625 Liberty Ave, Suite
1700
Pittsburgh PA 15222
www.eqt.com

TEL: (412) 395-3699

R. Alex Bosiljevac
Environmental
Coordinator

May 18, 2015

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

RE: G70-A Permit Application
EQT Production Company
OXF-163 Natural Gas Production Site

Dear Director Durham:

Enclosed are one (1) original hard copy and two (2) complete PDFs included on CD-ROM of a G70-A General Air Permit Application for the OXF-163 natural gas production site. 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,

RAB

R. Alex Bosiljevac
EQT Corporation

Enclosures

EQT Production Company

G70-A General Air Permit Application
OXF 163 Natural Gas Production Site

West Union, West Virginia

Prepared By:

ENVIRONMENTAL RESOURCES MANAGEMENT, Inc.
Hurricane, West Virginia

May 2015

INTRODUCTION

EQT Production Company (EQT) is submitting this G70-A Class II General Permit application to the WVDEP's Department of Air Quality for the OXF-163 natural gas production site located in Ritchie County, West Virginia. This application addresses the operational activities associated with the production of natural gas and condensates at the OXF-163 pad.

FACILITY DESCRIPTION

The EQT OXF-163 natural gas production site operates in Ritchie County, WV and consists of six (6) natural gas wells. Natural gas and liquids (including water and condensates) are extracted from underground deposits. The natural gas will be transported from the wells to a gas line for compression and additional processing, as necessary. The produced liquids are stored in storage vessels.

The applicant seeks to authorize the operation of:

- Six (6) natural gas wells;
- Six (6) line heaters each rated at 1.50 MMBtu/hr heat input;
- One (1) 100 bbl sand trap blowdown tank for storage of condensate and water;
- Six (6) 400 barrel (bbl) tanks for storage of condensate and water;
- Two (2) thermoelectric generator (TEG) each rated at 0.013 mmBtu/hr heat input; and
- Two (2) enclosed combustion devices each with a capacity of 11.66 MMBtu/hr heat input.

A process flow diagram is included in this application in Attachment D.

STATEMENT OF AGGREGATION

The OXF-163 pad will be located in Ritchie County, WV and operated by EQT Production Company. Stationary sources of air pollutants may require aggregation of total emission levels if these sources share the same industrial grouping, are operating under common control, and are classified as contiguous or adjacent properties. EQT will operate the OXF-163 with the same industrial grouping as nearby facilities, and some of these facilities are under common control. EQT, however, is not subject to the aggregation of stationary emission sources because these sites do not meet the definition of contiguous or adjacent facilities.

The OXF-163 pad will operate under SIC code 1311 (Crude Petroleum and Natural Gas Extraction). There are surrounding wells and compressor stations operated by EQT that share the same two-digit major SIC code of 13 for Crude Petroleum and Natural Gas Extraction. Therefore, the OXF-163 pad does share the same SIC codes as the surrounding wells and compressor stations.

EQT Production Company is the sole operator of the OXF-163 pad. EQT is also the sole operator of other production sites and compressor stations in the area. Therefore, EQT does qualify as having nearby operations under common control.

There are no EQT owned or operated sites with a ¾ mile radius of the OXF-163 pad. Nearby sites do not meet the definition of contiguous or adjacent properties since they are not in contact and do not share a common boundary. Operations conducted at the OXF-163 site do not rely on or interact with other sites. Furthermore, operations separated by this distance do not meet the common sense notion of a "plant."

Based on the above reasoning, EQT is not subject to the aggregation of stationary emission sources since the stationary sources are not considered contiguous or adjacent facilities.

REGULATORY DISCUSSION

This section outlines the State air quality regulations that could be reasonably expected to apply to the OXF-163 pad and makes an applicability determination for each regulation based on activities conducted at the site and the emissions of regulated air pollutants. This review is presented to supplement and/or add clarification to the information provided in the WVDEP G70-A permit application forms.

The West Virginia State Regulations address federal regulations, including Prevention of Significant Deterioration permitting, Title V permitting, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants. The regulatory requirements in reference to OXF-163 are described in detail in the below section.

WEST VIRGINIA STATE AIR REGULATIONS

45 CSR 02 – To Prevent and Control Particulate Air Pollution From Combustion of Fuel in Indirect Heat Exchangers

The line heaters are indirect heat exchangers that combust natural gas but are exempt since the heat input capacities are less than 10 MMBtu/hr.

45 CSR 04 – To Prevent and Control the Discharge of Air Pollutants into the Air Which Causes or Contributes to an Objectionable Odor

Operations conducted at the OXF-163 wellpad are subject to this requirement. Based on the nature of the process at the wellpad, the presence of objectionable odors is unlikely.

45 CSR 06 – Control of Air Pollution from the Combustion of Refuse

The enclosed combustion device located on the OXF-163 natural gas production site is subject to this regulation. Per 45 CSR 6-4.3, opacity of emissions from the enclosed combustion device shall not exceed 20 percent, except as provided by 4.4. Particulate matter emissions from this unit will not exceed the levels calculated in accordance with 6-4.1.

45 CSR 10 – To Prevent and Control Air Pollution From the Emission of Sulfur Oxides

The line heaters are indirect heat exchangers that combust natural gas but are exempt since the heat input capacities are less than 10 MMBtu/hr.

45 CSR 13 – Permits for Construction, Modification, Relocation, And Operation of Stationary Sources of Air Pollutants

This G70-A permit application is being submitted for the operational activities associated with EQT's production of natural gas.

45 CSR 14 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

Federal construction permitting programs regulate new and modified sources of attainment pollutants under Prevention of Significant Deterioration (PSD). The G70A-applicability criterion excludes facilities that meet the definition of a major source as defined in 45 CSR 19 for being eligible for the general permit.

Operation of equipment at the OXF-163 pad will not exceed emission thresholds established by this permitting program. EQT will monitor future construction and modification 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.

45 CSR 16 - Standards of Performance for New Stationary Sources (NSPS)

45CSR 16 applies to all registrants that are subject to any of the NSPS requirements described in more detail in the Federal Regulations section. Applicable requirements of NSPS, Subpart JJJJ and OOOO are included in the G70-A general permit.

This facility is expected to contain gas well affected facilities under Subpart OOOO. No additional NSPS are applicable for this facility. Additional discussion is provided in the Federal Regulation Discussion of this permit application

45 CS R19 – Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contributed to Non-attainment

Federal construction permitting programs regulate new and modified sources of non-attainment pollutants under Non-Attainment New Source Review (NNSR). The G70A-applicability criterion excludes facilities that meet the definition of a major source as defined in 45 CSR 19 for being eligible for the general permit.

Operation of equipment at the OXF-163 pad will not exceed emission thresholds established by either of these permitting programs. EQT will monitor future construction and modification activities at the site closely and will compare any future increase in emissions with the NSR thresholds to ensure these activities will not trigger this program.

45 CSR 25 – Control of Air Pollution from Hazardous Waste Treatment, Storage, and Disposal Facilities

No hazardous waste will be burnt at this well site; therefore, it is not subject to this hazardous waste rule.

45 CSR 30 – Requirements for Operating Permits

45 CSR 30 applies to the requirements of the federal Title V operating permit program (40 CFR 70). The major source thresholds with respect to the West Virginia Title V operating permit program regulations are 10 tons per year (tpy) of a single HAP, 25 tpy of any combination of HAP, and 100 tpy of all other regulated pollutants.

The potential emissions of 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.

45 CSR 34 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

45 CSR 34 applies to all registrants that are subject to any of the NESHAP requirements. Excluded from G70-A general permit eligibility are any sources that are subject to NESHAP Subpart HHH.

The following NESHAP included in the G70-A permit are not subject to the OXF-163 facility:

- 40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities).

- 40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)

FEDERAL REGULATIONS

40 CFR 60, Subpart OOOO (Standards of Performance for Crude oil and Natural Gas Production, Transmission and Distribution)

EPA published the NSPS for the oil and gas sector on August 16, 2012. EPA published final amendments to the subpart on September 23, 2013.

Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The applicable provisions and requirements of Subpart OOOO are included under the G70-A permit.

The only affected facilities expected to be subject to Subpart OOOO located at the OXF-163 production pad are listed below:

- Each gas well affected facility, which is a single natural gas well.

There are several equipment types that will be installed at OXF-163 that do not meet the affected facility definitions as specified by EPA. These include pneumatic controllers and storage vessels.

> Pneumatic Controllers: Any pneumatic controller installed at this facility will be intermittent bleed rate devices. Therefore, there will not be any pneumatic controller affected facilities located at this site.
>
> Storage vessels: Based on PTE calculations included within this permit, each storage vessel will be manifolded and routed to an enclosed combustion device such that emissions from each of these tanks are expected to be below 6 tons per year (tpy) of VOC. Therefore, these tanks will not be considered group 2 storage vessel affected facilities as specified in §60.5365(e).

The following NSPS included in the G70-A permit are not applicable to the OXF-163 facility:

- *40 CFR 60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines).*

No additional NSPS are expected to be applicable to this facility.

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

APPLICATION FOR GENERAL PERMIT REGISTRATION

CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE
A STATIONARY SOURCE OF AIR POLLUTANTS

☒ CONSTRUCTION ☐ MODIFICATION ☐ RELOCATION ☐ CLASS I ADMINISTRATIVE UPDATE ☐ CLASS II ADMINISTRATIVE UPDATE

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

☐ **G10-D –** Coal Preparation and Handling
☐ **G20-B –** Hot Mix Asphalt
☐ **G30-D –** Natural Gas Compressor Stations
☐ **G33-A –** Spark Ignition Internal Combustion Engines
☐ **G35-A –** Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit)
☐ **G40-C –** Nonmetallic Minerals Processing
☐ **G50-B –** Concrete Batch
☐ **G60-C** - Class II Emergency Generator
☐ **G65-C –** Class I Emergency Generator
☒ **G70-A –** Class II Oil and Natural Gas Production Facility

SECTION I. GENERAL INFORMATION

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

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

3. Applicant's mailing address:
625 Liberty Avenue, Suite 1700
Pittsburgh, PA 15222

4. Applicant's physical address:
Traveling North on Route 19 (Grove Summers Road), turn left in Summers, WV onto Sugar Run. Continue for 1.83 miles and at the fork turn left Summers Rd Brushy Fork. Travel a little over a mile and take the unnamed road on the left to the site. The facility is located alongside this unnamed road.

5. If applicant is a subsidiary corporation, please provide the name of parent corporation:

6. **WV BUSINESS REGISTRATION.** Is the applicant a resident of the State of West Virginia? ☐ **YES** ☒ **NO**
- IF **YES,** provide a copy of the Certificate of **Incorporation/ Organization / Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A**.
- IF **NO,** provide a copy of the **Certificate of Authority / Authority of LLC / Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A**.

SECTION II. FACILITY INFORMATION

7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.):
Class II Oil and Natural Gas Production Facility

8a. Standard Industrial Classification (SIC) code: **1311**
AND
8b. North American Industry System (NAICS) code: **211111**

9. DAQ Plant ID No. (for existing facilities only):
N/A

10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):
N/A

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
OXF-163 Natural Gas Production Facility	Mailing: **625 Liberty Avenue, Suite 1700** **Pittsburgh, PA 15222** Physical:

13A**.** Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? ☒ **YES** ☐ **NO**

- IF **YES**, please explain: **The applicant leases the proposed site.**
- IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

14A. ☐ For **Modifications or Administrative Updates** at an existing facility, please provide directions to the present location of the facility from the nearest state road;

– For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a **MAP** as **Attachment F**.

Traveling North on Route 19 (Grove Summers Road), turn left in Summers, WV onto Sugar Run. Continue for 1.83 miles and at the fork turn left Summers Rd Brushy Fork. Travel a little over a mile and take the unnamed road on the left to the site.

15A. Nearest city or town:	16A. County:	17A. UTM Coordinates:
West Union, WV	**Ritchie**	Northing (KM): **513.59** Easting (KM): **4,331.88** Zone: **17**

18A. Briefly describe the proposed new operation or change (s) to the facility:	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
The OXF-163 Natural Gas Production Facility will be a new production site expected to be in production in October 2015.	Latitude: **39.13602** Longitude: **-80.84274**

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

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

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

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

25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.

- ☒ ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ☒ ATTACHMENT B: PROCESS DESCRIPTION
- ☒ ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ☒ ATTACHMENT D: PROCESS FLOW DIAGRAM
- ☒ ATTACHMENT E: PLOT PLAN
- ☒ ATTACHMENT F: AREA MAP
- ☒ ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM
- ☒ ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS
- ☒ ATTACHMENT I: EMISSIONS CALCULATIONS
- ☒ ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ☐ ATTACHMENT K: ELECTRONIC SUBMITTAL **(not applicable)**
- ☒ ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE
- ☐ ATTACHMENT M: SITING CRITERIA WAIVER **(not applicable)**
- ☐ ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS) **(not applicable)**
- ☒ ATTACHMENT O: EMISSIONS SUMMARY SHEETS
- ☒ OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)

Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.

SECTION IV. CERTIFICATION OF INFORMATION

This 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 a 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, Emission Inventory, Certified Emission Statement, 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 Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

☒ I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

☐ I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

☐ I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

☐ I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

☐ I certify that I am the President, General Partner or General Manager

FOR A SOLE PROPRIETORSHIP

☐ I certify that I am the Owner and Proprietor

☒ *I hereby certify that* (please print or type) *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 Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this 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.

Signature _____ 4/18/15
(please use blue ink) Responsible Official Date

Name & Title **Kenneth Kirk, Executive Vice President**
(please print or type)

Signature _____
(please use blue ink) Authorized Representative (if applicable) Date

Applicant's Name **R. Alex Bosiljevac, Environmental Coordinator**

Phone & Fax **(412) 395-3699**
Phone Fax

Email **abosiljevac@eqt.com**

Attachment A

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.

atL006 v.3
L0553297664

Attachment B

Attachment B
Process Description

This permit application is being filed for EQT Production Company and addresses operational activities associated with the OXF-163 natural gas production site. Incoming raw natural gas from the six (6) wells enters the site through a pipeline. The raw gas is first routed through the sand traps to remove any sediment. Fluids from these sand traps are manually blowdown to the sand trap blowdown tank (S018), as needed. From the sand traps, raw gas is routed through line heaters (S001-S006) to assist with the phase separation process in the downstream three-phase separators. In the separator, produced fluids are removed from the raw gas and transferred to the produced fluids storage tanks (S007-S012). Emissions from the produced fluids tanks and sand trap blowdown tank are directed to one of the two enclosed combustion devices (C013, C014) and burnt. Produced fluids are pumped into a tank truck (S015) on an as-needed basis and are disposed of off-site. Vapors during truck loading will be controlled by either of the two enclosed combustion devices.

Two thermoelectric generation units (S016, S017) are operated and provide power to the OXF-163 natural gas production site.

A process flow diagram is included as Attachment D.

Attachment C

Attachment C
G70-A General Permit Description of Fugitive Emissions

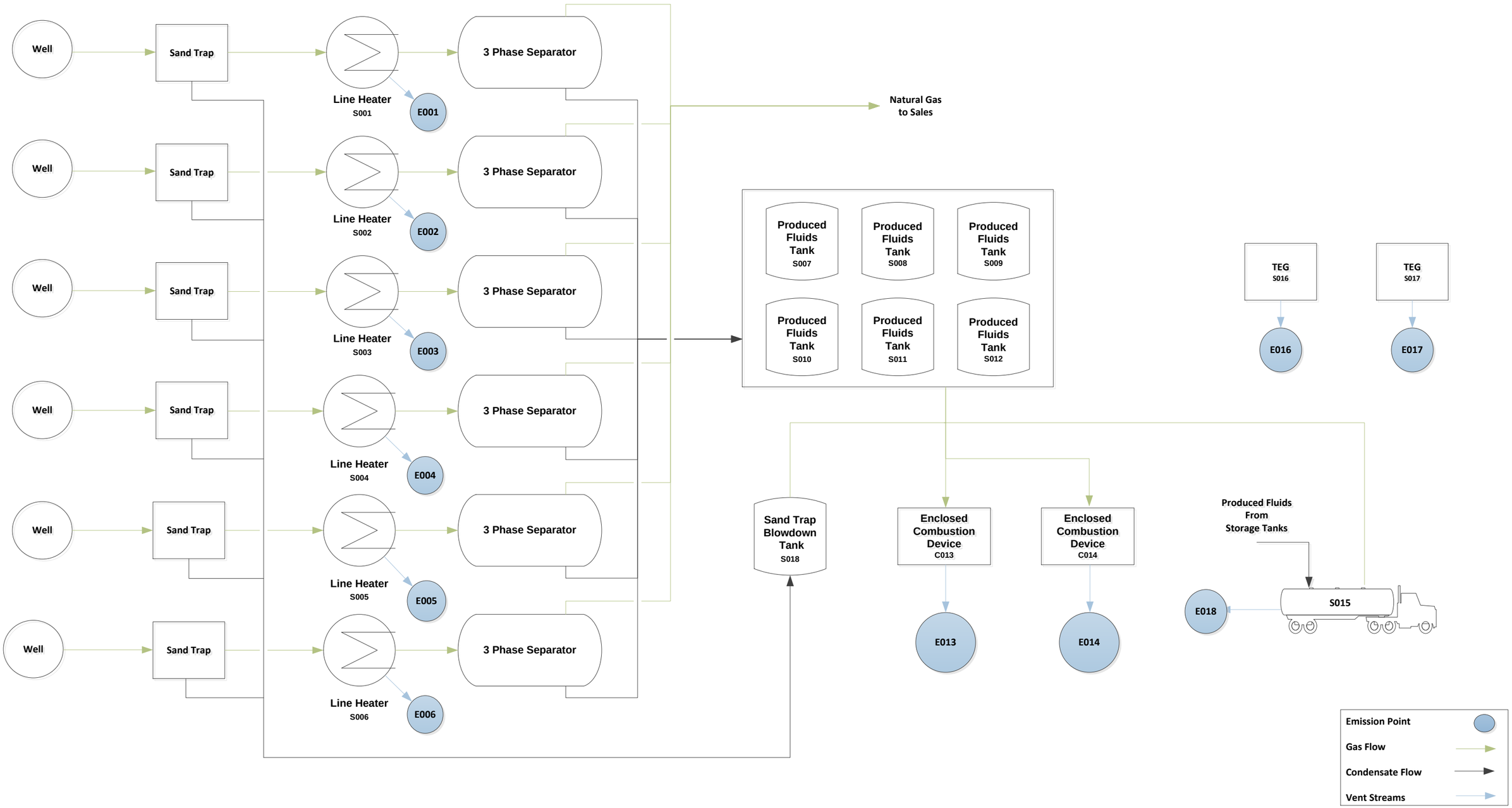
This permit application is being filed for EQT Production Company and addresses operational activities associated with the OXF-163 natural gas production site. Fugitive emissions on the site are generated from a number of sources, including an unpaved haul road and equipment leaks. These fugitive emission sources cannot be controlled by air pollution control devices. Emission levels for fugitive emissions were calculated using AP-42 emission factors, results of a gas analysis, and 40 CFR 98 Subpart W factors and equipment counts. A summary of the fugitive emissions on the OXF-163 natural gas production site can be found in Attachment O – Emissions Summary Sheet.

Attachment D

Attachment D

OFX 163 Natural Gas Production

Process Flow Diagram

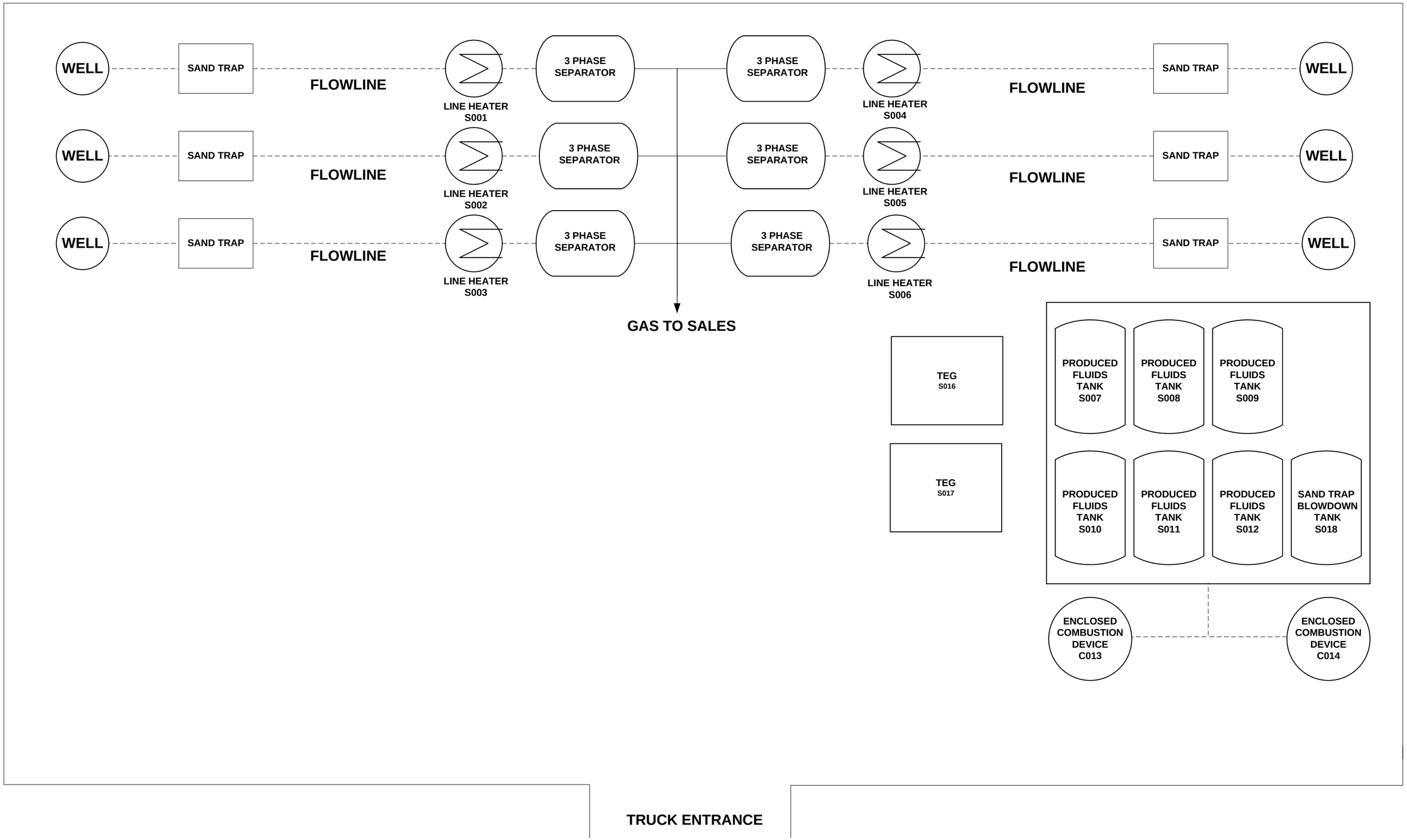


Attachment E

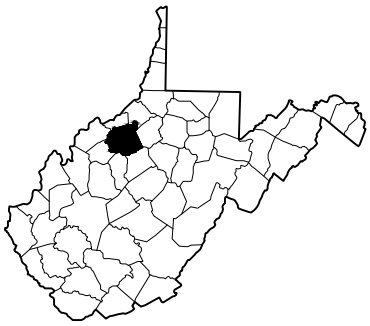
Attachment E

Plot Plan

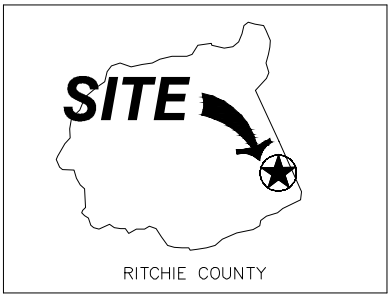
EQT OXF 163 Natural Gas Production Site



Attachment F



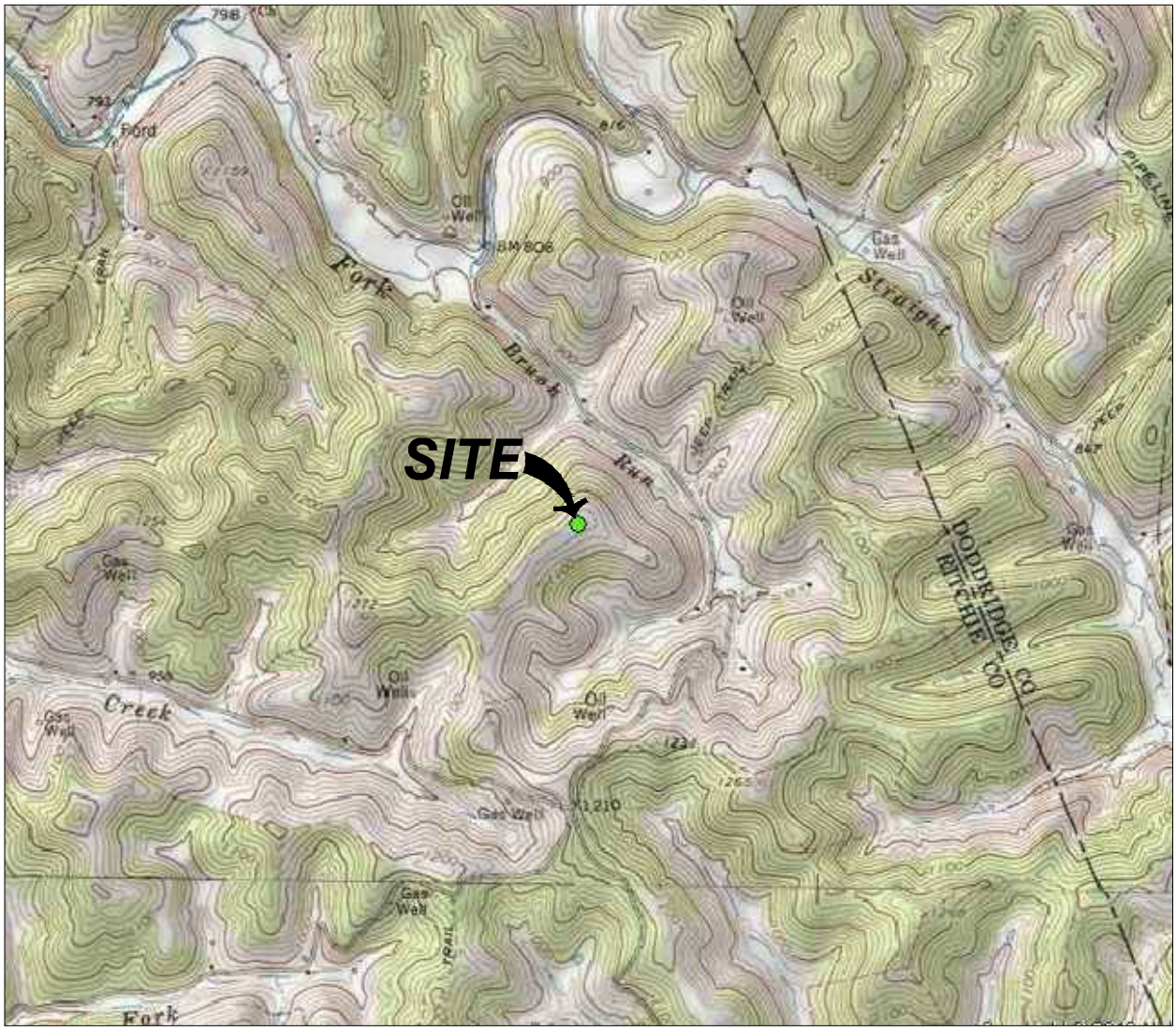
WEST VIRGINIA



LAT. 39.13602 LON. -80.84274
CITY OF WEST UNION
RITCHIE COUNTY
WEST VIRGINIA

0 2000

SCALE (IN FEET)



SITE LOCATION MAP

ADAPTED FROM USGS

REVISIONS ARE TO BE MADE ON THE CADD FILE ONLY

ERM	**EQT PRODUCTION COMPANY** OXF 163 WELL PAD WEST UNION, WEST VIRGINIA	CADD Review CHK'D MC 0250395
Drawn By MLB/11-20-14	Environmental Resources Management	ATTACHMENT F

G:\CAD\Drawings\EQT Production\0250395\C109.dwg

Attachment G

General Permit G70-A Registration
Section Applicability Form

General Permit G70-A was developed to allow qualified applicants to seek registration for a variety of sources. These sources include natural gas well affected facilities, storage tanks, natural gas-fired compressor engines (RICE), natural gas producing units, natural gas-fired in-line heaters, pneumatic controllers, heater treaters, tank truck loading, glycol dehydration units, 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-A 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.

Section 5	Natural Gas Well Affected Facility	☒
Section 6	Storage Vessels*	☒
Section 7	Gas Producing Units, In-Line Heaters, Heater Treaters, and Glycol Dehydration Reboilers	☒
Section 8	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)	☐
Section 9	*Reserved*	☐
Section 10	Natural gas-fired Compressor Engine(s) (RICE) **	☐
Section 11	Tank Truck Loading Facility ***	☒
Section 12	Standards of Performance for Storage Vessel Affected Facilities (NSPS, Subpart OOOO)	☐
Section 13	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS, Subpart JJJJ)	☐
Section 14	Control Devices not subject to NSPS, Subpart OOOO	☒
Section 15	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40CFR63, Subpart ZZZZ)	☐
Section 16	Glycol Dehydration Units	☐
Section 17	Dehydration Units With Exemption from NESHAP Standard, Subpart HH § 63.764(d) (40CFR63, Subpart HH)	☐
Section 18	Dehydration Units Subject to NESHAP Standard, Subpart HH and Not Located Within an UA/UC (40CFR63, Subpart HH)	☐
Section 19	Dehydration Units Subject to NESHAP Standard, Subpart HH and Located Within an UA/UC (40CFR63, Subpart HH)	☐

***** *Applicants that are subject to Section 6 may also be subject to Section 12 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 14.*

****** *Applicants that are subject to Section 10 may also be subject to the applicable RICE requirements of Section 13 and/or Section 15.*

******* *Applicants that are subject to Section 11 may also be subject to control device requirements of Section 14.*

Attachment G
Emission Source Data Sheets

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

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
S001	E001	Line Heater	2015	1.54 mmBtu/hr	New	NA
S002	E002	Line Heater	2015	1.54 mmBtu/hr	New	NA
S003	E003	Line Heater	2015	1.54 mmBtu/hr	New	NA
S004	E004	Line Heater	2015	1.54 mmBtu/hr	New	NA
S005	E005	Line Heater	2015	1.54 mmBtu/hr	New	NA
S006	E006	Line Heater	2015	1.54 mmBtu/hr	New	NA
S007	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
S008	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
S009	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
S010	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
S011	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
S012	E013 E014	Produced Fluid Tank	2015	400 bbl	New	C013 C014
C013	E013	Enclosed Combustion Device	2015	11.66 mmBtu/hr	New	NA
C014	E014	Enclosed Combustion Device	2015	11.66 mmBtu/hr	New	NA
S015	E013 E014 E018	Tank Truck Loading Rack	2015	55,640 gal/day	New	NA
S016	E016	Thermal Electric Generator	2015	0.013 mmBtu/hr	New	NA
S017	E017	Thermal Electric Generator	2015	0.013 mmBtu/hr	New	NA
S018	E013 E014	Sand Trap Blow Tank	2015	100 bbl	New	C013 C014

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

Attachment G
Emission Source Data Sheets
NATURAL 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).

Please provide the API number(s) for each NG well at this facility:
API Number
TBD
TBD
TBD
TBD
TBD
TBD

Note: This is the same API 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 (American Petroleum Institute) 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 G
Emission Source Data Sheets
STORAGE VESSEL EMISSION UNIT DATA SHEET

Provide the following information for each new or modified bulk liquid storage tank.

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **OXF-163 Storage Tank Area**	2. Tank Name **Produced Fluid Tanks (S007-S012)**
3. Emission Unit ID number **S007-S012**	4. Emission Point ID number **E013 or E014**
5. Date Installed or Modified *(for existing tanks)* **10/1/2015 (anticipated)**	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable): **NA***	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ **No**	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **NA**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. **16,800 gallons**	
9A. Tank Internal Diameter (ft.) **12**	9B. Tank Internal Height (ft.) **20**
10A. Maximum Liquid Height (ft.) **20**	10B. Average Liquid Height (ft.) **10**
11A. Maximum Vapor Space Height (ft.) **20**	11B. Average Vapor Space Height (ft.) **10**
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume. **16,800 gallons**	
13A. Maximum annual throughput (gal/yr) **20,002,584**	13B. Maximum daily throughput (gal/day) **54,801**
14. Number of tank turnovers per year **1,191**	15. Maximum tank fill rate (gal/min) **38.06**
16. Tank fill method ☒ Submerged ☐ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ 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): ☒ **Fixed Roof** **X vertical** ___ horizontal ___ flat roof **X** cone roof ___ dome roof ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)	

III. TANK CONSTRUCTION AND OPERATION INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 19 – 26 in section VII**

Attachment G
Emission Source Data Sheets

IV. SITE INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 27 – 33 in section VII**

V. LIQUID INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 34 – 39 in section VII**

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

40. Emission Control Devices (check as many as apply):

☐ Does Not Apply
☐ Carbon Adsorption[1]
☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers)
☐ Condenser[1]
☐ Other[1] (describe)
☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____
☐ Conservation Vent (psig
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)

[1] Complete appropriate Air Pollution Control Device Sheet

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name and CAS No.	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
Please Refer to Calculations Provided in Attachment I.									

[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.

SECTION VII (required if did not provide TANKS Summary Sheets)

TANK CONSTRUCTION AND OPERATION INFORMATION		
19. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☒ **Other WELDED**		
20A. Shell Color: **Green**	20B. Roof Color: **Green**	20C. Year Last Painted: **NA**
21. Shell Condition (if metal and unlined):		

Attachment G
Emission Source Data Sheets

☒ **No Rust** ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☒ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **-0.05 oz. to 10 oz.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☒ Yes ☐No	24A. If yes, for dome roof provide radius (ft): **NA**	24B. If yes, for cone roof, provide slop (ft/ft): **0.06 ft/ft**
25. Complete item 25 for **Floating Roof Tanks** ☐ **Does not apply** ☒		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☒ **Does not apply**		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ 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:
SITE INFORMATION:		
27. Provide the city and state on which the data in this section are based: **Charleston, WV**		
28. Daily Avg. Ambient Temperature (°F): **70 °F**	29. Annual Avg. Maximum Temperature (°F): **65.5 °F**	
30. Annual Avg. Minimum Temperature (°F): **44.0 °F**	31. Avg. Wind Speed (mph): **18 mph**	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,123**	33. Atmospheric Pressure (psia): **14.70**	
LIQUID INFORMATION: Refer to ProMax Simulation Sheets in Attachment I.		

Attachment G
Emission Source Data Sheets
STORAGE VESSEL EMISSION UNIT DATA SHEET

Provide the following information for each new or modified bulk liquid storage tank.

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **OXF-163 Storage Tank Area**	2. Tank Name **Sand Trap Blowdown Tank**
3. Emission Unit ID number **S018**	4. Emission Point ID number **E013 or E014**
5. Date Installed or Modified *(for existing tanks)* **10/1/2015 (anticipated)**	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable): **NA***	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ **No**	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **NA**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. **16,800 gallons**	
9A. Tank Internal Diameter (ft.) **12**	9B. Tank Internal Height (ft.) **20**
10A. Maximum Liquid Height (ft.) **20**	10B. Average Liquid Height (ft.) **10**
11A. Maximum Vapor Space Height (ft.) **20**	11B. Average Vapor Space Height (ft.) **10**
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume. **5,800 gallons**	
13A. Maximum annual throughput (gal/yr) **305,760**	13B. Maximum daily throughput (gal/day) **838**
14. Number of tank turnovers per year **52**	15. Maximum tank fill rate (gal/min) **14**
16. Tank fill method ☐ Submerged ☒ Splash ☐ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ 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): ☒ **Fixed Roof** __vertical **_X_ horizontal** __ flat roof __ cone roof **_X_ dome roof** ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)	

III. TANK CONSTRUCTION AND OPERATION INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 19 – 26 in section VII**

Attachment G
Emission Source Data Sheets

IV. SITE INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 27 – 33 in section VII**

V. LIQUID INFORMATION *(check which one applies)*

☐ Refer to enclosed TANKS Summary Sheets
☒ **Refer to the responses to items 34 – 39 in section VII**

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

40. Emission Control Devices (check as many as apply):

☐ Does Not Apply
☐ Carbon Adsorption[1]
☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers)
☐ Condenser[1]
☐ Other[1] (describe)
☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____
☐ Conservation Vent (psig
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)

[1] Complete appropriate Air Pollution Control Device Sheet

41. Expected Emission Rate (submit Test Data or Calculations here or elsewhere in the application).

Material Name and CAS No.	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
Please Refer to Calculations Provided in Attachment I.									

[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.

SECTION VII (required if did not provide TANKS Summary Sheets)

TANK CONSTRUCTION AND OPERATION INFORMATION		
19. Tank Shell Construction: ☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☒ **Other WELDED**		
20A. Shell Color: **Green**	20B. Roof Color: **Green**	20C. Year Last Painted: **NA**
21. Shell Condition (if metal and unlined):		

Attachment G
Emission Source Data Sheets

☒ **No Rust** ☐ Light Rust ☐ Dense Rust ☐ Not applicable		
22A. Is the tank heated? ☐ Yes ☒ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?
23. Operating Pressure Range (psig): **-0.5 oz. to 10 oz.**		
24. Is the tank a **Vertical Fixed Roof Tank**? ☒ Yes ☐No	24A. If yes, for dome roof provide radius (ft): **5 ft.**	24B. If yes, for cone roof, provide slop (ft/ft): **NA**
25. Complete item 25 for **Floating Roof Tanks** ☐ **Does not apply** ☒		
25A. Year Internal Floaters Installed:		
25B. Primary Seal Type *(check one):* ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):		
25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐No		
25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):		
25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No		
25F. Describe deck fittings:		
26. Complete the following section for **Internal Floating Roof Tanks** ☒ **Does not apply**		
26A. Deck Type: ☐ Bolted ☐ Welded	26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ 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:
SITE INFORMATION:		
27. Provide the city and state on which the data in this section are based: **Charleston, WV**		
28. Daily Avg. Ambient Temperature (°F): **70 °F**	29. Annual Avg. Maximum Temperature (°F): **65.5 °F**	
30. Annual Avg. Minimum Temperature (°F): **44.0 °F**	31. Avg. Wind Speed (mph): **18 mph**	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,123**	33. Atmospheric Pressure (psia): **14.70**	
LIQUID INFORMATION: Refer to ProMax Simulation Sheets in Attachment I.		

Attachment G
Emission Source Data Sheets

NATURAL GAS FIRED FUEL BURNING UNITS
EMISSION DATA SHEET

Complete the information on this data for each Gas Producing Unit(s), Heater Treater(s), and in-line heater(s) at the production pad. Reboiler information should be entered on the Glycol Dehydration Emission Unit Data Sheet.

Emission Unit ID #[1]	Emission Point ID#[2]	Emission Unit Description (Manufacturer / Model #)	Year Installed/ Modified	Type[3] and Date of Change	Control Device[4]	Design Heat Input (mmBtu/hr)[5]	Fuel Heating Value (Btu/scf)[6]
S001	**E001**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S002	**E002**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S003	**E003**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S004	**E004**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S005	**E005**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S006	**E006**	**Line Heater**	**2015**	**New**	**NA**	**1.54**	**1,088**
S016	**E016**	**TEG**	**2015**	**New**	**NA**	**0.013**	**1,088**
S017	**E017**	**TEG**	**2015**	**New**	**NA**	**0.013**	**1,088**

[1] Enter the appropriate Emission Unit (or Sources) 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 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] Complete appropriate air pollution control device sheet for any control device.

[5] Enter design heat input capacity in mmBtu/hr.

[6] Enter the fuel heating value in Btu/standard cubic foot.

Attachment G
Emission Source Data Sheets

TANK TRUCK LOADING
EMISSION UNIT DATA SHEET

Furnish the following information for each new or modified bulk liquid transfer area or loading rack at the natural gas production pad. This form is to be used for bulk liquid transfer operations to tank trucks.

1. Emission Unit ID: **S018**	2. Emission Point ID: **E013/E014**	3. Year Installed/ Modified: **2015**
4. Emission Unit Description: **Tank Truck Loading Rack**		
5. Loading Area Data:		
5A. Number of pumps: **1**	5B. Number of liquids loaded:**1**	5C. Maximum number of tank trucks loading at one time: **1**
6. Describe cleaning location, compounds and procedure for tank trucks: **NA**		
7. Are tank trucks pressure tested for leaks at this or any other location? ☐ Yes ☒ No If YES, describe: **NA**		

8. Projected Maximum Operating Schedule (for rack or transfer point as a whole):

Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	**As needed**	**As needed**	**As needed**	**As needed**
days/week	**As needed**	**As needed**	**As needed**	**As needed**

9. Bulk Liquid Data *(add pages as necessary):*

Liquid Name	**Produced Fluids**
Max. daily throughput (1000 gal/day)	**55.64**
Max. annual throughput (1000 gal/yr)	**20,308.3**
Loading Method [1]	**SP**
Max. Fill Rate (gal/min)	**42**
Average Fill Time (min/loading)	**100 min**
Max. Bulk Liquid Temperature (^{o}F)	**70 ^{o}F**
True Vapor Pressure [2]	**NA**
Cargo Vessel Condition[3]	**U**
Control Equipment or Method [4]	**Enclosed Combustion Device (C013 or C014)**
Minimum collection efficiency (%)	**70 %**
Minimum control efficiency (%)	**98 %**

** Continued on next page*

Attachment G
Emission Source Data Sheets

Maximum Emission Rate	Loading (lb/hr)	**0.05**
	Annual (ton/yr)	**0.21**
Estimation Method [5]		**EPA AP-42, ProMax**

Notes:

[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 as Attachment "H"*):
CA = Carbon Adsorption
VB = Dedicated Vapor Balance (closed system)
ECD = Enclosed Combustion Device
F = Flare
TO = Thermal Oxidation or Incineration

[5] EPA = EPA Emission Factor as stated in AP-42
MB = Material Balance
TM = Test Measurement based upon test data submittal
O = other (describe)

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

MONITORING *Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation/air pollution control device.* **EQT will comply with all monitoring requirements set forth in the permit that is issued.**	RECORDKEEPING *Please describe the proposed recordkeeping that will accompany the monitoring.* **EQT will comply with all recordkeeping requirements set forth in the permit that is issued.**
REPORTING *Please describe the proposed frequency of reporting of the recordkeeping.* **EQT will comply with all reporting requirements set forth in the permit that is issued.**	TESTING *Please describe any proposed emissions testing for this process equipment/air pollution control device.* **EQT will comply with all testing requirements set forth in the permit that is issued.**

11. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty:
NA

Attachment G
Emission Source Data Sheets
LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components[1]	Number of Components Monitored by Frequency[2]	Average Time to Repair (days)[3]	Estimated Annual Emission Rate (lb/yr)[4]
Pumps[5]	light liquid VOC[6,7]	--	--	--	--
	heavy liquid VOC[8]	--	--	--	--
	Non-VOC[9]	--	--	--	--
Valves[10]	Gas VOC	**222**	**N/A**	**N/A**	**561.60**
	Light Liquid VOC	--	--	--	--
	Heavy Liquid VOC	--	--	--	--
	Non-VOC	--	--	--	--
Safety Relief Valves[11]	Gas VOC	**6**	**N/A**	**N/A**	**22.49**
	Non VOC	--	--	--	--
Open-ended Lines[12]	VOC	**15**	**N/A**	**N/A**	**85.73**
	Non-VOC	--	--	--	--
Sampling Connections[13]	VOC	--	--	--	--
	Non-VOC	--	--	--	--
Compressors	VOC	--	--	--	--
	Non-VOC	--	--	--	--
Flanges	VOC	**969**	**N/A**	**N/A**	**272.37**
	Non-VOC	--	--	--	--
Other	VOC	--	--	--	--
	Non-VOC	--	--	--	--

[1 - 13] See notes on the following page.

Attachment G

FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

		PM	PM-10
k =	Particle size multiplier	**4.9**	**1.5**
s =	Silt content of road surface material (%)	**4.8**	**4.8**
p =	Number of days per year with precipitation >0.01 in.	**150**	**150**

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	**Liquids Hauling**	**14**	**30**	**10**	**0.72**	**1**	**4,835**	**NA**	**NA**
2	**Employee Vehicles**	**4**	**3**	**10**	**0.72**	**1**	**200**	**NA**	**NA**
3									
4									

Source: *AP-42 Fifth Edition – 13.2.2 Unpaved Roads*

$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) =$ lb/Vehicle Mile Traveled (VMT)

Where:

		PM		PM-10	
k =	Particle size multiplier	**4.9**		**1.5**	
s =	Silt content of road surface material (%)	**4.8**		**4.8**	
S =	Mean vehicle speed (mph)	**10**		**10**	
W =	Mean vehicle weight (tons)	**30**	**3**	**30**	**3**
w =	Mean number of wheels per vehicle	**14**	**4**	**14**	**4**
p =	Number of days per year with precipitation >0.01 in.	**150**		**150**	

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	**3.10**	**7.49**	**3.10**	**7.49**	**0.79**	**1.91**	**0.79**	**1.91**
2	**1.10**	**0.11**	**1.10**	**0.11**	**0.28**	**0.03**	**0.28**	**0.03**
3								
4	**Note: AP-42 has been updated since the last revision of this form. The most recently published factors were used in preparing these emission calculations. See Attachment I for detailed calculation methodologies.**							
5								
6								
7								
8								
TOTALS:	**4.20**	**7.60**	**4.20**	**7.60**	**1.07**	**1.94**	**1.07**	**1.94**

Attachment H

AIR POLLUTION CONTROL DEVICE
Vapor Combustion Control Device Sheet

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

IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.

General Information

1. Control Device ID#: **C013**	2. Installation Date: 2015 ☒ New	
3. Maximum Rated Total Flow Capacity: **~7,800 scfh 188,000 scfd**	4. Maximum Design Heat Input: **11.66 MMBtu/hr**	5. Design Heat Content: **1,088 BTU/scf**

Control Device Information

6. Select the type of vapor combustion control device being used: ☒ Enclosed Combustion Device

☐ Elevated Flare ☐ Ground Flare ☐ Thermal Oxidizer ☐ Completion Combustion Device

7. Manufacturer: **LEED Fabrication** Model No.: **Enclosed Combustor 48"**	8. Hours of operation per year: **8,760**

9. List the emission units whose emissions are controlled by this vapor combustion control device:
Emission Units: S007-S012, S015, S018

10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
S007-S012	**Produced Fluid Tanks**	**S015**	**Tank Truck Loading Rack**
S018	**Sand Trap Blowdown Tank**		

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

11. Assist Type	12. Flare Height	13. Tip Diameter	14. Was the design per §60.18?
☐ Steam - ☐ Air - ☐ Pressure - ☒ Non -	**~25 ft**	**4 ft**	☐Yes ☐No NA

Waste Gas Information

15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft3)	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (ft/s)
266.89 lb/hr	**Variable**	**70**	

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

Pilot Information

20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Pipeline quality Natural Gas	**1**	**~30**	**0.03 MMBtu/hr**	☐ Yes ☒ No

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

26. Describe the method of controlling flame:

There are 3 flame cells to stop the main flame front and two (2) 2" flame arrestors on the piping from the drip pot to the burner assembly.

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

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
HC	100	>98
VOC	100	>98
HAP	100	>98

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

Yes – pending certification from EPA

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

See Attached

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

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

AIR POLLUTION CONTROL DEVICE
Vapor Combustion Control Device Sheet

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

IMPORTANT: READ THE INSTRUCTIONS ACCOMPANYING THIS FORM BEFORE COMPLETING.

General Information

1. Control Device ID#: **C014**	2. Installation Date: 2015 ☒ New	
3. Maximum Rated Total Flow Capacity: **~7,800 scfh 188,000 scfd**	4. Maximum Design Heat Input: **11.66 MMBtu/hr**	5. Design Heat Content: **1,088 BTU/scf**

Control Device Information

6. Select the type of vapor combustion control device being used: ☒ Enclosed Combustion Device

☐ Elevated Flare ☐ Ground Flare ☐ Thermal Oxidizer ☐ Completion Combustion Device

7. Manufacturer: **LEED Fabrication** Model No.: **Enclosed Combustor 48"**	8. Hours of operation per year: **8,760**

9. List the emission units whose emissions are controlled by this vapor combustion control device:
Emission Units: S007-S012, S015, S018

10. Emission Unit ID#	Emission Source Description:	Emission Unit ID#	Emission Source Description:
S007-S012	**Produced Fluid Tanks**	**S015**	**Tank Truck Loading Rack**
S018	**Sand Trap Blowdown Tank**		

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

11. Assist Type	12. Flare Height	13. Tip Diameter	14. Was the design per §60.18?
☐ Steam - ☐ Air - ☐ Pressure - ☒ Non -	**~25 ft**	**4 ft**	☐Yes ☐No NA

Waste Gas Information

15. Maximum waste gas flow rate (scfm):	16. Heat value of waste gas stream (BTU/ft3)	17. Temperature of the emissions stream (°F)	18. Exit Velocity of the emissions stream (ft/s)
266.89 lb/hr	**Variable**	**70**	

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

Pilot Information

20. Type/Grade of pilot fuel:	21. Number of pilot lights:	22. Fuel flow rate to pilot flame per pilot (scf/hr):	23. Heat input per pilot (BTU/hr):	24. Will automatic re-ignition be used?
Pipeline quality Natural Gas	**1**	**~30**	**0.03 MMBtu/hr**	☐ Yes ☒ No

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

26. Describe the method of controlling flame:

There are 3 flame cells to stop the main flame front and two (2) 2" flame arrestors on the piping from the drip pot to the burner assembly.

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

29. Pollutant(s) Controlled	30. % Capture Efficiency	31. Manufacturer's Guaranteed Control Efficiency (%)
HC	100	>98
VOC	100	>98
HAP	100	>98

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

Yes – pending certification from EPA

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

See Attached

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

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

		Item/Tag No.:		Page	1	of	2
		Project No.:		Revision:	B		
		Project:		Date:	27 February 2014		
	Enviromental Control Equipment Data Sheet			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

1	Design Code:		NDE:	LEED Fabrication Standards
2	Service:		Customer Specs:	☐ Yes
3	Description:	Standard Dual Stage 48 High Efficiency Combustor		☑ 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	☑ Gas	☐ 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	H_2O				
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:	☐ Elevated	☑ Enclosed		Equipment Design:		
36		☐ Above Ground			Component	Material / Size / Rating / Other	
37		☑ Stack	☐ Multiple Stack		Burner		
38		☐ Portable / Trailer			Burner Tip / Assist Gas Burner	304 SS	
39					Burner Body	Carbon Steel	
40	Smokeless By:	☐ Steam	☐ Assist Air		Pilot		
41		☐ Gas Assist	☑ Staging		Pilot Tip	304 SS	
42					Pilot Line(s)	Carbon Steel	
43	Stack:	☑ Self Supporting			Firebox / Stack		
44	Flare Burner:	☐ Non-Smokeless	☑ Smokeless	☐ Gas Assist	Shell	Carbon Steel	
45	Pilot:	☑ Intermittent	☐ Continuous		Piping	Carbon Steel	
46	Pilot Air Inspirator:	☑ Local	☐ Remote		Nozzles	Carbon Steel	
47	Pilot Flame Control:	☐ No	☑ Yes (Thermocouple)		Flanges	Carbon Steel	
48					Insulation	Blanket	
49	Pilot Ignition:	☐ Flamefront Generator	☑ Inspirating Ignitor		Insulation Pins	304 SS	
50		☐ Electronic	☑ Automatic	☐ Manual	Refractory	NA	
51		☐ With Pilot Flame Control			Refractory Anchors	NA	
52		☐ With Auto Pilot Re-Ignition			Ladders and Platforms	NA	
53					Stack Sample Connections	Per EPA requirements	
54	Pilot Ignition Backup:	☐ Manual	Specify: i.e Piezo-Electric		Sight Glass	2	
55		☐ Battery Pack			Other		

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

EQUIPMENT SPECIFICATION

56	**Flame Detection:**	☐ Thermocouple ☑ Ionization Rod	**Auxiliary Equipment**		
57		☐ 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					

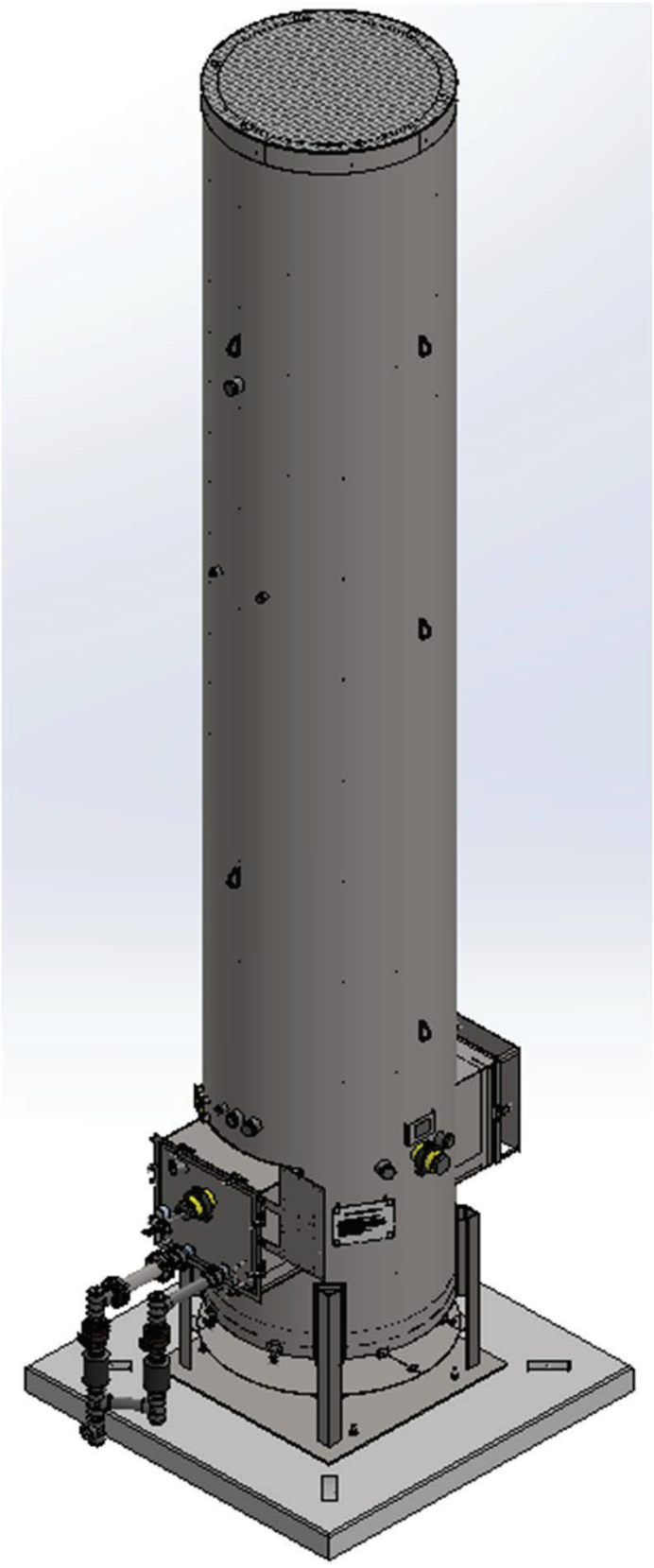
FABRICATION AND INSPECTION

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

Additional Notes:

		Item/Tag No.:		Page	3	of	3
		Project No.:		Revision:	B		
		Project:		Date:	27 February 2014		
				By:	JS		
Environmental Control Equipment Data Sheet		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



Attachment I

Line Heaters S001 - S006

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Boiler Rating (MMBtu/hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
VOC's	5.5	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	0.008	0.03
Hexane	1.8	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	0.003	0.011
Formaldehyde	0.075	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	<0.001	<0.001
Benzene	0.0021	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	<0.001	<0.001
Toluene	0.0034	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	<0.001	<0.001
Pb	0.0005	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	<0.001	<0.001
CO	84	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	0.12	0.52
NOx	100	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	0.14	0.62
PM_{10}	7.6	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	0.011	0.05
SO_2	0.6	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,088	8,760	<0.001	0.004
CO_2	53.06	kg CO_2 / MMBtu	40 CFR Subpart C	1.54	1,088	8,760	180.14	789.03
CH_4	0.001	kg CO_2 / MMBtu	40 CFR Subpart C	1.54	1,088	8,760	0.003	0.01
N_2O	0.0001	kg CO_2 / MMBtu	40 CFR Subpart C	1.54	1,088	8,760	<0.001	0.001
Total HAPs							0.003	0.012
Total CO_2e							180.33	789.85

Notes:

-Emission rates displayed above represent the max. hourly and max. annual emissions for one line heater. Cumulative emission rates for all 6 line heaters are diplayed in the Total Site Emissions Table.

-Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.

-AP-42, Chapter 1.4 references are from the July 1998 revision.

-Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.

-CO_2 equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2014). GWP CO_2=1, GWP CH_4=25, GWP N_2O=298

Example Equations:

Max. Hourly Emission Rate **(lb/hr) =** Emission Factor **(lb/10^6 scf)** ÷ Heating Value of Natural Gas **(Btu/scf)** x Boiler Rating (**MMBtu/hr)**

Thermoelectric Generators S016 & S017

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Boiler Rating (MMBtu/hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
VOC's	5.5	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
Hexane	1.8	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
Formaldehyde	0.075	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
Benzene	0.0021	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
Toluene	0.0034	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
Pb	0.0005	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
CO	84	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	0.001	0.004
NOx	100	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	0.001	0.005
PM_{10}	7.6	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
SO_2	0.6	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,088	8,760	<0.001	<0.001
CO_2	53.06	kg CO_2 / MMBtu	40 CFR Subpart C	0.013	1,088	8,760	1.52	6.66
CH_4	0.001	kg CO_2 / MMBtu	40 CFR Subpart C	0.013	1,088	8,760	<0.001	<0.001
N_2O	0.0001	kg CO_2 / MMBtu	40 CFR Subpart C	0.013	1,088	8,760	<0.001	<0.001
Total HAPs							<0.001	<0.001
Total CO_2e							1.52	6.67

Notes:

-Emission rates displayed above represent the max. hourly and max. annual emissions for one TEG. Cumulative emission rates for both TEGs are diplayed in the Total Site Emissions Table.

-Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.

- AP-42, Chapter 1.4 references are from the July 1998 revision.

-Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.

-CO_2 equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2014). GWP CO_2=1, GWP CH_4=25, GWP N_2O=298

Example Equations:

Max. Hourly Emission Rate **(lb/hr) =** Emission Factor **(lb/10^6 scf)** ÷ Heating Value of Natural Gas **(Btu/scf)** x Boiler Rating (**MMBtu/hr)**

Produced Fluids Tanks S007 - S012

Pollutant	Max. Hourly Emissions using ProMax (lb/hr)	Max. Annual Emissions using ProMax (tons/yr)
VOCs	368.22	1,612.79
Total HAPs	18.23	79.85
Hexane	16.43	71.97
Benzene	0.45	1.98
Toluene	0.93	4.09
Ethylbenzene	0.04	0.16
Xylene	0.33	1.43
CO_2	1.11	4.87
CH_4	58.75	257.31
Total CO_2e	1,469.75	6,437.51

Notes:

-Emission rates for Produced Fluid Tanks S007 - S012 were calculated using ProMax software. ProMax output sheets for the OXF-163 Pad are attached.

-The emission rates displayed above are pre-control device emissions.

-CO_2 equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2014). GWP CO_2=1, GWP CH_4=25, GWP N_2O=298

-CO_2 and CH_4 emissions solved for using emissions rates (lb/hr) of "4" from the ProMax output sheets.

-For emission calculation purposes, the total throughput for tanks S007 - S012 is modeled as being received through a single tank. The throughput value represents the total throughput for all six (6) 400-barrel tanks. Therefore, emission rates represent a total from all produced fluids tanks located on the well pad. Actual throughput for each tank will vary based on operations.

Sand Trap Blow Tank S018

Pollutant	Max. Hourly Emissions using ProMax (lb/hr)	Max. Annual Emissions using ProMax (tons/yr)
VOCs	5.64	24.71
Total HAPs	0.28	1.22
Hexane	0.25	1.10
Benzene	0.007	0.03
Toluene	0.01	0.06
Ethylbenzene	0.001	0.002
Xylene	0.005	0.02
CO_2	0.02	0.07
CH_4	0.90	3.94
Total CO_2e	22.52	98.63

Notes:

-Blowdown operations are conducted on the OFX 163 pad daily to allow for the removal of fluids from the sand traps. Based on available operational information, blowdowns are assummed to occur for one hour per day.

-Emissions from the Sand Trap Blow Tank are routed to an enclosed ground flare. The values displayed above a pre-control emission rates.

-Emission rates for the Sand Trap Blow Tank were calculated using ProMax software. ProMax output sheets for the OFX-163 Pad are attached.

-CO_2 equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1. GWP CO_2=1, GWP CH_4=25, GWP N_2O=298

-CO_2 and CH_4 emissions solved for using emissions rates (lb/hr) of Stream "4" from the ProMax output sheets.

Tank Unloading Operations S015

Total Emissions from Tank Unloading Operations

Pollutant	Max. Hourly Emissions (lb/hr)	Max. Yearly Emissions (tons/yr)	Loading Rack Collection Efficiency	Enclosed Combustion Device Combusion Efficiency	Post-Control Max. Yearly Emissions (lb/hr)	Post-Control Max. Yearly Emissions (tons/yr)	Max. Hourly Emissions Not Collected by Loading Rack (lb/hr)	Max. Hourly Emissions Not Collected by Loading Rack (tons/yr)
VOCs	0.16	0.71	70%	98%	0.002	0.01	0.05	0.21
HAPs	<0.001	0.003	70%	98%	<0.001	<0.001	<0.001	<0.001
CO_2	0.001	0.006	70%	98%	0.68	2.97	<0.001	0.002
CH_4	0.012	0.05	70%	98%	<0.001	<0.001	0.003	0.015
Total CO_2e	0.29	1.28	--	--	0.68	2.99	0.09	0.38

-CO_2 and CH_4 emissions solved for using emissions rates (lb/hr) of load out fluids from ProMax summary sheets.

Gas Composition of Vent Gas

Gas Stream
Methane
Ethane
Propane
Butane
Pentanes
Carbon Dioxide

Vent Gas Properties

Mass Flowrate (lb/hr)	Density (lb/ft^3)
0.38	0.10

Notes:

-Emission rates for liquid unloading operations were calculated using ProMax software. ProMax summary sheets are attached.

Enclosed Combustion Devices C013 - C014

Emissions from Tanks

Input to Enclosed Combustion Device	Pollutant	Amount of Gas Sent to Enclosed Combustion Device (lbs/hr)	Amount of Gas Sent to Enclosed Combustion Device (tons/year)	Enclosed Combustion Device Combustion Efficiency	Max. Hourly Emissions (lb/hr)	Max. Yearly Emissions (tons/yr)
Condensate Tanks S021 - S044	VOCs	184.11	806.39	98%	3.68	16.13
	HAPs	9.12	39.93	98%	0.182	0.80
	CO_2	0.56	2.43	98%	670.16	2,935.29
	CH_4	29.37	128.65	98%	0.59	2.57
Sand Trap Blowdown Tank - S017	VOCs	2.82	12.36	98%	0.06	0.25
	HAPs	0.14	0.61	98%	0.003	0.01
	CO_2	0.01	0.04	98%	10.27	44.97
	CH_4	0.45	1.97	98%	0.01	0.04
Truck Loading - S016	VOCs	0.08	0.35	98%	0.00	0.00
	HAPs	<0.001	0.001	98%	<0.001	<0.001
	CO_2	<0.001	0.003	98%	0.34	1.48
	CH_4	0.006	0.03	98%	<0.001	<0.001
Totals	VOCs	187.01	819.10	--	3.74	16.38
	HAPs	9.26	40.54	--	0.19	0.81
	CO_2	0.56	2.47	--	680.76	2,981.74
	CH_4	29.83	130.65	--	0.60	2.61
	CO2e	746.28	3,268.71	--	695.68	3,047.06

Gas Composition of Vent Gas

Gas Stream	Mole Fraction
Methane	0.27
Ethane	0.22
Propane	0.19
Butane	0.15
Pentanes	0.08
Carbon Dioxide	0.002

Vent Gas Properties

Vent Gas Properties	Mass Flow Rate (lb/hr)	Density (lb/ft^3)
Condensate Tank	262.86	0.10
Blowdown Tank	4.03	0.10

Emissions from Pilot Operations

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factors (kg X/MMBtu)	Heat Value of Natural Gas (Btu/scf)	Enclosed Ground Flare Pilot Rating (Btu/hr)	Enclosed Ground Flare Burner Rating (Btu/hr)	Plant Max. Hourly Emissions (lb/yr)	Plant Max. Hourly Emissions (tons/yr)	Burner Max.Hourly Emissions (lb/hr)	Burner Max.Hourly Emissions (tons/hr)	Max. Hourly Emissions (lb/hr)	Max. Yearly Emissions (tons/yr)
VOCs	5.5	--	1,088	30,000	11,660,000	<0.001	<0.001	0.06	0.26	0.06	0.26
Hexane	1.8	--	1,088	30,000	11,660,000	<0.001	<0.001	0.02	0.08	0.02	0.08
Formaldehyde	0.075	--	1,088	30,000	11,660,000	<0.001	<0.001	<0.001	0.004	<0.001	0.004
CO	84	--	1,088	30,000	11,660,000	0.002	0.01	0.90	3.94	0.90	3.95
NO_x	100	--	1,088	30,000	11,660,000	0.003	0.01	1.07	4.69	1.07	4.71
PM_{10}	7.6	--	1,088	30,000	11,660,000	<0.001	<0.001	0.08	0.36	0.08	0.36
SO_2	0.6	--	1,088	30,000	11,660,000	<0.001	<0.001	0.006	0.03	0.006	0.03
CO_2	--	52	1,088	30,000	11,660,000	3.44	15.08	1,226.46	5,371.89	1,229.90	5,386.98
CH_4	--	0.0	1,088	30,000	11,660,000	<0.001	<0.001	0.02	0.10	0.02	0.10
N_2O	--	<0.001	1,088	30,000	11,660,000	<0.001	<0.001	0.002	0.01	0.002	0.01
Total HAPs						<0.001	<0.001	0.02	0.09	0.02	0.09
CO_2e						3.45	15.10	1,227.75	5,377.55	1,231.20	5,392.65

Total Enclosed Combustion Device Emissions

Pollutant	Max. Hourly Emissions (lb/hr)	Max. Yearly Emissions (tons/yr)
VOCs	3.80	16.64
HAPs	0.21	0.90
CO	0.90	3.95
NOx	1.07	4.71
PM_{10}	0.08	0.36
SO_2	0.01	0.03
CO_2	1,910.67	8,368.71
CH_4	0.62	2.72
N_2O	0.00	0.01
CO_2e	1,926.87	8,439.70

Notes:
-Emissions from Enclosed Combustion Device Operations from AP-42, Chapter 1.4 references are from the July 1998 revision.
-Greenhouse Gas Emissions from the Enclosed Combustion Device Pilot and Burner calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
-Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.
-CO_2 equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2014). GWP CO_2=1, GWP CH_4=25, GWP N_2O=298

Example Calculations:
Emissions from Tanks VOCs (lb/hr) = Amount of Gas sent to Enclosed Combustion Device (lb/hr) x 0.02 = Max. Hourly Emissions (lb/hr)
Emissions from Enclosed Combustion Device Operations (lb/hr) = Emission factor (lb/106 Btu) x Heat Value of Natural Gas (Btu/scf) ÷ 1,000,000 x Enclosed Combustion Device Pilot Gas Usage (mcfd) x 1,000 ÷ 24
Emissions from Enclosed Combustion Device Vapor Destruction CO2 Methodologies shown below sample equation

Emissions from Enclosed Combustion Device Operations CO2 (tons/yr) = ((Enclosed Combustion Device Pilot Gas Usage (mcfd) x 1,000 x 365 x Fraction of Gas Combusted by Enclosed Combustion Device x Mole Fraction of Methane x Number of Carbon Atoms in Methane) + … + (Enclosed Combustion Device Pilot Gas Usage (mcfd) x 1,000 x 365 x Fraction of Gas Combusted by Enclosed Combustion Device x Mole Fraction of Pentanes-plus x Number of Carbon Atoms in Pentanes-plus))
x .0526 (kg/ft3) CO2 x .001 x 1.102 tons/tonnes

$$E_{a,CH4}(un-combusted) = V_a * (1-\eta) * X_{CH4} \qquad \text{(Eq. W-19)}$$

$$E_{a,CO2}(un-combusted) = V_a * X_{CO2} \qquad \text{(Eq. W-20)}$$

$$E_{a,CO2}(combusted) = \sum_{J=1}^{5} (\eta * V_a * Y_j * R_j) \qquad \text{(Eq. W-21)}$$

Where:
Ea,CH4(un-combusted) = Contribution of annual un-combusted CH4 emissions from Enclosed Combustion Device stack in cubic feet, under actual conditions.
Ea,CO2(un-combusted) = Contribution of annual un-combusted CO2 emissions from Enclosed Combustion Device stack in cubic feet, under actual conditions.
Ea,CO2(combusted) = Contribution of annual combusted CO2 emissions from Enclosed Combustion Device stack in cubic feet, under actual conditions.
Va = Volume of gas sent to Enclosed Combustion Device in cubic feet, during the year.
η = Fraction of gas combusted by a burning Enclosed Combustion Device (default is 0.98). For gas sent to an unlit Enclosed Combustion Device, η is zero.
XCH4 = Mole fraction of CH4 in gas to the Enclosed Combustion Device.
XCO2 = Mole fraction of CO2 in gas to the Enclosed Combustion Device.
Y_j = Mole fraction of gas hydrocarbon constituents j (such as methane, ethane, propane, butane, and pentanes-plus).
R_j = Number of carbon atoms in the gas hydrocarbon constituent j: 1 for methane, 2 for ethane, 3 for propane, 4 for butane, and 5 for pentanes plus).

Fugitive Emissions from Unpaved Haul Roads

Constant	Industrial Roads		
	PM	PM-10	PM-2.5
k (lb/VMT)	4.9	1.5	0.15
a	0.7	0.9	0.9
b	0.45	0.45	0.45

where

k		Patricle size multiplier[1]
s	4.8	Silt content of road surface material (%)
p	150	Number of days per year with precipitation

Item Number	Description	Number of Wheels	W: Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Year	Control Efficiency (%)	PM Emissions (lbs/hr)	PM Emissions (tons/yr)	PM-10 Emissions (lbs/hr)	PM-10 Emissions (tons/yr)	PM-2.5 Emissions (lbs/hr)	PM-2.5 Emissions (tons/yr)
1	Liquids Hauling	14	30	0.72	4,835	NA	3.10	7.49	0.79	1.91	0.08	0.19
2	Employee Vehicles	4	3	0.72	200	NA	1.10	0.11	0.28	0.03	0.03	0.003
						Totals:	**4.20**	**7.60**	**1.07**	**1.94**	**0.11**	**0.19**

Notes:

[1] - Particle Size Multiplier used from AP-42 13.2.2 - Final Version 11/2006

[2] - Silt Content of Road Surface uses Sand and Gravel Processing Plant Road from AP-42 13.2.2 - Final Version 11/2006

[3] - Number of days per year with precipitation >0.01 in3 found using AP-42 13.2.2 Figure 13.2.2-1 - Final Version 11/2006

Example Calculations:

Emissions (lb/Vehicle Mile Traveled) - $E = k \times (s/12)^a \times (W/3)^b$ — Equation 1a from AP-42 13.2.2 - Final Version 11/2006

Size Specific Emissions (lb/VMT) - $E_{ext} = E[(365-p)/365]$ — Equation 2 from AP-42 13.2.2 - Final Version 11/2006

Fugitive Leaks

Default Average Component Counts for Major Onshore Natural Gas Production Equipment[1]				
Facility Equipment Type	**Valves**	**Connectors**	**Open-ended Lines**	**Pressure Relief Valves**
Wellheads	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 40CFR98 Subpart W

Well Specific Equipment Counts	
Facility Equipment Type	**Count on Site**
Wellheads	6
Separators	6
Meters/Piping	7
Compressors	0
In-line Heaters	6
Dehydrators	0

Gas Composition														
Emissions from Flaring Operations	**Propane**	**Butane**	**Pentanes**	**Heptane**	**Octanes**	**Nonanes**	**Decanes**	**Hexane**	**Benzene**	**Toluene**	**Ethylbenzene**	**Xylene**	**CO_2**	**CH_4**
Mole %	4.16	1.71	0.71	0.22	0.14	0.03	0.009	0.41	0.01	0.014	<0.001	0.007	0.19	78.57
MW	44	58	72	100	114	128	142	86.00	78.00	92.00	106.00	106.00	44.00	16.00

Fugitive Emissions													
Facility Equipment Type	**Total Count**	**Emission Rate (scf/hr/component)[2]**	**Hours of Operation**	**VOCs (lbs/hr)**	**VOCs (tons/yr)**	**HAPs (lbs/hr)**	**HAPs (tons/yr)**	**CO_2 (lbs/hr)**	**CO_2 (tons/yr)**	**CH_4 (lbs/hr)**	**CH_4 (tons/yr)**	**Total CO_2e (lbs/hr)**	**Total CO_2e (tons/yr)**
Valves	222	0.027	8760	0.06	0.28	0.006	0.03	0.001	0.006	0.20	0.86	4.89	21.41
Connectors	969	0.003	8760	0.03	0.14	0.003	0.01	<0.001	0.003	0.09	0.42	2.37	10.38
Open-ended Lines	15	0.06	8760	0.01	0.04	<0.001	0.004	<0.001	<0.001	0.03	0.13	0.75	3.27
Pressure Relief Valves	6	0.04	8760	0.003	0.01	<0.001	0.001	<0.001	<0.001	0.01	0.03	0.20	0.86
			Total Emissions:	**0.11**	**0.47**	**0.01**	**0.04**	**0.002**	**0.01**	**0.33**	**1.44**	**8.20**	**35.92**

[2]- Table W-1A to 40CFR98 Subpart W

Notes:
-Gas Composition data for OXF-163 site was unavailable. Gas composition was used to determine fugitive emissions based upon a nearby similar natural gas production site operated by EQT.

Example Equations:
Fugitive Emissions (lb/hr) = Count x Emission Rate x Hours of Operation ÷ 385.5 scf/lbmol x mol VOC's

Total OXF 163 Site Emission Levels

	VOCs		HAPs		CO		NO_x		PM		SO_2		CO_2		CH_4		N_2O		CO_2e	
Emission Sources	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**
Line Heater (S001)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
Line Heater (S002)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
Line Heater (S003)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
Line Heater (S004)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
Line Heater (S005)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
Line Heater (S006)	0.008	0.03	0.003	0.01	0.12	0.52	0.14	0.62	0.011	0.05	<0.001	0.004	180.14	789.03	0.003	0.01	<0.001	0.001	180.33	789.85
TEG (S016)	<0.001	<0.001	<0.001	<0.001	0.001	0.004	0.001	0.005	<0.001	<0.001	<0.001	<0.001	1.52	6.66	<0.001	<0.001	<0.001	<0.001	1.52	6.67
TEG (S017)	<0.001	<0.001	<0.001	<0.001	0.001	0.004	0.001	0.005	<0.001	<0.001	<0.001	<0.001	1.52	6.66	<0.001	<0.001	<0.001	<0.001	1.52	6.67
Enclosed Combustion Unit (C013)	3.80	16.64	0.21	0.90	0.90	3.95	1.07	4.71	0.08	0.36	0.006	0.03	1,910.67	8,368.71	0.62	2.72	0.002	0.01	1,926.87	8,439.70
Enclosed Combustion Unit (C014)	3.80	16.64	0.21	0.90	0.90	3.95	1.07	4.71	0.08	0.36	0.006	0.03	1,910.67	8,368.71	0.62	2.72	0.002	0.01	1,926.87	8,439.70
Tank Truck Loading Activities (E018)	0.05	0.21	<0.001	<0.001	--	--	--	--	--	--	--	--	<0.001	0.00	0.003	0.02	--	--	0.09	0.38
Haul Roads	--	--	--	--	--	--	--	--	4.20	7.60	--	--	--	--	--	--	--	--	--	--
Fugitives Leaks	0.11	0.47	0.01	0.04	--	--	--	--	--	--	--	--	0.002	0.01	0.33	1.44	--	--	8.20	35.92
Totals	**7.80**	**34.17**	**0.44**	**1.91**	**2.52**	**11.04**	**3.00**	**13.14**	**4.43**	**8.60**	**0.02**	**0.08**	**4,905.24**	**21,484.96**	**1.59**	**6.97**	**0.01**	**0.03**	**4,947.06**	**21,668.14**

-Two enclosed combustion devices are being included in this application. Emissions from the produced fluid tanks, sand trap blowdown tanks, and tank truck loading are routed to either C013 or C014. For the permitting of these sources, it is assumed that vapors are being evenly distributed between the two enclosed combustion devices. For this reason, the emissions from the combustion of vent gases between C013 and C014 are additive.

Total OXF-163 Site Emission Levels - HAP Speciation

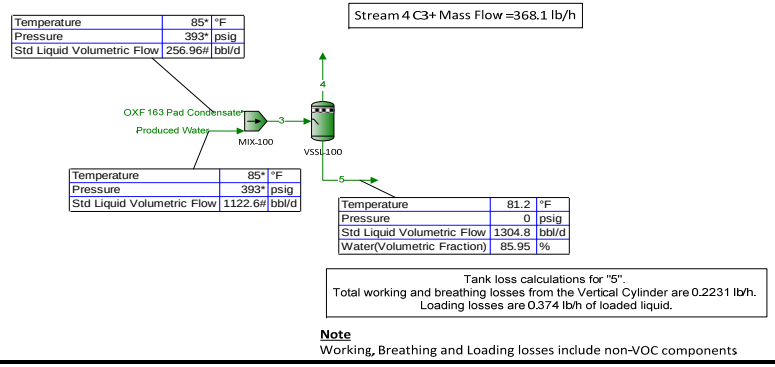
	Total HAPs		Hexane		Benzene		Toluene		Ethylbenzene		Xylene	
Emission Sources	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**
Line Heater (S001)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Line Heater (S002)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Line Heater (S003)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Line Heater (S004)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Line Heater (S005)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Line Heater (S006)	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TEG (S016)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TEG (S017)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Enclosed Combustion Unit (C013)	0.21	0.90	0.19	0.82	<0.01	0.02	<0.01	0.04	<0.01	<0.01	<0.01	0.01
Enclosed Combustion Unit (C014)	0.21	0.90	0.19	0.82	<0.01	0.02	<0.01	0.04	<0.01	<0.01	<0.01	0.01
Tank Truck Loading Activities (E018)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Haul Roads	--	--	--	--	--	--	--	--	--	--	--	--
Fugitives Leaks	0.01	0.04	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Totals	**0.44**	**1.91**	**0.37**	**1.63**	**0.00**	**0.08**	**0.00**	**0.08**	**0.00**	**0.00**	**0.00**	**0.03**

-Two enclosed combustion devices are being included in this application. Emissions from the produced fluids tanks, sand trap blowdown tanks, and truck loading are routed to either C013 or C014. For the permitting of these sources, it is assumed that vapors are being evenly distributed between the two enclosed combustion devices. For this reason, the emissions from the combustion of vent gases between C013 and C014 are additive.

Flowsheet1
Plant Schematic

Client Name:	EQT	Job:
Location:	OXF 163 100% Contingency	
Flowsheet:	Flowsheet1	

EQT OXF 163 Well Pad
100% Contingency



Note
Working, Breathing and Loading losses include non-VOC components

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job:	
Location:	OXF 163 100% Contingency		
Flowsheet:	Flowsheet1		

Connections

	OXF 163 Pad Condensate	Produced Water	3	4	5
From Block	--	--	MIX-100	VSSL-100	VSSL-100
To Block	MIX-100	MIX-100	VSSL-100	--	--

Stream Composition

Mole Fraction	OXF 163 Pad Condensate %		Produced Water %		3 %	4 %	5 %
Nitrogen	0	*	0	*	0	0	0
Methane	12.131	*	0	*	0.392867	27.3861	0.00324517
Carbon Dioxide	0.087	*	0	*	0.00281753	0.188739	0.000133935
Ethane	10.145	*	0	*	0.32855	22.1612	0.0134157
Propane	9.322	*	0	*	0.301896	18.5658	0.038275
i-Butane	2.446	*	0	*	0.0792146	4.10285	0.0211373
n-Butane	6.995	*	0	*	0.226536	10.5718	0.0772116
i-Pentane	3.988	*	0	*	0.129153	3.92655	0.0743411
n-Pentane	5.018	*	0	*	0.16251	4.14567	0.105017
Isohexane	4.263	*	0	*	0.138059	1.84689	0.113394
n-Hexane	4.311	*	0	*	0.139613	1.42619	0.121043
2,2,4-Trimethylpentane	0.025	*	0	*	0.000809634	0.00327915	0.000773989
Benzene	0.136	*	0	*	0.00440441	0.0433273	0.0038426
Heptane	11.691	*	0	*	0.378617	1.42008	0.363585
Toluene	0.717	*	0	*	0.0232203	0.0758228	0.022461
Octane	9.741	*	0	*	0.315466	0.393309	0.314342
Ethylbenzene	0.074	*	0	*	0.00239652	0.00255267	0.00239426
o-Xylene	0.878	*	0	*	0.0284344	0.0229619	0.0285133
Nonane	4.769	*	0	*	0.154446	0.0642891	0.155747
Decane	13.263	*	0	*	0.429527	0.05915	0.434873
Water	0	*	100	*	96.7615	3.59342	98.1063

Mass Fraction	OXF 163 Pad Condensate %		Produced Water %		3 %	4 %	5 %
Nitrogen	0	*	0	*	0	0	0
Methane	2.49009	*	0	*	0.315713	11.1731	0.00264489
Carbon Dioxide	0.0489906	*	0	*	0.00621142	0.211241	0.00029946
Ethane	3.90318	*	0	*	0.494876	16.9467	0.0204943
Propane	5.25959	*	0	*	0.666852	20.8199	0.085745
i-Butane	1.81906	*	0	*	0.230634	6.06455	0.0624151
n-Butane	5.20208	*	0	*	0.659561	15.6265	0.227994
i-Pentane	3.68156	*	0	*	0.466777	7.20461	0.272494
n-Pentane	4.63241	*	0	*	0.587334	7.60667	0.384933
Isohexane	4.70052	*	0	*	0.595969	4.04757	0.496443
n-Hexane	4.75345	*	0	*	0.602679	3.1256	0.529932
2,2,4-Trimethylpentane	0.0365395	*	0	*	0.00463276	0.00952592	0.00449167
Benzene	0.135926	*	0	*	0.0172338	0.0860695	0.0152489
Heptane	14.9891	*	0	*	1.90043	3.61877	1.85089
Toluene	0.845293	*	0	*	0.107173	0.177669	0.10514
Octane	14.2372	*	0	*	1.80511	1.14256	1.82421
Ethylbenzene	0.100522	*	0	*	0.012745	0.00689204	0.0129137
o-Xylene	1.19268	*	0	*	0.151217	0.0619956	0.15379
Nonane	7.82617	*	0	*	0.992264	0.209693	1.01483
Decane	24.1456	*	0	*	3.06137	0.21403	3.14347
Water	0	*	100	*	87.3212	1.64634	89.7916

Mass Flow	OXF 163 Pad Condensate lb/h		Produced Water lb/h		3 lb/h	4 lb/h	5 lb/h
Nitrogen	0	*	0	*	0	0	0
Methane	59.221	*	0	*	59.221	58.7388	0.482219

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job:	
Location:	OXF 163 100% Contingency		
Flowsheet:	Flowsheet1		

Mass Flow	OXF 163 Pad Condensate lb/h	Produced Water lb/h	3 lb/h	4 lb/h	5 lb/h
Carbon Dioxide	1.16513 *	0 *	1.16513	1.11053	0.054598
Ethane	92.8281 *	0 *	92.8281	89.0916	3.73654
Propane	125.087 *	0 *	125.087	109.454	15.6331
i-Butane	43.262 *	0 *	43.262	31.8824	11.3796
n-Butane	123.719 *	0 *	123.719	82.1513	41.5681
i-Pentane	87.5573 *	0 *	87.5573	37.8759	49.6814
n-Pentane	110.171 *	0 *	110.171	39.9896	70.1815
Isohexane	111.791 *	0 *	111.791	21.2788	90.5121
n-Hexane	113.05 *	0 *	113.05	16.4318	96.6178
2,2,4-Trimethylpentane	0.869006 *	0 *	0.869006	0.0500794	0.818926
Benzene	3.23269 *	0 *	3.23269	0.452482	2.78021
Heptane	356.481 *	0 *	356.481	19.0245	337.456
Toluene	20.1033 *	0 *	20.1033	0.934036	19.1693
Octane	338.599 *	0 *	338.599	6.00665	332.593
Ethylbenzene	2.39068 *	0 *	2.39068	0.0362327	2.35445
o-Xylene	28.3651 *	0 *	28.3651	0.325921	28.0392
Nonane	186.127 *	0 *	186.127	1.10239	185.025
Decane	574.247 *	0 *	574.247	1.12519	573.122
Water	0 *	16379.6 *	16379.6	8.65511	16370.9

Stream Properties

Property	Units	OXF 163 Pad Condensate	Produced Water	3	4	5
Temperature	°F	85 *	85 *	85.0985	81.2448	81.2448
Pressure	psia	407.696 *	407.696 *	407.696	14.6959 *	14.6959
Mole Fraction Vapor	%	2.45359	0	0.0230963	100	0
Mole Fraction Light Liquid	%	97.5464	100	3.16039	0	1.8921
Mole Fraction Heavy Liquid	%	0	0	96.8165	0	98.1079
Molecular Weight	lb/lbmol	78.1542	18.0153	19.9629	39.3214	19.6835
Mass Density	lb/ft^3	34.8738	62.1455	57.6661	0.100821	59.5052
Molar Flow	lbmol/h	30.4304	909.204	939.635	13.3698	926.265
Mass Flow	lb/h	2378.27	16379.6	18757.8	525.717	18232.1
Vapor Volumetric Flow	ft^3/h	68.1964	263.568	325.284	5214.38	306.396
Liquid Volumetric Flow	gpm	8.50241	32.8604	40.5549	650.105	38.2
Std Vapor Volumetric Flow	MMSCFD	0.277149	8.2807	8.55785	0.121767	8.43608
Std Liquid Volumetric Flow	sgpm	7.49457 *	32.744 *	40.2385	2.18174	38.0568
Compressibility		0.156312	0.0202195	0.0241415	0.98738	0.000837436
Specific Gravity			0.996417		1.35766	0.954082
API Gravity			9.96415			16.1637
Enthalpy	Btu/h	-2.35821E+06	-1.11588E+08	-1.13946E+08	-621210	-1.13325E+08
Mass Enthalpy	Btu/lb	-991.568	-6812.63	-6074.59	-1181.64	-6215.67
Mass Cp	Btu/(lb*°F)	0.531146	0.981529	0.925092	0.421415	0.93377
Ideal Gas CpCv Ratio		1.06777	1.32512	1.28951	1.13713	1.29463
Dynamic Viscosity	cP		0.833816		0.00889169	0.806909
Kinematic Viscosity	cSt		0.837605		5.50572	0.83748
Thermal Conductivity	Btu/(h*ft*°F)		0.353848		0.0122885	0.312747
Surface Tension	lbf/ft		0.00492858			0.0044521 ?
Net Ideal Gas Heating Value	Btu/ft^3	3993.4	0	129.328	2031.85	101.867
Net Liquid Heating Value	Btu/lb	19235.7	-1059.76	1513.46	19454.3	996.143
Gross Ideal Gas Heating Value	Btu/ft^3	4313.43	50.31	188.373	2213.17	159.147
Gross Liquid Heating Value	Btu/lb	20789.6	0	2635.87	21204.2	2100.46

Remarks

Blocks
MIX-100
Mixer/Splitter Report

Client Name:	EQT	Job:	
Location:	OXF 163 100% Contingency	Modified:	3:14 PM, 7/24/2014
Flowsheet:	Flowsheet1	Status:	Solved 9:48 AM, 5/8/2015

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Produced Water	Inlet		OXF 163 Pad Condensate	Inlet	
3	Outlet	VSSL-100			

Block Parameters

Pressure Drop	0 psi	Fraction to PStream 3	100 %

Remarks

Blocks
VSSL-100
Separator Report

Client Name:	EQT	Job:	
Location:	OXF 163 100% Contingency	Modified: 2:11 PM, 7/17/2014	
Flowsheet:	Flowsheet1	Status: Solved 9:48 AM, 5/8/2015	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
3	Inlet	MIX-100	4	Vapor Outlet	
5	Light Liquid Outlet				

Block Parameters

Pressure Drop	393	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	1.42287	%	Heat Duty	0	Btu/h
Mole Fraction Light Liquid	1.86518	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	96.712	%	Heat Release Curve Increments	5	

Remarks

Flowsheet Environment
Environment1

Client Name:	EQT	Job:	
Location:	OXF 163 100% Contingency		
Flowsheet:	Flowsheet1		

Environment Settings

Number of Poynting Intervals	0	Freeze Out Temperature Threshold Difference	10 °F
Gibbs Excess Model Evaluation Temperature	77 °F	Phase Tolerance	1 %

Components

Component Name	Henry`s Law Component	Phase Initiator	Component Name	Henry`s Law Component	Phase Initiator
Nitrogen	False	False	2,2,4-Trimethylpentane	False	False
Methane	False	False	Benzene	False	False
Carbon Dioxide	False	False	Heptane	False	False
Ethane	False	False	Toluene	False	False
Propane	False	False	Octane	False	False
i-Butane	False	False	Ethylbenzene	False	False
n-Butane	False	False	o-Xylene	False	False
i-Pentane	False	False	Nonane	False	False
n-Pentane	False	False	Decane	False	False
Isohexane	False	False	Water	False	True
n-Hexane	False	False			

Physical Property Method Sets

Liquid Molar Volume	COSTALD	Overall Package	Peng-Robinson
Stability Calculation	Peng-Robinson	Vapor Package	Peng-Robinson
Light Liquid Package	Peng-Robinson	Heavy Liquid Package	Peng-Robinson

Remarks

Calculator Report

Client Name:	EQT	Job:
Location:	OXF 163 100% Contingency	

Simple Solver 1

Source Code

Residual Error (for CV1) = TP / 476190 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!OXF 163 Pad Condensate!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	256.957
Unit	bbl/d

Measured Variable [TP]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	476253
Unit	bbl/yr

Solver Properties

Status: Solved

Error	0.000133126		Iterations	9
Calculated Value	7.49457	sgpm	Max Iterations	20
Lower Bound		sgpm	Weighting	1
Upper Bound		sgpm	Priority	0
Step Size		sgpm	Solver Active	Active
Is Minimizer	False		Group	
Algorithm	Default		Skip Dependency Check	False

Remarks

Simple Solver 2

Source Code

Residual Error (for CV1) = LF /86 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Produced Water!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	1122.65
Unit	bbl/d

Measured Variable [LF]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Composition!Std. Liquid Volumetric Fraction!Water
Value	85.9943
Unit	%

Solver Properties

Status: Solved

Error	-6.65926E-05		Iterations	9
Calculated Value	32.744	sgpm	Max Iterations	20
Lower Bound		sgpm	Weighting	1
Upper Bound		sgpm	Priority	0
Step Size		sgpm	Solver Active	Active
Is Minimizer	False		Group	
Algorithm	Default		Skip Dependency Check	False

Remarks

User Value Sets Report

Client Name:	EQT	Job:
Location:	OXF 163 100% Contingency	

Cn+ Flow/Frac.

User Value [CnPlusSum]

* Parameter	368.121	lb/h	Upper Bound	
Lower Bound		lb/h	* Enforce Bounds	False

Remarks
This User Value Set was programmatically generated. GUID={E867C485-3D3C-49CB-BC24-EA16096DB2B1}

Tank Losses

User Value [ShellLength]

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

User Value [ShellDiam]

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

User Value [BreatherVP]

* Parameter	0.03	psig	Upper Bound	
Lower Bound			* Enforce Bounds	False

User Value [BreatherVacP]

* Parameter	-0.03	psig	Upper Bound	
Lower Bound			* 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	
Lower Bound			* 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	1302.87	bbl/day	Upper Bound	
* Lower Bound	0	bbl/day	* Enforce Bounds	False

User Value [OREff]

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

User Value [AtmPressure]

* Parameter	14.1085	psia	Upper Bound	
Lower Bound			* Enforce Bounds	False

User Value Sets Report

Client Name:	EQT	Job:
Location:	OXF 163 100% Contingency	

User Value [TVP]

* Parameter	0.405573 psia	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [AvgLiqSurfaceT]

* Parameter	57.7675 °F	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [MaxLiqSurfaceT]

* Parameter	66.3119 °F	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [TotalLosses]

* Parameter	0.223078 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	0.13674 ton/yr	Upper Bound	
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [StandingLosses]

* Parameter	0.0261066 ton/yr	Upper Bound	
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [RimSealLosses]

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

User Value [WithdrawalLoss]

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

User Value [LoadingLosses]

* Parameter	0.374001 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [DeckFittingLosses]

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

User Value [DeckSeamLosses]

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

User Value [FlashingLosses]

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

User Value [GasMoleWeight]

* Parameter	0.0279931 kg/mol	Upper Bound	
Lower Bound		* Enforce Bounds	False

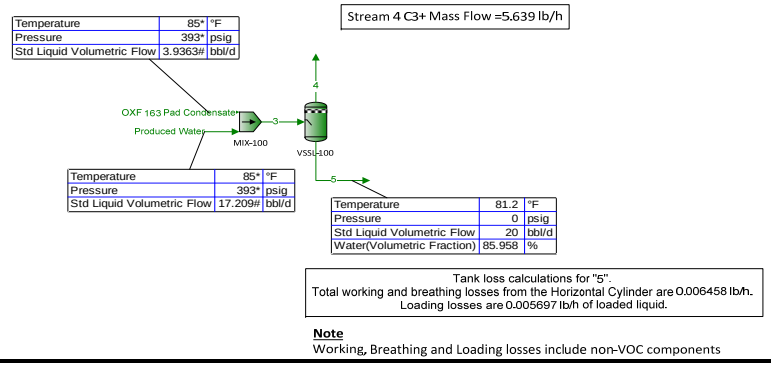
Remarks

This User Value Set was programmatically generated. GUID={B57AFC7E-AAE8-4873-921B-7B4031991004}

Flowsheet1
Plant Schematic

Client Name:	EQT	Job:
Location:	OXF 163 Blowdown Tank	
Flowsheet:	Flowsheet1	

EQT OXF 163 Well Pad
Blowdown Tank



Note
Working, Breathing and Loading losses include non-VOC components

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job:	
Location:	OXF 163 Blowdown Tank		
Flowsheet:	Flowsheet1		

Connections

	OXF 163 Pad Condensate	Produced Water	3	4	5
From Block	--	--	MIX-100	VSSL-100	VSSL-100
To Block	MIX-100	MIX-100	VSSL-100	--	--

Stream Composition

Mole Fraction	OXF 163 Pad Condensate %		Produced Water %		3 %	4 %	5 %
Nitrogen	0	*	0	*	0	0	0
Methane	12.131	*	0	*	0.392614	27.3856	0.00324335
Carbon Dioxide	0.087	*	0	*	0.00281572	0.188732	0.000133896
Ethane	10.145	*	0	*	0.328338	22.1609	0.0134067
Propane	9.322	*	0	*	0.301702	18.5656	0.0382483
i-Butane	2.446	*	0	*	0.0791637	4.10285	0.0211225
n-Butane	6.995	*	0	*	0.22639	10.5719	0.0771576
i-Pentane	3.988	*	0	*	0.12907	3.92666	0.0742901
n-Pentane	5.018	*	0	*	0.162405	4.14581	0.104945
Isohexane	4.263	*	0	*	0.13797	1.84699	0.113318
n-Hexane	4.311	*	0	*	0.139524	1.42628	0.120962
2,2,4-Trimethylpentane	0.025	*	0	*	0.000809114	0.0032794	0.00077348
Benzene	0.136	*	0	*	0.00440158	0.0433292	0.00384005
Heptane	11.691	*	0	*	0.378374	1.4202	0.363346
Toluene	0.717	*	0	*	0.0232054	0.0758285	0.0224463
Octane	9.741	*	0	*	0.315263	0.393346	0.314137
Ethylbenzene	0.074	*	0	*	0.00239498	0.00255291	0.0023927
o-Xylene	0.878	*	0	*	0.0284161	0.0229641	0.0284947
Nonane	4.769	*	0	*	0.154347	0.0642958	0.155646
Decane	13.263	*	0	*	0.429251	0.0591568	0.43459
Water	0	*	100	*	96.7635	3.59376	98.1075

Mass Fraction	OXF 163 Pad Condensate %		Produced Water %		3 %	4 %	5 %
Nitrogen	0	*	:4*	*	0	0	0
Methane	2.49009	*	0	*	0.31553	11.1728	0.00264355
Carbon Dioxide	0.0489906	*	0	*	0.00620782	0.211232	0.000299389
Ethane	3.90318	*	0	*	0.494589	16.9462	0.0204816
Propane	5.25959	*	0	*	0.666466	20.8195	0.0856899
i-Butane	1.81906	*	0	*	0.2305	6.0645	0.0623748
n-Butane	5.20208	*	0	*	0.659178	15.6265	0.227847
i-Pentane	3.68156	*	0	*	0.466506	7.20475	0.272322
n-Pentane	4.63241	*	0	*	0.586993	7.60687	0.384692
Isohexane	4.70052	*	0	*	0.595623	4.04776	0.496139
n-Hexane	4.75345	*	0	*	0.60233	3.12577	0.529609
2,2,4-Trimethylpentane	0.0365395	*	0	*	0.00463007	0.00952657	0.00448896
Benzene	0.135926	*	0	*	0.0172238	0.0860725	0.0152397
Heptane	14.9891	*	0	*	1.89933	3.61903	1.84977
Toluene	0.845293	*	0	*	0.107111	0.177681	0.105077
Octane	14.2372	*	0	*	1.80406	1.14266	1.82312
Ethylbenzene	0.100522	*	0	*	0.0127376	0.00689261	0.012906
o-Xylene	1.19268	*	0	*	0.151129	0.0620008	0.153698
Nonane	7.82617	*	0	*	0.991688	0.209713	1.01422
Decane	24.1456	*	0	*	3.0596	0.214053	3.1416
Water	0	*	100	*	87.3286	1.64648	89.7978

Mass Flow	OXF 163 Pad Condensate lb/h		Produced Water lb/h		3 lb/h	4 lb/h	5 lb/h
Nitrogen	0	*	0	*	0	0	0
Methane	0.907205	*	0	*	0.907205	0.899817	0.00738777

* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job:	
Location:	OXF 163 Blowdown Tank		
Flowsheet:	Flowsheet1		

Mass Flow	OXF 163 Pad Condensate lb/h	Produced Water lb/h	3 lb/h	4 lb/h	5 lb/h
Carbon Dioxide	0.0178486 *	0 *	0.0178486	0.0170119	0.000836683
Ethane	1.42203 *	0 *	1.42203	1.36479	0.0572387
Propane	1.91621 *	0 *	1.91621	1.67673	0.239473
i-Butane	0.66273 *	0 *	0.66273	0.488415	0.174315
n-Butane	1.89526 *	0 *	1.89526	1.2585	0.636751
i-Pentane	1.34129 *	0 *	1.34129	0.580247	0.761042
n-Pentane	1.68771 *	0 *	1.68771	0.612632	1.07508
Isohexane	1.71252 *	0 *	1.71252	0.325993	1.38653
n-Hexane	1.73181 *	0 *	1.73181	0.251739	1.48007
2,2,4-Trimethylpentane	0.0133123 *	0 *	0.0133123	0.000767238	0.012545
Benzene	0.0495215 *	0 *	0.0495215	0.00693199	0.0425895
Heptane	5.46092 *	0 *	5.46092	0.291464	5.16945
Toluene	0.307962 *	0 *	0.307962	0.0143098	0.293653
Octane	5.187 *	0 *	5.187	0.0920259	5.09497
Ethylbenzene	0.0366228 *	0 *	0.0366228	0.000555108	0.0360676
o-Xylene	0.434524 *	0 *	0.434524	0.00499334	0.429531
Nonane	2.85128 *	0 *	2.85128	0.0168895	2.83439
Decane	8.79688 *	0 *	8.79688	0.0172391	8.77964
Water	0 *	251.085 *	251.085	0.132602	250.953

Stream Properties

Property	Units	OXF 163 Pad Condensate	Produced Water	3	4	5
Temperature	°F	85 *	85 *	85.0985	81.2476	81.2476
Pressure	psia	407.696 *	407.696 *	407.696	14.6959 *	14.6959
Mole Fraction Vapor	%	2.45359	0	0.0230435	100	0
Mole Fraction Light Liquid	%	97.5464	100	3.15836	0	1.89085
Mole Fraction Heavy Liquid	%	0	0	96.8186	0	98.1092
Molecular Weight	lb/lbmol	78.1542	18.0153	19.9617	39.3218	19.6824
Mass Density	lb/ft^3	34.8738	62.1455	57.6693	0.100821	59.5067
Molar Flow	lbmol/h	0.466163	13.9373	14.4035	0.204814	14.1987
Mass Flow	lb/h	36.4326	251.085	287.518	8.05367	279.464
Vapor Volumetric Flow	ft^3/h	1.0447	4.04028	4.98563	79.8808	4.69635
Liquid Volumetric Flow	gpm	0.130248	0.503723	0.621585	9.95916	0.585519
Std Vapor Volumetric Flow	MMSCFD	0.00424564	0.126936	0.131182	0.00186537	0.129316
Std Liquid Volumetric Flow	sgpm	0.114809 *	0.501937 *	0.616747	0.0334227	0.583324
Compressibility		0.156312	0.0202195	0.0241386	0.987379	0.000837364
Specific Gravity			0.996417		1.35767	0.954107
API Gravity			9.96415			16.16
Enthalpy	Btu/h	-36125.4	-1.71055E+06	-1.74667E+06	-9516.56	-1.73716E+06
Mass Enthalpy	Btu/lb	-991.568	-6812.63	-6075.02	-1181.64	-6216.03
Mass Cp	Btu/(lb*°F)	0.531146	0.981529	0.925125	0.421416	0.933799
Ideal Gas CpCv Ratio		1.06777	1.32512	1.28953	1.13713	1.29464
Dynamic Viscosity	cP		0.833816		0.00889172	0.806918
Kinematic Viscosity	cSt		0.837605		5.50571	0.837473
Thermal Conductivity	Btu/(h*ft*°F)		0.353848		0.0122885	0.312771
Surface Tension	lbf/ft		0.00492858			0.00445237 ?
Net Ideal Gas Heating Value	Btu/ft^3	3993.4	0	129.245	2031.86	101.8
Net Liquid Heating Value	Btu/lb	19235.7	-1059.76	1511.97	19454.3	994.904
Gross Ideal Gas Heating Value	Btu/ft^3	4313.43	50.31	188.284	2213.19	159.075
Gross Liquid Heating Value	Btu/lb	20789.6	0	2634.35	21204.2	2099.2

Remarks

* User Specified Values
? Extrapolated or Approximate Values

Blocks
MIX-100
Mixer/Splitter Report

Client Name:	EQT	Job:	
Location:	OXF 163 Blowdown Tank	Modified: 2:14 PM, 7/24/2014	
Flowsheet:	Flowsheet1	Status: Solved 11:54 AM, 1/15/2015	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Produced Water	Inlet		OXF 163 Pad Condensate	Inlet	
3	Outlet	VSSL-100			

Block Parameters

Pressure Drop	0 psi	Fraction to PStream 3	100 %

Remarks

Blocks
VSSL-100
Separator Report

Client Name:	EQT	Job:	
Location:	OXF 163 Blowdown Tank	Modified: 1:11 PM, 7/17/2014	
Flowsheet:	Flowsheet1	Status: Solved 11:54 AM, 1/15/2015	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
3	Inlet	MIX-100	4	Vapor Outlet	
5	Light Liquid Outlet				

Block Parameters

Pressure Drop	393	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	1.42198	%	Heat Duty	0	Btu/h
Mole Fraction Light Liquid	1.86396	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	96.7141	%	Heat Release Curve Increments	5	

Remarks

Flowsheet Environment
Environment1

Client Name:	EQT	Job:	
Location:	OXF 163 Blowdown Tank		
Flowsheet:	Flowsheet1		

Environment Settings

Number of Poynting Intervals	0	Freeze Out Temperature Threshold Difference	10 °F
Gibbs Excess Model Evaluation Temperature	77 °F	Phase Tolerance	1 %

Components

Component Name	Henry`s Law Component	Phase Initiator	Component Name	Henry`s Law Component	Phase Initiator
Nitrogen	False	False	2,2,4-Trimethylpentane	False	False
Methane	False	False	Benzene	False	False
Carbon Dioxide	False	False	Heptane	False	False
Ethane	False	False	Toluene	False	False
Propane	False	False	Octane	False	False
i-Butane	False	False	Ethylbenzene	False	False
n-Butane	False	False	o-Xylene	False	False
i-Pentane	False	False	Nonane	False	False
n-Pentane	False	False	Decane	False	False
Isohexane	False	False	Water	False	True
n-Hexane	False	False			

Physical Property Method Sets

Liquid Molar Volume	COSTALD	Overall Package	Peng-Robinson
Stability Calculation	Peng-Robinson	Vapor Package	Peng-Robinson
Light Liquid Package	Peng-Robinson	Heavy Liquid Package	Peng-Robinson

Remarks

Calculator Report

Client Name:	EQT	Job:
Location:	OXF 163 Blowdown Tank	

Simple Solver 1

Source Code

Residual Error (for CV1) = TP / 20 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!OXF 163 Pad Condensate!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	3.93631
Unit	bbl/d

Measured Variable [TP]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	19.9997
Unit	bbl/d

Solver Properties

Status: Solved

Error	-1.62467E-05		Iterations	5
Calculated Value	0.114809	sgpm	Max Iterations	20
Lower Bound		sgpm	Weighting	1
Upper Bound		sgpm	Priority	0
Step Size		sgpm	Solver Active	Active
Is Minimizer	False		Group	
Algorithm	Default		Skip Dependency Check	False

Remarks

Simple Solver 2

Source Code

Residual Error (for CV1) = LF /86 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Produced Water!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	17.2093
Unit	bbl/d

Measured Variable [LF]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Composition!Std. Liquid Volumetric Fraction!Water
Value	86.0024
Unit	%

Solver Properties

Status: Solved

Error	2.7567E-05		Iterations	5
Calculated Value	0.501937	sgpm	Max Iterations	20
Lower Bound		sgpm	Weighting	1
Upper Bound		sgpm	Priority	0
Step Size		sgpm	Solver Active	Active
Is Minimizer	False		Group	
Algorithm	Default		Skip Dependency Check	False

Remarks

User Value Sets Report

Client Name:	EQT	Job:
Location:	OXF 163 Blowdown Tank	

Cn+ Flow/Frac.

User Value [CnPlusSum]

* Parameter	5.63944	lb/h	Upper Bound	
Lower Bound		lb/h	* Enforce Bounds	False

Remarks
This User Value Set was programmatically generated. GUID={E867C485-3D3C-49CB-BC24-EA16096DB2B1}

Tank Losses

User Value [ShellLength]

* Parameter	10	ft	Upper Bound	
* Lower Bound	0	ft	* Enforce Bounds	False

User Value [ShellDiam]

* Parameter	10	ft	Upper Bound	
* Lower Bound	0	ft	* Enforce Bounds	False

User Value [BreatherVP]

* Parameter	0.03	psig	Upper Bound	
Lower Bound			* Enforce Bounds	False

User Value [BreatherVacP]

* Parameter	-0.03	psig	Upper Bound	
Lower Bound			* 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	
Lower Bound			* 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	19.8551	bbl/day	Upper Bound	
* Lower Bound	0	bbl/day	* Enforce Bounds	False

User Value [OREff]

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

User Value [AtmPressure]

* Parameter	14.1085	psia	Upper Bound	
Lower Bound			* Enforce Bounds	False

User Value Sets Report

Client Name:	EQT	Job:
Location:	OXF 163 Blowdown Tank	

User Value [TVP]

* Parameter	0.40546 psia	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [AvgLiqSurfaceT]

* Parameter	57.7675 °F	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [MaxLiqSurfaceT]

* Parameter	66.3119 °F	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [TotalLosses]

* Parameter	0.00645818 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	0.0282868 ton/yr	Upper Bound	
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [StandingLosses]

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

User Value [RimSealLosses]

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

User Value [WithdrawalLoss]

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

User Value [LoadingLosses]

* Parameter	0.00569714 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [DeckFittingLosses]

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

User Value [DeckSeamLosses]

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

User Value [FlashingLosses]

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

User Value [GasMoleWeight]

* Parameter	0.0279891 kg/mol	Upper Bound	
Lower Bound		* Enforce Bounds	False

Remarks

This User Value Set was programmatically generated. GUID={B57AFC7E-AAE8-4873-921B-7B4031991004}

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

Certificate of Analysis : 13060035-001A

Company:	Gas Analytical Services	**For:**	Gas Analytical Services
Well:	Oxford 21 Pad		Alan Ball
Field:	EQT Midstream		PO Box 1028
Sample of:	Condensate-Spot		
Conditions:	393 @ N.G.		Bridgeport, WV, 26330
Sampled by:	RM-GAS		
Sample date:	5/28/2013	**Report Date:**	6/27/2013
Remarks:	Cylinder No.: GAS		
Remarks:			

Analysis: (*GPA 2186M*)	**Mol. %**	**MW**	**Wt. %**	**Sp. Gravity**	**L.V. %**
Nitrogen	0.000	28.013	0.000	0.8094	0.000
Methane	12.131	16.043	2.159	0.3000	4.855
Carbon Dioxide	0.087	44.010	0.042	0.8180	0.035
Ethane	10.145	30.070	3.384	0.3562	6.403
Propane	9.322	44.097	4.560	0.5070	6.061
Iso-butane	2.446	58.123	1.577	0.5629	1.889
N-butane	6.995	58.123	4.510	0.5840	5.207
Iso-pentane	3.988	72.150	3.191	0.6244	3.446
N-pentane	5.018	72.150	4.016	0.6311	4.291
i-Hexanes	4.263	86.177	4.026	0.6795	4.092
n-Hexane	4.311	85.713	4.125	0.6640	4.172
2,2,4 trimethylpentane	0.025	114.231	0.032	0.6967	0.031
Benzene	0.136	78.114	0.102	0.8846	0.090
Heptanes	11.691	97.742	12.715	0.7030	12.206
Toluene	0.717	92.141	0.630	0.8719	0.569
Octanes	9.741	106.996	11.781	0.7535	10.540
E-benzene	0.074	106.167	0.040	0.8718	0.068
M-,O-,P-xylene	0.878	106.167	1.032	0.8731	0.803
Nonanes	4.769	122.539	6.704	0.7576	6.051
Decanes Plus	13.263	240.460	35.374	0.8174	29.191
	100.000		100.000		100.000

Calculated Values	**Total Sample**	**Decanes Plus**
Specific Gravity at 60 °F	0.6744	0.8174
Api Gravity at 60 °F	78.317	41.616
Molecular Weight	90.157	240.460
Pounds per Gallon (in Vacuum)	5.623	6.815
Pounds per Gallon (in Air)	5.617	6.807
Cu. Ft. Vapor per Gallon @ 14.73 psia	23.722	10.730

Brian Gaspard

Southern Petroleum Laboratories, Inc.

Attachment J

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 General Permit for the OXF-163 natural gas production operation located in West Union, Doddridge County, West Virginia. The latitude and longitude coordinates are: 39.13602 and -80.84274. Startup of operations is scheduled to begin on June 1, 2015.

The applicant estimates the maximum potential to discharge the following regulated air pollutants on a facility-wide basis will be:

Particulate Matter (PM) = 8.60 tpy
Sulfur Dioxide (SO_2) = 0.08 tpy
Volatile Organic Compounds (VOC) = 34.17 tpy
Carbon Monoxide (CO) = 11.04 tpy
Nitrogen Oxides (NO_x) = 13.14 tpy
Hazardous Air Pollutants (HAPs) = 1.91 tpy
Carbon Dioxide Equivalents (CO_2e) = 21,668.14 tpy

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

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 18th day of May, 2015.

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

Attachment L

Attachment L
G70-A General Permit Application Fee

Please contact Alex Bosiljevac at 412-395-3699 or abosiljevac@eqt.com for payment of the application fee by credit card.

Attachment O

Attachment O
G70-A Emission Summary Sheet

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E001	Upward Vertical Stack	S001	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		
E002	Upward Vertical Stack	S002	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E003	Upward Vertical Stack	S003	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		
E004	Upward Vertical Stack	S004	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E005	Upward Vertical Stack	S005	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		
E006	Upward Vertical Stack	S006	NA	NA	NA	Total VOCs	<0.01	0.03	<0.01	0.03	Gas	AP-42, Subpart W
						NO_x	0.14	0.62	0.14	0.62		
						CO	0.12	0.52	0.12	0.52		
						PM_{10}	0.01	0.05	0.01	0.05		
						Total HAPs	<0.01	0.01	<0.01	0.01		
						Hexane	<0.01	0.01	<0.01	0.01		
						CO_2	180.14	789.03	180.14	789.03		
						CH_4	<0.01	0.01	<0.01	0.01		
						CO_2e	180.33	789.85	180.33	789.85		

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions[4]		Maximum Potential Controlled Emissions[5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used[6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E013*	Upward Vertical Stack	S007 - S012, S018, S015	Produced Fluids Tanks, Sand Trap Blowdown Tank, Tank Truck Loading Emissions	NA	NA	Total VOCs	187.01	819.10	3.80	16.64	Gas	AP-42, Subpart W
						NO_x	1.07	4.71	1.07	4.71		
						CO	0.90	3.95	0.90	3.95		
						PM_{10}	0.08	0.36	0.08	0.36		
						SO_2	0.006	0.03	<0.01	0.03		
						Hexane	8.34	36.54	0.19	0.82		
						Benzene	0.23	1.01	<0.01	0.02		
						Ethylbenzene	0.02	0.08	<0.01	<0.01		
						Toluene	0.47	2.08	<0.01	0.04		
						Xylenes	0.17	0.72	<0.01	0.01		
						Total HAPs	9.26	40.54	0.21	0.90		
						CO_2	0.56	2.47	1,910.67	8,368.71		
						CH_4	29.83	130.65	0.62	2.72		
						N_2O	<0.01	0.01	<0.01	0.01		
						CO_2e	746.28	3,268.71	1,926.87	8,439.70		
E014*	Upward Vertical Stack	S007 - S012, S018, S015	Produced Fluids Tanks, Sand Trap Blowdown Tank, Tank Truck Loading Emissions	NA	NA	Total VOCs	187.01	819.10	3.80	16.64	Gas	AP-42, Subpart W
						NO_x	1.07	4.71	1.07	4.71		
						CO	0.90	3.95	0.90	3.95		
						PM_{10}	0.08	0.36	0.08	0.36		
						SO_2	<0.01	0.03	<0.01	0.03		
						Hexane	8.34	36.54	0.19	0.82		
						Benzene	0.23	1.01	<0.01	0.02		
						Ethylbenzene	0.02	0.08	<0.01	<0.01		
						Toluene	0.47	2.08	<0.01	0.04		
						Xylenes	0.17	0.72	<0.01	0.01		
						Total HAPs	9.26	40.54	0.21	0.90		
						CO_2	0.56	2.47	1,910.67	8,368.71		
						CH_4	29.83	130.65	0.62	2.72		
						N_2O	<0.01	0.01	<0.01	0.01		
						CO_2e	746.28	3,268.71	1,926.87	8,439.70		
E016	Upward Vertical Stack	S016	NA	NA	NA	CO_2	1.52	6.66	1.52	6.66	Gas	AP-42, Subpart W
						CO_2e	1.52	6.67	1.52	6.67		

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		All Regulated Pollutants - Chemical Name/CAS[3] (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]
		ID No.	Source	ID No.	Device Type		lb/hr	ton/yr	lb/hr	ton/yr		
E017	Upward Vertical Stack	S017	NA	NA	NA	CO_2	1.52	6.66	1.52	6.66	Gas	AP-42, Subpart W
						CO_2e	1.52	6.67	1.52	6.67		
E018	Upward Vertical Stack	S015	NA	NA	NA	VOCs	0.05	0.21	0.05	0.21	Gas	AP-42, Subpart W
						Total HAPs	<0.001	<0.001	<0.001	<0.001		
						CO_2	<0.001	0.00	<0.001	0.00		
						CH_4	0.00	0.00	0.00	0.00		
						CO_2e	0.09	0.38	0.09	0.38		

*Two enclosed combustion devices are being included in this application. Emissions from the condensate tanks, sand trap blowdown tanks, and truck loading are routed to either C021 or C022. For the permitting of these sources, it is assumed that vapors are being evenly distributed between the two enclosed combustion devices. For this reason, the emissions from the combustion of vent gases between C021 and C022 are additive.

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

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

2 List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS2, VOCs, H2S, Inorganics, Lead, Organics, O3, NO, NO2, SO2, SO3, all applicable Greenhouse Gases (including CO2 and methane), etc. DO NOT LIST H2, H2O, N2, O2, and Noble Gases

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

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

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

G70-A FUGITIVE EMISSIONS SUMMARY SHEET

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads	**NA**	**--**	**--**	**--**	**--**	**--**
Unpaved Haul Roads	**PM** **PM-10** **PM-2.5**	**4.20** **1.07** **0.11**	**7.60** **1.94** **0.19**	**4.20** **1.07** **0.11**	**7.60** **1.94** **0.19**	**AP-42**
Equipment Leaks	**Total VOC** **Total HAPs** **CO_2** **CH_4** **CO_2e**	**0.11** **0.01** **<0.01** **0.33** **8.20**	**0.47** **0.04** **0.01** **1.44** **35.92**	**0.11** **0.01** **<0.01** **0.33** **8.20**	**0.47** **0.04** **0.01** **1.44** **35.92**	**40CFR98 Subpart W**
Other	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.
[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; M = modeling; O = other (specify).