software. Controlled calculations assume an overall control efficiency (capture and destruction) of 98%. The throughput for the produced fluids tanks are based on the maximum annualized monthly condensate and produced water at the OXF-153 well pad (i.e., the maximum monthly throughput for the pad times 12). The composition for the analysis was from a sample taken at OXF-152. Emissions of VOC and HAPs from the sand separator tank are calculated using E&P TANK v2.0. The produced fluids throughput is calculated as follows:
$$\text{Throughput} \left(\frac{\text{bbl}}{\text{day}} \right) = \left(\text{Condensate Throughput} \left(\frac{\text{bbl}}{\text{month}} \right) + \left(\text{Produced Water Throughput} \left(\frac{\text{bbl}}{\text{month}} \right) \right) \right) * \frac{12 \left(\frac{\text{months}}{\text{year}} \right)}{365 \left(\frac{\text{days}}{\text{year}} \right)}$$
- > **Tank Truck Loading:** Uncontrolled emissions of VOC and HAPs from the loading of organic liquids from storage tanks to tank truck are calculated using Bryan Research Engineering ProMax® Software. Truck

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

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

³ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 3.2, Natural Gas-fired Reciprocating Engines, Supplement D, August 2000.

⁴ 40 CFR 98 Subpart W, *Petroleum and Natural Gas Systems*, Section 98.233(r), *Population Count and Emission Factors*.

loading is controlled by the enclosed combustors. U.S. EPA's AP-42 Chapter 5 Section 2 factors were used for capture efficiency.⁵

- > **Haul Roads:** Fugitive dust emitted from facility roadways has been estimated using projected vehicle miles traveled along with U.S. EPA's AP-42 factors for unpaved haul roads.⁶

⁵ U.S. EPA, AP 42, Fifth Edition, Volume I, Chapter 5.2, Transportation And Marketing Of Petroleum Liquids, June 2008.

⁶ U.S. EPA, AP 42, Fifth Edition, Volume I, Section 13.2.2, Unpaved Roads, November 2006.

3. REGULATORY DISCUSSION

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

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

This review is presented to supplement and/or add clarification to the information provided in the WVDEP G70-B permit application forms.

In addition to providing a summary of applicable requirements, this section of the application also provides non-applicability determinations for certain regulations, allowing the WVDEP to confirm that identified regulations are not applicable to the wellpad. Note that explanations of non-applicability are limited to those regulations for which there may be some question of applicability specific to the operations at the wellpad. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, Standards of Performance for Petroleum Refineries).

3.1. PREVENTION OF SIGNIFICANT DETERIORATION SOURCE CLASSIFICATION

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration. PSD regulations apply when a major source makes a change, such as installing new equipment or modifying existing equipment, and a significant increase in emissions results from the change. The wellpad is not a major source with respect to the PSD program since its potential emissions are below all the PSD thresholds. As such, PSD permitting is not triggered by this construction activity. EQT will monitor future construction activities at the site closely and will compare any future increase in emissions with the PSD thresholds to ensure these activities will not trigger this program.

3.2. TITLE V OPERATING PERMIT PROGRAM

Title 40 of the Code of Federal Regulations Part 70 (40 CFR 70) establishes the federal Title V operating permit program. West Virginia has incorporated the provisions of this federal program in its Title V operating permit program in West Virginia CSR 45-30. The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single HAP, 25 tpy of any combination of HAP and 100 tpy of all other regulated pollutants.⁷ The potential emissions of all regulated pollutants are below the corresponding threshold(s) at this facility after the proposed project. Therefore, the wellpad is not a major source for Title V purposes.

3.3. NEW SOURCE PERFORMANCE STANDARDS

New Source Performance Standards, located in 40 CFR 60, require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the applicable provisions.

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

Moreover, any source subject to an NSPS is also subject to the general provisions of NSPS Subpart A, except where expressly noted. The following is a summary of applicability and non-applicability determinations for NSPS regulations of relevance to the wellpad. The following NSPS could potentially apply to the wellpad:

- > 40 CFR Part 60 Subparts D/Da/Db/Dc – Steam Generating Units
- > 40 CFR Part 60 Subpart K/Ka/Kb – Storage Vessels for Petroleum Liquids/Volatile Organic Liquids
- > 40 CFR Part 60 Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines
- > 40 CFR Part 60 Subpart OOOO – Crude Oil and Natural Gas Production, Transmission, and Distribution
- > 40 CFR Part 60 Subpart OOOOa – Crude Oil and Natural Gas Facilities

3.3.1. NSPS Subparts D, Da, Db, and Dc - Steam Generating Units

These subparts apply to steam generating units of various sizes, all greater than 10 MMBtu/hr. The proposed 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.

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

These subparts apply to storage tanks of certain sizes constructed, reconstructed, or modified during various time periods. Subpart K applies to storage tanks constructed, reconstructed, or modified prior to 1978, and Subpart Ka applies to those constructed, reconstructed, or modified prior to 1984. Both Subparts K and Ka apply to storage tanks with a capacity greater than 40,000 gallons. Subpart Kb applies to volatile organic liquid (VOL) storage tanks constructed, reconstructed, or modified after July 23, 1984 with a capacity equal to or greater than 75 m³ (~19,813 gallons). All of the tanks at the wellpad have a capacity of 19,813 gallons or less. As such, Subparts K, Ka, and Kb do not apply to the storage tanks at the wellpad.

3.3.3. NSPS Subparts JJJJ - Stationary Spark Ignition Internal Combustion Engines

New Source Performance Standards 40 CFR Part 60 Subpart JJJJ (NSPS JJJJ) affects owners and operators of stationary spark ignition internal combustion engines (SI ICE) that commence construction, reconstruction or modification after June 12, 2006. Applicability dates are based on the date the engine was ordered by the operator. The proposed engine (VRU engine) at the well pad is a 4-stroke rich burn, spark ignition engine manufactured after July 1, 2008, and is subject to this subpart. EQT will operate the engine according to the manufacturer's recommended practices and demonstrate compliance with the requirements specified in 40 CFR §60.4244 (testing methods) and 40 CFR §60.4243(b)(2) (maintenance plan/records and performance testing frequency) for noncertified affected SI ICE at the facility or by purchasing a certified engine. At this time, EQT intends to purchase a certified engine.

3.3.4. NSPS Subpart OOOO - Crude Oil and Natural Gas Production, Transmission, and Distribution

Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, applies to affected facilities that commenced construction, reconstruction, or modification after August 23, 2011 (see clarification below regarding dates). This NSPS was published in the Federal Register on August 16, 2012, and subsequently amended. Although there are sources proposed to be installed that could potentially be subject to this regulation, due to the anticipated installation dates, they will not be subject to the rule. This is due to the most recent proposed developments related to the rule, which are the inclusion of an end date for applicability to Subpart OOOO

(September 18, 2015) and the promulgation of 40 CFR 60 Subpart 0000a.⁸ The potential applicability of Subpart 0000a is discussed in the following section.

3.3.5. NSPS Subpart 0000a—Crude Oil and Natural Gas Facilities

Subpart 0000a, Standards of Performance for Crude Oil and Natural Gas Facilities, will apply to affected facilities that commenced construction, reconstruction, or modification after September 18, 2015. This regulation has yet to be finalized. The currently proposed version of the rule includes provisions for the following facilities:

- > Hydraulically fractured wells;
- > Centrifugal compressors located between the wellhead and the point of custody transfer to the natural gas distribution segment;
- > Reciprocating compressors located between the wellhead and the point of custody transfer to the natural gas distribution segment;
- > Continuous bleed natural gas-driven pneumatic controllers with a bleed rate of > 6 scfh located in the production, gathering, processing, or transmission and storage segments (excluding natural gas processing plants);
- > Continuous bleed natural gas-driven pneumatic controllers located at natural gas processing plants;
- > Pneumatic pumps located in the production, gathering, processing, or transmission and storage segments;
- > Storage vessels located in the production, gathering, processing, or transmission and storage segments;
- > The collection of fugitive emissions components at a well site;
- > The collection of fugitive emissions components at a compressor station; and
- > Sweetening units located onshore that process natural gas produced from either onshore or offshore wells.

Based on the current version of the proposed rule, the following paragraphs describe the potential applicability of the facilities to be located at the proposed facility.

40 CFR 60.5385 requires owners and operators of affected reciprocating compressors to change the rod packing prior to operating 26,000 hours or prior to 36 months since start up or the last packing replacement. However, according to §60.5365a, compressors located at well sites are not affected facilities under Subpart 0000a.

There are ten (10) produced fluid storage vessels and one (1) sand separator storage vessel at the wellpad. The storage vessels at the facility each have potential VOC emissions less than 6 tpy based on the permit application materials and enforceable limits to be included in the G70-B permit. As such, per 60.5365a(e), the tanks will not be storage vessel affected facilities under the rule.

Note that the proposed changes to the well pad do not meet the definition of modification under 60.5365a(i)(3). Therefore, EQT will not be subject to the leak detection and repair program under 0000a.

The pneumatic controllers will potentially subject to NSPS 0000a. Per 60.5365a(d)(1), a pneumatic controller affected facility is a single continuous bleed natural gas driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh. No pneumatic controllers installed will meet the definition of a pneumatic controller affected facility. Therefore, these units are not subject to the requirements of Subpart 0000a.

⁸ September 18, 2015 publication in Federal Register: <https://www.federalregister.gov/articles/2015/09/18/2015-21023/oil-and-natural-gas-sector-emission-standards-for-new-and-modified-sources>

3.3.6. Non-Applicability of All Other NSPS

NSPS are developed for particular industrial source categories. Other than NSPS developed for natural gas processing plants (Subparts 0000) and associated equipment (Subparts D-Dc and K-Kb), the applicability of a particular NSPS to the wellpad can be readily ascertained based on the industrial source category covered. All other NSPS are categorically not applicable to the proposed project.

3.4. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 63 NESHAP allowable emission limits are established on the basis of a maximum achievable control technology (MACT) determination for a particular major source. A HAP major source is defined as having potential emissions in excess of 25 tpy for total HAP and/or potential emissions in excess of 10 tpy for any individual HAP. The wellpad is an Area (minor) source of HAP since its potential emissions of HAP are less than the 10/25 major source thresholds. NESHAP apply to sources in specifically regulated industrial source categories (Clean Air Act Section 112(d)) or on a case-by-case basis (Section 112(g)) for facilities not regulated as a specific industrial source type. Besides 40 CFR 63 Subpart A (NESHAP Subpart A), which is similar to 40 CFR 60 Subpart A (NSPS Subpart A), the following NESHAP could potentially apply to the wellpad:

- > 40 CFR Part 63 Subpart HH – Oil and Natural Gas Production Facilities
- > 40 CFR Part 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines
- > 40 CFR Part 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers

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

3.4.1. 40 CFR 63 Subpart HH - Oil and Natural Gas Production Facilities

This standard contains requirements for both major and area sources of HAP. At area sources, the only affected source is a triethylene glycol dehydration unit (§63.760(b)(2)). The wellpad does not include a triethylene glycol dehydration unit; therefore the requirements of this subpart do not apply.

3.4.2. 40 CFR 63 Subpart ZZZZ - Stationary Reciprocating Internal Engines

This rule affects reciprocating internal combustion engines (RICE) located at a major and area sources of HAP. 40 CFR §63.6590(c) states that a new or reconstructed stationary RICE located at an area HAP source must meet the requirements of NESHAP Subpart ZZZZ by meeting the requirements of NSPS Subpart JJJJ. No further requirements apply for such engines under NESHAP Subpart ZZZZ. The OXF-153 well pad is a minor (area) source of hazardous air pollutants and the VRU engine is considered a new stationary RICE. Therefore, the requirements contained in §63.6590(c) are applicable. EQT will be in compliance with applicable requirements of 40 CFR 63 Subpart ZZZZ by meeting the applicable requirements of 40 CFR 60 Subpart JJJJ.

3.4.3. 40 CFR 63 Subpart JJJJJJ - Industrial, Commercial, and Institutional Boilers

This MACT standard applies to industrial, commercial, and institutional boilers of various sizes and fuel types at area sources. The proposed low pressure separator heating will be natural gas-fired and are specifically exempt from this subpart. Therefore, no sources at the wellpad are subject to any requirements under 40 CFR 63 Subpart JJJJJJ.

3.5. WEST VIRGINIA SIP REGULATIONS

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

3.5.1. 45 CSR 2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

45 CSR 2 applies to fuel burning units, defined as equipment burning fuel “for the primary purpose of producing heat or power by indirect heat transfer”. The TEGs, line heaters, and low pressure separator heater are fuel burning units and therefore must comply with this regulation. Per 45 CSR 2-3, opacity of emissions from units shall not exceed 10 percent.

3.5.2. 45 CSR 4: To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

According to 45 CSR 4-3:

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

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

3.5.3. 45 CSR 6: Control of Air Pollution from the Combustion of Refuse

45 CSR 6 applies to activities involving incineration of refuse, defined as “the destruction of combustible refuse by burning in a furnace designed for that purpose. For the purposes of this rule, the destruction of any combustible liquid or gaseous material by burning in a flare or flare stack, thermal oxidizer or thermal catalytic oxidizer stack shall be considered incineration.” The enclosed combustors are incinerators and therefore must comply with this regulation. Per 45 CSR 6-4.3, opacity of emissions from this unit shall not exceed 20 percent, except as provided by 4.4. PM emissions from this unit will not exceed the levels calculated in accordance with 6-4.1.

3.5.4. 45 CSR 16: Standards of Performance for New Stationary Sources

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

3.5.5. 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 wellpad, it is unlikely that fugitive particulate matter emissions will be emitted under normal operating conditions. However, EQT will take measures to ensure any fugitive particulate matter emissions will not cross the property boundary should any such emissions occur.

3.5.6. 45 CSR 21-28: Petroleum Liquid Storage in Fixed Roof Tanks

45 CSR 21-28 applies to any fixed roof petroleum liquid storage tank with a capacity greater than 40,000 gallons. The capacity of each storage tank proposed for the wellpad is less than 40,000 gallons; therefore, 45 CSR 21-28 will not apply to the petroleum liquid storage tanks at this wellpad.

3.5.7. 45 CSR 34: Emissions Standards for Hazardous Air Pollutants

45 CSR 34-1 incorporates the federal Clean Air Act (CAA) national emissions standards for hazardous air pollutants (NESHAPs) as set forth in 40 CFR Parts 61 and 63 by reference. As such, by complying with all applicable requirements of 40 CFR Parts 61 and 63 at the wellpad, EQT will be complying with 45 CSR 34. Note that there are no applicable requirements under 40 CFR Parts 61 and 63 for the wellpad.

3.5.8. Non-Applicability of Other SIP Rules

A thorough examination of the West Virginia SIP rules with respect to applicability at the wellpad 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 wellpad.

4. G70-B APPLICATION FORMS

The WVDEP permit application forms contained in this application include all applicable G70-B application forms including the required attachments.



West Virginia Department of Environmental Protection

Division of Air Quality
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G70-B GENERAL PERMIT REGISTRATION APPLICATION

PREVENTION AND CONTROL OF AIR POLLUTION IN REGARD TO THE CONSTRUCTION, MODIFICATION, RELOCATION, ADMINISTRATIVE UPDATE AND OPERATION OF NATURAL GAS PRODUCTION FACILITIES LOCATED AT THE WELL SITE

- CONSTRUCTION
MODIFICATION
RELOCATION
CLASS I ADMINISTRATIVE UPDATE
CLASS II ADMINISTRATIVE UPDATE

SECTION 1. GENERAL INFORMATION

Name of Applicant (as registered with the WV Secretary of State's Office): EQT Production Company

Federal Employer ID No. (FEIN): 25-0724685

Applicant's Mailing Address: 625 Liberty Avenue, Suite 1700

City: Pittsburgh

State: PA

ZIP Code: 15222

Facility Name: OXF-153 Pad

Operating Site Physical Address: Taylor Drain Road, Oxford, WV
If none available, list road, city or town and zip of facility.

City: Oxford

Zip Code: 26421

County: Doddridge

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):

Latitude: 39.18997 N

Longitude: -80.81757 W

SIC Code: 1311

DAQ Facility ID No. (For existing facilities) 017-00053

NAICS Code: 211111

CERTIFICATION OF INFORMATION

This G70-B General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of the Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned G70-B Registration Application will be returned to the applicant. Furthermore, if the G70-B forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.

I hereby certify that Kenneth Kirk is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Division of Air Quality immediately.

I hereby certify that all information contained in this G70-B General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible.

Responsible Official Signature: [Signature]
Name and Title: Kenneth Kirk, Executive Vice President
Email: KKirk@eqt.com
Date: 4-15-16
Phone:
Fax:

If applicable:
Authorized Representative Signature:
Name and Title:
Email:
Date:
Phone:
Fax:

If applicable:
Environmental Contact
Name and Title: Alex Bosiljevac, Environmental Coordinator
Email: ABosiljevac@eqt.com
Date:
Phone: 412-395-3699
Fax: 412-395-7027

OPERATING SITE INFORMATION	
Briefly describe the proposed new operation and/or any change(s) to the facility: General permit application for an existing natural gas production well pad.	
Directions to the facility: From West Union, take US-50 west for 3 miles, turn left onto Sunnyside Road for two miles, turn left onto Oxford road for 5 miles, turn slight right on S Fork of Hughes River Rd for one mile, turn left on Taylor Drain Road for 1.5 miles. Access road on the left.	
ATTACHMENTS AND SUPPORTING DOCUMENTS	
I have enclosed the following required documents:	
Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22). <input type="checkbox"/> Check attached to front of application. <input type="checkbox"/> I wish to pay by electronic transfer. Contact for payment (incl. name and email address): <input checked="" type="checkbox"/> I wish to pay by credit card. Contact for payment (incl. name and email address): R. Alex Bosiljevac, abosiljevac@eqt.com <input checked="" type="checkbox"/> \$500 (Construction, Modification, and Relocation) <input type="checkbox"/> \$300 (Class II Administrative Update) <input checked="" type="checkbox"/> \$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO ¹ <input type="checkbox"/> \$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH ²	
¹ Only one NSPS fee will apply. ² Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ. <i>NSPS and NESHAP fees apply to new construction or if the source is being modified.</i>	
<input checked="" type="checkbox"/> Responsible Official or Authorized Representative Signature (if applicable)	
<input checked="" type="checkbox"/> Single Source Determination Form (must be completed in its entirety) – Attachment A	
<input type="checkbox"/> Siting Criteria Waiver (if applicable) – Attachment B	<input checked="" type="checkbox"/> Current Business Certificate – Attachment C
<input checked="" type="checkbox"/> Process Flow Diagram – Attachment D	<input checked="" type="checkbox"/> Process Description – Attachment E
<input checked="" type="checkbox"/> Plot Plan – Attachment F	<input checked="" type="checkbox"/> Area Map – Attachment G
<input checked="" type="checkbox"/> G70-B Section Applicability Form – Attachment H	<input checked="" type="checkbox"/> Emission Units/ERD Table – Attachment I
<input checked="" type="checkbox"/> Fugitive Emissions Summary Sheet – Attachment J	
<input checked="" type="checkbox"/> Gas Well Affected Facility Data Sheet (if applicable) – Attachment K	
<input checked="" type="checkbox"/> Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment L	
<input checked="" type="checkbox"/> Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPU's, Heater Treaters, In-Line Heaters if applicable) – Attachment M	
<input checked="" type="checkbox"/> Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment N	
<input checked="" type="checkbox"/> Tanker Truck Loading Data Sheet (if applicable) – Attachment O	
<input type="checkbox"/> Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment P	
<input type="checkbox"/> Pneumatic Controllers Data Sheet – Attachment Q	
<input checked="" type="checkbox"/> Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment R	
<input checked="" type="checkbox"/> Emission Calculations (please be specific and include all calculation methodologies used) – Attachment S	
<input checked="" type="checkbox"/> Facility-wide Emission Summary Sheet(s) – Attachment T	
<input checked="" type="checkbox"/> Class I Legal Advertisement – Attachment U	
<input checked="" type="checkbox"/> One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

All attachments must be identified by name, divided into sections, and submitted in order.

ATTACHMENT A

Single Source Determination

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Classifying multiple facilities as one “stationary source” under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of Building, structure, facility, or installation as given in §45-14-2.13 and §45-19-2.12. The definition states:

“Building, Structure, Facility, or Installation” means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same “Major Group” (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

Is there a facility owned by or associated with the natural gas industry located within one (1) mile of the proposed facility? Yes No

If Yes, please complete the questionnaire on the following page (Attachment A).

Please provide a source aggregation analysis for the proposed facility below:

Please see discussion in the Application Report.

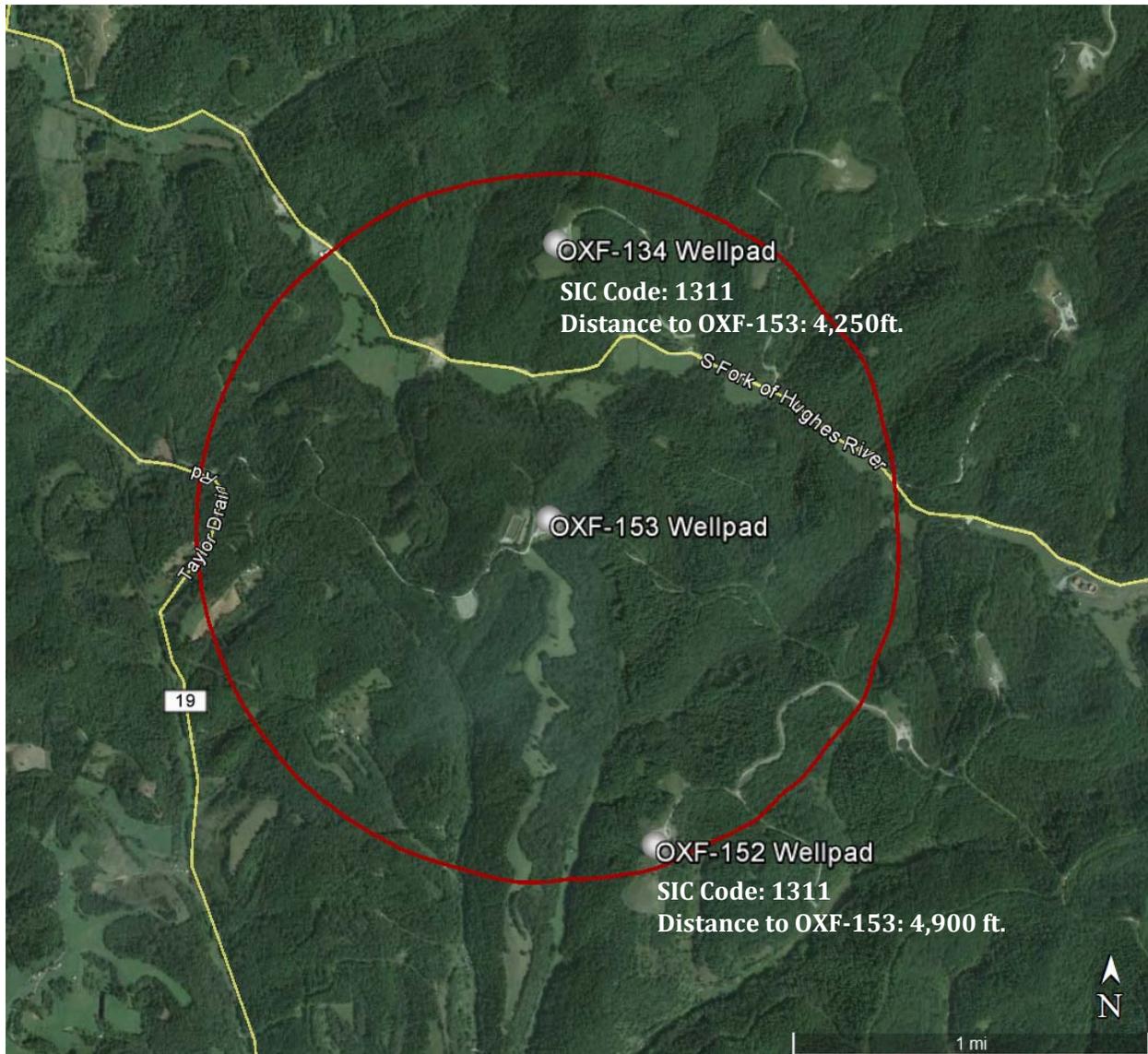
ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

Answer each question with a detailed explanation to determine contiguous or adjacent properties which are under a common control and any support facilities. This section must be completed in its entirety.

Provide a map of contiguous or adjacent facilities (production facilities, compressor stations, dehydration facilities, etc.) which are under common control and those facilities that are not under common control but are support facilities. Please indicate the SIC code, permit number (if applicable), and the distance between facilities in question on the map.

Are the facilities owned by the same parent company or a subsidiary of the parent company? Provide the owners identity and the percentage of ownership of each facility.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
OXF-135 and OXF-153 are owned by EQT Production Company.		
Does an entity such as a corporation have decision making authority over the operation of a second entity through a contractual agreement or voting interest? Please explain.	Yes <input type="checkbox"/> N/A	No <input type="checkbox"/>
Is there a contract for service relationship between the two (2) companies or, a support/dependency relationship that exists between the two (2) companies? Please explain.	Yes <input type="checkbox"/> N/A	No <input type="checkbox"/>
Do the facilities share common workforces, plant managers, security forces, corporate executive officers or board executives?	Yes <input type="checkbox"/> N/A	No <input type="checkbox"/>
Will managers or other workers frequently shuttle back and forth to be involved actively at both facilities?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Do the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions? Please explain.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Does one (1) facility operation support the operation of the other facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is one (1) facility dependent on the other? If one (1) facility shuts down, what are the limitations on the other to pursue outside business? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are there any financial arrangements between the two (2) entities?	Yes <input type="checkbox"/> N/A	No <input type="checkbox"/>
Are there any legal or lease agreements between the two (2) facilities?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do the facilities share products, byproducts, equipment, or other manufacturing or air pollution control device equipment? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do all the pollutant-emitting activities at the facilities belong to the same SIC Code? Please provide the SIC Codes. 1311	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Was the location of the new facility chosen primarily because of its proximity to the existing facility to integrate the operation of the two (2) facilities? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Will materials be routinely transferred between the two (2) facilities? Please explain the amount of transfer and how often the transfers take place and what percentages go to the various entities.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the facility influence production levels or compliance with environmental regulations at other facilities? Who accepts the responsibility for compliance with air quality requirements? Please explain.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

ATTACHMENT A: SINGLE SOURCE DETERMINATION MAP



ATTACHMENT B

Siting Criteria Waiver *(Not Applicable)*

ATTACHMENT B - SITING CRITERIA WAIVER – NOT APPLICABLE

If applicable, please complete this form and it must be notarized.

**G70-B General Permit
Siting Criteria Waiver**

WV Division of Air Quality 300' Waiver

I _____ hereby
Print Name
acknowledge and agree that _____ will
General Permit Applicant's Name

construct an emission unit(s) at a natural gas production facility
that will be located within 300' of my dwelling and/or business.

I hereby offer this waiver of siting criteria to the West Virginia Department of Environmental Protection
Division of Air Quality as permission to construct, install and operate in such location.

Signed:

Signature Date

Signature Date

Taken, subscribed and sworn before me this ____ day of

_____, 20____.

My commission expires: _____

SEAL _____
Notary Public

ATTACHMENT C

Business Certificate

**WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION
CERTIFICATE**

ISSUED TO:
**EQT PRODUCTION COMPANY
625 LIBERTY AVE 1700
PITTSBURGH, PA 15222-3114**

BUSINESS REGISTRATION ACCOUNT NUMBER: 1022-8081

This certificate is issued on: 08/4/2010

*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.*

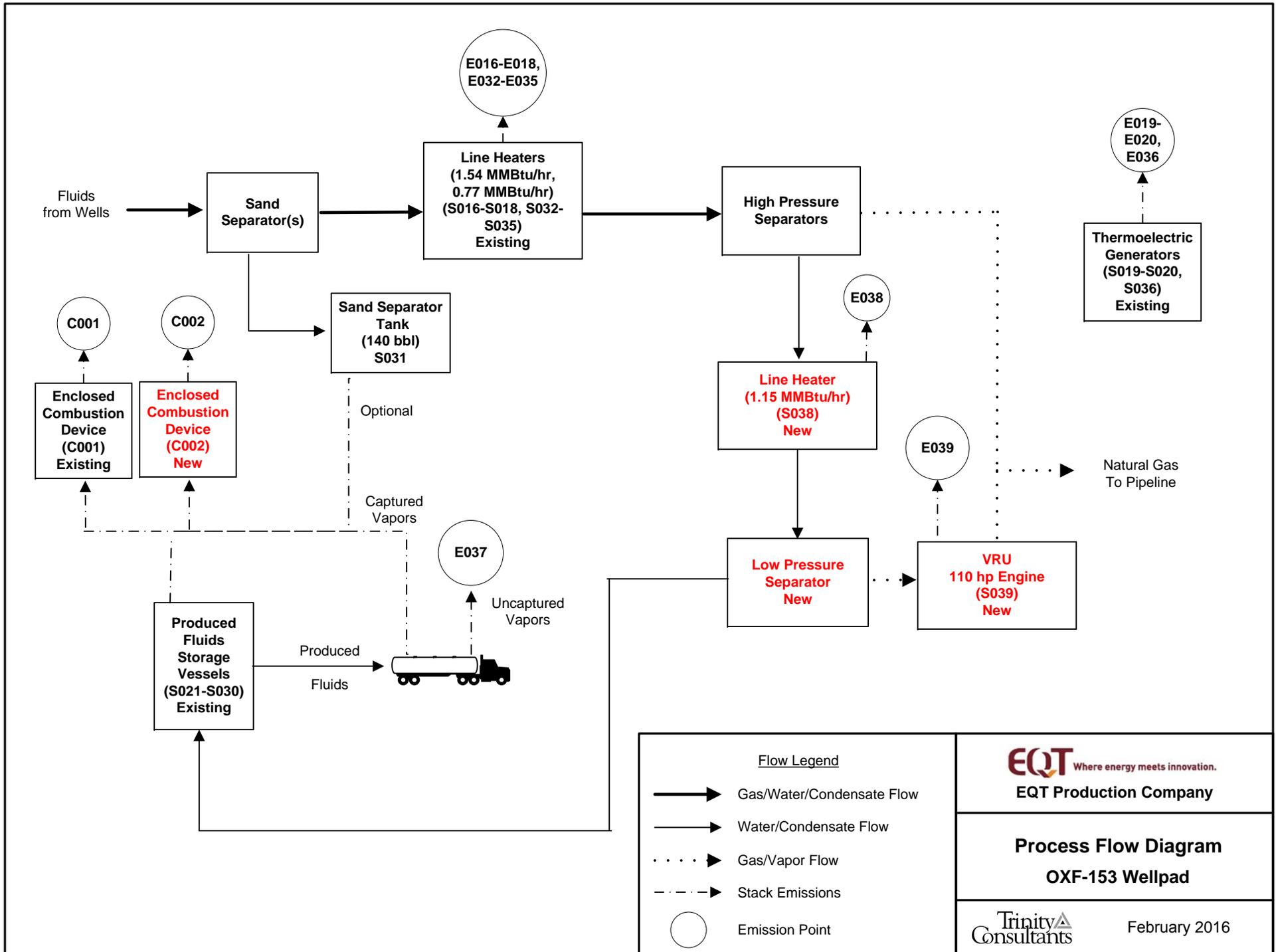
This certificate is not transferrable and must be displayed at the location for which issued.
This certificate shall be permanent until cessation of the business for which the certificate of registration
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

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.

ATTACHMENT D

Process Flow Diagram



Flow Legend	
	Gas/Water/Condensate Flow
	Water/Condensate Flow
	Gas/Vapor Flow
	Stack Emissions
	Emission Point

EQT Where energy meets innovation.
EQT Production Company

Process Flow Diagram
OXF-153 Wellpad

Trinity Consultants February 2016

ATTACHMENT E

Process Description

ATTACHMENT E: PROCESS DESCRIPTION

The G70-B Permit Application involves the permitting of a low pressure tower and vapor recovery unit (VRU) and combustor (C002), at an existing natural gas production wellpad (OXF-153). The wellpad consists of seven (7) wells, each with the same basic operation.

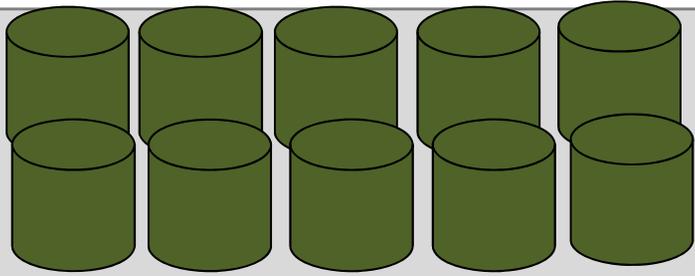
The incoming gas/liquid stream from the underground well will pass through a sand separator, where sand, water, and residual solids are displaced and transferred to the sand separator tank (S031). The gas stream will then pass through a line heater (S016-S018, S032-S035) to raise/maintain temperature. The stream will then pass through a high pressure separator, which will separate gas (natural gas from the separator is sent to the sales line) from liquids (condensate and produced water). The liquids stream will then pass through a low pressure separator, where it is heated (S038) to volatilize (flash off) lighter hydrocarbons and separate condensate from water in the combined liquid stream. The flash gas from the condensate stream is recovered by the Vapor Recovery Unit (S039), which utilizes a natural gas-fired engine driven compressor to raise the pressure of the flash gas and route it back into the natural gas pipeline. The condensate is then transferred to the produced fluid storage vessels (S021-S030).

Emissions from the storage vessels are controlled by an enclosed combustor (C001-C002). Once the tanks are filled, the contents are loaded into trucks for transport. EQT utilizes vapor balancing in the truck loading operations, which means the vapors displaced by the filling of tanker trucks (S037) are routed back into the battery of tanks and ultimately to the combustor. Facility electricity is provided by thermoelectric generators (S019-S020, S036).

A process flow diagram is included as Attachment D.

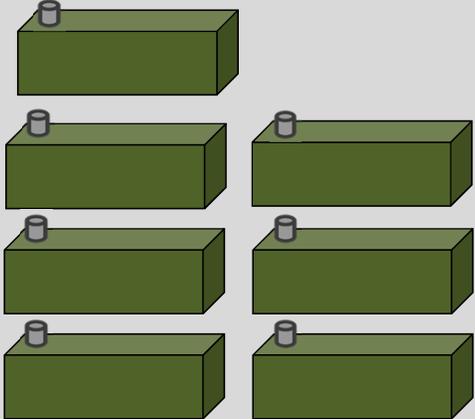
ATTACHMENT F

Plot Plan

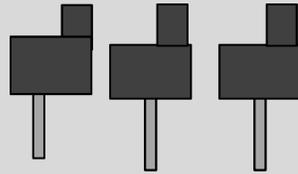


Tanks
400 bbl
(10)
S021-S030

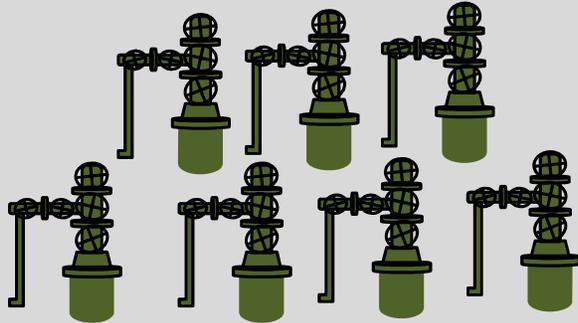
Six (6) 1.54 MMBtu/hr Line Heaters &
One (1) 0.77 MMBtu/hr Line Heater
(S016-S018, S032-S035)



Sand Separator
Tank
140 bbl



Thermoelectric Generators
(3)
(S019-S020, S036)



Wellheads
(7)

NOTE: This diagram is not to scale.
Locations and distances between surface
equipment are not known at this time.



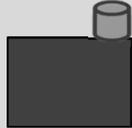
One (1)
Combustor
11.66
MMBTU/hr
C001



One (1)
Combustor
11.66
MMBTU/hr
C002



Line Heater
(1.15 MMBtu/hr)
S038



VRU Engine
110 hp
S039

Entrance to OXF-153 pad

Attachment E
OXF-153 Well Pad Plot Plan

ATTACHMENT G

Area Map

ATTACHMENT G: AREA MAP

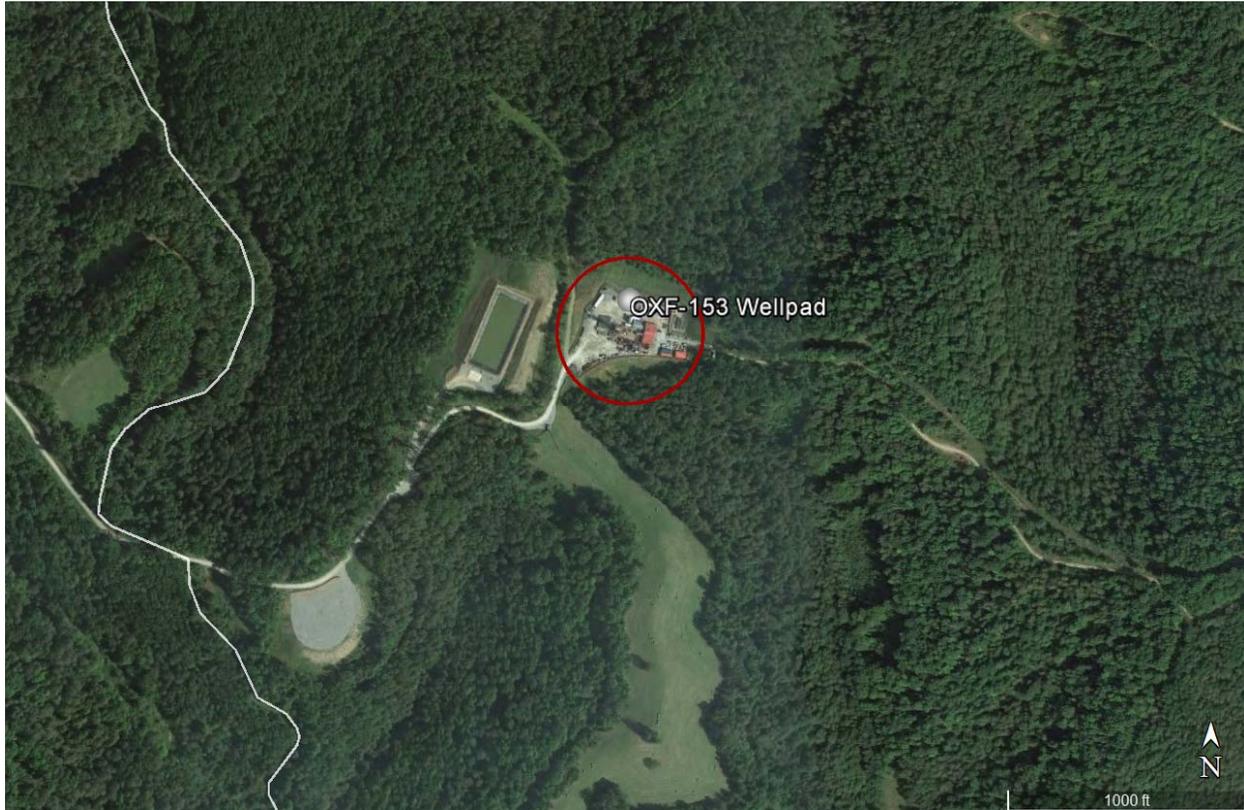


Figure 1 - Map of OXF-153 Location

UTM Northing (KM): 4,337.873
UTM Easting (KM): 515.746
Elevation: ~1,140 ft

ATTACHMENT H
Applicability Form

ATTACHMENT H – G70-B SECTION APPLICABILITY FORM

**General Permit G70-B Registration
Section Applicability Form**

General Permit G70-B was developed to allow qualified applicants to seek registration for a variety of sources. These sources include gas well affected facilities, storage vessels, gas production units, in-line heaters, heater treaters, glycol dehydration units and associated reboilers, pneumatic controllers, centrifugal compressors, reciprocating compressors, reciprocating internal combustion engines (RICES), tank truck loading, fugitive emissions, completion combustion devices, flares, enclosed combustion devices, and vapor recovery systems. All registered facilities will be subject to Sections 1.0, 2.0, 3.0, and 4.0.

General Permit G70-B allows the registrant to choose which sections of the permit they are seeking registration under. Therefore, please mark which additional sections that you are applying for registration under. If the applicant is seeking registration under multiple sections, please select all that apply. Please keep in mind, that if this registration is approved, the issued registration will state which sections will apply to your affected facility.

GENERAL PERMIT G70-B APPLICABLE SECTIONS	
<input checked="" type="checkbox"/> Section 5.0	Gas Well Affected Facility (NSPS, Subpart OOOO)
<input checked="" type="checkbox"/> Section 6.0	Storage Vessels Containing Condensate and/or Produced Water ¹
<input type="checkbox"/> Section 7.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO)
<input checked="" type="checkbox"/> Section 8.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO and/or NESHAP Subpart HH
<input checked="" type="checkbox"/> Section 9.0	Small Heaters and Reboilers not subject to 40CFR60 Subpart Dc
<input type="checkbox"/> Section 10.0	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)
<input type="checkbox"/> Section 11.0	Centrifugal Compressor Affected Facility (NSPS, Subpart OOOO) ²
<input type="checkbox"/> Section 12.0	Reciprocating Compressor Affected Facility (NSPS, Subpart OOOO) ²
<input checked="" type="checkbox"/> Section 13.0	Reciprocating Internal Combustion Engines, Generator Engines, Microturbines
<input checked="" type="checkbox"/> Section 14.0	Tanker Truck Loading ³
<input type="checkbox"/> Section 15.0	Glycol Dehydration Units ⁴

- 1 Applicants that are subject to Section 6 may also be subject to Section 7 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 8.
- 2 Applicants that are subject to Section 11 and 12 may also be subject to the applicable RICE requirements of Section 13.
- 3 Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 8.
- 4 Applicants that are subject to Section 15 may also be subject to the requirements of Section 9 (reboilers). Applicants that are subject to Section 15 may also be subject to control device and emission reduction device requirements of Section 8.

ATTACHMENT I

Emission Units Table

ATTACHMENT I – EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

Include ALL emission units and air pollution control devices/ERDs that will be part of this permit application review. Do not include fugitive emission sources in this table. Deminimis storage tanks shall be listed in the Attachment L table. This information is required for all sources regardless of whether it is a construction, modification, or administrative update.

Emission Unit ID¹	Emission Point ID²	Emission Unit Description	Year Installed	Manufac. Date³	Design Capacity	Type⁴ and Date of Change	Control Device(s)⁵	ERD(s)⁶
S016	E016	Line Heater	2011	2011	1.54 MMBtu/hr	Existing; No change	None	---
S017	E017	Line Heater	2011	2011	1.54 MMBtu/hr	Existing; No change	None	---
S018	E018	Line Heater	2011	2011	0.77 MMBtu/hr	Existing; No change	None	---
S019	E019	Thermoelectric Generator	2011	2011	0.013 MMBtu/hr	Existing; No change	None	---
S020	E020	Thermoelectric Generator	2011	2011	0.013 MMBtu/hr	Existing; No change	None	---
S021	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S022	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S023	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S024	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S025	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S026	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S027	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S028	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---

S029	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S030	C001 – C002	Produced Fluid Storage Tank	2015	2015	400 bbl	Existing; No change	C001 – C002	---
S031	E031	Sand Separator Storage Tank	2015	2015	140 bbl	Existing; No change	C001 – C002 (Optional)	---
S032	E032	Line Heater	2015	2015	1.54 MMBtu/hr	Existing; No change	None	---
S033	E033	Line Heater	2015	2015	1.54 MMBtu/hr	Existing; No change	None	---
S034	E034	Line Heater	2015	2015	1.54 MMBtu/hr	Existing; No change	None	---
S035	E035	Line Heater	2015	2015	1.54 MMBtu/hr	Existing; No change	None	---
S036	E036	Thermoelectric Generator	2015	2015	0.013 MMBtu/hr	Existing; No change	None	---
S037	E037 (Uncaptured) C001–C002 (Controlled, Captured)	Liquid Loading	2011	2011	22,398,663	Modified; Increase throughput	C001 – C002	---
S038	E038	Line Heater	TBD	TBD	1.15 MMBtu/hr	New	None	---
S039	E039	VRU Engine	TBD	TBD	110 hp	New	None	---
C001	C001	Tank Combustor	2013	2013	11.66 MMBtu/hr	Existing; No change	NA	---
C002	C002	Tank Combustor	TBD	TBD	11.66 MMBtu/hr	New	NA	---

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 When required by rule

⁴ New, modification, removal, existing

⁵ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

⁶ For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

ATTACHMENT J

Fugitive Emissions Summary Sheet

ATTACHMENT J – 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		<input type="checkbox"/> Audible, visual, and olfactory (AVO) inspections	<input type="checkbox"/> Infrared (FLIR) cameras	<input checked="" type="checkbox"/> Other (please describe) Will satisfy condition 4.1.4. of the G70-B	<input type="checkbox"/> None required		
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 ₂ e)
Pumps	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	17	U.S. EPA. Office of Air Quality Planning and Standards. Protocol for Equipment Leak Emission Estimates. Table 2-1. (EPA-453/R-95-017, 1995).	<input type="checkbox"/> Gas <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Both	3.17	0.06	0.61
Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	387	U.S. EPA. Office of Air Quality Planning and Standards. Protocol for Equipment Leak Emission Estimates. Table 2-1. (EPA-453/R-95-017, 1995).	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	3.21	0.06	38.80
Safety Relief Valves	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	33	U.S. EPA. Office of Air Quality Planning and Standards. Protocol for Equipment Leak Emission Estimates. Table 2-1. (EPA-453/R-95-017, 1995).	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	4.69	0.08	4.83
Open Ended Lines	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	27	U.S. EPA. Office of Air Quality Planning and Standards. Protocol for Equipment Leak Emission Estimates. Table 2-1. (EPA-453/R-95-017, 1995).	<input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Both	0.06	1.1E-3	6.12
Sampling Connections	<input type="checkbox"/> Yes <input type="checkbox"/> No	0	N/A	<input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	---	---	---
Connections (Not sampling)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1,712	U.S. EPA. Office of Air Quality Planning and Standards. Protocol for Equipment Leak Emission Estimates. Table 2-1. (EPA-453/R-95-017, 1995).	<input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input checked="" type="checkbox"/> Both	4.35	0.08	19.07
Compressors	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1	(included in other component counts)	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	---	---	---
Flanges	<input type="checkbox"/> Yes <input type="checkbox"/> No	---	(included in connections)	<input type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	---	---	---
Other ¹	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	35	40 CFR 98 Subpart W	<input checked="" type="checkbox"/> Gas <input type="checkbox"/> Liquid <input type="checkbox"/> Both	5.24	0.09	779.79

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

Please provide an explanation of the sources of fugitive emissions (e.g. pigging operations, equipment blowdowns, pneumatic controllers, etc.):
Pneumatic Controller count is 'Other' category. An estimate of Miscellaneous Gas Venting emissions are included in the Emission Calculations and serve to include such sources as compressor venting, pigging, vessel blowdowns and other sources.

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

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

ATTACHMENT K

Gas Well Data Sheet

ATTACHMENT K – GAS WELL AFFECTED FACILITY DATA SHEET

Complete this data sheet if you are the owner or operator of a gas well affected facility for which construction, modification or reconstruction commenced after August 23, 2011. This form must be completed for natural gas well affected facilities regardless of when flowback operations occur (or have occurred).

API Number	Date of Flowback	Date of Well Completion	Green Completion and/or Combustion Device
047-017-05923	May 2011	May 2011	Green
047-017-05927	May 2011	May 2011	Green
047-017-05926	May 2011	May 2011	Green
047-017-05924	May 2011	May 2011	Green
047-017-05925	May 2011	May 2011	Combustion Device
PLANNED	Planned 2016	Planned 2016	Green
PLANNED	Planned 2016	Planned 2016	Green

Note: If future wells are planned and no API number is available please list as PLANNED. If there are existing wells that commenced construction prior to August 23, 2011, please acknowledge as existing.

This is the same API (American Petroleum Institute) well number(s) provided in the well completion notification and as provided to the WVDEP, Office of Oil and Gas for the well permit. The API number may be provided on the application without the state code (047).

Every oil and gas well permitted in West Virginia since 1929 has been issued an API number. This API is used by agencies to identify and track oil and gas wells.

The API number has the following format: 047-001-00001

Where,

- 047 = State code. The state code for WV is 047.*
- 001 = County Code. County codes are odd numbers, beginning with 001 (Barbour) and continuing to 109 (Wyoming).*
- 00001 = Well number. Each well will have a unique well number.*

ATTACHMENT L

Storage Vessel Data Sheet

ATTACHMENT L – STORAGE VESSEL DATA SHEET

Complete this data sheet if you are the owner or operator of a storage vessel that contains condensate and/or produced water. This form must be completed for *each* new or modified bulk liquid storage vessel(s) that contains condensate and/or produced water . (If you have more than one (1) identical tank (i.e. 4-400 bbl condensate tanks), then you can list all on one (1) data sheet). **Include gas sample analysis, flashing emissions, working and breathing losses, USEPA Tanks, simulation software (ProMax, E&P Tanks, HYSYS, etc.), and any other supporting documents where applicable.**

The following information is REQUIRED:

- Composition of the representative sample used for the simulation
- For each stream that contributes to flashing emissions:
 - Temperature and pressure (inlet and outlet from separator(s))
 - Simulation-predicted composition
 - Molecular weight
 - Flow rate
- Resulting flash emission factor or flashing emissions from simulation
- Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name OXF-153 Pad	2. Tank Name Produced Fluid Tanks (water and condensate)
3. Emission Unit ID number S021-S030	4. Emission Point ID number C001-C002
5. Date Installed , Modified or Relocated <i>(for existing tanks)</i> Was the tank manufactured after August 23, 2011? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: N/A <input type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other (Low Pressure Tower) <input type="checkbox"/> Relocation
7A. Description of Tank Modification <i>(if applicable)</i> N/A	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<i>If Yes, please provide the appropriate documentation and items 8-42 below are not required.</i>	

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunitite lined <input type="checkbox"/> Epoxy-coated rivets <input checked="" type="checkbox"/> Other (describe) Welded or riveted			
21A. Shell Color: Green	21B. Roof Color: Green	21C. Year Last Painted: New	
22. Shell Condition (if metal and unlined): <input checked="" type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable			
22A. Is the tank heated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): Must be listed for tanks using VRUs with closed vent system.			
24. Is the tank a Vertical Fixed Roof Tank ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	24A. If yes, for dome roof provide radius (ft): 6	24B. If yes, for cone roof, provide slop (ft/ft): N/A	
25. Complete item 25 for Floating Roof Tanks <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type (<i>check one</i>): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (<i>check one</i>) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
SITE INFORMATION - Not Applicable: Tank calculations performed using ProMax software			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft ² -day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION - Not Applicable: Tank calculations performed using ProMax software			
36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):	
38A. Minimum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39A. Avg. liquid surface temperature (°F):		39B. Corresponding vapor pressure (psia):	
40A. Maximum liquid surface temperature (°F):		40B. Corresponding vapor pressure (psia):	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name OXF-153 Pad	2. Tank Name Sand Separator Tank
3. Emission Unit ID number S031	4. Emission Point ID number E031
5. Date Installed , Modified or Relocated <i>(for existing tanks)</i> Was the tank manufactured after August 23, 2011? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. Type of change: N/A <input type="checkbox"/> New construction <input type="checkbox"/> New stored material <input type="checkbox"/> Other (Low Pressure Tower) <input type="checkbox"/> Relocation
7A. Description of Tank Modification <i>(if applicable)</i> N/A	
7B. Will more than one material be stored in this tank? <i>If so, a separate form must be completed for each material.</i> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7C. Was USEPA Tanks simulation software utilized? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If Yes, please provide the appropriate documentation and items 8-42 below are not required.</i>	

TANK INFORMATION

8. Design Capacity <i>(specify barrels or gallons)</i> . Use the internal cross-sectional area multiplied by internal height. 140 bbls	
9A. Tank Internal Diameter (ft.) 10	9B. Tank Internal Height (ft.) 10
10A. Maximum Liquid Height (ft.) 10	10B. Average Liquid Height (ft.) 5
11A. Maximum Vapor Space Height (ft.) 10	11B. Average Vapor Space Height (ft.) 5
12. Nominal Capacity <i>(specify barrels or gallons)</i> . This is also known as “working volume”. 140 bbls	
13A. Maximum annual throughput (gal/yr) See attached emissions calculations for all throughput values	13B. Maximum daily throughput (gal/day) See attached emissions calculations for all throughput values
14. Number of tank turnovers per year See attached emissions calculations for all throughput values	15. Maximum tank fill rate (gal/min) See attached emissions calculations for all throughput values
16. Tank fill method <input type="checkbox"/> Submerged <input checked="" type="checkbox"/> Splash <input type="checkbox"/> Bottom Loading	
17. Is the tank system a variable vapor space system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): <input checked="" type="checkbox"/> Fixed Roof <input type="checkbox"/> vertical <input checked="" type="checkbox"/> horizontal <input type="checkbox"/> flat roof <input type="checkbox"/> cone roof <input type="checkbox"/> dome roof <input type="checkbox"/> other (describe) <input type="checkbox"/> External Floating Roof <input type="checkbox"/> pontoon roof <input type="checkbox"/> double deck roof <input type="checkbox"/> Domed External (or Covered) Floating Roof <input type="checkbox"/> Internal Floating Roof <input type="checkbox"/> vertical column support <input type="checkbox"/> self-supporting <input type="checkbox"/> Variable Vapor Space <input type="checkbox"/> lifter roof <input type="checkbox"/> diaphragm <input type="checkbox"/> Pressurized <input type="checkbox"/> spherical <input type="checkbox"/> cylindrical	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:	
<input checked="" type="checkbox"/> Does Not Apply	<input type="checkbox"/> Rupture Disc (psig)
<input type="checkbox"/> Inert Gas Blanket of _____	<input type="checkbox"/> Carbon Adsorption ¹
<input type="checkbox"/> Vent to Vapor Combustion Device ¹ (vapor combustors, flares, thermal oxidizers, enclosed combustors)	
<input type="checkbox"/> Conservation Vent (psig)	<input type="checkbox"/> Condenser ¹
Vacuum Setting Pressure Setting	
<input type="checkbox"/> Emergency Relief Valve (psig)	
Vacuum Setting Pressure Setting	
<input type="checkbox"/> Thief Hatch Weighted <input type="checkbox"/> Yes <input type="checkbox"/> No	

¹ Complete appropriate Air Pollution Control Device Sheet									
20. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).									
Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method ¹
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
See attached Emissions Calculation for all values									

¹ EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)
Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

TANK CONSTRUCTION AND OPERATION INFORMATION			
21. Tank Shell Construction: <input type="checkbox"/> Riveted <input type="checkbox"/> Gunit lined <input type="checkbox"/> Epoxy-coated rivets <input checked="" type="checkbox"/> Other (describe) Welded			
21A. Shell Color: Gray	21B. Roof Color: Gray	21C. Year Last Painted: New	
22. Shell Condition (if metal and unlined): <input checked="" type="checkbox"/> No Rust <input type="checkbox"/> Light Rust <input type="checkbox"/> Dense Rust <input type="checkbox"/> Not applicable			
22A. Is the tank heated? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?	
23. Operating Pressure Range (psig): Must be listed for tanks using VRUs with closed vent system.			
24. Is the tank a Vertical Fixed Roof Tank ? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft):	
25. Complete item 25 for Floating Roof Tanks <input type="checkbox"/> Does not apply <input checked="" type="checkbox"/>			
25A. Year Internal Floaters Installed:			
25B. Primary Seal Type (<i>check one</i>): <input type="checkbox"/> Metallic (mechanical) shoe seal <input type="checkbox"/> Liquid mounted resilient seal <input type="checkbox"/> Vapor mounted resilient seal <input type="checkbox"/> Other (describe):			
25C. Is the Floating Roof equipped with a secondary seal? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25D. If yes, how is the secondary seal mounted? (<i>check one</i>) <input type="checkbox"/> Shoe <input type="checkbox"/> Rim <input type="checkbox"/> Other (describe):			
25E. Is the floating roof equipped with a weather shield? <input type="checkbox"/> Yes <input type="checkbox"/> No			
25F. Describe deck fittings:			
26. Complete the following section for Internal Floating Roof Tanks <input checked="" type="checkbox"/> Does not apply			
26A. Deck Type: <input type="checkbox"/> Bolted <input type="checkbox"/> Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: <input type="checkbox"/> 5 ft. wide <input type="checkbox"/> 6 ft. wide <input type="checkbox"/> 7 ft. wide <input type="checkbox"/> 5 x 7.5 ft. wide <input type="checkbox"/> 5 x 12 ft. wide <input type="checkbox"/> other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft ²):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
27. Closed Vent System with VRU? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
28. Closed Vent System with Enclosed Combustor? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
SITE INFORMATION - Not Applicable: Tank calculations performed using E&P Tank software			
29. Provide the city and state on which the data in this section are based:			
30. Daily Avg. Ambient Temperature (°F):		31. Annual Avg. Maximum Temperature (°F):	
32. Annual Avg. Minimum Temperature (°F):		33. Avg. Wind Speed (mph):	
34. Annual Avg. Solar Insulation Factor (BTU/ft ² -day):		35. Atmospheric Pressure (psia):	
LIQUID INFORMATION - Not Applicable: Tank calculations performed using E&P Tank software			

36. Avg. daily temperature range of bulk liquid (°F):	36A. Minimum (°F):	36B. Maximum (°F):	
37. Avg. operating pressure range of tank (psig):	37A. Minimum (psig):	37B. Maximum (psig):	
38A. Minimum liquid surface temperature (°F):	38B. Corresponding vapor pressure (psia):		
39A. Avg. liquid surface temperature (°F):	39B. Corresponding vapor pressure (psia):		
40A. Maximum liquid surface temperature (°F):	40B. Corresponding vapor pressure (psia):		
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:			
41B. CAS number:			
41C. Liquid density (lb/gal):			
41D. Liquid molecular weight (lb/lb-mole):			
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year. From: To:			
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.			

ATTACHMENT M

Heaters Data Sheet

**ATTACHMENT M – 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
S016	E016	Line Heater	2011	Existing; No change	1.54	~1,216
S017	E017	Line Heater	2011	Existing; No change	1.54	~1,216
S018	E018	Line Heater	2011	Existing; No change	0.77	~1,216
S032	E032	Line Heater	2015	Existing; No change	1.54	~1,216
S033	E033	Line Heater	2015	Existing; No change	1.54	~1,216
S034	E034	Line Heater	2015	Existing; No change	1.54	~1,216
S035	E035	Line Heater	2015	Existing; No change	1.54	~1,216
S019	E019	Thermoelectric Generator	2011	Existing; No change	0.013	~1,216
S020	E020	Thermoelectric Generator	2011	Existing; No change	0.013	~1,216
S036	E036	Thermoelectric Generator	2015	Existing; No change	0.013	~1,216
S038	E038	Line Heater	2016	New	1.15	~1,216

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 N

Engines Data Sheet

ATTACHMENT N – 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		S039							
Engine Manufacturer/Model		Ford CSG-637							
Manufacturers Rated bhp/rpm		110							
Source Status ²		NS							
Date Installed/ Modified/Removed/Relocated ³		TBD							
Engine Manufactured /Reconstruction Date ⁴		> July 2010							
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable) ⁵		<input checked="" type="checkbox"/> 40CFR60 Subpart JJJJ <input checked="" type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input checked="" type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input type="checkbox"/> 40CFR60 Subpart JJJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources		<input type="checkbox"/> 40CFR60 Subpart JJJJ <input type="checkbox"/> JJJJ Certified? <input type="checkbox"/> 40CFR60 Subpart IIII <input type="checkbox"/> IIII Certified? <input type="checkbox"/> 40CFR63 Subpart ZZZZ <input type="checkbox"/> NESHAP ZZZZ/ NSPS JJJJ Window <input type="checkbox"/> NESHAP ZZZZ Remote Sources			
Engine Type ⁶		4SRB							
APCD Type ⁷									
Fuel Type ⁸		PQNG							
H ₂ S (gr/100 scf)		0							
Operating bhp/rpm		110							
BSFC (BTU/bhp-hr)		7,000							
Hourly Fuel Throughput		733 NA	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)		6.4 NA	MMft ³ /yr gal/yr		MMft ³ /yr gal/yr		MMft ³ /yr gal/yr		
Fuel Usage or Hours of Operation Metered		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
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	
	NO _x	0.24		1.06					
	CO	0.49		2.12					
	VOC	0.17		0.74					
	SO ₂	<0.01		<0.01					
	PM ₁₀	0.01		0.07					
	Formaldehyde	0.02		0.07					
	Total HAPs	0.02		0.11					
	GHG (CO ₂ e)	90		395					

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

**Engine Air Pollution Control Device
(Emission Unit ID# S039, use extra pages as necessary)**

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes No
See attached certification

NSCR SCR Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream:
Sequential multi-part fuel injection

Manufacturer: Ford	Model #: CSG-637
--------------------	------------------

Design Operating Temperature: 1,600 °F	Design gas volume: scfm
--	--------------------------------

Service life of catalyst: 5,000 hours	Provide manufacturer data? <input type="checkbox"/> Yes <input type="checkbox"/> No
---------------------------------------	---

Volume of gas handled: 444.9 acfm at 1,600 °F	Operating temperature range for NSCR/Ox Cat: From °F to °F
---	---

Reducing agent used, if any:	Ammonia slip (ppm):
------------------------------	---------------------

Pressure drop against catalyst bed (delta P): 6 inches of H₂O

Provide description of warning/alarm system that protects unit when operation is not meeting design conditions:

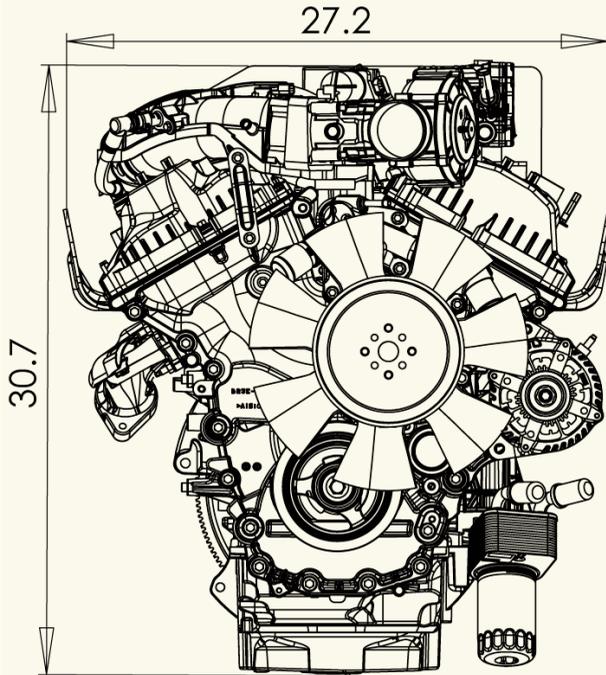
Is temperature and pressure drop of catalyst required to be monitored per 40CFR63 Subpart ZZZZ?
 Yes No

How often is catalyst recommended or required to be replaced (hours of operation)?
5,000 hours

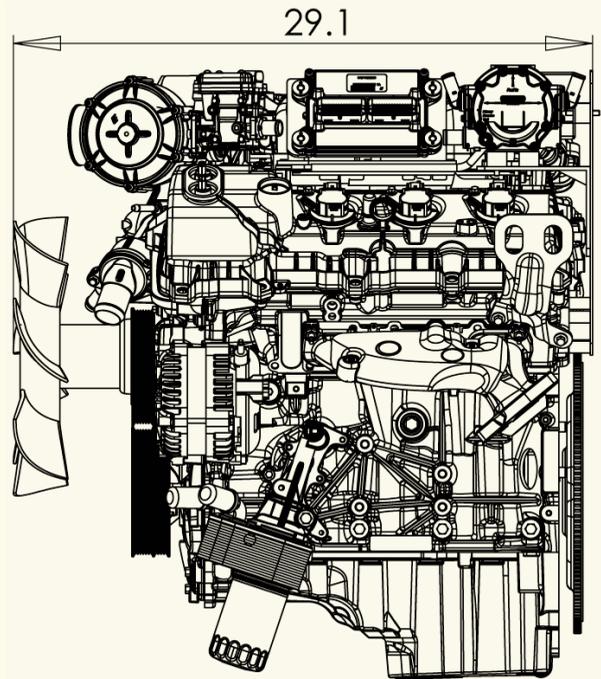
How often is performance test required?
 Initial
 Annual
 Every 8,760 hours of operation
 Field Testing Required
 No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT
 Per 40 CFR §60.4243(a)(1), EQT must maintain the certified engine and control device according to the manufacturer's emission related written instructions and keep records of conducted maintenance to demonstrate compliance, but no performance testing is required.

Installation Drawings

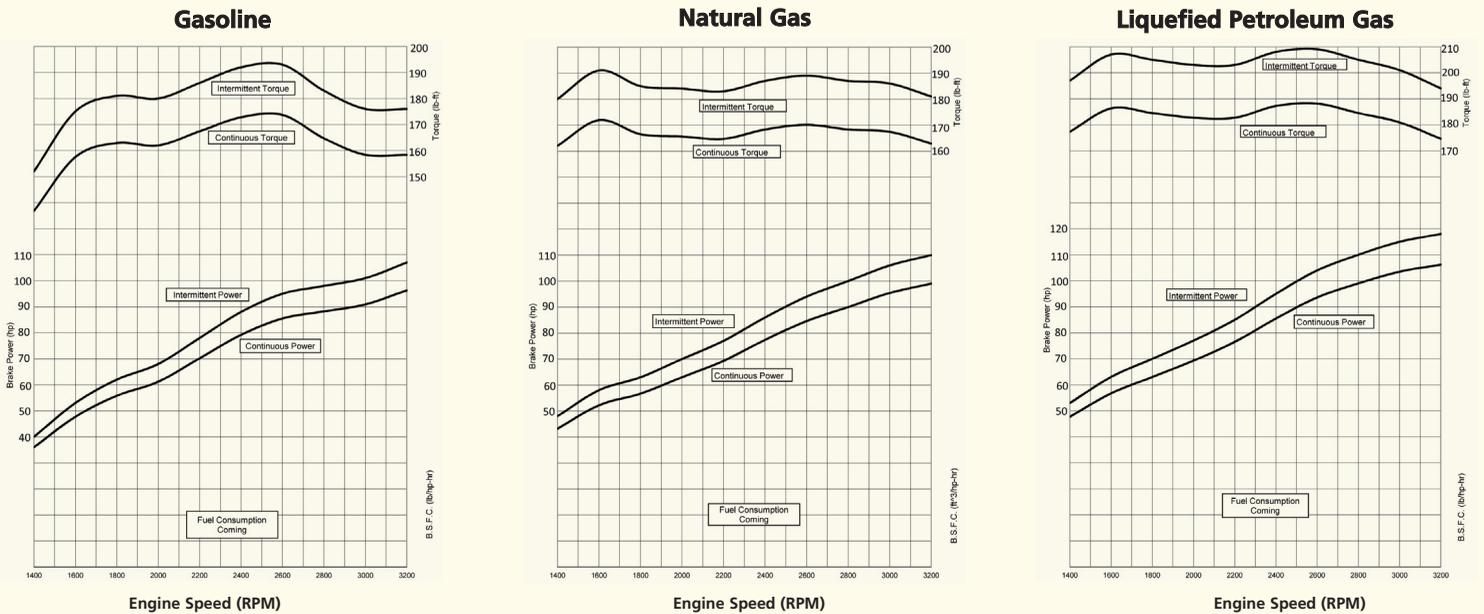
Front End View



Left Side View



Power Curves (corrected per SAE J1349)



Powertrain Assemblies
& Components
Provided By Ford
Component Sales

For additional information Contact:

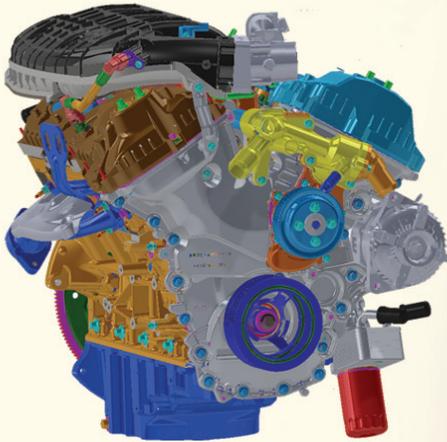
**ENGINE
DISTRIBUTORS
INC.**



400 University Ct • Blackwood NJ 08012
856/228-7298 • Fax:856/228-5531
www.edi-dist.com

CSG-637 EFI

3.7 Liter 6-Cylinder



Options

Engine Cooling Fans

- 14" (355mm) diameter suction
- 14" (355mm) diameter pusher

Flywheels

- 11.5" (292mm) SAE over-center clutch
- flat face flywheel

Flywheel Housings

- SAE #3

Exhaust Manifold

- rear dump down

Power Steering Pump

Air Conditioning

Wiring Harnesses

Discrete Speed Switch

Variable Speed Hand Throttle

Variable Speed Foot Pedal

Engine Mounts

- Automotive with insulators
- Open power unit

Electronic Instrument Panel, Gauges

Three Way Catalyst / Muffler Standard

Transmissions

6R80 electronic shift

Emissions Information

California Air Resources Board (CARB)
Environmental Protection Agency (EPA)
Emission Certified Packages

Warranty

Contact Engine Distributors, Inc
for warranty details.



Powertrain Assemblies
& Components
Provided By Ford
Component Sales

Specifications

Engine Type	V-6
Bore and Stroke	3.7" x 3.4" (94mm x 86mm)
Displacement	3.7L Liter (225.7 CID)
Compression Ratio	10.5:1
Oil Capacity	6 qts. including filter
Net Weight	355 Lbs. with accessories (161 Kgs.)
Dimensions	L 25.4" x W 29.5" x H 29.4" (646 mm x 751 mm x 748 mm)

Gasoline (corrected per SAE J1349)

Unleaded 87 or 89 octane		
Intermittent Power	107 [HP] @ 3200rpm	(80 [kW] @ 3200rpm)
Continuous Power	96 [HP] @ 3200rpm	(72 [kW] @ 3200rpm)
Intermittent Torque	193 [ft-lbs] @ 2600rpm	(261 [N-m] @ 2600rpm)
Continuous Torque	173 [ft-lbs] @ 2600rpm	(235 [N-m] @ 3200rpm)

Natural Gas (corrected per SAE J1349)

Fuel Specification	1050 BTU/FT3	
Intermittent Power	110 [HP] @ 3200rpm	(82 [kW] @ 3200rpm)
Continuous Power	99 [HP] @ 3200rpm	(74 [kW] @ 3200rpm)
Intermittent Torque	191 [ft-lbs] @ 1600rpm	(259 [N-m] @ 1600rpm)
Continuous Torque	172 [ft-lbs] @ 1600rpm	(233 [N-m] @ 1600rpm)

Liquefied Petroleum Gas (corrected per SAE J1349)

Fuel Specification	HD-5	
Intermittent Power	118 [HP] @ 3200rpm	(88 [kW] @ 3200rpm)
Continuous Power	106 [HP] @ 3200rpm	(79 [kW] @ 3200rpm)
Intermittent Torque	209 [ft-lbs] @ 2600rpm	(284 [N-m] @ 2600rpm)
Continuous Torque	188 [ft-lbs] @ 2600rpm	(255 [N-m] @ 2600rpm)

Standard Features / Benefits

Set-for-life valvetrain

Deep skirted, ribbed cylinder block casting for rigidity

150 AMP Alternator

Aluminum cylinder block and heads.

Chain driven dual camshafts with automatic tensioning system

Structural front cover and deep sump oil pan

Alternate fuel ready valvetrain components

Individual coil on plug electronic ignition

Four main bolts with side bolts through block for strength
and durability

Gasoline Sequential Port Fuel Injection

Closed loop fuel control for all fuels

Electronic engine management system with built-in engine
protection against detonation, high coolant temperature, low oil
pressure, over speed shutdown and starter lockout

Next generation governing – discrete speeds, variable speeds,
drive by wire – using the highest quality components.

Variable CAM Timing for intake camshafts - advances or retards
timing to maximize engine power and fuel efficiency

Forged steel crankshaft

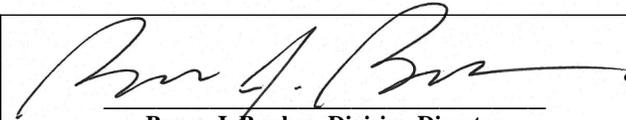


**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2015 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT**

**OFFICE OF TRANSPORTATION
AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105**

Certificate Issued To: Engine Distributors, Inc.
(U.S. Manufacturer or Importer)
Certificate Number: FEDIB03.7CSG-006

Effective Date:
06/08/2015
Expiration Date:
12/31/2015


Byron J. Bunker, Division Director
Compliance Division

Issue Date:
06/08/2015
Revision Date:
N/A

Manufacturer: Engine Distributors, Inc.
Engine Family: FEDIB03.7CSG
Mobile/Stationary Certification Type: Mobile and Stationary
Fuel : LPG/Propane
Gasoline (up to and including 10% Ethanol)
Natural Gas (CNG/LNG)
Emission Standards :
Mobile Part 1048
HC + NOx (g/kW-hr) : 0.8
NMHC + NOx (g/kW-hr) : 0.8
CO (g/kW-hr) : 20.6
Part 60 Subpart JJJJ Table 1
NOx (g/kW-hr) : 1.3
HC + NOx (g/kW-hr) : 0.8
CO (g/kW-hr) : 2.7
CO (g/kW-hr) : 20.6
VOC (g/kW-hr) : 0.9
Emergency Use Only : N

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 40 CFR Part 1048, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60, 40 CFR Part 1048 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60, 40 CFR Part 1048. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60, 40 CFR Part 1048. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60, 40 CFR Part 1048.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

ATTACHMENT O

Truck Loading Data Sheet

ATTACHMENT O – TANKER TRUCK LOADING DATA SHEET

Complete this data sheet for each new or modified bulk liquid transfer area or loading rack at the facility. This is to be used for bulk liquid transfer operations to tanker trucks. Use extra pages if necessary.

Truck Loadout Collection Efficiencies

The following applicable capture efficiencies of a truck loadout are allowed:

- For tanker trucks passing the MACT level annual leak test – 99.2%
- For tanker trucks passing the NSPS level annual leak test – 98.7%
- For tanker trucks not passing one of the annual leak tests listed above – 70%

Compliance with this requirement shall be demonstrated by keeping records of the applicable MACT or NSPS Annual Leak Test certification for *every* truck and railcar loaded/unloaded. This requirement can be satisfied if the trucking company provided certification that its entire fleet was compliant. This certification must be submitted in writing to the Director of the DAQ. These additional requirements must be noted in the Registration Application.

Emission Unit ID#: S037	Emission Point ID#: C001-C002, E037	Year Installed/Modified: N/A		
Emission Unit Description: Uncaptured losses from loading of produced fluids into tanker trucks				
Loading Area Data				
Number of Pumps: 1	Number of Liquids Loaded: 1	Max number of trucks loading at one (1) time: 1		
Are tanker trucks pressure tested for leaks at this or any other location? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required If Yes, Please describe:				
Provide description of closed vent system and any bypasses. Trucks utilize vapor recovery lines to route displaced vapors back into battery of tanks.				
Are any of the following truck loadout systems utilized? <input type="checkbox"/> Closed System to tanker truck passing a MACT level annual leak test? <input type="checkbox"/> Closed System to tanker truck passing a NSPS level annual leak test? <input checked="" type="checkbox"/> Closed System to tanker truck not passing an annual leak test and has vapor return?				
Projected Maximum Operating Schedule (for rack or transfer point as a whole)				
Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	Varies	Varies	Varies	Varies
Days/week	7	7	7	7
Bulk Liquid Data (use extra pages as necessary)				
Liquid Name	Produced Fluids			
Max. Daily Throughput (1000 gal/day)	See attached emissions calculations for all throughput values			
Max. Annual Throughput (1000 gal/yr)	See attached emissions calculations for all throughput values			
Loading Method ¹	SP			
Max. Fill Rate (gal/min)	Varies			
Average Fill Time (min/loading)	Varies			
Max. Bulk Liquid Temperature (°F)	See ProMax results			
True Vapor Pressure ²	See ProMax results			
Cargo Vessel Condition ³	U			
Control Equipment or Method ⁴	VB, ECD (captured loading losses)			

Max. Collection Efficiency (%)		70		
Max. Control Efficiency (%)		98		
Max.VOC Emission Rate	Loading (lb/hr)	See attached emission calculations for breakdown		
	Annual (ton/yr)	See attached emission calculations for breakdown		
Max.HAP Emission Rate	Loading (lb/hr)	See attached emission calculations for breakdown		
	Annual (ton/yr)	See attached emission calculations for breakdown		
Estimation Method ⁵		AP-42 Section 5.2 Methodology (via ProMax)		

- 1 BF Bottom Fill SP Splash Fill SUB Submerged Fill
- 2 At maximum bulk liquid temperature
- 3 B Ballasted Vessel C Cleaned U Uncleaned (dedicated service)
- O Other (describe)
- 4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
- CA Carbon Adsorption VB Dedicated Vapor Balance (closed system)
- ECD Enclosed Combustion Device F Flare
- TO Thermal Oxidization or Incineration
- 5 EPA EPA Emission Factor in AP-42 MB Material Balance
- TM Test Measurement based upon test data submittal O Other (describe)

ATTACHMENT P

Glycol Dehydrator Data Sheet *(Not Applicable)*

**ATTACHMENT P – GLYCOL DEHYDRATION UNIT
DATA SHEET – NOT APPLICABLE**

Complete this data sheet for each Glycol Dehydration Unit, Reboiler, Flash Tank and/or Regenerator at the facility. Include gas sample analysis and GRI- GLYCalc™ input and aggregate report. Use extra pages if necessary.

Manufacturer:		Model:			
Max. Dry Gas Flow Rate:		Reboiler Design Heat Input			
Design Type: <input type="checkbox"/> TEG <input type="checkbox"/> DEG <input type="checkbox"/> EG		Source Status ¹ :			
Date Installed/Modified/Removed ² :		Regenerator Still Vent APCD/ERD ³ :			
Control Device/ERD ID# ³ :		Fuel HV (BTU/scf):			
H ₂ S Content (gr/100 scf):		Operation (hours/year):			
Pump Rate (gpm):					
Water Content (wt %) in: Wet Gas: Dry Gas:					
Is the glycol dehydration unit exempt from 40CFR63 Section 764(d)? <input type="checkbox"/> Yes <input type="checkbox"/> No: If Yes, answer the following:					
The actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters per day, as determined by the procedures specified in §63.772(b)(1) of this subpart. <input type="checkbox"/> Yes <input type="checkbox"/> No					
The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton per year), as determined by the procedures specified in §63.772(b)(2) of this subpart. <input type="checkbox"/> Yes <input type="checkbox"/> No					
Is the glycol dehydration unit located within an Urbanized Area (UA) or Urban Cluster (UC)? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Is a lean glycol pump optimization plan being utilized? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Recycling the glycol dehydration unit back to the flame zone of the reboiler. <input type="checkbox"/> Yes <input type="checkbox"/> No					
Recycling the glycol dehydration unit back to the flame zone of the reboiler and mixed with fuel. <input type="checkbox"/> Yes <input type="checkbox"/> No					
What happens when temperature controller shuts off fuel to the reboiler? <input type="checkbox"/> Still vent emissions to the atmosphere. <input type="checkbox"/> Still vent emissions stopped with valve. <input type="checkbox"/> Still vent emissions to glow plug. <input type="checkbox"/> None of the above: Still vent emissions are controlled by an enclosed combustor					
Please indicate if the following equipment is present. <input type="checkbox"/> Flash Tank <input type="checkbox"/> Burner management system that continuously burns condenser or flash tank vapors					
Control Device Technical Data					
Pollutants Controlled		Manufacturer's Guaranteed Control Efficiency (%)			
Emissions Data					
Emission Unit ID / Emission Point ID ⁴	Description	Calculation Methodology ⁵	PTE ⁶	Controlled Maximum Hourly Emissions (lb/hr)	Controlled Maximum Annual Emissions (tpy)

- 1 Enter the Source Status using the following codes:
NS Construction of New Source ES Existing Source
MS Modification of Existing Source
- 2 Enter the date (or anticipated date) of the glycol dehydration unit's installation (construction of source), modification or removal.
- 3 Enter the Air Pollution Control Device (APCD)/Emission Reduction Device (ERD) type designation using the following codes and the device ID number:
NA None CD Condenser FL Flare
CC Condenser/Combustion Combination TO Thermal Oxidizer O Other (please list)
- 4 Enter the appropriate Emission Unit ID Numbers and Emission Point ID Numbers for the glycol dehydration unit reboiler vent and glycol regenerator still vent. The glycol dehydration unit reboiler vent and glycol regenerator still vent should be designated RBV-1 and RSV-1, respectively. If the compressor station incorporates multiple glycol dehydration units, a Glycol Dehydration Emission Unit Data Sheet shall be completed for each, using Source Identification RBV-2 and RSV-2, RBV-3 and RSV-3, etc.
- 5 Enter the Potential Emissions Data Reference designation using the following codes:
MD Manufacturer's Data AP AP-42
GR GRI-GLYCalc™ OT Other (please list)
- 6 Enter the Reboiler Vent and Glycol Regenerator Still Vent Potential to Emit (PTE) for the listed regulated pollutants in lbs per hour and tons per year. The Glycol Regenerator Still Vent potential emissions may be determined using the most recent version of the thermodynamic software model GRI-GLYCalc™ (Radian International LLC & Gas Research Institute). **Attach all referenced Potential Emissions Data (or calculations) and the GRI-GLYCalc™ Aggregate Calculations Report (shall include emissions reports, equipment reports, and stream reports) to this Glycol Dehydration Emission Unit Data Sheet(s). Backup pumps do not have to be considered as operating for purposes of PTE.** This PTE data shall be incorporated in the Emissions Summary Sheet.

ATTACHMENT Q

Pneumatic Controller Data Sheet *(Not Applicable)*

**ATTACHMENT Q – PNEUMATIC CONTROLLERS
DATA SHEET**

Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011?

Yes No

Please list approximate number.

ATTACHMENT R

Air Pollution Control Device Data Sheet

**ATTACHMENT R – AIR POLLUTION CONTROL DEVICE /
EMISSION REDUCTION DEVICE SHEETS**

Complete the applicable air pollution control device sheets for each flare, vapor combustor, thermal oxidizer, condenser, adsorption system, vapor recovery unit, BTEX Eliminator, Reboiler with and without Glow Plug, etc. at the facility. Use extra pages if necessary.

Emissions calculations must be performed using the most conservative control device efficiency.

The following five (5) rows are only to be completed if registering an alternative air pollution control device.

Emission Unit ID: Not Applicable	Make/Model:
Primary Control Device ID:	Make/Model:
Control Efficiency (%):	APCD/ERD Data Sheet Completed: <input type="checkbox"/> Yes <input type="checkbox"/> No
Secondary Control Device ID:	Make/Model:
Control Efficiency (%):	APCD/ERD Data Sheet Completed: <input type="checkbox"/> Yes <input type="checkbox"/> No

VAPOR COMBUSTION (Including Enclosed Combustors)

General Information

Control Device ID#: C001 (existing; no change);	Installation Date: <input type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Maximum Rated Total Flow Capacity ~7,850 scfh 188,000 scfd	Maximum Design Heat Input (from mfg. spec sheet) 11.66 MMBTU/hr	Design Heat Content 1,500 BTU/scf

Control Device Information

Type of Vapor Combustion Control?		
<input checked="" type="checkbox"/> Enclosed Combustion Device <input type="checkbox"/> Thermal Oxidizer	<input type="checkbox"/> Elevated Flare	<input type="checkbox"/> Ground Flare
Manufacturer: LEED Fabrication Model: Enclosed Combustor 48"	Hours of operation per year? 8,760	

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID# S021-S030, S037)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
S021-S030	Produced Fluid Tanks		
S037	Liquid Loading		

If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.

Assist Type (Flares only)	Flare Height	Tip Diameter	Was the design per §60.18?
<input type="checkbox"/> Steam <input type="checkbox"/> Air <input type="checkbox"/> Pressure <input checked="" type="checkbox"/> Non	~25 feet	4 feet	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Provide determination.

Waste Gas Information

Maximum Waste Gas Flow Rate 130 (scfm)	Heat Value of Waste Gas Stream Varies BTU/ft ³	Exit Velocity of the Emissions Stream Varies (ft/s)
--	--	--

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

Pilot Gas Information

Number of Pilot Lights 1	Fuel Flow Rate to Pilot Flame per Pilot ~50 scfh	Heat Input per Pilot 0.05 MMBTU/hr	Will automatic re-ignition be used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
-----------------------------	---	---------------------------------------	--

If automatic re-ignition is used, please describe the method.

Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, what type? <input checked="" type="checkbox"/> Thermocouple <input type="checkbox"/> Infrared <input type="checkbox"/> Ultraviolet <input type="checkbox"/> Camera <input type="checkbox"/> Other:
---	---

Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).* See attached information on unit

Additional information attached? Yes No
 Please attach copies of manufacturer's data sheets, drawings, flame demonstration per §60.18 or §63.11(b) and performance testing.

VAPOR COMBUSTION (Including Enclosed Combustors)

General Information

Control Device ID#: C002 (new)	Installation Date: <input checked="" type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Maximum Rated Total Flow Capacity ~7,850 scfh 188,000 scfd	Maximum Design Heat Input (from mfg. spec sheet) 11.66 MMBTU/hr	Design Heat Content 1,500 BTU/scf

Control Device Information

Type of Vapor Combustion Control?		
<input checked="" type="checkbox"/> Enclosed Combustion Device <input type="checkbox"/> Thermal Oxidizer	<input type="checkbox"/> Elevated Flare	<input type="checkbox"/> Ground Flare

Manufacturer: LEED Fabrication Model: Enclosed Combustor 48"	Hours of operation per year? 8,760
---	------------------------------------

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID# S021-S030, S037)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
S021-S030	Produced Fluid Tanks		
S037	Liquid Loading		

If this vapor combustor controls emissions from more than six (6) emission units, please attach additional pages.

Assist Type (Flares only)	Flare Height	Tip Diameter	Was the design per §60.18?
<input type="checkbox"/> Steam <input type="checkbox"/> Air <input type="checkbox"/> Pressure <input checked="" type="checkbox"/> Non	~25 feet	4 feet	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Provide determination.

Waste Gas Information

Maximum Waste Gas Flow Rate 130 (scfm)	Heat Value of Waste Gas Stream Varies BTU/ft ³	Exit Velocity of the Emissions Stream Varies (ft/s)
--	--	--

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

Pilot Gas Information

Number of Pilot Lights 1	Fuel Flow Rate to Pilot Flame per Pilot ~50 scfh	Heat Input per Pilot 0.05 MMBTU/hr	Will automatic re-ignition be used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
-----------------------------	--	---------------------------------------	--

If automatic re-ignition is used, please describe the method.

Is pilot flame equipped with a monitor to detect the presence of the flame? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If Yes, what type? <input checked="" type="checkbox"/> Thermocouple <input type="checkbox"/> Infrared <input type="checkbox"/> Ultraviolet <input type="checkbox"/> Camera <input type="checkbox"/> Other:
---	---

Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty. *(If unavailable, please indicate).* See attached information on unit

Additional information attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Please attach copies of manufacturer's data sheets, drawings, flame demonstration per §60.18 or §63.11(b) and performance testing.
--	--

CONDENSER – Not Applicable

General Information

Control Device ID#:	Installation Date: <input type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Manufacturer:	Model:	Control Device Name:
Control Efficiency (%):		
Manufacturer's required temperature range for control efficiency. °F		
Describe the warning and/or alarm system that protects against operation when unit is not meeting the design requirements:		
Describe all operating ranges and maintenance procedures required by the manufacturer to maintain the warranty.		
Additional information attached? <input type="checkbox"/> Yes <input type="checkbox"/> No Please attach copies of manufacturer's data sheets.		
Is condenser routed to a secondary APCD or ERD? <input type="checkbox"/> Yes <input type="checkbox"/> No		

ADSORPTION SYSTEM – Not Applicable

General Information

Control Device ID#:	Installation Date: <input type="checkbox"/> New <input type="checkbox"/> Modified <input type="checkbox"/> Relocated	
Manufacturer:	Model:	Control Device Name:
Design Inlet Volume: scfm	Adsorbent charge per adsorber vessel and number of adsorber vessels:	
Length of Mass Transfer Zone supplied by the manufacturer:	Adsorber diameter: ft	Adsorber area: ft ²
Adsorbent type and physical properties:	Overall Control Efficiency (%):	
Working Capacity of Adsorbent (%):		

Operating Parameters

Inlet volume: scfm @ °F	
Adsorption time per adsorption bed (life expectancy):	Breakthrough Capacity (lbs of VOC/100 lbs of adsorbent):
Temperature range of carbon bed adsorber. °F - °F	

Control Device Technical Data

Pollutants Controlled	Manufacturer's Guaranteed Control Efficiency (%)

Describe the warning and/or alarm system that protects against operation when unit is not meeting the design requirements:

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

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

Additional information attached? Yes No

Please attach copies of manufacturer's data sheets, drawings, and performance testing.

VAPOR RECOVERY UNIT

General Information

Emission Unit ID#: S039

Installation Date: TBD

New Modified Relocated

Device Information

Manufacturer: Ford

Model: CSG-637

List the emission units whose emissions are controlled by this vapor recovery unit (Emission Point ID# NA)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
NA	Low Pressure Separator		

If this vapor recovery unit controls emissions from more than six (6) emission units, please attach additional pages.

Additional information attached? Yes No

Please attach copies of manufacturer's data sheets, drawings, and performance testing.

The registrant may claim a capture and control efficiency of 95 % (which accounts for 5% downtime) for the vapor recovery unit.

The registrant may claim a capture and control efficiency of 98% if the VRU has a backup flare that meet the requirements of Section 8.1.2 of this general permit.

The registrant may claim a capture and control efficiency of 98% if the VRU has a backup VRU.



**Environmental Control Equipment
Data Sheet**

Item/Tag No.:		Page	1	of	2
Project No.:		Revision:	B		
Project:		Date:	27 February 2014		
P.O. No.:	-	By:	JS		
RFQ No.:	-	Checked:	SG		
Ref. P&ID:	-	Approved:	MS		
Client:		Supplier:	LEED FABRICATION		
Site:		Model No.:	L30-0011-00		
Unit/Lease:		Remarks:			

GENERAL

1 Design Code:		NDE:	LEED Fabrication Standards		
2 Service:		Customer Specs:	<input type="checkbox"/> Yes		
3 Description:	Standard Dual Stage 48 High Efficiency Combustor		<input checked="" type="checkbox"/> No		

PROCESS DATA

Gas Composition:	mol %	Process Conditions:		
		Variable	Value	Units
4 Methane		Flow Rate	Up to 140	Mscfd
5 Ethane		Pressure	Up to 12	oz/in2
6 Propane		Temperature		°F
7 I-Butane		Molecular Weight		
8 n-Butane		Process/Waste Stream	<input checked="" type="checkbox"/> Gas	<input type="checkbox"/> Liquid
9 I-Pentane		Detailed Process Description / Process Notes:		
10 n-Pentane		1. Turndown 10:1. Based on an expected normal operating rate indicated above.		
11 n-Hexane		2. DRE: 98 % operating at design conditions		
12 CO2		3. Burner Pressure Drop: Min. 0.10 oz/in2		
13 N2				
14 Helium				
15 H2O				
16 C7				
17 C8				
18 C9				
19 C10				
20 C11+				
21 TOTAL				
Other Components:	PPMV	Available Utilities:		
22 H2S		Fuel / Pilot Gas	Min. 30psig Natural Gas /Propane 40-50 SCFH	
23 Benzene		Instrument Air	NA	
24 Toluene		Power	120 V / 60 Hz or Solar Power	
25 E-Benzene		Steam	NA	
26 Xylene		Purge Gas		

DESIGN DATA

27 Ambient Temperatures:		Noise Performance Requirements:	Under 85 dBA	
28 Low, °F	-20	Structural Design Code:		
29 High, °F	120	Wind Design Code:	ASCE	
30 Design Conditions:	Pressure/Temperature			
31 Max. Relative Humidity, %	90	Pressure/Speed	100 mph	
32 Elevation (ASL), ft		Category		
33 Area Classification:	Class I Div 2	Seismic Design Code:		
34 Electrical Design Code:	NEC	Location		

EQUIPMENT SPECIFICATION

35 Type:	<input type="checkbox"/> Elevated <input checked="" type="checkbox"/> Enclosed	Equipment Design:		
36	<input type="checkbox"/> Above Ground	Component	Material / Size / Rating / Other	
37	<input checked="" type="checkbox"/> Stack <input type="checkbox"/> Multiple Stack	Burner		
38	<input type="checkbox"/> Portable / Trailer	Burner Tip / Assist Gas Burner	304 SS	
39		Burner Body	Carbon Steel	
40 Smokeless By:	<input type="checkbox"/> Steam <input type="checkbox"/> Assist Air	Pilot		
41	<input type="checkbox"/> Gas Assist <input checked="" type="checkbox"/> Staging	Pilot Tip	304 SS	
42		Pilot Line(s)	Carbon Steel	
43 Stack:	<input checked="" type="checkbox"/> Self Supporting	Firebox / Stack		
44 Flare Burner:	<input type="checkbox"/> Non-Smokeless <input checked="" type="checkbox"/> Smokeless <input type="checkbox"/> Gas Assist	Shell	Carbon Steel	
45 Pilot:	<input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Continuous	Piping	Carbon Steel	
46 Pilot Air Inspirator:	<input checked="" type="checkbox"/> Local <input type="checkbox"/> Remote	Nozzles	Carbon Steel	
47 Pilot Flame Control:	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (Thermocouple)	Flanges	Carbon Steel	
48		Insulation	Blanket	
49 Pilot Ignition:	<input type="checkbox"/> Flamefront Generator <input checked="" type="checkbox"/> Inspiring Ignitor	Insulation Pins	304 SS	
50	<input type="checkbox"/> Electronic <input checked="" type="checkbox"/> Automatic <input type="checkbox"/> Manual	Refractory	NA	
51	<input type="checkbox"/> With Pilot Flame Control	Refractory Anchors	NA	
52	<input type="checkbox"/> With Auto Pilot Re-Ignition	Ladders and Platforms	NA	
53		Stack Sample Connections	Per EPA requirements	
54 Pilot Ignition Backup:	<input type="checkbox"/> Manual Specify: i.e Piezo-Electric	Sight Glass	2	
55	<input type="checkbox"/> Battery Pack	Other		

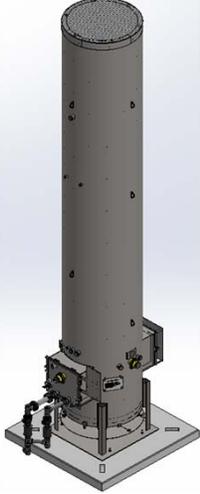


**Environmental Control Equipment
Data Sheet**

Item/Tag No.:		Page	2	of	3
Project No.:		Revision:	B		
Project:		Date:	27 February 2014		
P.O. No.:	-	By:	JS		
RFQ No.:	-	Checked:	SG		
Ref. P&ID:	-	Approved:	MS		
Remarks:	-	Supplier:	LEED FABRICATION		
		Model No.:	L30-0011-00		

Client:	
Site:	
Unit/Lease:	

EQUIPMENT SPECIFICATION

56	Flame Detection:	<input type="checkbox"/> Thermocouple	<input checked="" type="checkbox"/> Ionization Rod	Auxiliary Equipment	
57		<input type="checkbox"/> UV Scanner		Valves	NA
58	General Configuration:			Blowers	NA
59				Dampers	NA
60				Inlet KO / Liquid Seal	NA
61				Flame / Detonation Arrestor	Yes
62				Instrumentation & Controls	
63				Solenoids / Shut-Off Valves	Check with Sales for available config.
64				Flow Meters	NA
65				Calorimeter	NA
66				Pressure Switches/Transmitters	NA
67				Thermocouples	Check with Sales for available config.
68				Temperature Switches/Transmitters	NA
69				BMS	Check with Sales for available config.
70				CEMS	NA
71				Other	NA
72					
73					
74					
75					

FABRICATION AND INSPECTION

76	Special requirements	<input type="checkbox"/> Skid Mounted	<input checked="" type="checkbox"/> Concrete Pad	Equipment Info	
77		<input type="checkbox"/> Other		Component	Weight / Dimensions
78				Burner	
79	Inspection	<input checked="" type="checkbox"/> Vendor Standard		Burner Assembly	
80		<input type="checkbox"/> Other. Specify:		Stack	
81	Material Certification	<input checked="" type="checkbox"/> Vendor Standard		Stack Assembly	48" OD x 25' H
82		<input type="checkbox"/> MTR		Pilot Tip	
83		<input type="checkbox"/> Certificate of Compliance		Pilot Line(s)	
84		<input type="checkbox"/> Other (Specify):		Stack Assembly	
85	NDE	<input checked="" type="checkbox"/> Vendor Standard		Auxiliary Equipment	
86		<input type="checkbox"/> Radiography. Specify:		Blowers	
87		<input type="checkbox"/> Ultrasonic. Specify:		Inlet KO / Liquid Seal	
88		<input type="checkbox"/> Liquid Penetrant.		Flame / Detonation Arrestor	
89		<input type="checkbox"/> Magnetic Particles.		Skid	
90		<input type="checkbox"/> PMI. Specify:		Instrumentation & Controls	
91		<input type="checkbox"/> Other. Specify:		BMS	
92	Surface Preparation	<input checked="" type="checkbox"/> Vendor Standard		Control Panel	
93		<input type="checkbox"/> Other. Specify:			
94	Paint System	<input checked="" type="checkbox"/> Vendor Standard			
95		<input type="checkbox"/> Other. Specify:			
96	Finished Color	<input checked="" type="checkbox"/> Vendor Standard			
97		<input type="checkbox"/> Other. Specify:			
98					
99					

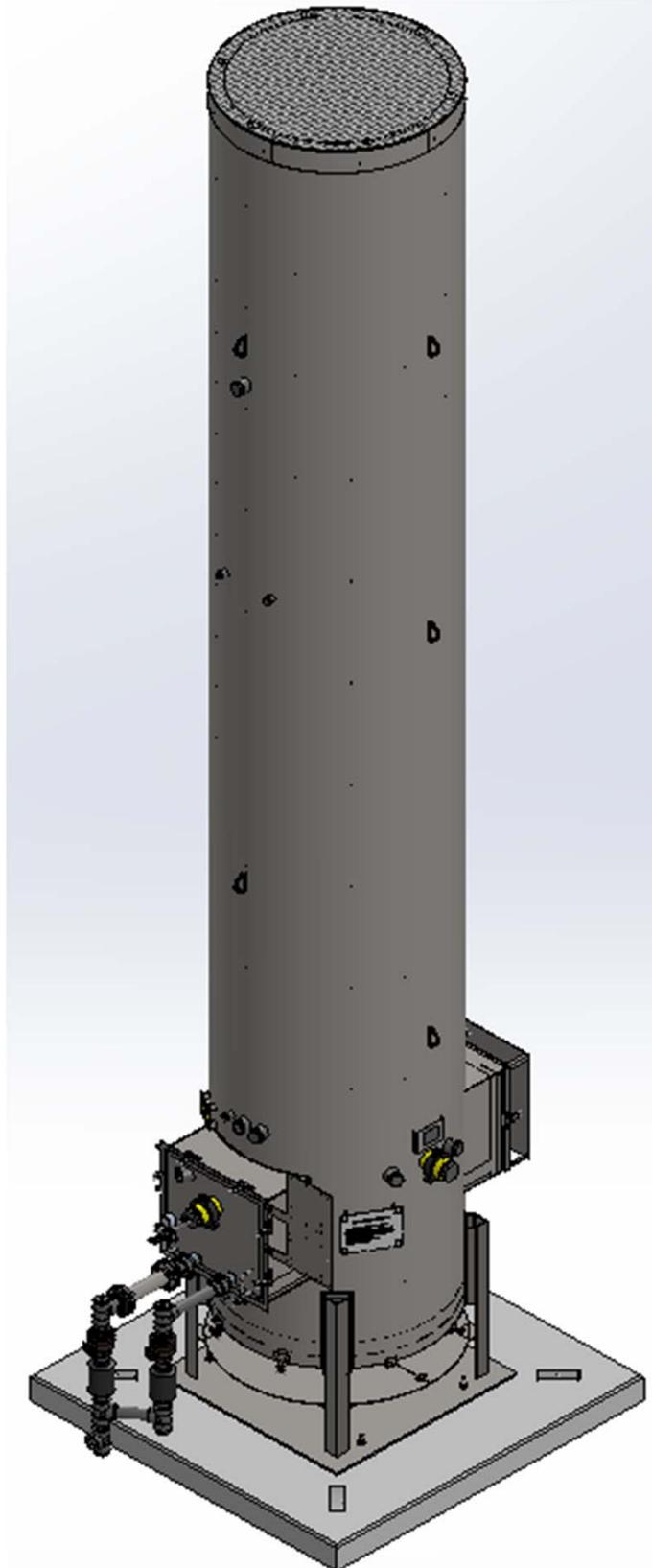
Additional Notes:



Environmental Control Equipment
Data Sheet

Item/Tag No.:		Page	3	of	3
Project No.:		Revision:	B		
		Date:	27 February 2014		
Project:		By:	JS		
P.O. No.:	-	Checked:	SG		
RFQ No.:	-	Approved:	MS		
Client:		Ref. P&ID:	-		
Site:		Supplier:	LEED FABRICATION		
Unit/Lease:		Remarks:	-		
		Model No.:	L30-0011-00		

GENERAL ARRANGEMENT



§ MMBTU/hr values are calculated based on 1500 BTU/scf gas

Flare Size	# of Orifices (N)	Pressure (OZ/in ²)	m ³ /s	mSCFD	MMBTU/hr
18	2	1	0.0021	6.34	0.39
18	2	2	0.0029	8.97	0.56
18	2	3	0.0036	10.99	0.68
18	2	4	0.0042	12.69	0.78
18	2	5	0.0046	14.18	0.88
18	2	6	0.0051	15.54	0.96
18	2	7	0.0055	16.78	1.04
18	2	8	0.0059	17.94	1.11
18	2	9	0.0062	19.03	1.18
18	2	10	0.0066	20.06	1.24
18	2	11	0.0069	21.04	1.30
18	2	12	0.0072	21.97	1.36
18	2	13	0.0075	22.87	1.42
18	2	14	0.0078	23.73	1.47
18	2	15	0.0081	24.57	1.52
18	2	16	0.0083	25.37	1.57
18	2	17	0.0086	26.15	1.62
18	2	18	0.0088	26.91	1.67
24	4	1	0.0042	12.69	0.78
24	4	2	0.0059	17.94	1.11
24	4	3	0.0072	21.97	1.36
24	4	4	0.0083	25.37	1.57
24	4	5	0.0093	28.37	1.76
24	4	6	0.0102	31.08	1.92
24	4	7	0.0110	33.56	2.08
24	4	8	0.0118	35.88	2.22
24	4	9	0.0125	38.06	2.35
24	4	10	0.0131	40.12	2.48
24	4	11	0.0138	42.08	2.60
24	4	12	0.0144	43.95	2.72
24	4	13	0.0150	45.74	2.83
24	4	14	0.0156	47.47	2.94
24	4	15	0.0161	49.13	3.04
24	4	16	0.0166	50.75	3.14
24	4	17	0.0171	52.31	3.24
24	4	18	0.0176	53.82	3.33
36	10	1	0.0104	31.72	1.96
36	10	2	0.0147	44.85	2.78
36	10	3	0.0180	54.93	3.40

36	10	4	0.0208	63.43	3.92
36	10	5	0.0232	70.92	4.39
36	10	6	0.0255	77.69	4.81
36	10	7	0.0275	83.91	5.19
36	10	8	0.0294	89.71	5.55
36	10	9	0.0312	95.15	5.89
36	10	10	0.0329	100.29	6.21
36	10	11	0.0345	105.19	6.51
36	10	12	0.0360	109.87	6.80
36	10	13	0.0375	114.35	7.08
36	10	14	0.0389	118.67	7.34
36	10	15	0.0403	122.83	7.60
36	10	16	0.0416	126.86	7.85
36	10	17	0.0429	130.77	8.09
36	10	18	0.0441	134.56	8.33
48	14	1	0.0146	44.40	2.75
48	14	2	0.0206	62.79	3.89
48	14	3	0.0252	76.91	4.76
48	14	4	0.0291	88.80	5.49
48	14	5	0.0325	99.29	6.14
48	14	6	0.0356	108.76	6.73
48	14	7	0.0385	117.48	7.27
48	14	8	0.0412	125.59	7.77
48	14	9	0.0437	133.21	8.24
48	14	10	0.0460	140.41	8.69
48	14	11	0.0483	147.27	9.11
48	14	12	0.0504	153.81	9.52
48	14	13	0.0525	160.09	9.91
48	14	14	0.0545	166.14	10.28
48	14	15	0.0564	171.97	10.64
48	14	16	0.0582	177.61	10.99
48	14	17	0.0600	183.07	11.33
48	14	18	0.0617	188.38	11.66

ATTACHMENT S

Emission Calculations

Company Name:
 Facility Name:
 Project Description:

EOT Production, LLC
OXF153 Wellpad
G70-B Application

Facility-Wide Emission Summary - Controlled

Wells	7	per pad	Carbon equivalent emissions (CO ₂ e) are based on the following Global Warming Potentials (GWP) from 40 CFR Part 98, Table A-1:
Storage Tanks	10	per pad	CO ₂ 1
Sand Separator Tank	1	per pad	CH ₄ 25
Line Heaters	7	per pad	N ₂ O 298
TEGs	3	per pad	
Dehy Reboiler	0	per pad	
Glycol Dehy	0	per pad	
Dehy Drip Tank	0	per pad	
Dehy Combustor	0	per pad	
Compressor	1	per pad	
High Pressure Separator	7	per pad	
Low Pressure Separator	1	per pad	
Vapor Recovery Unit	1	per pad	
Tank Combustor	2	per pad	
Length of lease road	8,140	feet	

Emission Point ID #	Emission Source ID#s	Emission Source Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		CO ₂ e	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C001-C002	S021-S030	Storage Vessels	---	---	---	---	0.25	1.10	---	---	---	---	---	---	4.66	20.42
C001-C002	S037	Captured Liquid Loading	---	---	---	---	1.68	0.44	---	---	---	---	---	---	---	---
C001	C001	Tank Combustor	1.15	5.03	0.96	4.22	2.8E-04	1.2E-03	0.01	0.03	0.09	0.38	0.09	0.38	1,371.10	6,005.43
C002	C002	Tank Combustor	1.15	5.03	0.96	4.22	2.8E-04	1.2E-03	0.01	0.03	0.09	0.38	0.09	0.38	1,371.10	6,005.43
C001	S021-S030, S037, C001	---	1.15	5.03	0.96	4.22	0.96	0.77	0.01	0.03	0.09	0.38	0.09	0.38	1,373.43	6,015.64
C002	S021-S030, S037, C002	---	1.15	5.03	0.96	4.22	0.96	0.77	0.01	0.03	0.09	0.38	0.09	0.38	1,373.43	6,015.64
E016	S016	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E017	S017	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E018	S018	Line Heater	0.07	0.32	0.06	0.27	4.0E-03	0.02	4.4E-04	1.9E-03	0.01	0.02	0.01	0.02	90.09	394.60
E032	S032	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E033	S033	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E034	S034	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E035	S035	Line Heater	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E038	S038	Line Heater	0.11	0.48	0.09	0.40	0.01	0.03	6.6E-04	2.9E-03	0.01	0.04	0.01	0.04	134.69	589.92
E019	S019	TEG	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E020	S020	TEG	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E036	S036	TEG	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E031	S031	Sand Separator Tank	---	---	---	---	0.13	0.58	---	---	---	---	---	---	0.85	3.68
E039	S039	VRU Engine	0.24	1.06	0.49	2.12	0.19	0.81	4.5E-04	2.0E-03	0.01	0.07	0.01	0.07	90.18	394.99
E037	S037	Uncaptured Liquid Loading	---	---	---	---	35.90	9.33	---	---	---	---	---	---	---	---
---	---	Fugitives	---	---	---	---	---	24.53	---	---	---	---	---	---	---	1,273.10
---	---	Haul Roads	---	---	---	---	---	---	---	---	9.54	---	---	0.95	---	---
Facility Total			3.60	15.79	3.31	14.49	38.21	37.05	0.02	0.09	0.27	10.73	0.27	2.14	4,148.32	19,442.68
Facility Total (excluding fugitive emissions)			3.60	15.79	3.31	14.49	2.30	3.19	0.02	0.09	0.27	1.18	0.27	1.18	4,148.32	18,169.58

1. Emissions routed to combustors are divided evenly by the total number of combustors (i.e., Combustor Point Emissions = [storage tanks emissions + captured loading emissions] / [number of combustors] + combustor emissions). However, emissions can be routed to either combustor.

Company Name:
 Facility Name:
 Project Description:

EOT Production, LLC
OXF153 Wellpad
G70-B Application

Facility-Wide Emission Summary - Controlled

Emission Point ID #	Emission Source ID#s	Emission Source Description	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		n-Hexane		Total HAP	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C001-C002	S021-S030	Storage Vessels	---	---	3.3E-04	1.4E-03	6.8E-04	3.0E-03	4.4E-05	1.9E-04	3.2E-04	1.4E-03	4.1E-03	0.02	0.01	0.02
C001-C002	S037	Captured Liquid Loading	---	---	1.4E-03	3.6E-04	1.8E-03	4.6E-04	1.1E-04	2.8E-05	7.6E-04	2.0E-04	0.03	0.01	0.03	0.01
C001	C001	Tank Combustor	---	---	---	---	---	---	---	---	---	---	---	---	---	---
C002	C002	Tank Combustor	---	---	---	---	---	---	---	---	---	---	---	---	---	---
C001	S021-S030, S037, C001	---	---	---	8.5E-04	8.9E-04	1.2E-03	1.7E-03	7.6E-05	1.1E-04	5.4E-04	7.9E-04	0.02	0.01	0.02	0.02
C002	S021-S030, S037, C002	---	---	---	8.5E-04	8.9E-04	1.2E-03	1.7E-03	7.6E-05	1.1E-04	5.4E-04	7.9E-04	0.02	0.01	0.02	0.02
E016	S016	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E017	S017	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E018	S018	Line Heater	5.5E-05	2.4E-04	1.5E-06	6.7E-06	2.5E-06	1.1E-05	---	---	---	---	1.3E-03	0.01	1.4E-03	0.01
E032	S032	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E033	S033	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E034	S034	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E035	S035	Line Heater	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E038	S038	Line Heater	8.2E-05	3.6E-04	2.3E-06	1.0E-05	3.7E-06	1.6E-05	---	---	---	---	2.0E-03	0.01	2.1E-03	0.01
E019	S019	TEG	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E020	S020	TEG	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E036	S036	TEG	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E031	S031	Sand Separator Tank	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.0E-03	<0.01	2.0E-03	1.0E-02
E039	S039	VRU Engine	0.02	0.07	1.2E-03	5.3E-03	4.3E-04	1.9E-03	1.9E-05	8.4E-05	1.5E-04	6.6E-04	---	---	0.02	0.11
E037	S037	Uncaptured Liquid Loading	---	---	0.03	0.01	0.04	0.01	2.3E-03	6.1E-04	0.02	4.2E-03	0.58	0.15	0.67	0.17
---	---	Fugitives	---	---	---	3.2E-03	---	0.01	---	3.2E-03	---	0.02	---	0.11	---	0.44
---	---	Haul Roads	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Facility Total			0.02	0.07	0.03	0.02	0.04	0.03	2.5E-03	4.1E-03	0.02	0.03	0.63	0.37	0.75	0.85
Facility Total (excluding fugitive emissions)			0.02	0.07	2.9E-03	0.01	2.9E-03	0.01	1.7E-04	3.0E-04	1.2E-03	2.2E-03	0.05	0.11	0.08	0.24

1. Emissions routed to combustors are divided evenly by the total number of combustors (i.e., Combustor Point Emissions = [storage tanks emissions + captured loading emissions] / [number of combustors] + combustor emissions). However, emissions can be routed to either combustor.

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Produced Fluids Storage Vessels
--

Potential Throughput

Operational Hours 8,760 hrs/yr
 Maximum Condensate Throughput¹ 5,032 bbl/month
 Maximum Produced Water Throughput¹ 39,284 bbl/month

¹ Based on the highest monthly throughput recorded at the site (May 2013). Includes a safety factor of 4

Overall Control Efficiency of Combustor 98%

Storage Tanks - Uncontrolled

	Breathing		Working		Flashing		Total Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Methane	<0.001	<0.001	<0.001	<0.001	9.326	40.846	9.326	40.846
Ethane	<0.001	<0.001	<0.001	<0.001	5.736	25.122	5.736	25.122
Propane	0.084	0.367	1.012	4.435	4.677	20.487	5.774	25.289
Isobutane	0.021	0.093	0.234	1.025	1.096	4.801	1.351	5.920
n-Butane	0.040	0.174	0.438	1.920	2.175	9.527	2.653	11.620
Isopentane	0.015	0.066	0.164	0.720	0.788	3.453	0.968	4.238
n-Pentane	0.012	0.053	0.132	0.577	0.641	2.807	0.785	3.436
n-Hexane	0.003	0.014	0.034	0.150	0.166	0.729	0.204	0.893
Cyclohexane	1.3E-04	0.001	0.001	0.006	0.011	0.046	0.012	0.053
Methylcyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Heptane	0.004	0.018	0.046	0.199	0.236	1.036	0.286	1.253
n-Octane	0.001	0.006	0.015	0.064	0.077	0.339	0.093	0.409
n-Nonane	1.3E-04	0.001	0.001	0.006	0.008	0.036	0.010	0.042
n-Decane	2.9E-04	0.001	0.003	0.014	0.019	0.081	0.022	0.096
n-Undecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dodecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Triethylene Glycol	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isohexane	0.005	0.021	0.052	0.228	0.250	1.096	0.307	1.345
3-Methylpentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Neohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,3-Dimethylbutane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methylcyclohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Decane, 2-Methyl-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	7.5E-05	3.3E-04	0.002	0.009	0.014	0.062	0.016	0.071
Toluene	1.6E-04	0.001	0.002	0.010	0.032	0.139	0.034	0.150
Ethylbenzene	1.2E-05	5.1E-05	1.4E-04	0.001	0.002	0.009	0.002	0.010
m-Xylene	8.2E-05	3.6E-04	0.001	0.004	0.015	0.065	0.016	0.070
Isooctane	8.8E-06	3.8E-05	9.6E-05	4.2E-04	4.9E-04	0.002	0.001	0.003
Total VOC Emissions:	0.19	0.82	2.14	9.37	10.21	44.71	12.53	54.90
Total HAP Emissions:	3.5E-03	0.02	0.04	0.17	0.23	1.01	0.27	1.20

¹ Uncontrolled emissions calculation using Promax (sum of produced water and condensate). Non-methane emissions are taken from the tank emissions stencil. Methane emissions are taken from the flash stream composition.

² Composition of condensate from OXF-152 sample from 5/14/2013.

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Produced Fluids Storage Vessels

Storage Tanks - Controlled

	Breathing		Working		Flashing		Total Emissions	
	lb/hr	tpy			lb/hr	tpy	lb/hr	tpy
Methane	<0.001	<0.001	<0.001	<0.001	0.187	0.817	0.187	0.817
Ethane	<0.001	<0.001	<0.001	<0.001	0.115	0.502	0.115	0.502
Propane	0.002	0.007	0.020	0.089	0.094	0.410	0.115	0.506
Isobutane	4.3E-04	0.002	0.005	0.021	0.022	0.096	0.027	0.118
n-Butane	0.001	0.003	0.009	0.038	0.044	0.191	0.053	0.232
Isopentane	3.0E-04	0.001	0.003	0.014	0.016	0.069	0.019	0.085
n-Pentane	2.4E-04	0.001	0.003	0.012	0.013	0.056	0.016	0.069
n-Hexane	6.3E-05	2.7E-04	0.001	0.003	0.003	0.015	0.004	0.018
Cyclohexane	2.7E-06	1.2E-05	2.9E-05	1.3E-04	2.1E-04	0.001	2.4E-04	0.001
Methylcyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Heptane	8.3E-05	3.7E-04	0.001	0.004	0.005	0.021	0.006	0.025
n-Octane	2.7E-05	1.2E-04	2.9E-04	0.001	0.002	0.007	0.002	0.008
n-Nonane	2.6E-06	1.1E-05	2.9E-05	1.3E-04	1.6E-04	0.001	1.9E-04	0.001
n-Decane	5.8E-06	2.5E-05	6.3E-05	2.8E-04	3.7E-04	0.002	4.4E-04	0.002
n-Undecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dodecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Triethylene Glycol	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isohexane	9.5E-05	4.2E-04	0.001	0.005	0.005	0.022	0.006	0.027
3-Methylpentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Neohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,3-Dimethylbutane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methylcyclohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Decane, 2-Methyl-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	1.5E-06	6.6E-06	4.0E-05	1.8E-04	2.8E-04	0.001	3.3E-04	0.001
Toluene	3.2E-06	1.4E-05	4.7E-05	2.1E-04	0.001	0.003	0.001	0.003
Ethylbenzene	2.3E-07	1.0E-06	2.8E-06	1.2E-05	4.1E-05	1.8E-04	4.4E-05	1.9E-04
m-Xylene	1.6E-06	7.2E-06	2.0E-05	8.5E-05	3.0E-04	0.001	3.2E-04	0.001
Isooctane	1.8E-07	7.7E-07	1.9E-06	8.4E-06	9.7E-06	4.3E-05	1.2E-05	5.2E-05
Total VOC Emissions:	3.7E-03	0.02	0.04	0.19	0.20	0.89	0.25	1.10
Total HAP Emissions:	6.9E-05	3.0E-04	8.0E-04	3.5E-03	4.6E-03	0.02	0.01	0.02

Company Name: EOT Production, LLC
 Facility Name: OXF 153 Wellpad
 Project Description: G70-B Application

VRU Engine

Engine Information:

Manufacturer:	Ford
Model No.:	CSG-637
Engine ID	S039
Stroke Cycle:	4-stroke
Type of Burn:	Rich
Rated Horsepower (bhp):	110

Engine Fuel Information:

Fuel Type:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,050
Specific Fuel Consumption (Btu/bhp-hr):	7,000
Maximum Fuel Consumption at 100% Load (scf/hr):	733
Heat Input (MMBtu/hr):	0.77
Potential Fuel Consumption (MMBtu/yr):	6,745
Max. Fuel Consumption at 100%(MMscf/hr):	0.0007
Max. Fuel Consumption (MMscf/yr):	6.4
Max. Annual Hours of Operation (hr/yr):	8,760

Engine Emissions Data:

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
NO _x	1.00	g/bhp-hr	0.24	1.06	Manufacturer
VOC (excludes HCHO)	0.70	g/bhp-hr	0.17	0.74	Manufacturer
VOC (includes HCHO)	---	---	0.19	0.81	VOC + HCHO
CO	2.00	g/bhp-hr	0.49	2.12	Manufacturer
SO _x	0.001	lb/MMBtu	0.00	0.00	AP-42, Table 3.2-3 (Aug-2000)
PM ₁₀	0.02	lb/MMBtu	0.01	0.07	AP-42, Table 3.2-3 (Aug-2000)
PM _{2.5}	0.02	lb/MMBtu	0.01	0.07	AP-42, Table 3.2-3 (Aug-2000)
Formaldehyde (HCHO)	0.02	lb/MMBtu	0.02	0.07	AP-42, Table 3.2-3 (Aug-2000)
GHG (CO ₂ e)	See Table Below		90	395	40 CFR 98, Tables C-1 & C-2
Other (Total HAP)	See Table Below		0.02	0.11	AP-42, Table 3.2-3 (Aug-2000)

Notes:

1. PM₁₀ and PM_{2.5} are total values (filterable + condensable).
2. GHG (CO₂e) is carbon dioxide equivalent, which is the summation of CO₂ (GWP = 1) + CH₄ (GWP = 25) + N₂O (GWP = 298).
3. Total HAP is the summation of all hazardous air pollutants for which there is a published emission factor for this source type.

Company Name:
 Facility Name:
 Project Description:

EOT Production, LLC
OXF 153 Wellpad
G70-B Application

VRU Engine

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

Pollutant	Emission Factor	Units	Maximum Potential Emissions		Estimation Basis / Emission Factor Source
			lbs/hr	tpy	
GHGs:					
CO ₂	53.06	kg/MMBtu	90.09	394.59	40 CFR 98, Table C-1
CH ₄	0.001	kg/MMBtu	1.7E-03	7.4E-03	40 CFR 98, Table C-2
N ₂ O	0.0001	kg/MMBtu	1.7E-04	7.4E-04	40 CFR 98, Table C-2
GHG (CO₂e)			90	395	
Organic HAPs:					
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	1.9E-05	8.5E-05	AP-42, Table 3.2-3 (Aug-2000)
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	1.2E-05	5.2E-05	AP-42, Table 3.2-3 (Aug-2000)
1,3-Butadiene	6.63E-04	lb/MMBtu	5.1E-04	2.2E-03	AP-42, Table 3.2-3 (Aug-2000)
1,3-Dichloropropene	1.27E-05	lb/MMBtu	9.8E-06	4.3E-05	AP-42, Table 3.2-3 (Aug-2000)
Acetaldehyde	2.79E-03	lb/MMBtu	2.1E-03	9.4E-03	AP-42, Table 3.2-3 (Aug-2000)
Acrolein	2.63E-03	lb/MMBtu	2.0E-03	8.9E-03	AP-42, Table 3.2-3 (Aug-2000)
Benzene	1.58E-03	lb/MMBtu	1.2E-03	5.3E-03	AP-42, Table 3.2-3 (Aug-2000)
Carbon Tetrachloride	1.77E-05	lb/MMBtu	1.4E-05	6.0E-05	AP-42, Table 3.2-3 (Aug-2000)
Chlorobenzene	1.29E-05	lb/MMBtu	9.9E-06	4.4E-05	AP-42, Table 3.2-3 (Aug-2000)
Chloroform	1.37E-05	lb/MMBtu	1.1E-05	4.6E-05	AP-42, Table 3.2-3 (Aug-2000)
Ethylbenzene	2.48E-05	lb/MMBtu	1.9E-05	8.4E-05	AP-42, Table 3.2-3 (Aug-2000)
Ethylene Dibromide	2.13E-05	lb/MMBtu	1.6E-05	7.2E-05	AP-42, Table 3.2-3 (Aug-2000)
Methanol	3.06E-03	lb/MMBtu	2.4E-03	1.0E-02	AP-42, Table 3.2-3 (Aug-2000)
Methylene Chloride	4.12E-05	lb/MMBtu	3.2E-05	1.4E-04	AP-42, Table 3.2-3 (Aug-2000)
Naphthalene	9.71E-05	lb/MMBtu	7.5E-05	3.3E-04	AP-42, Table 3.2-3 (Aug-2000)
PAH	1.41E-04	lb/MMBtu	1.1E-04	4.8E-04	AP-42, Table 3.2-3 (Aug-2000)
Styrene	1.19E-05	lb/MMBtu	9.2E-06	4.0E-05	AP-42, Table 3.2-3 (Aug-2000)
Toluene	5.58E-04	lb/MMBtu	4.3E-04	1.9E-03	AP-42, Table 3.2-3 (Aug-2000)
Vinyl Chloride	7.18E-06	lb/MMBtu	5.5E-06	2.4E-05	AP-42, Table 3.2-3 (Aug-2000)
Xylene	1.95E-04	lb/MMBtu	1.5E-04	6.6E-04	AP-42, Table 3.2-3 (Aug-2000)
Total HAP			0.02	0.11	

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Sand Separator Tank

Throughput Parameter	Value	Units
Tank Capacity	5,880	gallons
Operational Hours	8,760	hrs/yr
Throughput	280	bbl/month
Percent Produced Water	50%	
Total Produced Water Throughput	140	bbl/month

¹ Conservatively assumes 2 turnovers/month of sand and produced water.

Description	Potential Throughput (gal/yr)
Produced Water and Sand	141,120

Sand Separator Tank (140 bbl) - Uncontrolled (Per tank) ^{2,3}

Constituent	Total Emissions ¹	
	lb/hr	tpy
Methane	0.034	0.147
Ethane	0.053	0.234
Propane	0.070	0.305
Isobutane	0.015	0.067
n-Butane	0.029	0.125
Isopentane	0.008	0.035
n-Pentane	0.006	0.028
Hexanes	0.002	0.007
Heptanes	0.001	0.006
Octane	<0.001	0.002
Nonane	<0.001	<0.001
Decane	<0.001	<0.001
Benzene	<0.001	<0.001
Toluene	<0.001	<0.001
Ethylbenzene	<0.001	<0.001
Xylenes	<0.001	<0.001
n-Hexane	0.001	0.005
2,2,4-Trimethylpentane	<0.001	<0.001
Total HC Emissions:	0.219	0.961
Total VOC Emissions:	0.132	0.580
Total HAP Emissions:	0.002	0.010

² E&P TANK 2.0 calculates working, breathing and flashing losses and reports the sum as one total.

³ E&P TANK v2.0 emission calculations are based on OXF-152 sample from 5/14/2013.

Company Name: EQT Production, LLC
Facility Name: OXF153 Wellpad
Project Description: G70-B Application

Sand Separator Tank

Sand Separator Tank (140 bbl) - Controlled (Per tank)

Constituent	Total Emissions	
	lb/hr	tpy
Methane	0.034	0.147
Ethane	0.053	0.234
Propane	0.070	0.305
Isobutane	0.015	0.067
n-Butane	0.029	0.125
Isopentane	0.008	0.035
n-Pentane	0.006	0.028
Hexanes	0.002	0.007
Heptanes	0.001	0.006
Octane	<0.001	0.002
Nonane	<0.001	<0.001
Decane	<0.001	<0.001
Benzene	<0.001	<0.001
Toluene	<0.001	<0.001
Ethylbenzene	<0.001	<0.001
Xylenes	<0.001	<0.001
n-Hexane	0.001	0.005
2,2,4-Trimethylpentane	<0.001	<0.001
Total Emissions:	0.220	0.964
Total VOC Emissions:	0.132	0.580
Total HAP Emissions:	0.002	0.010

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Tank Combustor

Source Designation:	C001 & C002
Pilot Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,050
Pilot Rating (MMBtu/hr)	0.05
Combustor Rating (MMBtu/hr) ¹	11.66
Combustor Rating (Mscfd) ¹	188.38
Combustor Rating (scf/hr)	7849.17
Pilot Fuel Consumption (scf/hr):	50.00
Potential Annual Hours of Operation (hr/yr):	8,760

¹ Maximum heat input for 48" model from Leed Enclosed Combustor Operations Manual

Enclosed Combustor Emissions

Pollutant	Emission Factors ²	Combustor		Pilot		Total	
	(lb/MMBtu)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
NO _x	0.10	1.14	5.01	5.1E-03	0.02	1.15	5.03
CO	0.08	0.96	4.21	4.3E-03	0.02	0.96	4.22
VOC	5.4E-03	---	---	2.8E-04	1.2E-03	0.00	0.00
SO ₂	5.9E-04	0.01	0.03	3.1E-05	1.4E-04	0.01	0.03
PM/PM ₁₀	0.01	0.09	0.38	3.9E-04	1.7E-03	0.09	0.38
CO ₂	117.00	1364.189	5975.146	6.14	26.90	1370.33	6002.05
CH ₄	2.2E-03	---	---	1.2E-04	5.1E-04	0.00	0.00
N ₂ O	2.2E-04	2.6E-03	0.01	1.2E-05	5.1E-05	2.6E-03	0.01

² Emission factors from AP-42 Ch. 1.4 for natural gas combustion were used as they were determined to be most representative of the process. Ch. 5.3 (Natural Gas Processing) was consulted, however, factors contained there are appropriate for amine gas sweetening processes, which is not the case at the OXF 153 Pad. Also, Ch. 13.5 (Industrial Flares) was consulted, but since the control device in this case is an enclosed combustor vs. an elevated flare, these factors were also determined to be inappropriate.

Combustor Maximum Loading:

$$\frac{7849.17 \text{ scf}}{\text{hr}} \times \frac{\text{lb-mol}}{379.5 \text{ scf}} \times \frac{20.03 \text{ lb}}{\text{lb-mol}} = 414.2 \text{ lb/hr}$$

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Line Heater - 1.54 MMBtu/hr

Source Designation:	S016-S017, S032-S035
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,050
Heat Input (MMBtu/hr)	1.54
Fuel Consumption (MMscf/hr):	1.47E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^{1,4}	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
NO _x	100	0.15	0.64
CO	84	0.12	0.54
VOC	5.5	0.01	0.04
SO ₂	0.6	8.8E-04	3.9E-03
PM Total	7.6	0.01	0.05
PM Condensable	5.7	0.01	0.04
PM ₁₀ (Filterable)	1.9	2.8E-03	0.01
PM _{2.5} (Filterable)	1.9	2.8E-03	0.01
Lead	5.00E-04	7.3E-07	3.2E-06
CO ₂	117.0	180.00	788.38
CH ₄	2.21E-03	3.4E-03	1.5E-02
N ₂ O	2.21E-04	3.4E-04	1.5E-03

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Line Heater - 1.54 MMBtu/hr

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
HAPs:			
2-Methylnaphthalene	2.4E-05	3.5E-08	1.5E-07
3-Methylchloranthrene	1.8E-06	2.6E-09	1.2E-08
7,12-Dimethylbenz(a)anthracene	1.6E-05	2.3E-08	1.0E-07
Acenaphthene	1.8E-06	2.6E-09	1.2E-08
Acenaphthylene	1.8E-06	2.6E-09	1.2E-08
Anthracene	2.4E-06	3.5E-09	1.5E-08
Benz(a)anthracene	1.8E-06	2.6E-09	1.2E-08
Benzene	2.1E-03	3.1E-06	1.3E-05
Benzo(a)pyrene	1.2E-06	1.8E-09	7.7E-09
Benzo(b)fluoranthene	1.8E-06	2.6E-09	1.2E-08
Benzo(g,h,i)perylene	1.2E-06	1.8E-09	7.7E-09
Benzo(k)fluoranthene	1.8E-06	2.6E-09	1.2E-08
Chrysene	1.8E-06	2.6E-09	1.2E-08
Dibenzo(a,h) anthracene	1.2E-06	1.8E-09	7.7E-09
Dichlorobenzene	1.2E-03	1.8E-06	7.7E-06
Fluoranthene	3.0E-06	4.4E-09	1.9E-08
Fluorene	2.8E-06	4.1E-09	1.8E-08
Formaldehyde	7.5E-02	1.1E-04	4.8E-04
Hexane	1.8E+00	2.6E-03	1.2E-02
Indo(1,2,3-cd)pyrene	1.8E-06	2.6E-09	1.2E-08
Naphthalene	6.1E-04	8.9E-07	3.9E-06
Phenanthrene	1.7E-05	2.5E-08	1.1E-07
Pyrene	5.0E-06	7.3E-09	3.2E-08
Toluene	3.4E-03	5.0E-06	2.2E-05
Arsenic	2.0E-04	2.9E-07	1.3E-06
Beryllium	1.2E-05	1.8E-08	7.7E-08
Cadmium	1.1E-03	1.6E-06	7.1E-06
Chromium	1.4E-03	2.1E-06	9.0E-06
Cobalt	8.4E-05	1.2E-07	5.4E-07
Manganese	3.8E-04	5.6E-07	2.4E-06
Mercury	2.6E-04	3.8E-07	1.7E-06
Nickel	2.1E-03	3.1E-06	1.3E-05
Selenium	2.4E-05	3.5E-08	1.5E-07
Total HAP		2.8E-03	1.2E-02

¹ Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

² Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

³ Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁴ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Line Heater - 0.77 MMBtu/hr

Source Designation:	S018
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,050
Heat Input (MMBtu/hr)	0.77
Fuel Consumption (MMscf/hr):	7.33E-04
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^{1,4}	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
NO _x	100	0.07	0.32
CO	84	0.06	0.27
VOC	5.5	4.0E-03	0.02
SO ₂	0.6	4.4E-04	1.9E-03
PM Total	7.6	0.01	0.02
PM Condensable	5.7	4.2E-03	0.02
PM ₁₀ (Filterable)	1.9	1.4E-03	0.01
PM _{2.5} (Filterable)	1.9	1.4E-03	0.01
Lead	5.00E-04	3.7E-07	1.6E-06
CO ₂	117.0	90.00	394.19
CH ₄	2.21E-03	1.7E-03	7.4E-03
N ₂ O	2.21E-04	1.7E-04	7.4E-04

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Line Heater - 0.77 MMBtu/hr

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
HAPs:			
2-Methylnaphthalene	2.4E-05	1.8E-08	7.7E-08
3-Methylchloranthrene	1.8E-06	1.3E-09	5.8E-09
7,12-Dimethylbenz(a)anthracene	1.6E-05	1.2E-08	5.1E-08
Acenaphthene	1.8E-06	1.3E-09	5.8E-09
Acenaphthylene	1.8E-06	1.3E-09	5.8E-09
Anthracene	2.4E-06	1.8E-09	7.7E-09
Benz(a)anthracene	1.8E-06	1.3E-09	5.8E-09
Benzene	2.1E-03	1.5E-06	6.7E-06
Benzo(a)pyrene	1.2E-06	8.8E-10	3.9E-09
Benzo(b)fluoranthene	1.8E-06	1.3E-09	5.8E-09
Benzo(g,h,i)perylene	1.2E-06	8.8E-10	3.9E-09
Benzo(k)fluoranthene	1.8E-06	1.3E-09	5.8E-09
Chrysene	1.8E-06	1.3E-09	5.8E-09
Dibenzo(a,h) anthracene	1.2E-06	8.8E-10	3.9E-09
Dichlorobenzene	1.2E-03	8.8E-07	3.9E-06
Fluoranthene	3.0E-06	2.2E-09	9.6E-09
Fluorene	2.8E-06	2.1E-09	9.0E-09
Formaldehyde	7.5E-02	5.5E-05	2.4E-04
Hexane	1.8E+00	1.3E-03	5.8E-03
Indo(1,2,3-cd)pyrene	1.8E-06	1.3E-09	5.8E-09
Naphthalene	6.1E-04	4.5E-07	2.0E-06
Phenanthrene	1.7E-05	1.2E-08	5.5E-08
Pyrene	5.0E-06	3.7E-09	1.6E-08
Toluene	3.4E-03	2.5E-06	1.1E-05
Arsenic	2.0E-04	1.5E-07	6.4E-07
Beryllium	1.2E-05	8.8E-09	3.9E-08
Cadmium	1.1E-03	8.1E-07	3.5E-06
Chromium	1.4E-03	1.0E-06	4.5E-06
Cobalt	8.4E-05	6.2E-08	2.7E-07
Manganese	3.8E-04	2.8E-07	1.2E-06
Mercury	2.6E-04	1.9E-07	8.3E-07
Nickel	2.1E-03	1.5E-06	6.7E-06
Selenium	2.4E-05	1.8E-08	7.7E-08
Total HAP		1.4E-03	6.1E-03

¹ Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

² Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

³ Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁴ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EQT Production, LLC
Facility Name: OXF153 Wellpad
Project Description: G70-B Application

Line Heater - 1.15 MMBtu/hr

Source Designation:	S038
Fuel Used:	Natural Gas
Higher Heating Value (HHV) (Btu/scf):	1,050
Heat Input (MMBtu/hr)	1.15
Fuel Consumption (MMscf/hr):	1.10E-03
Potential Annual Hours of Operation (hr/yr):	8,760

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^{1, 4}	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
NO _x	100	0.11	0.48
CO	84	0.09	0.40
VOC	5.5	0.01	0.03
SO ₂	0.6	6.6E-04	2.9E-03
PM Total	7.6	0.01	0.04
PM Condensable	5.7	0.01	0.03
PM ₁₀ (Filterable)	1.9	2.1E-03	0.01
PM _{2.5} (Filterable)	1.9	2.1E-03	0.01
Lead	5.00E-04	5.5E-07	2.4E-06
CO ₂	117.0	134.55	589.32
CH ₄	2.21E-03	2.5E-03	1.1E-02
N ₂ O	2.21E-04	2.5E-04	1.1E-03

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Line Heater - 1.15 MMBtu/hr

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ¹	Potential Emissions	
		(lb/hr) ²	(tons/yr) ³
HAPs:			
2-Methylnaphthalene	2.4E-05	2.6E-08	1.2E-07
3-Methylchloranthrene	1.8E-06	2.0E-09	8.6E-09
7,12-Dimethylbenz(a)anthracene	1.6E-05	1.8E-08	7.7E-08
Acenaphthene	1.8E-06	2.0E-09	8.6E-09
Acenaphthylene	1.8E-06	2.0E-09	8.6E-09
Anthracene	2.4E-06	2.6E-09	1.2E-08
Benz(a)anthracene	1.8E-06	2.0E-09	8.6E-09
Benzene	2.1E-03	2.3E-06	1.0E-05
Benzo(a)pyrene	1.2E-06	1.3E-09	5.8E-09
Benzo(b)fluoranthene	1.8E-06	2.0E-09	8.6E-09
Benzo(g,h,i)perylene	1.2E-06	1.3E-09	5.8E-09
Benzo(k)fluoranthene	1.8E-06	2.0E-09	8.6E-09
Chrysene	1.8E-06	2.0E-09	8.6E-09
Dibenzo(a,h)anthracene	1.2E-06	1.3E-09	5.8E-09
Dichlorobenzene	1.2E-03	1.3E-06	5.8E-06
Fluoranthene	3.0E-06	3.3E-09	1.4E-08
Fluorene	2.8E-06	3.1E-09	1.3E-08
Formaldehyde	7.5E-02	8.2E-05	3.6E-04
Hexane	1.8E+00	2.0E-03	8.6E-03
Indo(1,2,3-cd)pyrene	1.8E-06	2.0E-09	8.6E-09
Naphthalene	6.1E-04	6.7E-07	2.9E-06
Phenanthrene	1.7E-05	1.9E-08	8.2E-08
Pyrene	5.0E-06	5.5E-09	2.4E-08
Toluene	3.4E-03	3.7E-06	1.6E-05
Arsenic	2.0E-04	2.2E-07	9.6E-07
Beryllium	1.2E-05	1.3E-08	5.8E-08
Cadmium	1.1E-03	1.2E-06	5.3E-06
Chromium	1.4E-03	1.5E-06	6.7E-06
Cobalt	8.4E-05	9.2E-08	4.0E-07
Manganese	3.8E-04	4.2E-07	1.8E-06
Mercury	2.6E-04	2.8E-07	1.2E-06
Nickel	2.1E-03	2.3E-06	1.0E-05
Selenium	2.4E-05	2.6E-08	1.2E-07
Total HAP		2.1E-03	9.1E-03

¹ Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

² Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

³ Annual Emissions (tons/yr)_{Potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁴ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EQT Production, LLC
Facility Name: OXF153 Wellpad
Project Description: G70-B Application

Thermoelectric Generator

Source Designation: S019-S020, S036
 Fuel Used: Natural Gas
 Higher Heating Value (HHV) (Btu/scf): 1,050
 Heat Input (MMBtu/hr)¹ 0.013
 Fuel Consumption (MMscf/hr): 1.23E-05
 Potential Annual Hours of Operation (hr/yr): 8,760

¹ Global Thermoelectric specification sheet states 311 ft³/day at 1000 BTU/ft³.

Criteria and Manufacturer Specific Pollutant Emission Rates:

Pollutant	Emission Factor (lb/MMscf) ^{2,5}	Potential Emissions	
		(lb/hr) ³	(tons/yr) ⁴
NO _x	100	1.2E-03	0.01
CO	84	1.0E-03	4.5E-03
VOC	5.5	6.8E-05	3.0E-04
SO ₂	0.6	7.4E-06	3.2E-05
PM Total	7.6	9.4E-05	4.1E-04
PM Condensable	5.7	7.0E-05	3.1E-04
PM ₁₀ (Filterable)	1.9	2.3E-05	1.0E-04
PM _{2.5} (Filterable)	1.9	2.3E-05	1.0E-04
Lead	5.00E-04	6.2E-09	2.7E-08
CO ₂	116.9	1.51	6.64
CH ₄	2.21E-03	2.9E-05	1.3E-04
N ₂ O	2.21E-04	2.9E-06	1.3E-05

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Thermoelectric Generator

Hazardous Air Pollutant (HAP) Potential Emissions:

Pollutant	Emission Factor (lb/MMscf) ²	Potential Emissions	
		(lb/hr) ³	(tons/yr) ⁴
HAPs:			
2-Methylnaphthalene	2.4E-05	3.0E-10	1.3E-09
3-Methylchloranthrene	1.8E-06	2.2E-11	9.7E-11
7,12-Dimethylbenz(a)anthracene	1.6E-05	2.0E-10	8.6E-10
Acenaphthene	1.8E-06	2.2E-11	9.7E-11
Acenaphthylene	1.8E-06	2.2E-11	9.7E-11
Anthracene	2.4E-06	3.0E-11	1.3E-10
Benz(a)anthracene	1.8E-06	2.2E-11	9.7E-11
Benzene	2.1E-03	2.6E-08	1.1E-07
Benzo(a)pyrene	1.2E-06	1.5E-11	6.5E-11
Benzo(b)fluoranthene	1.8E-06	2.2E-11	9.7E-11
Benzo(g,h,i)perylene	1.2E-06	1.5E-11	6.5E-11
Benzo(k)fluoranthene	1.8E-06	2.2E-11	9.7E-11
Chrysene	1.8E-06	2.2E-11	9.7E-11
Dibenzo(a,h) anthracene	1.2E-06	1.5E-11	6.5E-11
Dichlorobenzene	1.2E-03	1.5E-08	6.5E-08
Fluoranthene	3.0E-06	3.7E-11	1.6E-10
Fluorene	2.8E-06	3.5E-11	1.5E-10
Formaldehyde	7.5E-02	9.3E-07	4.1E-06
Hexane	1.8E+00	2.2E-05	9.7E-05
Indo(1,2,3-cd)pyrene	1.8E-06	2.2E-11	9.7E-11
Naphthalene	6.1E-04	7.5E-09	3.3E-08
Phenanthrene	1.7E-05	2.1E-10	9.2E-10
Pyrene	5.0E-06	6.2E-11	2.7E-10
Toluene	3.4E-03	4.2E-08	1.8E-07
Arsenic	2.0E-04	2.5E-09	1.1E-08
Beryllium	1.2E-05	1.5E-10	6.5E-10
Cadmium	1.1E-03	1.4E-08	5.9E-08
Chromium	1.4E-03	1.7E-08	7.6E-08
Cobalt	8.4E-05	1.0E-09	4.5E-09
Manganese	3.8E-04	4.7E-09	2.1E-08
Mercury	2.6E-04	3.2E-09	1.4E-08
Nickel	2.1E-03	2.6E-08	1.1E-07
Selenium	2.4E-05	3.0E-10	1.3E-09
Total HAP		2.3E-05	1.0E-04

² Emission factors from AP-42 Section 1.4 "Natural Gas Combustion" Tables 1.4-1, 1.4-2, & 1.4-3

³ Emission Rate (lb/hr) = Rated Capacity (MMscf/hr) × Emission Factor (lb/MMscf).

⁴ Annual Emissions (tons/yr)_{potential} = (lb/hr)_{Emissions} × (Maximum Allowable Operating Hours, 8760 hr/yr) × (1 ton/2000 lb).

⁵ GHG Emission factors from Tables C-1 and C-2, 40 CFR 98, Subpart C.

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Liquid Loading

Throughput 22,398,663 gal/yr
 Capture Efficiency 70% non-tested tanker trucks
 Control Efficiency 98% Combustor destruction efficiency

Liquid Loading Emissions

	Uncontrolled Emissions		Uncaptured Emissions		Controlled Emissions	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Propane	56.081	14.581	16.824	4.374	0.785	0.204
Isobutane	13.227	3.439	3.968	1.032	0.185	0.048
n-Butane	24.718	6.427	7.415	1.928	0.346	0.090
Isopentane	9.287	2.415	2.786	0.724	0.130	0.034
n-Pentane	7.444	1.936	2.233	0.581	0.104	0.027
n-Hexane	1.939	0.504	0.582	0.151	0.027	0.007
Cyclohexane	0.083	0.022	0.025	0.006	0.001	0.000
Methylcyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
n-Heptane	2.575	0.669	0.772	0.201	0.036	0.009
n-Octane	0.825	0.215	0.248	0.064	0.012	0.003
n-Nonane	0.081	0.021	0.024	0.006	0.001	0.000
n-Decane	0.179	0.047	0.054	0.014	0.003	0.001
n-Undecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Dodecane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Triethylene Glycol	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cyclopentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Isohexane	2.947	0.766	0.884	0.230	0.041	0.011
3-Methylpentane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Neohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2,3-Dimethylbutane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Methylcyclohexane	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Decane, 2-Methyl-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Benzene	0.099	0.026	0.030	0.008	0.001	0.000
Toluene	0.126	0.033	0.038	0.010	0.002	0.000
Ethylbenzene	0.008	0.002	0.002	0.001	0.000	0.000
m-Xylene	0.054	0.014	0.016	0.004	0.001	0.000
Isooctane	0.005	0.001	0.002	0.000	0.000	0.000
Total VOC Emissions:	119.678	31.116	35.903	9.335	1.675	0.436
Total HAP Emissions:	2.231	0.580	0.669	0.174	0.031	0.008

¹ Uncontrolled emissions calculation using Promax (sum of produced water and condensate).

² Hourly emissions assume two hours of loading per day, five days per week.

Company Name: EOT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Fugitive Emissions

Fugitive Emissions from Component Leaks

Facility Equipment Type ¹	Valves	Connectors	Open-Ended Lines	Pressure Relief Devices
Wellhead	8	38	0.5	0
Separators	1	6	0	0
Meters/Piping	12	45	0	0
Compressors	12	57	0	0
In-line heaters	14	65	2	1
Dehydrators	24	90	2	2

¹ Table W-1B to Subpart W of Part 98 —Default Average Component Counts for Major Onshore Natural Gas Production

Fugitive VOC/Total Emissions from Component Leaks

Equipment Type	Service	Emission Factors ¹ (kg/hr/source)	Facility Equipment Count ² (units)	TOC Annual Fugitive Emissions (tpy)	Weight Fraction VOC	Weight Fraction HAP	VOC Emissions ³ (tpy)	HAP Emissions ³ (tpy)
Pumps	Light Liquid	0.01990	17	3.17	1.00	0.02	3.17	0.06
Valves	Gas	0.00597	387	22.31	0.14	2.6E-03	3.21	0.06
Pressure Relief Valves	Gas	0.10400	33	32.64	0.14	2.6E-03	4.69	0.08
Open-Ended Lines	All	0.00170	27	0.44	0.14	2.6E-03	0.06	1.1E-03
Connectors	All	0.00183	1,712	30.24	0.14	2.6E-03	4.35	0.08
Pneumatic Devices ⁴	Gas	13.5	35	---	---	---	5.24	0.09
Emission Totals:				88.80	---	---	20.73	0.37

¹ U.S. EPA. Office of Air Quality Planning and Standards. *Protocol for Equipment Leak Emission Estimates*. Table 2-1. (Research Triangle Park, NC: U.S. EPA EPA-453/R-95-017, 1995). SOCOMI factors were used as it was representative of natural gas liquids extraction. The pneumatic controller value is from 40 CFR 98 Subpart W, Table W-1A. Pneumatic assumes operation 1/3 of the year.

² Assumes one pump for each tank and one meter per wellhead. Pressure relief valves count includes one Emergency Pressure Relief valve and one lock-down hatch for each storage tank. Pneumatic devices assume 5 per well. A 50% compliance margin is added to the component counts based on Subpart W counts.

³ Potential emissions VOC/HAP (tpy) = Emission factor (kg/hr/source) * Number of Sources * Weight % VOC/HAP x 2.2046 (lb/kg) x 8,760 (hr/yr) ÷ 2,000 (lb/ton)

⁴ 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)

Company Name: EOT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Fugitive Emissions

Fugitive Emissions from Venting

Source	Volume (scf/yr)	VOC Emissions (tpy)	Benzene Emissions (tpy)	Toluene Emissions (tpy)	Ethylbenzene Emissions (tpy)	Xylene Emissions (tpy)	n-Hexane Emissions (tpy)	HAP Emissions (tpy)	CH ₄ Emissions (tpy)	CO ₂ Emissions (tpy)	CO ₂ e Emissions (tpy)
Miscellaneous Gas Venting	1,000,000	3.80	5.5E-04	2.3E-03	5.6E-04	4.3E-03	0.02	0.07	16.95	0.12	423.89
Total		3.80	5.5E-04	2.3E-03	5.6E-04	4.3E-03	0.02	0.07	16.95	0.12	423.89

¹ VOC and HAP emissions are based on sum of the fractions of the pollutants in the site-specific gas analysis in those classifications, and are calculated in accordance with standard conversion methodology and factors.

² CH₄ and CO₂ emissions are based on fractions of these pollutants in the site-specific gas analysis, and are calculated in accordance with Equations W-35 and W-36 in Subpart W of 40 CFR 98.

³ GHG (CO₂e) is carbon dioxide equivalent, which is the summation of CO₂ (GWP = 1) + CH₄ (GWP = 25) + N₂O (GWP = 298).

⁴ Total gas volume emitted (and thus subsequent emissions values) is estimated based on engineering judgement and is conservative.

⁵ Total gas volume emitted includes blowdowns and other venting activities.

⁶ 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)

⁷ Potential emissions CH₄/CO₂ (tpy) = Gas volume vented (scf/yr) * Mole % CH₄/CO₂ ÷ 100 * Density CH₄/CO₂ (kg/scf) * 1,000 (g/kg) ÷ 453.6 (g/lb) ÷ 2,000 (lb/ton)

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Haul Roads

Estimated Potential Road Fugitive Emissions

Unpaved Road Emissions

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

	PM	PM₁₀	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)	Trips Per Year	Mileage Per Year	Control (%)	Emissions (tpy)		
								PM	PM ₁₀	PM _{2.5}
Liquids Hauling	20	40	30	1.54	5,600	17,266	0	36.98	9.42	0.94
Employee Vehicles	3	3	3	1.54	200	617	0	0.47	0.12	0.01
Total Potential Emissions								37.45	9.54	0.95

Company Name: EQT Production, LLC
 Facility Name: OXF153 Wellpad
 Project Description: G70-B Application

Gas Analysis

Sample Location: OXF 153 Gas Analysis - 512445
 Sample Date: 10/28/2014
 HHV (Btu/scf): 1,216 Note: A conservatively low BTU content of 1,050 was used for calculations

Constituent	Natural Gas Stream Speciation (Mole %)	Molecular Weight	Molar Weight	Average Weight Fraction	Natural Gas Stream Speciation (Wt. %)
Carbon Dioxide	0.201	44.01	0.09	0.00	0.442
Nitrogen	0.495	28.01	0.14	0.01	0.693
Methane	80.093	16.04	12.85	0.64	64.151
Ethane	13.542	30.07	4.07	0.20	20.334
Propane	3.792	44.10	1.67	0.08	8.350
Isobutane	0.451	58.12	0.26	0.01	1.308
n-Butane	0.826	58.12	0.48	0.02	2.396
Isopentane	0.209	72.15	0.15	0.01	0.751
n-Pentane	0.177	72.15	0.13	0.01	0.638
Cyclopentane	<0.001	70.1	0.0	0.0	0.000
n-Hexane	0.017	86.18	0.01	0.00	0.072
Cyclohexane	0.003	84.16	0.00	0.00	0.011
Other Hexanes	0.031	86.18	0.03	0.00	0.135
Heptanes	0.032	100.21	0.03	0.00	0.162
Methylcyclohexane	<0.001	98.19	0.00	0.00	0.000
2,2,4-Trimethylpentane	0.027	114.23	0.03	0.00	0.154
Benzene*	0.001	78.11	0.00	0.00	0.002
Toluene*	0.002	92.14	0.00	0.00	0.009
Ethylbenzene*	0.000	106.17	0.00	0.00	0.002
Xylenes*	0.003	106.16	0.00	0.00	0.016
C8 + Heavies	0.057	130.80	0.08	0.00	0.375
Totals	99.959		20.03	1.00	100

TOC (Total)	99.26	98.87
VOC (Total)	5.63	14.38
HAP (Total)	0.05	0.26

*Hexanes plus speciated based on an 11/13/2014 analysis from SMI-27

EQT Production
OXF-153

Names	Units	LPT Gas to VRU	PW Tank Flash	Condensate Flash	Combined Flash Vapor
Temperature	°F	110	70°	70	69.8
Pressure	psig	30	0.620°	0.620°	0.620°
Mole Fraction Vapor	%	100	100	100	100
Std Vapor Volumetric Flow	MMSCFD	56.881	5.7191	3.5339	6.263
Net Ideal Gas Heating Value	Btu/ft³	1759.7	1018	2073.7	1421.2
Molecular Weight	(lb/mol)	33.191	19.493	39.431	27.084
Methane(Mole Fraction)	%	40.619	80.454	18.612	57.217
Ethane(Mole Fraction)	%	24.881	11.439	30.647	18.775
Propane(Mole Fraction)	%	16.56	2.8454	25.226	11.456
Isobutane(Mole Fraction)	%	3.5339	0.14689	5.348	2.1334
n-Butane(Mole Fraction)	%	6.9157	0.36254	10.262	4.2665
Isopentane(Mole Fraction)	%	2.3903	0.09252	3.2184	1.3972
n-Pentane(Mole Fraction)	%	2.0295	0.070562	2.6429	1.067
n-Hexane(Mole Fraction)	%	0.54288	0.0072782	0.14644	0.23624
Benzene(Mole Fraction)	%	0.021909	0.000666	0.05178	0.02117
n-Heptane(Mole Fraction)	%	0.79304	0.0078362	0.77783	0.3018
n-Octane(Mole Fraction)	%	0.21455	0.002061	0.20712	0.08975
n-Nonane(Mole Fraction)	%	0.029397	0.0005536	0.021488	0.008974
n-Decane(Mole Fraction)	%	0.072889	0.0009792	0.040083	0.016203
Toluene(Mole Fraction)	%	0.048879	0.0016683	0.040582	0.016021
m-Xylene(Mole Fraction)	%	0.024623	0.0015151	0.020372	0.017145
Ethylbenzene(Mole Fraction)	%	0.033372	0.002477	0.002875	0.00287

Properties	Pipeline
Std Vapor Volumetric Flow (Total)	17 MMSCFD
Pressure(Total)	435 psig
Temperature(Total)	91 °F

Properties	Reservoir Gas
Std Vapor Volumetric Flow (Total)	17° MMSCFD
Pressure(Total)	700° psig
Temperature(Total)	75° °F
Std Liquid Volumetric Flow (Light Liquid)	36.6 bbl/d

Properties	Reservoir Water
Pressure(Total)	700° psig
Temperature(Total)	75° °F
Std Liquid Volumetric Flow (Total)	1300° bbl/d

Properties	Reservoir Oil
Pressure(Total)	700° psig
Temperature(Total)	75° °F
Std Liquid Volumetric Flow (Total)	240° bbl/d

Properties	Produced Water
Std Liquid Volumetric Flow (Total)	1296.1 bbl/d
API Gravity(Total)	10.015

Properties	Sales Oil
Std Liquid Volumetric Flow (Total)	165 bbl/d
API Gravity(Total)	68.69

Tank loss calculations for "Combined PW".
Total working and breathing losses from the Vertical Cylinder are 0.4565 ton/yr.
Flashing losses are 5.305 ton/yr.
Loading losses are 1.202 ton/yr of loaded liquid.
Warning: expansion coefficient is negative. Verify vapor pressure of stored fluid

Tank loss calculations for "LPT Condensate".
Total working and breathing losses from the Vertical Cylinder are 9.728 ton/yr.
Flashing losses are 39.4 ton/yr.
Loading losses are 29.91 ton/yr of loaded liquid.

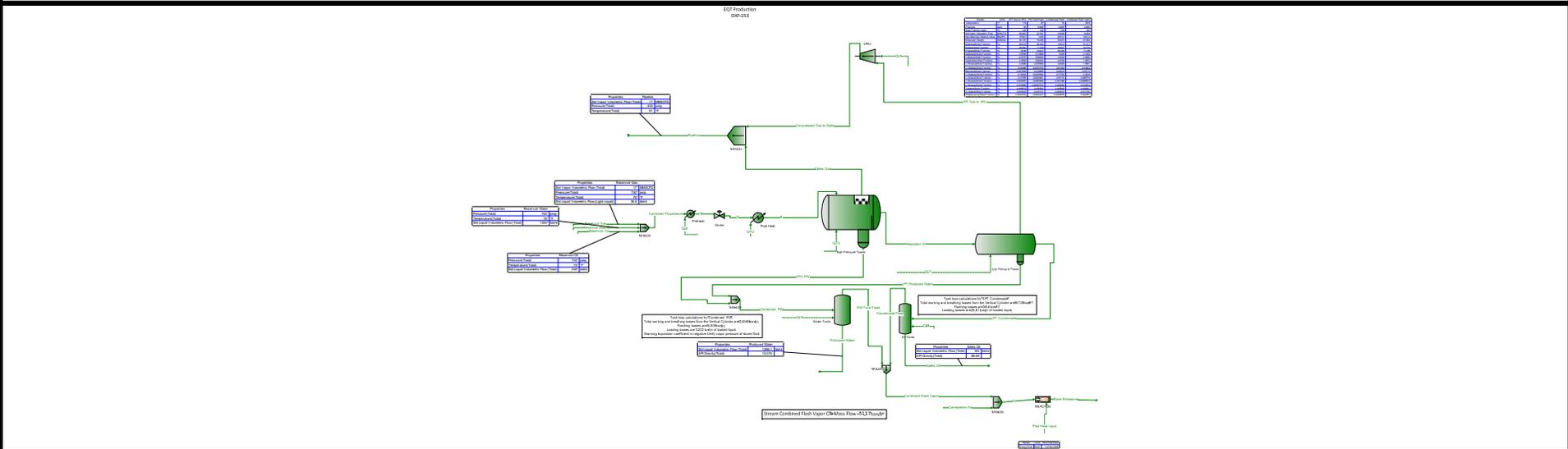
Stream Combined Flash Vapor C3+ Mass Flow =51.17 ton/yr

Names	Units	Pilot Heat Input
Energy Rate	Btu/h	547964000



OXF-153 Plant Schematic

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	



* User Specified Values
 ? Extrapolated or Approximate Values

Process Streams Report All Streams Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Connections

	Combined PW	Combined Flash Vapor	Pipeline	Produced Water	Reservoir Gas
From Block	MIX-104	MIX-100	MIX-101	Water Tanks	--
To Block	Water Tanks	MIX-105	--	--	MIX-102

Stream Composition

Mass Flow	Combined PW lb/h	Combined Flash Vapor lb/h	Pipeline lb/h	Produced Water lb/h	Reservoir Gas lb/h
Nitrogen	0.0505644	0.0513592	269.903	0.00106618	269.955 *
Methane	8.45937	9.32552	24463.4	0.35463	24413.5 *
CO2	0.7852	0.437994	130.218	0.37345	129.804 *
Ethane	2.27065	5.73558	6946.71	0.110795	6862.13 *
Propane	0.863903	5.13237	3022.88	0.0477698	2920.59 *
Isobutane	0.0547749	1.25976	574.895	0.00112663	542.95 *
n-Butane	0.223159	2.51346	1013.24	0.0105451	928.476 *
Isopentane	0.0435726	0.943516	367.876	0.00133889	317.785 *
n-Pentane	0.0357691	0.774573	303.497	0.00107367	243.662 *
n-Hexane	0.00398757	0.20946	92.3351	5.07137E-05	49.9006 *
Methylcyclopentane	0	0	0	0	0 *
Benzene	0.0697373	0.0168	3.27559	0.0605722	1.45908 *
Cyclohexane	0.00284261	0.0127022	4.55904	0.000448543	7.8602 *
n-Heptane	0.00500449	0.307237	163.099	7.38578E-05	112.302 *
n-Octane	0.00149328	0.104185	67.0183	1.41613E-05	27.7382 *
n-Nonane	0.000484587	0.0111636	8.39273	1.45761E-05	31.1443 *
n-Decane	0.000892057	0.0263134	24.9968	2.03017E-05	151.49 *
n-Undecane	0	0	0	0	0 *
Dodecane	0	0	0	0	0 *
Water	18908.2	0.283309	58.8894	18907.9	0 *
Triethylene Glycol	0	0	0	0	0 *
Oxygen	0	0	0	0	0 *
Argon	0	0	0	0	0 *
Carbon Monoxide	0	0	0	0	0 *
Cyclopentane	0	0	0	0	0 *
Isohexane	0.0065133	0.311423	131.705	9.01026E-05	93.3624 *
3-Methylpentane	0	0	0	0	0 *
Neohexane	0	0	0	0	0 *
2,3-Dimethylbutane	0	0	0	0	0 *
Methylcyclohexane	0	0	0	0	0 *
Isooctane	1.71297E-06	0.000628465	0.331864	2.70775E-09	0 *
Decane, 2-Methyl-	0	0	0	0	0 *
Toluene	0.13705	0.0380064	8.85276	0.116416	5.16325 *
m-Xylene	0.0674171	0.0184921	5.33758	0.057317	11.8985 *
Ethylbenzene	0.00865059	0.00254221	0.724576	0.00728551	1.98309 *

Volumetric Flow	Combined PW gpm	Combined Flash Vapor ft ³ /h	Pipeline ft ³ /h	Produced Water gpm	Reservoir Gas ft ³ /h
Nitrogen	0.000137353	0.681876	131.47	2.84757E-06	83.3356
Methane	0.0419634	215.403	19199.7	0.00173321	11360.1
CO2	0.00124484	3.67676	34.6212	0.000584154	19.0031
Ethane	0.00767939	70.1639	2437.44	0.000370363	1186.01
Propane	0.00249619	42.5564	613.429	0.000136629	227.578
Isobutane	0.000144625	7.88702	77.1612	2.94667E-06	20.6322
n-Butane	0.000581697	15.7121	126.743	2.72345E-05	25.783
Isopentane	0.000105695	4.72789	30.5049	3.21942E-06	1.25375
n-Pentane	8.69261E-05	3.8775	24.2141	2.5867E-06	0.225588
n-Hexane	9.20734E-06	0.872178	4.47121	1.16132E-07	-0.719707
Methylcyclopentane	0	0	0	0	0
Benzene	0.000131022	0.0775463	0.213887	0.000112963	-0.00917929
Cyclohexane	5.78655E-06	0.0542916	0.246992	9.06189E-07	-0.0815869

* User Specified Values
? Extrapolated or Approximate Values

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Process Streams Report
All Streams
 Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Volumetric Flow	Combined PW gpm	Combined Flash Vapor ft ³ /h	Pipeline ft ³ /h	Produced Water gpm	Reservoir Gas ft ³ /h
n-Heptane	1.11767E-05	1.09361	4.15837	1.6363E-07	-2.18547
n-Octane	3.22932E-06	0.323336	0.690271	3.03851E-08	-0.322037
n-Nonane	1.02303E-06	0.030644	-0.0291311	3.05351E-08	-0.000654986
n-Decane	1.85329E-06	0.0647052	-0.332436	4.18557E-08	1.3985
n-Undecane	0	0	0	0	0
Dodecane	0	0	0	0	0
Water	37.9663	5.81659	39.2603	37.8532	0
Triethylene Glycol	0	0	0	0	0
Oxygen	0	0	0	0	0
Argon	0	0	0	0	0
Carbon Monoxide	0	0	0	0	0
Cyclopentane	0	0	0	0	0
Isohexane	1.50622E-05	1.2985	6.94246	2.06626E-07	-1.06181
3-Methylpentane	0	0	0	0	0
Neohexane	0	0	0	0	0
2,3-Dimethylbutane	0	0	0	0	0
Methylcyclohexane	0	0	0	0	0
Isooctane	3.66695E-09	0.00196096	0.00744849	5.75009E-12	0
Decane, 2-Methyl-	0	0	0	0	0
Toluene	0.000254829	0.147745	0.333464	0.000214919	-0.0717476
m-Xylene	0.000124323	0.062006	0.10329	0.000104957	-0.0772879
Ethylbenzene	1.58673E-05	0.00853172	0.0153776	1.32701E-05	-0.0150634

Mole Fraction	Combined PW	Combined Flash Vapor	Pipeline	Produced Water	Reservoir Gas
Nitrogen	1.7187E-06	0.00180458	0.00511864	3.62613E-08	0.00516277 *
Methane	0.000502098	0.57217	0.810137	2.10613E-05	0.815296 *
CO2	1.69885E-05	0.00979591	0.00157195	8.08476E-06	0.00158015 *
Ethane	7.19037E-05	0.18775	0.122736	3.5106E-06	0.122263 *
Propane	1.86548E-05	0.114563	0.0364198	1.03214E-06	0.0354839 *
Isobutane	8.97348E-07	0.0213337	0.00525484	1.8468E-08	0.00500465 *
n-Butane	3.65589E-06	0.042565	0.00926157	1.72859E-07	0.00855825 *
Isopentane	5.7505E-07	0.0128719	0.00270885	1.76806E-08	0.00235972 *
n-Pentane	4.72063E-07	0.0105671	0.0022348	1.41782E-08	0.00180932 *
n-Hexane	4.40602E-08	0.00239244	0.000569241	5.6069E-10	0.000310226 *
Methylcyclopentane	0	0	0	0	0 *
Benzene	8.50098E-07	0.000211698	2.22784E-05	7.38818E-07	1.00073E-05 *
Cyclohexane	3.21614E-08	0.000148559	2.87795E-05	5.07787E-09	5.00365E-05 *
n-Heptane	4.75559E-08	0.003018	0.000864744	7.02265E-10	0.000600438 *
n-Octane	1.24477E-08	0.000897745	0.000311696	1.18116E-10	0.000130095 *
n-Nonane	3.59765E-09	8.56743E-05	3.47649E-05	1.0828E-10	0.000130095 *
n-Decane	5.96987E-09	0.000182033	9.3336E-05	1.35945E-10	0.000570416 *
n-Undecane	0	0	0	0	0 *
Dodecane	0	0	0	0	0 *
Water	0.99938	0.015479	0.00173664	0.999964	0 *
Triethylene Glycol	0	0	0	0	0 *
Oxygen	0	0	0	0	0 *
Argon	0	0	0	0	0 *
Carbon Monoxide	0	0	0	0	0 *
Cyclopentane	0	0	0	0	0 *
Isohexane	7.1968E-08	0.00355705	0.000811955	9.96173E-10	0.000580424 *
3-Methylpentane	0	0	0	0	0 *
Neohexane	0	0	0	0	0 *
2,3-Dimethylbutane	0	0	0	0	0 *
Methylcyclohexane	0	0	0	0	0 *
Isooctane	1.42789E-11	5.41538E-06	1.54347E-06	2.25847E-14	0 *
Decane, 2-Methyl-	0	0	0	0	0 *
Toluene	1.41632E-06	0.000406012	5.10447E-05	1.2038E-06	3.00219E-05 *
m-Xylene	6.04658E-07	0.000171446	2.67101E-05	5.14378E-07	6.00438E-05 *

* User Specified Values

? Extrapolated or Approximate Values

Process Streams Report
All Streams
 Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

	Combined PW	Combined Flash Vapor	Pipeline	Produced Water	Reservoir Gas
Mole Fraction					
Ethylbenzene	7.75863E-08	2.35696E-05	3.62589E-06	6.53821E-08	1.00073E-05 *

Stream Properties

Property	Units	Combined PW	Combined Flash Vapor	Pipeline	Produced Water	Reservoir Gas
Temperature	°F	90	69.8002	90.5071	70	75 *
Pressure	psig	435	0.625	435	0.625	700 *
Mole Fraction Vapor		0	1	0.999987	0	0.997549
Mole Fraction Light Liquid		1	0	1.28469E-05	1	0.00245098
Mole Fraction Heavy Liquid		0	0	0	0	0
Molecular Weight	lb/lbmol	18.0166	27.0841	20.0086	18.0157	19.8885
Mass Density	lb/ft ³	62.0447	0.0734676	1.65684	62.2745	2.87315
Mass Flow	lb/h	18921.3	27.5164	37662.1	18909.1	37123.2
Vapor Volumetric Flow	ft ³ /h	304.962	374.538	22731.4	303.641	12920.7
Liquid Volumetric Flow	gpm	38.0213	46.6956	2834.04	37.8566	1610.9
Std Vapor Volumetric Flow	MMSCFD	9.56498	0.009253	17.1432	9.55927	17 *
Std Liquid Volumetric Flow	sgpm	37.8754	0.137968	224.221	37.8031	222.056
Specific Gravity		0.994801	0.93514		0.998484	
API Gravity		10.0625			10.0155	
Net Ideal Gas Heating Value	Btu/ft ³	0.647296	1421.21	1095.48	0.0386261	1091.14
Net Liquid Heating Value	Btu/lb	-1045.43	19801.8	20722.8	-1058.89	20768.2

Remarks

Process Streams Report
All Streams
 Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Connections

	Reservoir Oil	Sales Oil		
From Block	--	Oil Tanks		
To Block	MIX-102	--		

Stream Composition

Mass Flow	Reservoir Oil lb/h	Sales Oil lb/h		
Nitrogen	0 *	0.000116033		
Methane	59.8435 *	0.264755		
CO2	1.24138 *	0.016098		
Ethane	95.2738 *	4.8486		
Propane	129.715 *	22.2445		
Isobutane	49.6063 *	16.3999		
n-Butane	132.34 *	45.0477		
Isopentane	99.4266 *	48.3907		
n-Pentane	113.987 *	53.3766		
n-Hexane	94.148 *	51.504		
Methylcyclopentane	0 *	0		
Benzene	3.86147 *	1.96759		
Cyclohexane	0 *	3.28801		
n-Heptane	294.646 *	243.542		
n-Octane	317.057 *	277.673		
n-Nonane	70.8996 *	93.64		
n-Decane	592.197 *	718.664		
n-Undecane	0 *	0		
Dodecane	0 *	0		
Water	0 *	0.00912149		
Triethylene Glycol	0 *	0		
Oxygen	0 *	0		
Argon	0 *	0		
Carbon Monoxide	0 *	0		
Cyclopentane	0 *	0		
Isohexane	93.1957 *	54.5415		
3-Methylpentane	0 *	0		
Neohexane	0 *	0		
2,3-Dimethylbutane	0 *	0		
Methylcyclohexane	0 *	0		
Isooctane	0.79721 *	0.464717		
Decane, 2-Methyl-	0 *	0		
Toluene	19.5592 *	15.7152		
m-Xylene	24.0803 *	30.5655		
Ethylbenzene	2.31542 *	3.5641		

Volumetric Flow	Reservoir Oil gpm	Sales Oil gpm		
Nitrogen	0	3.59132E-07		
Methane	0.412124	0.00149633		
CO2	0.00204116	1.81916E-05		
Ethane	0.425665	0.0194125		
Propane	0.496282	0.080525		
Isobutane	0.175064	0.0565407		
n-Butane	0.452795	0.150716		
Isopentane	0.317105	0.153969		
n-Pentane	0.360783	0.168453		
n-Hexane	0.281502	0.155446		
Methylcyclopentane	0	0		
Benzene	0.00848843	0.00437021		
Cyclohexane	0	0.0084147		
n-Heptane	0.847891	0.713638		
n-Octane	0.878661	0.788043		
n-Nonane	0.190918	0.259284		

* User Specified Values

? Extrapolated or Approximate Values

Process Streams Report
All Streams
 Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Volumetric Flow	Reservoir Oil gpm	Sales Oil gpm			
n-Decane	1.56436	1.95815			
n-Undecane	0	0			
Dodecane	0	0			
Water	0	-1.41032E-05			
Triethylene Glycol	0	0			
Oxygen	0	0			
Argon	0	0			
Carbon Monoxide	0	0			
Cyclopentane	0	0			
Isohexane	0.281651	0.16643			
3-Methylpentane	0	0			
Neohexane	0	0			
2,3-Dimethylbutane	0	0			
Methylcyclohexane	0	0			
Isooctane	0.00223793	0.00133959			
Decane, 2-Methyl-	0	0			
Toluene	0.0431888	0.0355737			
m-Xylene	0.053148	0.069664			
Ethylbenzene	0.00509254	0.00811362			

Mole Fraction	Reservoir Oil	Sales Oil			
Nitrogen	0 *	2.65785E-07			
Methane	0.12828 *	0.00105898			
CO2	0.00097 *	2.34715E-05			
Ethane	0.10896 *	0.0103469			
Propane	0.10116 *	0.03237			
Isobutane	0.02935 *	0.0181057			
n-Butane	0.0783 *	0.049733			
Isopentane	0.04739 *	0.0430376			
n-Pentane	0.05433 *	0.0474719			
n-Hexane	0.03757 *	0.0383506			
Methylcyclopentane	0 *	0			
Benzene	0.0017 *	0.00161633			
Cyclohexane	0 *	0.00250695			
n-Heptane	0.10112 *	0.155959			
n-Octane	0.09545 *	0.155982			
n-Nonane	0.01901 *	0.0468491			
n-Decane	0.14313 *	0.324109			
n-Undecane	0 *	0			
Dodecane	0 *	0			
Water	0 *	3.24892E-05			
Triethylene Glycol	0 *	0			
Oxygen	0 *	0			
Argon	0 *	0			
Carbon Monoxide	0 *	0			
Cyclopentane	0 *	0			
Isohexane	0.03719 *	0.0406124			
3-Methylpentane	0 *	0			
Neohexane	0 *	0			
2,3-Dimethylbutane	0 *	0			
Methylcyclohexane	0 *	0			
Isooctane	0.00024 *	0.000261053			
Decane, 2-Methyl-	0 *	0			
Toluene	0.0073 *	0.0109445			
m-Xylene	0.0078 *	0.0184742			
Ethylbenzene	0.00075 *	0.00215419			

Process Streams Report
All Streams
 Tabulated by Total Phase

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Stream Properties

Property	Units	Reservoir Oil	Sales Oil			
Temperature	°F	75 *	70 *			
Pressure	psig	700 *	0.625			
Mole Fraction Vapor		0	0			
Mole Fraction Light Liquid		1	1			
Mole Fraction Heavy Liquid		0	0			
Molecular Weight	lb/lbmol	75.4549	108.169			
Mass Density	lb/ft ³	40.2355	43.7889			
Mass Flow	lb/h	2194.19	1685.73			
Vapor Volumetric Flow	ft ³ /h	54.5336	38.4967			
Liquid Volumetric Flow	gpm	6.799	4.79959			
Std Vapor Volumetric Flow	MMSCFD	0.264845	0.141935			
Std Liquid Volumetric Flow	sgpm	7 *	4.81045			
Specific Gravity		0.645121	0.702094			
API Gravity		84.9809	68.692			
Net Ideal Gas Heating Value	Btu/ft ³	3859.23	5480.12			
Net Liquid Heating Value	Btu/lb	19255	19067			

Remarks

Energy Stream Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	
Flowsheet:	OXF-153	

Energy Streams

Energy Stream	Energy Rate	Power	From Block	To Block
Pilot Heat Input	547935 * Btu/h	215.346 * hp	--	REAC-100

Remarks

20151207_EQT_OXF 153 with LPT.pmx Project Warnings Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	

ProMax:ProMax!Project!Flowsheets!OXF-153!Blocks!VRU
Warning: The change in entropy is negative.

User Value Sets Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	

Tank Losses.53

User Value [ShellLength]

* Parameter	20 ft	Upper Bound	ft
* Lower Bound	0 ft	* Enforce Bounds	False

User Value [ShellDiam]

* Parameter	12 ft	Upper Bound	ft
* Lower Bound	0 ft	* Enforce Bounds	False

User Value [BreatherVP]

* Parameter	0.875 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [BreatherVacP]

* Parameter	-0.0375 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [DomeRadius]

Parameter	ft	Upper Bound	ft
Lower Bound	ft	* Enforce Bounds	False

User Value [OpPress]

* Parameter	0 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [AvgPercentLiq]

* Parameter	50 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [MaxPercentLiq]

* Parameter	90 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [AnnNetTP]

* Parameter	171.201 bbl/day	Upper Bound	bbl/day
* Lower Bound	0 bbl/day	* Enforce Bounds	False

User Value [OREff]

* Parameter	0 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [AtmPressure]

* Parameter	14.2535 psia	Upper Bound	psia
Lower Bound	psia	* Enforce Bounds	False

* User Specified Values

? Extrapolated or Approximate Values

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User Value Sets Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	

User Value [MaxLiqSurfaceT]

* Parameter	61.4758 °F	Upper Bound	°F
Lower Bound	°F	* Enforce Bounds	False

User Value [TotalLosses]

* Parameter	9.72766 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	2.22807 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [StandingLosses]

* Parameter	0.203844 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [RimSealLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [WithdrawalLoss]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [LoadingLosses]

* Parameter	29.9114 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [DeckFittingLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [DeckSeamLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [FlashingLosses]

* Parameter	39.4034 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [GasMoleWeight]

* Parameter	0.0535177 kg/mol	Upper Bound	kg/mol
Lower Bound	kg/mol	* Enforce Bounds	False

Remarks

This User Value Set was programmatically generated. GUID={5524AB8C-40B1-4354-9DD7-EED65770BF87}

Tank Losses.331

User Value [ShellLength]

* Parameter	20 ft	Upper Bound	ft
* Lower Bound	0 ft	* Enforce Bounds	False

User Value Sets Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	

User Value [ShellDiam]

* Parameter	12 ft	Upper Bound	ft
* Lower Bound	0 ft	* Enforce Bounds	False

User Value [BreatherVP]

* Parameter	0.875 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [BreatherVacP]

* Parameter	-0.0375 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [DomeRadius]

Parameter	ft	Upper Bound	ft
Lower Bound	ft	* Enforce Bounds	False

User Value [OpPress]

* Parameter	0 psig	Upper Bound	psig
Lower Bound	psig	* Enforce Bounds	False

User Value [AvgPercentLiq]

* Parameter	50 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [MaxPercentLiq]

* Parameter	90 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [AnnNetTP]

* Parameter	1303.59 bbl/day	Upper Bound	bbl/day
* Lower Bound	0 bbl/day	* Enforce Bounds	False

User Value [OREff]

* Parameter	0 %	Upper Bound	%
Lower Bound	%	* Enforce Bounds	False

User Value [AtmPressure]

* Parameter	14.2535 psia	Upper Bound	psia
Lower Bound	psia	* Enforce Bounds	False

User Value [MaxLiqSurfaceT]

* Parameter	61.4758 °F	Upper Bound	°F
Lower Bound	°F	* Enforce Bounds	False

User Value [TotalLosses]

* Parameter	0.456528 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	0.0913056 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [StandingLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value Sets Report

Client Name:	EQT	Job: V1.0
Location:	OXF-153	

User Value [RimSealLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [WithdrawalLoss]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [LoadingLosses]

* Parameter	1.20238 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [DeckFittingLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [DeckSeamLosses]

* Parameter	0 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [FlashingLosses]

* Parameter	5.30489 ton/yr	Upper Bound	ton/yr
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [GasMoleWeight]

* Parameter	0.0451381 kg/mol	Upper Bound	kg/mol
Lower Bound	kg/mol	* Enforce Bounds	False

Remarks

This User Value Set was programmatically generated. GUID={23417019-6BCF-4B6A-8C2C-C51E3F9510A8}

2015-0921_EQT_OXF-153 Well pad_SandSepTank_E&P Tank Run Output.txt

* Project Setup Information

*

Project File : \\tsclient\Z\client\EQT Corporation\West Virginia\WV
Wells\153901.0056 WV Wells 2015\OXF 153\02 Draft\2016-0118_EQT_OXG-153_G70-B
Application\Att S Emission Calcs\01 E&P TANK\2015-0921_EQT_OXF-153 Well pad_Sand
Separator Tank_E&P Tank Run.ept
Flowsheet Selection : Oil Tank with Separator
Calculation Method : RVP Distillation
Control Efficiency : 0.0%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No

Filed Name : OXF-153 Well pad
Well Name : OXF-153 Well pad
Well ID : Condensate Analysis from OXF-152
Date : 2015.09.21

* Data Input

*

Separator Pressure : 435.00[psi g]
Separator Temperature : 60.00[F]
Ambient Pressure : 14.70[psi a]
Ambient Temperature : 55.00[F]
C10+ SG : 0.8021
C10+ MW : 161.72

-- Low Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0970
4	N2	0.0000
5	C1	12.8280
6	C2	10.8960
7	C3	10.1160
8	i-C4	2.9350
9	n-C4	7.8300
10	i-C5	4.7390
11	n-C5	5.4330
12	C6	3.7190
13	C7	10.1120
14	C8	9.5450
15	C9	1.9010
16	C10+	14.3130
17	Benzene	0.1700
18	Toluene	0.7300
19	E-Benzene	0.0750
20	Xylenes	0.7800
21	n-C6	3.7570
22	2,2,4-Tri methyl p	0.0240

-- Sales Oil

 Production Rate : 0.1[bbl/day]
 Days of Annual Operation : 365 [days/year]
 API Gravity : 59.11
 Reid Vapor Pressure : 10.60[psi a]

 * Calculation Results
 *

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]	
Page 1					E&P TANK
Total HAPs	0.010	0.002	0.010	0.002	
Total HC	0.961	0.219	0.961	0.219	
VOCs, C2+	0.814	0.186	0.814	0.186	
VOCs, C3+	0.580	0.132	0.580	0.132	

Uncontrolled Recovery Info.

Vapor	58.8300 x1E-3	[MSCFD]
HC Vapor	58.6900 x1E-3	[MSCFD]
GOR	588.30	[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.003	0.001	0.003	0.001
4	N2	0.000	0.000	0.000	0.000
5	C1	0.147	0.034	0.147	0.034
6	C2	0.234	0.053	0.234	0.053
7	C3	0.305	0.070	0.305	0.070
8	i-C4	0.067	0.015	0.067	0.015
9	n-C4	0.125	0.029	0.125	0.029
10	i-C5	0.035	0.008	0.035	0.008
11	n-C5	0.028	0.006	0.028	0.006
12	C6	0.007	0.002	0.007	0.002
13	C7	0.006	0.001	0.006	0.001
14	C8	0.002	0.000	0.002	0.000
15	C9	0.000	0.000	0.000	0.000
16	C10+	0.000	0.000	0.000	0.000
17	Benzene	0.000	0.000	0.000	0.000
18	Toluene	0.000	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000	0.000
20	Xylenes	0.000	0.000	0.000	0.000
21	n-C6	0.005	0.001	0.005	0.001
22	2,2,4-Trimethyl p	0.000	0.000	0.000	0.000
	Total	0.964	0.220	0.964	0.220

-- Stream Data

No.	Component	MW	LP Oil	Flash Oil	Sale Oil	Flash Gas	W&S Gas
-----	-----------	----	--------	-----------	----------	-----------	---------

2015-0921_EQT_OXF-153 Well pad_SandSepTank_E&P Tank Run Output.txt

Total Emissions

		mol %				
mol %						
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
3 CO2	44.01	0.0970	0.0072	0.0000	0.2758	0.0771
0.2445						
4 N2	28.01	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000						
5 C1	16.04	12.8280	0.2710	0.0000	37.8388	2.8886
32.3364						
6 C2	30.07	10.8960	1.7313	0.0020	29.1501	18.4354
27.4632						
7 C3	44.10	10.1160	5.3717	0.7200	19.5656	50.3039
24.4050						
8 i-C4	58.12	2.9350	2.7668	2.1902	3.2701	8.3366
4.0678						
9 n-C4	58.12	7.8300	8.5237	7.9818	6.4482	13.7594
7.5993						
10 i-C5	72.15	4.7390	6.3438	6.7210	1.5426	2.7002
1.7248						
11 n-C5	72.15	5.4330	7.5390	8.0934	1.2383	2.1839
1.3871						
12 C6	86.16	3.7190	5.4623	5.9802	0.2467	0.4598
0.2802						
13 C7	100.20	10.1120	15.0986	16.6236	0.1799	0.3671
0.2093						
14 C8	114.23	9.5450	14.3160	15.7881	0.0423	0.0958
0.0507						
15 C9	128.28	1.9010	2.8543	3.1491	0.0023	0.0062
0.0029						
16 C10+	161.72	14.3130	21.4986	23.7240	0.0008	0.0028
0.0011						
17 Benzene	78.11	0.1700	0.2516	0.2761	0.0075	0.0145
0.0086						
18 Toluene	92.13	0.7300	1.0930	1.2045	0.0071	0.0152
0.0083						
19 E-Benzene	106.17	0.0750	0.1126	0.1242	0.0002	0.0005
0.0002						
20 Xylenes	106.17	0.7800	1.1708	1.2916	0.0017	0.0040
0.0020						
21 n-C6	86.18	3.7570	5.5520	6.0907	0.1818	0.3485
0.2081						
22 2,2,4-Trimethyl p	114.24	0.0240	0.0359	0.0395	0.0003	0.0007
0.0004						
MW		77.47	100.37	106.02	31.84	45.78
34.04						
Stream Mole Ratio		1.0000	0.6658	0.6033	0.3342	0.0625
0.3967						
Heating Value	[BTU/SCF]				1852.69	2603.89
1970.95						
Gas Gravity	[Gas/Air]				1.10	1.58
1.17						
Bubble Pt. @ 100F	[psi a]	513.68	39.01	11.39		

Page 2-----E&P TANK

RVP @ 100F [psi a] 151.15 25.07 10.64

2015-0921_EQT_OXF-153 Wellpad_SandSepTank_E&P Tank Run Output.txt
Spec. Gravity @ 100F 0.643 0.691 0.700

Gas Analytical

Report Date: Nov 3, 2014 7:02a

Client:	Equitable Production	Date Sampled:	Oct 28, 2014 12:00a
Site:	512445	Analysis Date:	Oct 31, 2014 10:01a
Field No:	9998	Collected By:	Matt Bunting
Meter:		Date Effective:	Oct 28, 2014 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	430.0
Lab File No:	117911.CHR	Sample Temp (°F):	
Sample Type:	Spot	Field H2O (PPM):	No Test
Reviewed By:		Field H2S (PPM):	No Test

Component	Mol %	Gal/MSCF
Methane	80.0933	
Ethane	13.5421	3.60
Propane	3.7920	1.04
I-Butane	0.4506	0.15
N-Butane	0.8255	0.26
I-Pentane	0.2085	0.08
N-Pentane	0.1770	0.06
Nitrogen	0.4952	
Oxygen	0.0413	
CO2	0.2011	
Hexanes+	0.1734	0.07
TOTAL	100.0000	5.26

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,216.2611 BTU/ft ³
BTU/SCF (Saturated):	1,195.9705 BTU/ft ³
PSIA:	14.73 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99675
Z Factor (Saturated):	0.99636

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,216.2611 BTU/ft ³
BTU/SCF (Saturated):	1,195.9705 BTU/ft ³
PSIA:	14.7300 PSI
Temperature (°F):	60.0000 °F
Z Factor (Dry):	0.99675
Z Factor (Saturated):	0.99636

Calculated Specific Gravities		
Ideal Gravity:	0.6911	Real Gravity: 0.6930
Molecular Wt:	20.0149 lb/lbmol	

 Gross Heating Values are Based on:
 GPA 2145-09, 2186
 Compressibility is Calculated using AGA-8.

Source	Date	Notes
Gas Analytical	Oct 31, 2014	bob Gum



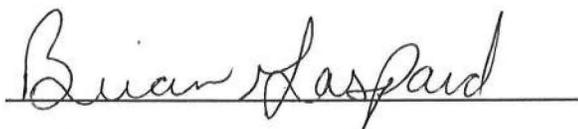
LAFAYETTE AREA LABORATORY
 4790 N.E. EVANGELINE THRUWAY
 CARENCRO, LA 70520
 PHONE (337) 896-3055
 FAX (337) 896-3077

Certificate of Analysis : 13050161-001A

Company:	Gas Analytical Services	For:	Gas Analytical Services
Well:	OXF 152 Pad		Alan Ball
Field:	EQT Production		PO Box 1028
Sample of:	Condensate-Spot		
Conditions:	435 @ N.G.		Bridgeport, WV, 26330
Sampled by:	GR-GAS		
Sample date:	5/14/2013	Report Date:	5/28/2013
Remarks:	Cylinder No.: GAS		
Remarks:			

<u>Analysis: (GPA 2186M)</u>	<u>Mol. %</u>	<u>MW</u>	<u>Wt. %</u>	<u>Sp. Gravity</u>	<u>L.V. %</u>
Nitrogen	0.000	28.013	0.000	0.8094	0.000
Methane	12.828	16.043	2.662	0.3000	5.771
Carbon Dioxide	0.097	44.010	0.055	0.8180	0.044
Ethane	10.896	30.070	4.238	0.3562	7.730
Propane	10.116	44.097	5.771	0.5070	7.393
Iso-butane	2.935	58.123	2.207	0.5629	2.548
N-butane	7.830	58.123	5.887	0.5840	6.552
Iso-pentane	4.739	72.150	4.423	0.6244	4.603
N-pentane	5.433	72.150	5.071	0.6311	5.222
i-Hexanes	3.719	86.177	4.092	0.6795	4.009
n-Hexane	3.757	85.684	4.195	0.6640	4.086
2,2,4 trimethylpentane	0.024	114.231	0.035	0.6967	0.033
Benzene	0.170	78.114	0.132	0.8846	0.127
Heptanes	10.112	97.409	12.820	0.7048	11.816
Toluene	0.730	92.141	0.672	0.8719	0.651
Octanes	9.545	107.484	13.615	0.7487	11.751
E-benzene	0.075	106.167	0.046	0.8718	0.078
M-,O-,P-xylene	0.780	106.167	1.072	0.8731	0.804
Nonanes	1.901	117.323	3.065	0.7990	2.521
Decanes Plus	14.313	161.720	29.942	0.8021	24.261
	-----		-----		-----
	100.000		100.000		100.000

Calculated Values	Total Sample	Decanes Plus
Specific Gravity at 60 °F	0.6499	0.8021
Api Gravity at 60 °F	86.221	44.905
Molecular Weight	77.303	161.720
Pounds per Gallon (in Vacuum)	5.419	6.688
Pounds per Gallon (in Air)	5.413	6.680
Cu. Ft. Vapor per Gallon @ 14.73 psia	26.662	15.657


 Southern Petroleum Laboratories, Inc.



LAFAYETTE AREA LABORATORY

4790 N.E. EVANGELINE THRUWAY
CARENCRO, LA 70520
PHONE (337) 896-3055
FAX (337) 896-3077

Certificate of Analysis : 13050161-001A

Company:	Gas Analytical Services	For:	Gas Analytical Services
Well:	OXF 152 Pad		Alan Ball
Field:	EQT Production		PO Box 1028
Sample of:	Condensate-Spot		
Conditions:	435 @ N.G.		Bridgeport, WV, 26330
Sampled by:	GR-GAS	Report Date:	5/28/2013
Sample date:	5/14/2013		
Remarks:	Cylinder No.: GAS		
Remarks:			

<u>Analysis: (GPA 2103M)</u>	<u>Mol. %</u>	<u>MW</u>	<u>Wt. %</u>	<u>Sp. Gravity</u>	<u>L.V. %</u>
Nitrogen	0.000	28.013	0.000	0.8094	0.000
Methane	12.828	16.043	2.662	0.3000	5.771
Carbon Dioxide	0.097	44.010	0.055	0.8180	0.044
Ethane	10.896	30.070	4.238	0.3562	7.730
Propane	10.116	44.097	5.771	0.5070	7.393
Iso-butane	2.935	58.123	2.207	0.5629	2.548
N-butane	7.830	58.123	5.887	0.5840	6.552
Iso-pentane	4.739	72.150	4.423	0.6244	4.603
N-pentane	5.433	72.150	5.071	0.6311	5.222
Hexanes	7.476	85.684	8.287	0.6654	8.095
Heptanes Plus	37.650	97.409	61.399	0.7048	52.042
	-----		-----		-----
	100.000		100.000		100.000

Calculated Values	Total Sample	Heptanes Plus
Specific Gravity at 60 °F	0.6499	0.7689
Api Gravity at 60 °F	86.221	52.528
Molecular Weight	77.303	126.064
Pounds per Gallon (in Vacuum)	5.419	6.411
Pounds per Gallon (in Air)	5.413	6.404
Cu. Ft. Vapor per Gallon @ 14.73 psia	26.662	19.342
Standing-Katz Density (lb. / ft ³)		

Southern Petroleum Laboratories, Inc.



Certificate of Analysis
 Number: 2030-13050161-001A

Carencro Laboratory
 4790 NE Evangeline Thruway
 Carencro, LA 70520

Alan Ball
 Gas Analytical Services
 PO Box 1028
 Bridgeport, WV 26330

May 22, 2013

Station Name: OXF 152 Pad
 Station Number: 512496
 Station Location: EQT Production
 Sample Point: Wellhead

Sampled By: GR-GAS
 Sample Of: Condensate Spot
 Sample Date: 05/14/2013 14:00
 Sample Conditions: 435 psig
 Cylinder No: GAS

Analytical Data

Test	Method	Result	Units	Detection Limit	Lab Tech.	Analysis Date
Color-Visual	Proprietary	L STRAW			AR	05/22/2013
API Gravity @ 60° F	ASTM D-5002	66.58	°		AR	05/22/2013
Specific Gravity @ 60/60° F	ASTM D-5002	0.7144			AR	05/22/2013
Density @ 60° F	ASTM D-5002	0.7137	g/ml		AR	05/22/2013
Shrinkage Factor	Proprietary	0.7761			AR	05/22/2013
Flash Factor	Proprietary	508.5845	Cu. Ft./S.T. Bbl		AR	05/22/2013

Hydrocarbon Laboratory Manager

Quality Assurance:

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

ATTACHMENT T

Emission Summary Sheet

ATTACHMENT T – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID# (Emission Source ID)	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		GHG (CO ₂ e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C001 (S021-S030, S037, C001)	1.15	5.03	0.96	4.22	0.96	0.77	0.01	0.03	0.09	0.38	0.09	0.38	1,373.43	6,015.64
C002 (S021-S030, S037, C002)	1.15	5.03	0.96	4.22	0.96	0.77	0.01	0.03	0.09	0.38	0.09	0.38	1,373.43	6,015.64
E016 (S016)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E017 (S017)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E018 (S018)	0.07	0.32	0.06	0.27	0.00	0.02	4.4E-04	1.9E-03	0.01	0.02	0.01	0.02	90.09	394.60
E019 (S019)	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E020 (S020)	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E031 (S031)	---	---	---	---	0.13	0.58	---	---	---	---	---	---	0.85	3.68
E032 (S032)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
S033 (S033)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E034 (S034)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E035 (S035)	0.15	0.64	0.12	0.54	0.01	0.04	8.8E-04	3.9E-03	0.01	0.05	0.01	0.05	180.18	789.20
E036 (S036)	1.2E-03	5.4E-03	1.0E-03	4.5E-03	6.8E-05	3.0E-04	7.4E-06	3.2E-05	9.4E-05	4.1E-04	9.4E-05	4.1E-04	1.52	6.64
E037 (S037)	---	---	---	---	35.90	9.33	---	---	---	---	---	---	---	---
E038 (S038)	0.11	0.48	0.09	0.40	0.01	0.03	6.6E-04	2.9E-03	0.01	0.04	0.01	0.04	134.69	589.92
E039 (S039)	0.24	1.06	0.49	2.12	0.19	0.81	4.5E-04	2.0E-03	0.01	0.07	0.01	0.07	90.18	394.99
Fugitives	---	---	---	---	---	24.53	---	---	---	---	---	---	---	1,273.10
Haul Roads	---	---	---	---	---	---	---	---	---	9.54	---	0.95	---	---

Facility Total	3.57	15.62	3.28	14.35	38.20	37.04	0.02	0.09	0.27	10.72	0.27	2.13	4,101.47	19,237.49
Facility Total (excl. fugitives)	3.57	15.62	3.28	14.35	2.30	3.18	0.02	0.09	0.27	1.17	0.27	1.17	4,101.47	17,964.39

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT T – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

List all sources of emissions in this table. Use extra pages if necessary.

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
C001 (S021-S030, S037, C001)	---	---	8.55E-04	8.94E-04	1.22E-03	1.72E-03	7.63E-05	1.10E-04	5.38E-04	7.95E-04	0.02	0.01	0.02	0.02
C002 (S021-S030, S037, C002)	---	---	8.55E-04	8.94E-04	1.22E-03	1.72E-03	7.63E-05	1.10E-04	5.38E-04	7.95E-04	0.02	0.01	0.02	0.02
E016 (S016)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E017 (S017)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E018 (S018)	5.5E-05	2.4E-04	1.5E-06	6.7E-06	2.5E-06	1.1E-05	---	---	---	---	1.3E-03	0.01	1.4E-03	0.01
E019 (S019)	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E020 (S020)	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E031 (S031)	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.0E-03	<0.01	2.0E-03	1.0E-02
E032 (S032)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
S033 (S033)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E034 (S034)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E035 (S035)	1.1E-04	4.8E-04	3.1E-06	1.3E-05	5.0E-06	2.2E-05	---	---	---	---	2.6E-03	0.01	2.8E-03	0.01
E036 (S036)	9.3E-07	4.1E-06	2.6E-08	1.1E-07	4.2E-08	1.8E-07	---	---	---	---	2.2E-05	9.7E-05	2.3E-05	1.0E-04
E037 (S037)	---	---	0.03	0.01	0.04	0.01	2.3E-03	6.1E-04	0.02	4.2E-03	0.58	0.15	0.67	0.17
E038 (S038)	8.2E-05	3.6E-04	2.3E-06	1.0E-05	3.7E-06	1.6E-05	---	---	---	---	2.0E-03	0.01	2.1E-03	0.01
E039 (S039)	0.02	0.07	1.2E-03	5.3E-03	4.3E-04	1.9E-03	1.9E-05	8.4E-05	1.5E-04	6.6E-04	---	---	0.02	0.11
Fugitives	---	---	---	3.2E-03	---	0.01	---	3.2E-03	---	0.02	---	0.11	---	0.44
Haul Roads	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Facility Total	0.02	0.07	0.03	0.02	0.04	0.03	2.5E-03	4.1E-03	0.02	0.03	0.63	0.37	0.75	0.85
Facility Total (excl. fugitives)	0.02	0.07	2.9E-03	0.01	2.9E-03	0.01	1.7E-04	3.0E-04	1.2E-03	2.2E-03	0.05	0.11	0.08	0.24

Annual emissions shall be based on 8,760 hours per year of operation for all emission units except emergency generators.

According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, fugitive emissions shall not be included in the PTE above.

ATTACHMENT U

Class I Legal Advertisement

RECOMMENDED PUBLIC NOTICE TEMPLATE

AIR QUALITY PERMIT NOTICE Notice of Application

Notice is given that EQT Production Company has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-B General Permit Registration for an existing natural gas production facility located on Taylor Drain Road, near Oxford, in Doddridge County, West Virginia. The latitude and longitude coordinates are: 39.18997 N, -80.81767 W.

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

Pollutant	Emissions in tpy (tons per year)
NO _x	15.79
CO	14.49
VOC	3.19
SO ₂	0.09
PM	1.18
Total HAPs	0.24
Carbon Dioxide Equivalents (CO ₂ e)	18,169.58

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

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the **(Day)** day of **(Month)**, 2016.

By: EQT Production Company
Kenneth Kirk, Executive Vice President
625 Liberty Ave Suite 1700
Pittsburgh, PA 15222

ATTACHMENT V

General Permit Registration Application Fee