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

TEL: (412) 395-3699

R. Alex Bosiljevac
Environmental
Coordinator

March 24, 2016

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-B General Permit Registration Application
EQT Production Company
PUL-96 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-B General Permit Registration Application for the PUL-96 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-B General Permit Registration Application

PUL 96 Natural Gas Production Site

Pullman, West Virginia

Prepared By:

ENVIRONMENTAL RESOURCES MANAGEMENT, Inc.
Hurricane, West Virginia

March 2016

INTRODUCTION

EQT Production Company (EQT) is submitting this G70-B General Permit Application to the WVDEP's Department of Air Quality for the PUL-96 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 PUL-96 pad.

FACILITY DESCRIPTION

The EQT PUL-96 natural gas production site will operate in Ritchie County, WV and will consist of eight (8) natural gas wells. Natural gas and liquids (including water and condensates) will be 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 will be stored in storage vessels.

The applicant seeks to authorize the operation of:

- Eight (8) natural gas wells;
- Eight (8) line heaters each rated at 1.54 MMBtu/hr heat input;
- One (1) line heater rated at 1.15 MMBtu/hr heat input;
- One (1) 140 barrel (bbl) sand trap blowdown tank for storage of condensate and water;
- Eight (8) 400 bbl tanks for storage of condensate and water;
- Two (2) thermoelectric generator (TEG) each rated at 0.013 MMBtu/hr heat input;
- One (1) enclosed combustion devices each with a capacity of 19.22 MMBtu/hr heat input; and
- One (1) 110 HP stationary natural gas compressor engine.

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

STATEMENT OF AGGREGATION

The PUL-96 pad is 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 PUL-96 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 PUL-96 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 PUL-96 pad does share the same SIC codes as the surrounding wells and compressor stations.

EQT Production Company is the sole operator of the PUL-96 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.

EQT's PUL-96 Natural Gas Production site is within 3.28 miles of the PEN-13 pad. These facilities 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 PUL-96 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."

On August 18, 2015 the EPA Administrator signed the *Source Determination for Certain Emission Units in the Oil and Natural Gas Sector*. This notice is to clarify how properties in the oil and natural gas sector are determined to be adjacent in order to assist permitting authorities and permit applicants in making consistent source determinations. The following proposed regulatory text defines "adjacent" for the oil and gas sector in terms of proximity.

> *Pollutant emitting activities shall be considered adjacent if they are located on the same surface site, or on surface sites that are located within ¼ mile of one another.*

The PUL-96 and PEN-13 pads are located on surface sites located greater than EPA's ¼ mile proposed ruling. Although the applicant notes the proposed status of this adjacency determination, it is the only guidance available on a finite distance impacting the adjacency determination, and has been noted due to lack of finalized guidance. Based upon the proximity of nearby facilities, EQT does not believe aggregation based upon adjacency is required.

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 PUL-96 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-B 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 PUL-96 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 PUL-96 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 PUL-96 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.

§45-6-4.1 Determination for Maximum Allowable Particulate Emissions

Emissions (lb/hr) = F x Incinerator Capacity (tons/hr)

Incinerator Capacity = 0.12 tons per hour or 245 lbs/hr

ρ_{NG} = 0.042 lb/scf – Density of NG from EPA AP42 – Sections 1.4 and 3.2 (NG combustion)

$$\frac{140{,}000\ scf}{day} * \frac{1\ day}{24\ hours} * \frac{0.042\ lb}{scf} = \frac{245\ lb}{hr} = \frac{1{,}073\ tons}{year}$$

If the Incinerator Capacity is less than 15,000 lbs/hr, then F = 5.43

F = 5.43 * (0.12 tons per hour)

F = 0.67 lbs / hour

The enclosed combustion devices utilize AP-42 Section 1.4 PM emission factors to determine emissions from the combustion of refuse natural gas. Based upon the type of fuel combusted and the emission factors utilized, the PM emissions from the enclosed combustion devices will be well below the maximum allowable particulate emissions mandated by 45 CSR 06.

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-B 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 G70B-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 PUL-96 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-B general permit.

This facility is expected to contain gas well affected facilities under Subpart OOOO. This facility will contain a spark ignition internal combustion engine subject to Subpart JJJJ. 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 G70-B 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 PUL-96 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-B general permit eligibility are any sources that are subject to NESHAP Subpart HHH.

The following NESHAP included in the G70-B permit are not subject to the PUL-96 facility:

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

FEDERAL REGULATIONS

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

Subpart JJJJ sets forth nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compound (VOC) emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine.

The Ford CSG-637 is a 110 HP EPA Certified 4 stroke rich burn (4SRB) spark ignition (SI) engine manufactured in 2015. Per 40CFR60.4230(a)(4)(iii), an engine manufactured on or after July 1, 2008 with a maximum engine power less than 500 HP must comply with the provisions of 40 CFR 60 Subpart JJJJ.

Emission standards contained in the EPA Certificate of Conformity issued to this engine conform to 40 CFR 60 Subpart JJJJ Table 1 - NOx, CO, VOC Emissions Standards for Stationary Non-Emergency SI Engines greater than 100 HP. Therefore, per 40CFR60.4243(a)(1), EQT must operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions to ensure applicable emission standards outlined in Part 60 Subpart JJJJ Table 1 are maintained. Additionally, performance testing is not required.

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-B permit.

The only affected facilities expected to be subject to Subpart OOOO located at the PUL-96 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 PUL-96 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).

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

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

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAPs) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This Subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

The Ford CSG-637 is a 110 HP EPA Certified 4 stroke rich burn (4SRB) spark ignition (SI) engine manufactured in 2015. The engine meets the requirements of 40 CFR 60 Subpart JJJJ. Per 40CFR63.6590(c)(1), no further requirements apply for a new stationary RICE located at an area source subject to regulation under 40 CFR 60 Subpart JJJJ.

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

Pollutant	Maximum Annual Emission Limit (tons/year)	PUL-96 Potential to Emit (tons/year)
Nitrogen Oxides	50	14.28
Carbon Monoxide	80	14.29
Volatile Organic Compounds	80	13.10
Particulate Matter – 10/2.5	20	1.52
Sulfur Dioxide	20	0.08
Any Single Hazardous Air Pollutant	8	0.61 (as C_6H_{14})
Total Hazardous Air Pollutants	20	0.81

The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source for the purposes of 45CSR30-2.26.b or for eligibility of this General Permit.

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G70-B GENERAL PERMIT REGISTRATION APPLICATION

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

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

SECTION 1. GENERAL INFORMATION

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

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

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

City: **Pittsburgh** | State: **PA** | ZIP Code: **15222**

Facility Name: **PUL-96 Natural Gas Production Facility**

Operating Site Physical Address: **None**
If none available, list road, city or town and zip of facility. **County Road 12/3, Harrisville, WV 26362**

City: **Harrisville, WV** | Zip Code: **26362** | County: **Ritchie**

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: **39.21089**
Longitude: **-80.98619**

SIC Code: **1311**

NAICS Code: **211111**

DAQ Facility ID No. (For existing facilities)
None

CERTIFICATION OF INFORMATION

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

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

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

Responsible Official Signature:
Name and Title: **Kenneth Kirk - Executive Vice President** Phone: 412-553-5700 Fax:
Email: Date: 3/24/16

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

If applicable:
Environmental Contact: **Alex Bosiljevac**
Name and Title: **Environmental Coordinator** Phone: **(412) 395-3699** Fax:
Email: **abosiljevac@eqt.com** Date:

OPERATING SITE INFORMATION
Briefly describe the proposed new operation and/or any change(s) to the facility: **The PUL-96 Natural Gas Production Facility will be a new production site expected to be in production in 2016.**
Directions to the facility: **Traveling North on Route 74 from Berea heading towards Pullman, WV at the Main Street/Slab Creek Intersection, continue straight onto Slab Creek (County Route 7/7). Continue for 1.5 miles and take a right at the fork onto Davis Run. Continue for another mile. Davis Run will turn into Goose Run. PUL-96 will be the second site on the left.**

ATTACHMENTS AND SUPPORTING DOCUMENTS	
I have enclosed the following required documents:	
Check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR13 and 45CSR22). ☐ Check attached to front of application. ☐ I wish to pay by electronic transfer. Contact for payment (incl. name and email address): ☒ I wish to pay by credit card. Contact for payment (incl. name and email address): **Alex Bosiljevac - abosiljevac@eqt.com** ☒$500 (Construction, Modification, and Relocation) ☐$300 (Class II Administrative Update) ☒$1,000 NSPS fee for 40 CFR60, Subpart IIII, JJJJ and/or OOOO [1] ☐$2,500 NESHAP fee for 40 CFR63, Subpart ZZZZ and/or HH [2] [1] Only one NSPS fee will apply. [2] Only one NESHAP fee will apply. The Subpart ZZZZ NESHAP fee will be waived for new engines that satisfy requirements by complying with NSPS, Subparts IIII and/or JJJJ. *NSPS and NESHAP fees apply to new construction or if the source is being modified.*	
☒ Responsible Official or Authorized Representative Signature (if applicable)	
☒ Single Source Determination Form **(must be completed in its entirety)** – Attachment A	
☐ Siting Criteria Waiver (if applicable) – Attachment B	☒ Current Business Certificate – Attachment C
☒ Process Flow Diagram – Attachment D	☒ Process Description – Attachment E
☒ Plot Plan – Attachment F	☒ Area Map – Attachment G
☒ G70-B Section Applicability Form – Attachment H	☒ Emission Units/ERD Table – Attachment I
☒ Fugitive Emissions Summary Sheet – Attachment J	
☒ Gas Well Affected Facility Data Sheet (if applicable) – Attachment K	
☒ Storage Vessel(s) Data Sheet (include gas sample data, USEPA Tanks, simulation software (e.g. ProMax, E&P Tanks, HYSYS, etc.), etc. where applicable) – Attachment L	
☒ Natural Gas Fired Fuel Burning Unit(s) Data Sheet (GPUs, Heater Treaters, In-Line Heaters if applicable) – Attachment M	
☒ Internal Combustion Engine Data Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment N	
☒ Tanker Truck Loading Data Sheet (if applicable) – Attachment O	
☐ Glycol Dehydration Unit Data Sheet(s) (include wet gas analysis, GRI- GLYCalc™ input and output reports and information on reboiler if applicable) – Attachment P	
☒ Pneumatic Controllers Data Sheet – Attachment Q	
☒ Air Pollution Control Device/Emission Reduction Device(s) Sheet(s) (include manufacturer performance data sheet(s) if applicable) – Attachment R	
☒ Emission Calculations (please be specific and include all calculation methodologies used) – Attachment S	
☒ Facility-wide Emission Summary Sheet(s) – Attachment T	
☒ Class I Legal Advertisement – Attachment U	
☒ One (1) paper copy and two (2) copies of CD or DVD with pdf copy of application and attachments	

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

Attachment A

SINGLE SOURCE DETERMINATION FORM

ATTACHMENT A - SINGLE SOURCE DETERMINATION FORM

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

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

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

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

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

See Introduction for additional source aggregation analysis.

Attachment B

CITING CRITERIA WAIVER – (NOT APPLICABLE)

ATTACHMENT B - SITING CRITERIA WAIVER
If applicable, please complete this form and it must be notarized.

G70-B General Permit
Siting Criteria Waiver

WV Division of Air Quality 300' Waiver

I _____ hereby
Print Name

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

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

.

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

Signed:

_____
Signature Date

_____
Signature Date

Taken, subscribed and sworn before me this _____ day of

_____, 20_____.

My commission expires: _____

SEAL_____
Notary Public

Attachment C

BUSINESS CERTIFICATE

WEST VIRGINIA
STATE TAX DEPARTMENT
BUSINESS REGISTRATION CERTIFICATE

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

BUSINESS REGISTRATION ACCOUNT NUMBER: **1022-8081**

This certificate is issued on: 08/4/2010

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

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

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

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

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

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

atL006 v.3
L0553297664

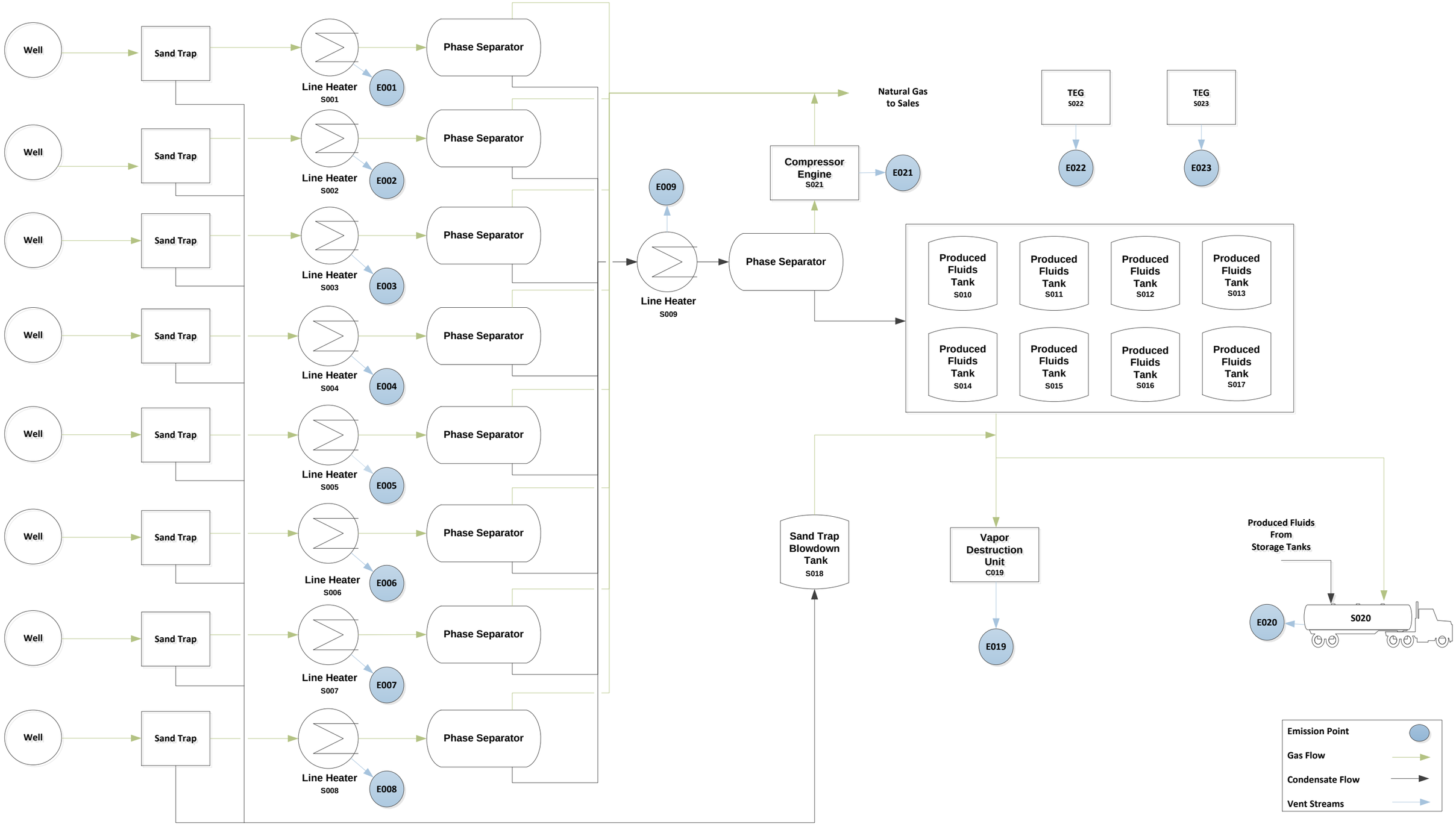
Attachment D

PROCESS FLOW DIAGRAM

Attachment D

PUL 96 Natural Gas Production

Process Flow Diagram



Attachment E

PROCESS DESCRIPTION

Attachment E
Process Description

This permit application is being filed for EQT Production Company and addresses operational activities associated with the PUL-96 natural gas production site. Incoming raw natural gas from the eight (8) 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 blown down to the sand trap blowdown tank (S018), as needed. From the sand traps, raw gas is routed through line heaters (S001-S008). High-pressure fluid separators directly downstream of the line heaters assist with the phase separation process. Produced fluids are removed from the raw gas in these high-pressure separators before being dumped to a second stage of fluid separation. The produced fluids pass through a line heater (S009) to further assist in the separation process. At this low pressure separator, produced fluid pressure is reduced from approximately 500 psig to 30 psig. Vapors realized at the low pressure separator are directed to a 110 bhp compressor engine (S021) and routed to the sales pipeline. Produced fluids from the low pressure separator are routed to the produced fluids storage tanks (S010-S017). Emissions from the produced fluids tanks and sand trap blowdown tank are directed to the enclosed combustion device (C019) and combusted. Produced fluids are pumped into a tank truck (S020) 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 (S022, S023) are operated and provide power to the PUL-96 natural gas production site.

A process flow diagram is included as Attachment D.

Attachment F

PLOT PLAN

Coordinates
Latitude: 39.21090
Longitude: -80.98619
Elevation: 1,200 ft
Drawn: 12/03/2015

N

Attachment F

Plot Plan

EQT PUL 96 Natural Gas Production Site

PRODUCED FLUIDS S010
PRODUCED FLUIDS TANK S011
PRODUCED FLUIDS TANK S012
PRODUCED FLUIDS TANK S013
PRODUCED FLUIDS TANK S014
PRODUCED FLUIDS TANK S015
PRODUCED FLUIDS TANK S016
PRODUCED FLUIDS TANK S017
SAND TRAP BLOW TANK S018

VAPOR DESTRUCTION UNIT C019

TEG S022

TEG S023

LINE HEATER

PHASE SEPARATOR

COMPRESSOR ENGINE S021

WELL

SAND TRAP

FLOWLINE

LINE HEATER

PHASE SEPARATOR

WELL

SAND TRAP

FLOWLINE

LINE HEATER

PHASE SEPARATOR

WELL

SAND TRAP

FLOWLINE

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WELL

SAND TRAP

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WELL

SAND TRAP

FLOWLINE

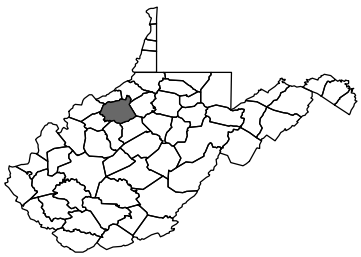
LINE HEATER

PHASE SEPARATOR

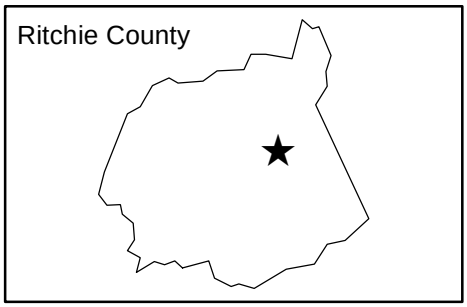
TRUCK ENTRANCE

Attachment G

AREA MAP



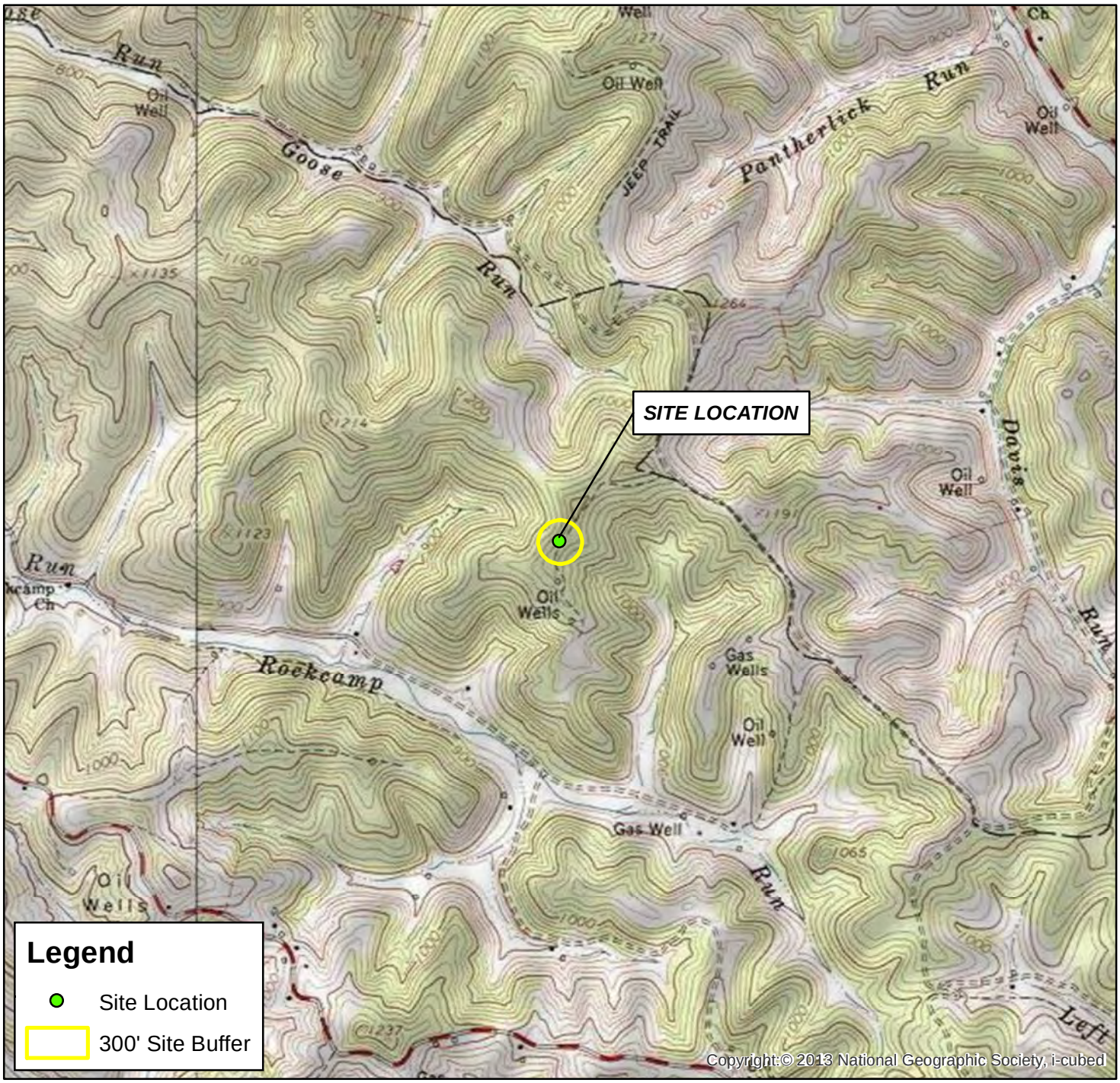
West Virginia



0 1,000 2,000 4,000 Feet

N

LAT. 39.21090 LON. -80.98619
RITCHIE COUNTY
WEST VIRGINIA



USGS 1:24K 7.5' Quadrangle:
Pullman, WV

SITE LOCATION MAP

ERM	**EQT PRODUCTION COMPANY** PUL-96 Well Pad Ritchie County, West Virginia	GIS Review: JS CHK'D: JS 0250395
Drawn By: SRV-12/18/15	**Environmental Resources Management**	ATTACHMENT G

J:\GIS\Projects\EQT_MXD\PUL_96_Site_Location_Map1.mxd - 12/18/2015|SRV

Attachment H

APPLICABILITY FORM

ATTACHMENT H – G70-B SECTION APPLICABILITY FORM

General Permit G70-B Registration
Section Applicability Form

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

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

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

1 *Applicants that are subject to Section 6 may also be subject to Section 7 if the applicant is subject to the NSPS, Subpart OOOO control requirements or the applicable control device requirements of Section 8.*

2 *Applicants that are subject to Section 11 and 12 may also be subject to the applicable RICE requirements of Section 13.*

3 *Applicants that are subject to Section 14 may also be subject to control device and emission reduction device requirements of Section 8.*

4 *Applicants that are subject to Section 15 may also be subject to the requirements of Section 9 (reboilers). Applicants that are subject to Section 15 may also be subject to control device and emission reduction device requirements of Section 8.*

Attachment I

EMISSION UNITS / EMISSION REDUCTION DEVICES (ERD) TABLE

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

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

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed	Manufac. Date[3]	Design Capacity	Type[4] and Date of Change	Control Device(s)[5]	ERD(s)[6]
S001	E001	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S002	E002	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S003	E003	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S004	E004	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S005	E005	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S006	E006	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S007	E007	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S008	E008	Line Heater	2016	2016	1.54 MMBtu/hr	New	NA	NA
S009	E009	Line Heater	2016	2016	1.15 MMBtu/hr	New	NA	NA
S010	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S011	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S012	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S013	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S014	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S015	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S016	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA
S017	E019 E020	Produced Fluid Tank	2016	2016	400 bbl	New	C019 C020	NA

S018	E019 E020	Sand Trap Blowdown Tank	2016	2016	140 bbl	New	C019 C020	NA
C019	E019	Enclosed Combustion Device	2016	2016	19.22 MMBtu/hr	New	NA	NA
S020	E019 E020	Tank Truck Loading Rack	2016	2016	38,726 gal/day	New	NA	NA
S021	E021	Natural Gas Compressor Engine	2016	2015	110 bhp	New	NA	Non-Selective Catalytic Reduction
S022	E022	Thermal Electric Generator	2016	2016	0.013 MMBtu/hr	New	NA	NA
S023	E023	Thermal Electric Generator	2016	2016	0.013 MMBtu/hr	New	NA	NA

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] When required by rule
[4] New, modification, removal, existing
[5] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.
[6] For ERDs use the following numbering system: 1D, 2D, 3D,... or other appropriate designation.

Attachment J

FUGITIVE EMISSIONS SUMMARY SHEET

ATTACHMENT J – FUGITIVE EMISSIONS SUMMARY SHEET

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

Source/Equipment: **Facility Wide**

Leak Detection Method Used	☐ Audible, visual, and olfactory (AVO) inspections	☐ Infrared (FLIR) cameras	☒ Other (please describe) **Permittee will follow Section 4.1.4 in issued permit.**	☐ None required

Component Type	Closed Vent System	Count	Source of Leak Factors (EPA, other (specify))	Stream type (gas, liquid, etc.)	Estimated Emissions (tpy)		
					VOC	HAP	GHG (CO_2e)
Pumps	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			
Valves	☐ Yes ☒ No	**306**	**40 CFR 98 Subpart W Table W-1A**	☒ Gas ☐ Liquid ☐ Both	**0.35**	**0.05**	**29.34**
Safety Relief Valves	☐ Yes ☒ No	**9**	**40 CFR 98 Subpart W Table W-1A**	☒ Gas ☐ Liquid ☐ Both	**0.02**	**<0.01**	**1.28**
Open Ended Lines	☐ Yes ☒ No	**22**	**40 CFR 98 Subpart W Table W-1A**	☒ Gas ☐ Liquid ☐ Both	**0.06**	**<0.01**	**4.77**
Sampling Connections	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			
Connections (Not sampling)	☐ Yes ☒ No	**1342**	**40 CFR 98 Subpart W Table W-1A**	☒ Gas ☐ Liquid ☐ Both	**0.17**	**0.02**	**14.30**
Compressors	☐ Yes ☒ No	**1**	**40 CFR 98 Subpart W Table W-1B: Default average component counts are used for major equipment. Compressor components (12 valves and 57 connections) are included in valve and connection counts.**	☒ Gas ☐ Liquid ☐ Both			
Flanges	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			
Other[1]	☐ Yes ☐ No			☐ Gas ☐ Liquid ☐ Both			

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

Please provide an explanation of the sources of fugitive emissions (e.g. pigging operations, equipment blowdowns, pneumatic controllers, etc.):
Fugitive emissions occur from sealed surfaces associated with production equipment, including equipment leaks.

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

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

Attachment K

GAS WELL AFFECTED FACILITY DATA SHEET

ATTACHMENT K – GAS WELL AFFECTED FACILITY DATA SHEET

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

API Number	Date of Flowback	Date of Well Completion	Green Completion and/or Combustion Device
47-085-10207	TBD	TBD	Green Completion
47-085-10218	TBD	TBD	Green Completion
47-085-10209	TBD	TBD	Green Completion
47-085-10210	TBD	TBD	Green Completion
47-085-10211	TBD	TBD	Green Completion
47-085-10219	TBD	TBD	Green Completion
47-085-10220	TBD	TBD	Green Completion
47-085-10217	TBD	TBD	Green Completion

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

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

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

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

Where,

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

Attachment L

STORAGE VESSEL DATA SHEET

ATTACHMENT L – STORAGE VESSEL DATA SHEET

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name **PUL-96 Storage Tank Area**	2. Tank Name **Produced Fluid Tanks (S010-S017)**
3. Emission Unit ID number **S010-S017**	4. Emission Point ID number **E019**
5. Date Installed , Modified or Relocated *(for existing tanks)* 06/2016 Was the tank manufactured after August 23, 2011? ☒ Yes ☐ No	6. Type of change: ☒ New construction ☐ New stored material ☐ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)*	
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. Was USEPA Tanks simulation software utilized? ☐ Yes ☒ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

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) **13,569,568**	13B. Maximum daily throughput (gal/day) **37,177**
14. Number of tank turnovers per year **808**	15. Maximum tank fill rate (gal/min) **25.82**
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 ☐ horizontal ☐ flat roof ☒ 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 ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☒ Conservation Vent (psig) ☐ Condenser[1]

-0.5 oz Vacuum Setting **14.0 oz** Pressure Setting

☒ Emergency Relief Valve (psig)

-0.5 oz Vacuum Setting **14.4 oz** Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☒ No – A lock down screw hatch will be installed instead of Thief Hatch

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Produced Fluid (Pre-Control)	**121.3**	**0.06**	**0.04**	**<0.01**	**0.13**	**<0.01**	**121.5**	**0.06**	**O - ProMax**

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

TANK CONSTRUCTION AND OPERATION INFORMATION

21. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☒ Other (describe) **WELDED**

21A. Shell Color: **Green**	21B. Roof Color: **Green**	21C. Year Last Painted: **NA**

22. Shell Condition (if metal and unlined):
☒ 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):

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):

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:

27. Closed Vent System with VRU? ☐ Yes ☒ No

28. Closed Vent System with Enclosed Combustor? ☒ Yes ☐ No

SITE INFORMATION

29. Provide the city and state on which the data in this section are based: **Charleston, WV**

30. Daily Avg. Ambient Temperature (°F): **70.0**	31. Annual Avg. Maximum Temperature (°F): **65.5**
32. Annual Avg. Minimum Temperature (°F): **44.0**	33. Avg. Wind Speed (mph): **18 mph**
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,123**	35. Atmospheric Pressure (psia): **14.7 (Atmosphere)**

LIQUID INFORMATION

36. Avg. daily temperature range of bulk liquid (°F): **82.9**	36A. Minimum (°F): **82.9**		36B. Maximum (°F): **82.9**
37. Avg. operating pressure range of tank (psig): **0 psig**	37A. Minimum (psig): **0 psig**		37B. Maximum (psig): **0 psig**
38A. Minimum liquid surface temperature (°F): **82.9**		38B. Corresponding vapor pressure (psia): **0.43**	
39A. Avg. liquid surface temperature (°F): **82.9**		39B. Corresponding vapor pressure (psia): **0.43**	
40A. Maximum liquid surface temperature (°F): **82.9**		40B. Corresponding vapor pressure (psia): **0.43**	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	**Produced Fluid**		
41B. CAS number:			
41C. Liquid density (lb/gal):	**8.00**		
41D. Liquid molecular weight (lb/lb-mole):	**20.59**		
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year.	From: **January** To: **December**		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	**30 psig** **85 F**		

STORAGE TANK DATA TABLE

List all deminimis storage tanks (i.e. lube oil, glycol, diesel etc.)

Source ID #[1]	Status[2]	Content[3]	Volume[4]
NA	**NA**	**NA**	**NA**

1. Enter the appropriate Source Identification Numbers (Source ID #) for each storage tank located at the compressor station. Tanks should be designated T01, T02, T03, etc.
2. Enter storage tank Status using the following:
   - EXIST Existing Equipment
   - NEW Installation of New Equipment
   - REM Equipment Removed
3. Enter storage tank content such as condensate, pipeline liquids, glycol (DEG or TEG), lube oil, diesel, mercaptan etc.
4. Enter the maximum design storage tank volume in gallons.

ATTACHMENT L – STORAGE VESSEL DATA SHEET

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name **PUL-96 Storage Tank Area**	2. Tank Name **Sand Trap Blowdown Tank**
3. Emission Unit ID number **S018**	4. Emission Point ID number **E019**
5. Date Installed , Modified or Relocated *(for existing tanks)* **06/2016** Was the tank manufactured after August 23, 2011? ☒ Yes ☐ No	6. Type of change: ☒ New construction ☐ New stored material ☐ Other ☐ Relocation
7A. Description of Tank Modification *(if applicable)*	
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. Was USEPA Tanks simulation software utilized? ☐ Yes ☒ No ***If Yes, please provide the appropriate documentation and items 8-42 below are not required.***	

TANK INFORMATION

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. **5,800 gallons**	
9A. Tank Internal Diameter (ft.) **10**	9B. Tank Internal Height (ft.) **10**
10A. Maximum Liquid Height (ft.) **8**	10B. Average Liquid Height (ft.) **5**
11A. Maximum Vapor Space Height (ft.) **8**	11B. Average Vapor Space Height (ft.) **5**
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume". **5,800 gallons**	
13A. Maximum annual throughput (gal/yr) **565,399**	13B. Maximum daily throughput (gal/day) **1,549**
14. Number of tank turnovers per year **97**	15. Maximum tank fill rate (gal/min) **1.08**
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 ☒ horizontal ☐ flat roof ☐ 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 ☐ Other (describe)	

PRESSURE/VACUUM CONTROL DATA

19. Check as many as apply:

☐ Does Not Apply ☐ Rupture Disc (psig)

☐ Inert Gas Blanket of _____ ☐ Carbon Adsorption[1]

☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers, enclosed combustors)

☐ Conservation Vent (psig) ☐ Condenser[1]

Vacuum Setting Pressure Setting

☒ Emergency Relief Valve (psig)

-0.5 oz Vacuum Setting **14.4 oz** Pressure Setting

☒ Thief Hatch Weighted ☐ Yes ☒ **No – Two 16 oz. weighted emergency hatches.**

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Produced Fluid (pre-control)	**17.00**	**0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**17.02**	**0.01**	**O - ProMax**

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

TANK CONSTRUCTION AND OPERATION INFORMATION

21. Tank Shell Construction:
☐ Riveted ☐ Gunite lined ☐ Epoxy-coated rivets ☒ Other (describe) **WELDED**

21A. Shell Color: **Green**	21B. Roof Color: **Green**	21C. Year Last Painted: **NA**

22. Shell Condition (if metal and unlined):
☒ 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):

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:

27. Closed Vent System with VRU? ☐ Yes ☐ No

28. Closed Vent System with Enclosed Combustor? ☒ Yes ☐ No

SITE INFORMATION

29. Provide the city and state on which the data in this section are based: **Charleston, WV**

30. Daily Avg. Ambient Temperature (°F): **70 °F**	31. Annual Avg. Maximum Temperature (°F): **65.5 °F**

32. Annual Avg. Minimum Temperature (°F): **44 °F**		33. Avg. Wind Speed (mph): **18 mph**	
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,123**		35. Atmospheric Pressure (psia): **14.70**	
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): **81.24**	36A. Minimum (°F): **81.24**	36B. Maximum (°F): **81.24**	
37. Avg. operating pressure range of tank (psig): **0 psig**	37A. Minimum (psig): **0 psig**	37B. Maximum (psig): **0 psig**	
38A. Minimum liquid surface temperature (°F): **81.24**		38B. Corresponding vapor pressure (psia): **0.4**	
39A. Avg. liquid surface temperature (°F): **81.24**		39B. Corresponding vapor pressure (psia): **0.4**	
40A. Maximum liquid surface temperature (°F): **81.24**		40B. Corresponding vapor pressure (psia): **0.4**	
41. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
41A. Material name and composition:	**Produced Fluid**		
41B. CAS number:			
41C. Liquid density (lb/gal):	**7.85**		
41D. Liquid molecular weight (lb/lb-mole):	**20.55**		
41E. Vapor molecular weight (lb/lb-mole):			
41F. Maximum true vapor pressure (psia):			
41G. Maximum Reid vapor pressure (psia):			
41H. Months Storage per year.	**From: January** **To: December**		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	**407 psia** **85 F**		

Legacy Measurement Solutions

Tulsa, OK

918-827-5770

Customer	: 01 - LEGACY MEASUREMENT	**Date Sampled**	: 08/17/2015
Station Id	: 515276	**Date Analyzed**	: 08/25/2015
Cylinder Id	: 1	**Effective Date**	: 09/01/2015
Producer	: EQT	**Line Pressure**	: 0.00000
Lease	: PED 15 TAYLOR ER	**Cyl Pressure**	: 502.00000
Area	: MGMD	**Temp**	: 68.00000
Sample By	: R MOORE	**Cylinder Type**	: Spot
Property Cd	:	**Formation**	:

COMPONENT		Mole Percent	WT. Percent	Liq Vol Percent
Methane	C1	12.6977	2.2551	5.1608
Ethane	C2	7.6528	2.5474	4.9067
Propane	C3	4.2766	2.0876	2.8244
Iso-Butane	IC4	0.8130	0.5230	0.6374
Normal-Butane	NC4	2.3058	1.4836	1.7423
Iso-Pentane	IC5	1.2112	0.9674	1.0614
Normal-Pentane	NC5	1.9514	1.5585	1.6954
Nitrogen	N2	0.0260	0.0080	0.0062
Carbon-Dioxide	CO2	0.3040	0.1480	0.1241
BENZENE	BENZENE	0.1085	0.0938	0.0726
TOLUENE	TOLUENE	0.7189	0.7333	0.5767
ETHYLBENZENE	E-BENZENE	0.0235	0.0276	0.0211
O-ETHYL-TOLUENE / 3-MC9	O-ETOLUENE/ 3-MC9	0.6933	0.9225	0.7147
O-XYLENE	O-XYLENE	0.1095	0.1286	0.0995
M-XYLENE/P-XYLENE	M-XYLENE/P-XYLENE	0.8365	0.9831	0.7759
2,2-Dimethylbutane	22-DMC4	0.2333	0.2225	0.2334
CYCLOPENTANE	23-DMC4 / CYC5	0.5271	0.5028	0.5172
2-methylpentane	2-MC5	3.1520	3.0070	3.1339
MCYC6/1,1,3-TMCYC5/2,2-DMC6	MCYC6/113-TMCYC5/22-DMC6	2.6614	6.2959	5.5790
N-C6	N-C6	6.3123	6.0219	6.2234
3-methylpentane	3-MC5	0.4387	0.4184	0.4285
2,2-Dimethylpentane	22-DMC5	0.2045	0.2268	0.2288
Methylcyclopentane	MCYC5	0.3080	0.2869	0.2609
2,4-DMC5	24-DMC5	0.0010	0.0011	0.0005

Comments: EXTENDED CONDENSATE

2,2,3-TMC4	223-TMC4	0.0054	0.0059	0.0057
3,3-Dimethylpentane	33-DMC5	0.1720	0.1907	0.1871
CYCLOHEXANE	CYC6	0.9803	0.9133	0.7994
2-Methylhexane	2-MC6	2.5482	2.8267	2.8370
2,3-Dimethylpentane	23-DMC5	0.6432	0.7135	0.6992
1,1-DMCYC5	11-DMCYC5	0.0284	0.0308	0.0274
3-Methylhexane	3-MC6	2.6702	2.9620	2.9365
1,t3-Dimethylcyclopentane	1t3-DMCYC5	0.1393	0.1514	0.1373
1,C3-DMCYC5 / 3-Ethylpentane	1C3-DMCYC5 / 3-EC5	0.3565	0.3874	0.3541
1,t2-DMCYC5 / 2,2,4-TMC5	1t2-DMCYC5 / 224-TMC5	0.1780	0.1934	0.1750
N-Heptane	N-C7	5.1668	5.7314	5.7147
1,C2-DMCYC5	1C2-DMCYC5	0.0036	0.0039	0.0034
2,5-Dimethylhexane	25-DMC6	0.2444	0.3090	0.3032
ECYC5 / 2,4-DMC6 / 2,2,3-TMC5	ECYC5 / 24-DMC6 / 223-TMC5	0.4914	0.5450	0.5315
3,3-DMC6 / 1,t3,c4-TMCYC5	33-DMC6 / 1t3c4-TMCYC5	0.1736	0.2156	0.1962
1,t2,c3-TMCYC5	1t2c3-TMCYC5	0.0629	0.0781	0.0703
2,3,4-TMC5	234-TMC5	0.0164	0.0207	0.0194
2,3-Dimethylhexane	23-DMC6	0.8080	1.0218	0.9779
1,1,2-TMCYC5	112-TMCYC5	0.3619	0.4495	0.3965
2-Methylheptane	2-MC7	2.0915	2.6448	2.5829
4-Methylheptane	4-MC7	1.1311	1.4303	1.3836
3,4-DMC6	34-DMC6	0.6259	0.7915	0.7502
3-Methylheptane	3-MC7	2.4937	3.1534	3.0458
3-EC6	3-EC6	0.3773	0.4770	0.4554
1,c,3-DMCYC6/1,c2,t3-TMCY5/1,c2,T4-TMCY	1c3-DMCYC6/1c2t3-TMCY5/1c2T4-TMCYC	1.6051	1.7446	1.5947
1,t4-Dimethylcyclohexane	1t4-DMCYC6	1.8148	2.2544	2.0152
2,2,5-TMC6	225-TMC6	0.1205	0.1710	0.1647
1,1-DMCYC6/1-M-t3-ECYC5	11-DMCYC6/1-M-t3-ECYC5	0.6783	0.8426	0.7359
1-M-C3-ECYC5	1-M-C3-ECYC5	0.0000	0.0000	0.0000
1-M-t2-ECYC5 / 2,2,4-TMC5	1-M-t2-ECYC5 / 224-TMC5	0.2238	0.2779	0.2483

Comments: EXTENDED CONDENSATE

CYC7/1-M-1-ECYC7	CYC7/1-M-1-ECYC7	0.4616	0.5017	0.4216
N-OCTANE / 1,T2-DMCYC6	N-OCTANE / 1T2-DMCYC6	4.0779	5.1568	5.0086
UNKNOWN C8-1	UNKNOWN C8-1	0.0000	0.0000	0.0000
1,t3-DMCYC6/1,C4-DMCYC6/1,C2,C3-TMCYC5	1t3-DMCYC6/1C4-DMCYC6 / 1C2C3-TMC5	0.0855	0.1062	0.0921
2,4,4 TMC6	244 TMC6	0.2908	0.4128	0.3885
I-C3CYC5	I-C3CYC5	0.0129	0.0160	0.0137
UNKNOWN C8-2	UNKNOWN C8-2	0.0329	0.0416	0.0400
2,2-DMC7	22-DMC7	0.0020	0.0028	0.0022
2,4-DMC7 / 1-M-C2-ECYC5	24-DMC7 / 1-M-C2-ECYC5	0.0000	0.0000	0.0000
2,2,3-TMC6	223-TMC6	0.1894	0.2689	0.1939
2,6-Dimethylheptane / 1,C2-DMCYC6	26-DMC7 / 1	0.0185	0.0262	0.0251
N-C3CYC5 / 1,C3,C5-TMCYC6	N-C3CYC5 / 1C3C5-TMCYC6	0.2384	0.3384	0.2443
2,5-DMC7 / 3,5-DMC7	25-DMC7 / 35-DMC7	0.0485	0.0688	0.0652
Ethylcyclohexane	ECYC6	0.6396	0.7945	0.6872
3,3-DMC7 / 2,3,3-TMC6 / 1,1,3-TMCYC6	33-DMC7 / 233-TMC8 / 113-TMCYC6	0.0300	0.0425	0.0394
1,1,4-TMCYC6	114-TMCYC6	0.0597	0.0834	0.0732
UNKNOWN C8-3	UNKNOWN C8-3	0.0085	0.0107	0.0102
2,3,4-TMC6	234-TMC6	0.0000	0.0000	0.0000
1,t2,t4-TMCYC6	1t2t4-TMCYC6	0.0000	0.0000	0.0000
2,3-DMC7 / 1,C3,t5-TMCYC6	23-DMC7 / 1C3t5-TMCYC6	0.1416	0.1978	0.1727
2-MC8/4-MC8	2-MC8/4-MC8	1.2910	1.8330	1.7520
UNKNOWN C8-4	UNKNOWN C8-4	0.0000	0.0000	0.0000
3-MC8	3-MC8	0.9204	1.3068	1.2365
UNKNOWN C8-5	UNKNOWN C8-5	0.0000	0.0000	0.0000
UNKNOWN C8-6	UNKNOWN C8-6	0.0068	0.0085	0.0080

Comments: EXTENDED CONDENSATE

1,t2,C3-TMCYC6/1,t2,C4-TMCYC6	1t2C3-TMCYC6/1t2C4-TMCYC6	0.0053	0.0074	0.0062
1,1,2-TMCYC6	112-TMCYC6	0.0021	0.0029	0.0022
UNKNOWN C8-8	UNKNOWN C8-8	0.0014	0.0017	0.0011
UNKNOWN C8-7	UNKNOWN C8-7	0.0876	0.1107	0.1069
NONANE	NONANE	1.5004	2.1304	2.0239
UNKNOWN C9-1	UNKNOWN C9-1	0.0014	0.0019	0.0017
UNKNOWN C9-2	UNKNOWN C9-2	0.0107	0.0151	0.0143
UNKNOWN C9-3	UNKNOWN C9-3	0.0042	0.0059	0.0051
1,C2,C3-TMCYCC6/1,C2,t3-TMCYCC6	1C2C3-TMCYCC6/1C2t3-TMCYCC6	0.0014	0.0019	0.0011
UNKNOWN C9-4	UNKNOWN C9-4	0.0051	0.0072	0.0062
UNKNOWN C9-5	UNKNOWN C9-5	0.0087	0.0123	0.0114
I-PROPYL-BENZENE	I-C3BENZENE	0.1337	0.1778	0.1401
2,2-DMC8	22-DMC8	0.0146	0.0229	0.0211
IC4CYC8 / CYC8	IC4CYC8 / CYC8	0.0089	0.0138	0.0114
UNKNOWN C9-6	UNKNOWN C9-6	0.0052	0.0073	0.0068
N-C4CYC5 / N-C3CYC6	N-C4CYC5 / N-C3CYC6	0.2572	0.3594	0.3124
3,3-DMC8	33-DMC8	0.0193	0.0303	0.0274
UNKNOWN C9-7	UNKNOWN C9-7	0.0065	0.0092	0.0085
UNKNOWN C9-8	UNKNOWN C9-8	0.0006	0.0008	0.0005
N-PROPYL-BENZENE	N-C3BENZENE	0.8306	1.1052	0.8743
UNKNOWN C9-9	UNKNOWN C9-9	0.3071	0.4360	0.4142
m-ETHYL-TOLUENE	m-ETOLUENE	0.6021	0.8011	0.6316
p-ETHYL-TOLUENE / 2,3-DMC8	p-ETOLUENE / 23-DMC8	0.8624	1.1475	0.9087
4-MC9 / 5-MC9 / 1,3,5-TMBENZENE	4-MC9 / 5-MC9/135-TMBENZ	0.3212	0.5059	0.4714
2-MC9	2-MC9	0.0000	0.0000	0.0000
3-EC8	3-EC8	0.4580	0.7214	0.6706
UNKNOWN C9-10	UNKNOWN C9-10	0.0000	0.0000	0.0000

Comments: EXTENDED CONDENSATE

UNKNOWN C9-11	UNKNOWN C9-11	0.0000	0.0000	0.0000
UNKNOWN C9-12	UNKNOWN C9-12	0.0006	0.0008	0.0005
MCYC8/1,2,4-TMBENZENE/t-BUTYLBENZENE	MCY8 / 124-TMLBENZENE / t-BENZENE	0.0034	0.0047	0.0034
t-4-BUTYL-CYC6	t-C4CYC6	0.0008	0.0012	0.0005
I-C4CYC6	I-C4CYC6	0.0210	0.0326	0.0274
N-DECANE	N-DECANE	0.8080	1.2727	1.1885
I-C4BENZENE	I-C4BENZENE	0.0116	0.0172	0.0137
SEC-C4BENZENE	SEC-C4BENZENE	0.0083	0.0123	0.0097
UNKNOWN C10-1	UNKNOWN C10-1	0.0010	0.0015	0.0011
1-M-3-I-PROPYL-BENZENE	1-M-3-IC4BENZENE	0.0020	0.0029	0.0022
1,2,3-TMBENZENE	123-TMBENZENE	3.6308	4.8310	3.6868
1-M-4-I-PROPLY-BENZENE	1-M-4-ICBENZENE	0.0000	0.0000	0.0000
UNKNOWN C10-2	UNKNOWN C10-2	0.0250	0.0393	0.0366
UNKNOWN C10-3	UNKNOWN C10-3	0.0193	0.0303	0.0280
UNKNOWN C10-4	UNKNOWN C10-4	0.0021	0.0033	0.0028
1-M-2-I-PROPYL-BENZENE	1-M-2-IC4BENZENE	0.0386	0.0573	0.0440
UNKNOWN C10-5	UNKNOWN C10-5	0.0972	0.1530	0.1424
N-C4CYC6	N-C4CYC6	0.0762	0.1183	0.1007
UNKNOWN C10-6	UNKNOWN C10-6	0.5235	0.8246	0.7702
UNKNOWN C10-7	UNKNOWN C10-7	0.0000	0.0000	0.0000
1,3-DEBENZENE / 1-M-3-PROPYLBENZENE	13-DEBENZENE / 1-M-3-C4BENZENE	0.1119	0.1662	0.1310
N-IC4BENZ/1,2-DEBENZ/1-M-4 PROPYLBENZ	N-IC4BENZ/12-DEBENZ/1-M-4 C3BENZ	0.2200	0.3268	0.2534
1,4-DEBENZENE	14-DEBENZENE	0.2096	0.3114	0.2460
1-M-2-PROPYLBENZENE	1-M-2-C3BENZENE	0.2367	0.3516	0.2746
1,4-DM-2-EBENZENE	14-DM-2-EBENZENE	0.0178	0.0264	0.0200

Comments: EXTENDED CONDENSATE

UNKNOWN C10-8	UNKNOWN C10-8	0.1635	0.2575	0.2403
UNKNOWN C10-9	UNKNOWN C10-9	0.1495	0.2354	0.2197
1,2-DM-4-EBENZENE	12-DM-4-EBENZENE	0.0000	0.0000	0.0000
1,3-DM-2-EBENZENE	13-DM-2-EBENZENE	0.0219	0.0325	0.0246
UNKNOWN C10-10	UNKNOWN C10-10	0.0000	0.0000	0.0000
1,2-DE-3-EBENZENE	12-DE-3-EBENZENE	0.0011	0.0016	0.0011
N-UNDECANE	N-UNDECANE	1.0587	1.8319	1.6880
UNKNOWN C11-1	UNKNOWN C11-1	0.6201	1.0730	0.9888
2-M-C4BENZENE	2-M-C4BENZENE	0.8005	1.3137	1.0431
UNKNOWN C11-2	UNKNOWN C11-2	0.0875	0.1514	0.1390
1,2,4,5-TETRA-MBENZENE	1245-TETRAMBENZENE	0.0022	0.0032	0.0022
1,2,3,5-TETRA-MBENZENE	1235-TETRAMBENZENE	0.0057	0.0084	0.0062
UNKNOWN C11-3	UNKNOWN C11-3	0.0023	0.0039	0.0034
tert-1-BUTYL-2-MBENZENE	tert-1-C4-2-MBENZENE	0.0008	0.0013	0.0005
UNKNOWN C11-4	UNKNOWN C11-4	0.0107	0.0185	0.0165
1,2,3,4-TETRA-MBENZENE/CYC10	CYC10 / 1234-TETRA-MBENZENE	0.0000	0.0000	0.0000
N-C5-BENZENE	N-C5-BENZENE	0.1284	0.2107	0.1670
UNKNOWN C11-5	UNKNOWN C11-5	2.4164	4.1814	3.8533
tert-1-C4-3,5-DMBENZENE	1-tert-C4-35-DMBENZENE	0.1819	0.3267	0.2569
UNKNOWN C11-6	UNKNOWN C11-6	0.0483	0.0835	0.0766
NAPHTHALENE	NAPHTHALENE	0.0012	0.0020	0.0017
UNKNOWN C11-7	UNKNOWN C11-7	0.0000	0.0000	0.0000
N-DODECANE	N-DODECANE	0.4391	0.8280	0.7536
N-C13	N-C13	0.0039	0.0079	0.0068
TOTAL		100.0003	100.0000	100.0000

Totals

Comments: EXTENDED CONDENSATE

SPECIFIC GRAVITY @ 60 DEG. F. (WATER = 1)	0.6859
MOLECULAR WEIGHT	90.3376
POUNDS/GALLON (ABSOLUTE DENSITY)	5.7186
CALC. VAPOR PRESSURE @ 14.65 PSIA, 100 Deg. F.	697.9798
CUFT. VAPOR / GALLON @ 14.65 PSIA, 60 Deg. G.	24.1732
BTU / CUFT. DRY GAS @ 14.65 PSIA, 60 Deg. F.	4,732.5563
BTU / GALLON LIQUID	117,268.6695
BTU / POUND	20,400.9731

Comments: EXTENDED CONDENSATE

GAS ANALYTICAL SERVICES

C6+ Gas Analysis Report

Gas Analytical

Report Date: Sep 14, 2015 9:23a

Client:	Equitable Production	Date Sampled:	Sep 8, 2015 11:00a
Site:	514394	Analysis Date:	Sep 11, 2015 2:17p
Field No:	9998	Collected By:	J. Brown
Meter:	514394	Date Effective:	Sep 8, 2015 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	70.0
Lab File No:	**X_CH1-6024.CHR**	Sample Temp (°F):	
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test

Component	Mol %	Gal/MSCF
Methane	78.1311	
Ethane	14.2559	3.79
Propane	4.0036	1.10
I-Butane	0.5947	0.19
N-Butane	1.1890	0.37
I-Pentane	0.3163	0.12
N-Pentane	0.3248	0.12
Nitrogen	0.4544	
Oxygen	<MDL	
Carbon Dioxide	0.1535	
Hexanes+	0.5767	0.24
TOTAL	100.0000	5.93

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,262.4954 BTU/ft³
BTU/SCF (Saturated):	1,241.4002 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99644
Z Factor (Saturated):	0.99604

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,262.4954 BTU/ft³
BTU/SCF (Saturated):	1,241.4002 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99644
Z Factor (Saturated):	0.99604

Calculated Specific Gravities			
Ideal Gravity:	0.7188	Real Gravity:	0.7211
Molecular Wt:	20.8177 lb/lbmol		

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

Source	Date	Notes
Gas Analytical	Sep 11, 2015	results to Bob Gum

<MDL = Less than Method Detection Limits, NG = Not Given, NT = Not Tested

Attachment M

HEATER AND REBOILERS NOT SUBJECT TO 40CFR60 SUBPART Dc

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

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

Emission Unit ID#[1]	Emission Point ID#[2]	Emission Unit Description (manufacturer, model #)	Year Installed/ Modified	Type[3] and Date of Change	Maximum Design Heat Input (MMBTU/hr)[4]	Fuel Heating Value (BTU/scf)[5]
S001	E001	Line Heater	2016	Existing	1.54	1,262
S002	E002	Line Heater	2016	Existing	1.54	1,262
S003	E003	Line Heater	2016	Existing	1.54	1,262
S004	E004	Line Heater	2016	Existing	1.54	1,262
S005	E005	Line Heater	2016	Existing	1.54	1,262
S006	E006	Line Heater	2016	Existing	1.54	1,262
S007	E007	Line Heater	2016	Existing	1.54	1,262
S008	E008	Line Heater	2016	Existing	1.54	1,262
S009	E009	Line Heater	2016	Existing	1.15	1,262
S022	E022	TEG	2016	Existing	0.013	1,262
S023	E023	TEG	2016	Existing	0.013	1,262

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

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

3 New, modification, removal

4 Enter design heat input capacity in MMBtu/hr.

5 Enter the fuel heating value in BTU/standard cubic foot.

Attachment N

INTERNAL COMBUSTION ENGINE DATA SHEET

ATTACHMENT N – INTERNAL COMBUSTION ENGINE DATA SHEET

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

Emission Unit ID#[1]	**S021**		
Engine Manufacturer/Model	**Ford / CSG-637**		
Manufacturers Rated bhp/rpm	**110 / 3200**		
Source Status[2]	**NS**		
Date Installed/ Modified/Removed/Relocated[3]	**2016**		
Engine Manufactured /Reconstruction Date[4]	**2015**		
Check all applicable Federal Rules for the engine (include EPA Certificate of Conformity if applicable)[5]	☒40CFR60 Subpart JJJJ ☒JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources	☐40CFR60 Subpart JJJJ ☐JJJJ Certified? ☐40CFR60 Subpart IIII ☐IIII Certified? ☐40CFR63 Subpart ZZZZ ☐ NESHAP ZZZZ/ NSPS JJJJ Window ☐ NESHAP ZZZZ Remote Sources
Engine Type[6]	**4SRB**		
APCD Type[7]	**NSCR**		
Fuel Type[8]	**PQ**		
H_2S (gr/100 scf)	**0.25**		
Operating bhp/rpm	**110 / 3,200**		
BSFC (BTU/bhp-hr)	**6,552.9**		
Hourly Fuel Throughput	**686.5** ft^3/hr gal/hr	ft^3/hr gal/hr	ft^3/hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)	**6.01** $MMft^3$/yr gal/yr	$MMft^3$/yr gal/yr	$MMft^3$/yr gal/yr
Fuel Usage or Hours of Operation Metered	Yes ☒ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

Calculation Methodology[9]	**Pollutant[10]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**	**Hourly PTE (lb/hr)[11]**	**Annual PTE (tons/year)[11]**
MD	NO_x	**0.42**	**1.85**				
MD	CO	**0.88**	**3.85**				
MD	VOC	**0.29**	**1.29**				
AP	SO_2	**<0.01**	**<0.01**				
AP	PM (Filterable)	**<0.01**	**0.03**				
AP	PM (Condensable)	**<0.01**	**0.03**				
AP	Formaldehyde	**0.01**	**0.06**				
AP	Total HAPs	**0.02**	**0.07**				
AP	GHG (CO_2e)	**82.58**	**361.69**				

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

2 Enter the Source Status using the following codes:

NS Construction of New Source (installation) ES Existing Source

MS	Modification of Existing Source	RS	Relocated Source
REM	Removal of Source		

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

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

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

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

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

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

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

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

8 Enter the Fuel Type using the following codes:

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

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

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

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

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

Engine Air Pollution Control Device
(Emission Unit ID# E021, use extra pages as necessary)

Air Pollution Control Device Manufacturer's Data Sheet included?
Yes ☒ No ☐

☒ NSCR ☐ SCR ☐ Oxidation Catalyst

Provide details of process control used for proper mixing/control of reducing agent with gas stream: **Sequential Multipart Fuel Injection**

Manufacturer: **Ford**	Model #: **CSG-637**
Design Operating Temperature: **1,600 °F**	Design gas volume: scfm
Service life of catalyst: **5000 hrs**	Provide manufacturer data? ☒Yes ☐ No
Volume of gas handled: **444.9** cfm at **1,600** °F	Operating temperature range for NSCR/Ox Cat: From °F to °F
Reducing agent used, if any:	Ammonia slip (ppm):

Pressure drop against catalyst bed (delta P): **6"** inches of H_2O

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

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

How often is catalyst recommended or required to be replaced (hours of operation)?
5000 hrs

How often is performance test required?
☐ Initial
☐ Annual
☐ Every 8,760 hours of operation
☐ Field Testing Required
☒ No performance test required. If so, why (please list any maintenance required and the applicable sections in NSPS/GACT, **40CFR60.4243(a)(1) – EQT must operate and maintain the certified stationary SI internal combustion engine and control device according to the manufacturer's emission-related written instructions, keep records of conducted maintenance to demonstrate compliance, but no performance testing is required.**

Attachment O

TANKER TRUCK LOADING DATA SHEET

ATTACHMENT O – TANKER TRUCK LOADING DATA SHEET

Emission Unit ID#: **S020**	Emission Point ID#: **E019**	Year Installed/Modified: **2016**
Emission Unit Description: **Tank Truck Loading Rack**		
Loading Area Data		
Number of Pumps: **1**	Number of Liquids Loaded: **1**	Max number of trucks loading at one (1) time: **1**
Are tanker trucks pressure tested for leaks at this or any other location? ☐ Yes ☒ No ☐ Not Required If Yes, Please describe:		
Provide description of closed vent system and any bypasses. **Emissions collected and controlled by enclosed combustion device. Bypass is not available.**		
Are any of the following truck loadout systems utilized? ☐ Closed System to tanker truck passing a MACT level annual leak test? ☐ Closed System to tanker truck passing a NSPS level annual leak test? ☒ Closed System to tanker truck not passing an annual leak test and has vapor return?		

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

Time	Jan – Mar	Apr - Jun	Jul – Sept	Oct - Dec
Hours/day	**As needed**	**As needed**	**As needed**	**As needed**
Days/week	**As needed**	**As needed**	**As needed**	**As needed**

Bulk Liquid Data (use extra pages as necessary)

Liquid Name		**Produced Fluids**		
Max. Daily Throughput (1000 gal/day)		**38.73**		
Max. Annual Throughput (1000 gal/yr)		**14,134.97**		
Loading Method[1]		**SP**		
Max. Fill Rate (gal/min)		**26.89**		
Average Fill Time (min/loading)		**100 min**		
Max. Bulk Liquid Temperature (°F)		**70 °F**		
True Vapor Pressure[2]		**NA**		
Cargo Vessel Condition[3]		**U**		
Control Equipment or Method[4]		**Enclosed Combustion Device (C019 or C020)**		
Max. Collection Efficiency (%)		**70 %**		
Max. Control Efficiency (%)		**98 %**		
Max.VOC Emission Rate	Loading (lb/hr)	**0.06**		
	Annual (ton/yr)	**0.25**		
Max.HAP Emission Rate	Loading (lb/hr)	**<0.01**		
	Annual (ton/yr)	**<0.01**		
Estimation Method[5]		**EPA AP-42, ProMax**		

1 BF Bottom Fill; SP Splash Fill; SUB Submerged Fill

2 At maximum bulk liquid temperature

3 B Ballasted Vessel; C Cleaned; U Uncleaned (dedicated service); O Other (describe)

4 List as many as apply (complete and submit appropriate Air Pollution Control Device Sheets)
CA Carbon Adsorption; VB Dedicated Vapor Balance (closed system); ECD Enclosed Combustion Device; F Flare; TO Thermal Oxidization or Incineration

5 EPA EPA Emission Factor in AP-42; MB Material Balance; TM Test Measurement based upon test data submittal; O Other (describe)

Attachment Q

PNEUMATIC CONTROLLERS DATA SHEET

ATTACHMENT Q – PNEUMATIC CONTROLLERS DATA SHEET
Are there any continuous bleed natural gas driven pneumatic controllers at this facility that commenced construction, modification or reconstruction after August 23, 2011? ☐ Yes ☒ No Please list approximate number.
Are there any continuous bleed natural gas driven pneumatic controllers at this facility with a bleed rate greater than 6 standard cubic feet per hour that are required based on functional needs, including but not limited to response time, safety and positive actuation that commenced construction, modification or reconstruction after August 23, 2011? ☐ Yes ☒ No Please list approximate number.

Attachment R

AIR POLLUTION CONTROL DEVICE / EMISSION REDUCTION DEVICE (ERD) SHEET

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

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

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

The following five (5) rows are only to be completed if registering an alternative air pollution control device.	
Emission Unit ID:	Make:
Primary Control Device ID:	Model:
Control Efficiency (%):	APCD/ERD Data Sheet Completed: ☐ Yes ☐ No
Secondary Control Device ID:	Make/Model:
Control Efficiency (%):	APCD/ERD Data Sheet Completed: ☐ Yes ☐ No

VAPOR COMBUSTION
(Including Enclosed Combustors)

General Information

Control Device ID#: **C019**	Installation Date: **2015** ☒ New ☐ Modified ☐ Relocated	
Maximum Rated Total Flow Capacity **~15,230** scfh **365,600** scfd	Maximum Design Heat Input (from mfg. spec sheet) **19.22** MMBTU/hr	Design Heat Content **1,262** BTU/scf

Control Device Information

Type of Vapor Combustion Control?

☒ Enclosed Combustion Device ☐ Elevated Flare ☐ Ground Flare
☐ Thermal Oxidizer

Manufacturer: **LEED Fabrication** Model: **Enclosed Combustor 60"**	Hours of operation per year? **8,760**

List the emission units whose emissions are controlled by this vapor control device (Emission Point ID# **S010-S017, S018, S021**)

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
S010-S017	**Produced Fluid Tanks**		
S018	**Sand Trap Blowdown Tank**		
S020	**Tank Truck Loading Rack**		

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

Assist Type (Flares only)	Flare Height	Tip Diameter	Was the design per §60.18?
☐ Steam ☐ Air ☐ Pressure ☒ Non	**~25** feet	**4** feet	☐ Yes ☐ No Provide determination.

Waste Gas Information

Maximum Waste Gas Flow Rate	Heat Value of Waste Gas Stream	Exit Velocity of the Emissions Stream
314.11 (lb/hr)	**Variable** BTU/ft^3	(ft/s)

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

Pilot Gas Information

Number of Pilot Lights	Fuel Flow Rate to Pilot Flame per Pilot	Heat Input per Pilot	Will automatic re-ignition be used?
1	**~30** scfh	**0.03** MMBTU/hr	☐ Yes ☒ No

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

Is pilot flame equipped with a monitor to detect the presence of the flame? ☒ Yes ☐ No	If Yes, what type? ☒ Thermocouple ☐ Infrared ☐ Ultraviolet ☐ Camera ☐ Other:

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

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

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		Project No.:		Revision:	A		
		Project:		Date:	10 November 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.:	L30-0028-00		

GENERAL

1	Design Code:		NDE:	LEED Fabrication Standards
2	Service:		Customer Specs:	☐ Yes
3	Description:	Standard Dual Stage 60 High Efficiency Combustor		☑ No

PROCESS DATA

	Gas Composition:	mol %	Process Conditions: Variable	Value	Units
4	Methane		Flow Rate	Up to 300	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. 0.12 oz/in2		
13	N2		4. Gas mixture heating value estimated to be 1500 BTU/SCF unless specified by customer		
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	Stainless Steel	
39					Burner Body	Carbon Steel	
40	Smokeless By:	☐ Steam	☐ Assist Air		Pilot		
41		☐ Gas Assist	☑ Staging		Pilot Tip	Stainless Steel	
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	Stainless Steel	
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		

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	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.:	L30-0028-00		

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	Check with Sales for available config.	
65			Calorimeter	NA	
66			Pressure Switches/Transmitters	Check with Sales for available config.	
67			Thermocouples	Check with Sales for available config.	
68			Temperature Switches/Transmitters	Check with Sales for available config.	
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	60 " OD x 30 ' H. 7,000 Lbs
82		☐ MTR	Pilot Tip	
83		☐ Certificate of Compliance	Pilot Line(s)	
84		☐ Other (Specify):	Concrete Pad	12'x12' 12". 21,600 Lbs
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:

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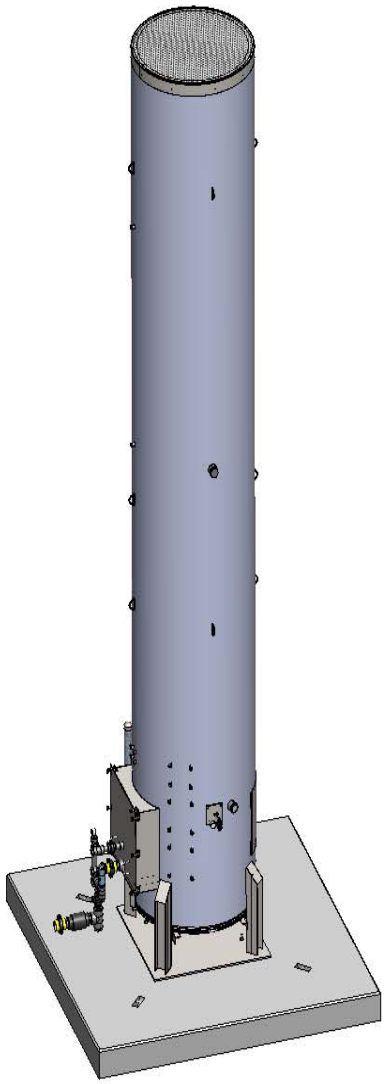
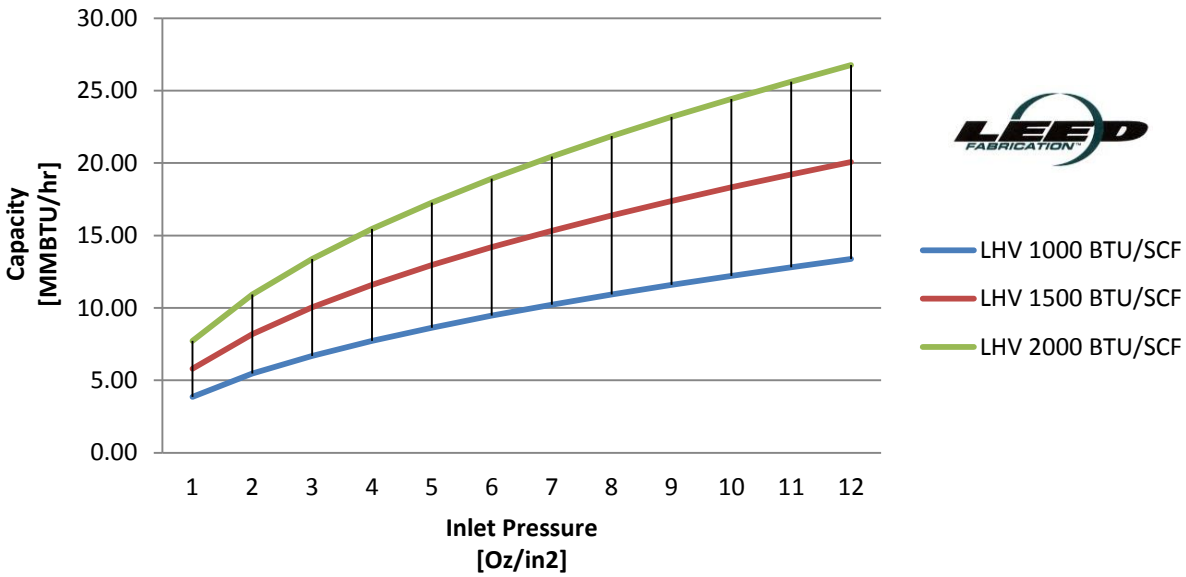
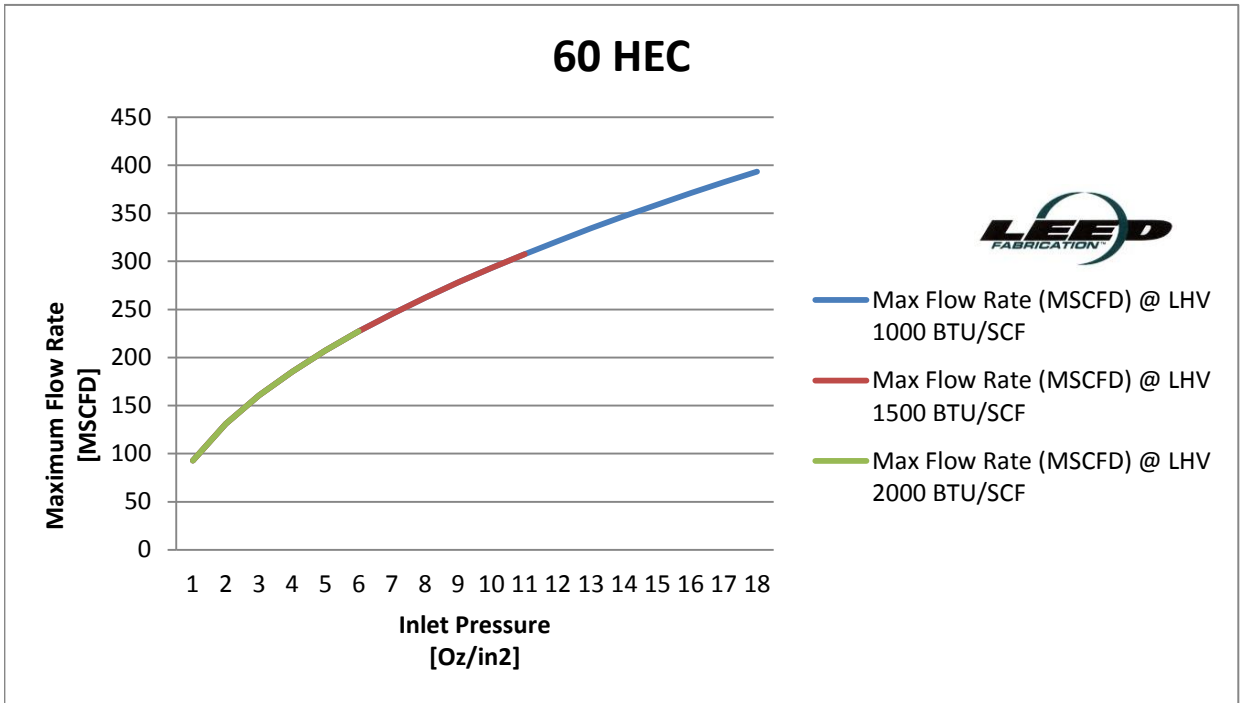
				By:	JS		
Environmental Control Equipment		P.O. No.:	-	Checked:	SG		
Data Sheet		RFQ No.:	-	Approved:	MS		
Client:		Ref. P&ID:	-				
Site:				Supplier:	LEED FABRICATION		
Unit/Lease:		Remarks:	-	Model No.:	L30-0028-00		

GENERAL ARRANGEMENT



60 HEC


30.00
25.00
20.00
15.00
10.00
5.00
0.00
Capacity [MMBTU/hr]
1
2
3
4
5
6
7
8
9
10
11
12
Inlet Pressure [Oz/in2]
LHV 1000 BTU/SCF
LHV 1500 BTU/SCF
LHV 2000 BTU/SCF


60 HEC
Maximum Flow Rate [MSCFD]
450
400
350
300
250
200
150
100
50
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Inlet Pressure [Oz/in2]
Max Flow Rate (MSCFD) @ LHV 1000 BTU/SCF
Max Flow Rate (MSCFD) @ LHV 1500 BTU/SCF
Max Flow Rate (MSCFD) @ LHV 2000 BTU/SCF

Attachment S

EMISSION CALCULATIONS

Line Heaters S001 - S008

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	1,262	8,760	<0.01	0.03
Hexane	1.8	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
Formaldehyde	0.075	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
Benzene	0.0021	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
Toluene	0.0034	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
Pb	0.0005	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
CO	84	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	0.10	0.45
NO_x	100	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	0.12	0.53
$PM_{Filterable}$	1.9	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	0.01
$PM_{Condensable}$	5.7	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	0.03
PM_{Total}	7.6	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	0.04
SO_2	0.6	lb/10^6 scf	AP-42 Chapter 1.4	1.54	1,262	8,760	<0.01	<0.01
CO_2	53.06	kg CO_2 / MMBtu	40CFR98 Subpart C	1.54	1,262	8,760	180.14	789.03
CH_4	0.001	kg CH_4 / MMBtu	40CFR98 Subpart C	1.54	1,262	8,760	<0.01	0.015
N_2O	0.0001	kg N_2O / MMBtu	40CFR98 Subpart C	1.54	1,262	8,760	<0.01	<0.01
Total HAPs							<0.01	0.01
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 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)**

Line Heaters S009

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	1.15	1,262	8,760	<0.01	0.02
Hexane	1.8	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
Formaldehyde	0.075	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
Benzene	0.0021	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
Toluene	0.0034	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
Pb	0.0005	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
CO	84	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	0.08	0.34
NO_x	100	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	0.09	0.40
$PM_{Filterable}$	1.9	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
$PM_{Condensable}$	5.7	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	0.02
PM_{Total}	7.6	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	0.03
SO_2	0.6	lb/10^6 scf	AP-42 Chapter 1.4	1.15	1,262	8,760	<0.01	<0.01
CO_2	53.06	kg CO_2 / MMBtu	40CFR98 Subpart C	1.15	1,262	8,760	134.52	589.21
CH_4	0.001	kg CH_4 / MMBtu	40CFR98 Subpart C	1.15	1,262	8,760	<0.01	0.011
N_2O	0.0001	kg N_2O / MMBtu	40CFR98 Subpart C	1.15	1,262	8,760	<0.01	<0.01
Total HAPs							<0.01	<0.01
Total CO_2e							134.66	589.82

Notes:

- Emission rates displayed above represent the max. hourly and max. annual emissions for one line heater. Cumulative emission rates for all 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 S022 & S023

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	1,262	8,760	<0.01	<0.01
Hexane	1.8	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
Formaldehyde	0.075	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
Benzene	0.0021	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
Toluene	0.0034	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
Pb	0.0005	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
CO	84	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
NO_x	100	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
$PM_{Filterable}$	1.9	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
$PM_{Condensable}$	5.7	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
PM_{Total}	7.6	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
SO_2	0.6	lb/10^6 scf	AP-42 Chapter 1.4	0.013	1,262	8,760	<0.01	<0.01
CO_2	53.06	kg CO_2 / MMBtu	40CFR98 Subpart C	0.013	1,262	8,760	1.52	6.66
CH_4	0.001	kg CH_4 / MMBtu	40CFR98 Subpart C	0.013	1,262	8,760	<0.01	<0.01
N_2O	0.0001	kg N_2O / MMBtu	40CFR98 Subpart C	0.013	1,262	8,760	<0.01	<0.01
Total HAPs							<0.01	<0.01
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)**

Natural Gas Compressor Engine S021

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Engine Rating (bhp)	Fuel Consumption (Btu/bhp-hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
VOC's	1.21	g/bhp-hr	Vendor Guarantee	110.0	6,553	1,262	8,760	0.29	1.29
Formaldehyde	2.05E-02	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	0.01	0.06
Benzene	1.58E-03	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	<0.01
Toluene	5.58E-04	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	<0.01
Ethylbenzene	2.48E-05	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	<0.01
Xylene	1.95E-04	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	<0.01
CO	3.62	g/bhp-hr	Vendor Guarantee	110.0	6,553	1,262	8,760	0.88	3.85
NO_x	1.74	g/bhp-hr	Vendor Guarantee	110.0	6,553	1,262	8,760	0.42	1.85
$PM_{Filterable}$	9.50E-03	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	0.03
$PM_{Condensable}$	9.91E-03	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	0.03
PM_{Total}	1.94E-02	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	0.01	0.06
SO_2	5.88E-04	lb/MMBtu	AP-42 Chapter 3.2	110.0	6,553	1,262	8,760	<0.01	<0.01
CO_2	53.06	kg CO_2 / MMBtu	40 CFR Subpart C	110.0	6,553	1,262	8,760	82.49	361.32
CH_4	0.001	kg CH_4 / MMBtu	40 CFR Subpart C	110.0	6,553	1,262	8,760	<0.01	<0.01
N_2O	0.0001	kg N_2O / MMBtu	40 CFR Subpart C	110.0	6,553	1,262	8,760	<0.01	<0.01
Total HAPs								0.02	0.07
Total CO_2e								82.58	361.69

Notes:

- Emission rates displayed above represent the max. hourly and max. annual emissions for one NG compressor.
- Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
- AP-42, Chapter 3.2, Table 3.2-3 - Uncontrolled Emission Factors for 4-Stroke Rich Burn Engines
- Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.
- CO_2 equivalency solved for using Global Warming Potentials found in 40 CFR 98 Table A-1 (Updated January 2014). GWP CO_2=1, GWP CH_4=25, GWP N_2O=298
- Vendor Guarantee Emissions are listed in Attachment S
- Vendor Guarantee Emissions are converted from g/kW-hr to g/bhp-hr. 1 kW = 1.34 bhp

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 S010 - S017

Pollutant	Max. Hourly Emissions using ProMax (lb/hr)	Max. Yearly Emissions using ProMax (tons/yr)
VOCs	121.45	531.94
HAPs	6.47	28.33
Hexane	6.03	26.39
Benzene	9.21	40.35
Toluene	5.77	25.26
Ethylbenzene	0.19	0.85
Xylene	0.87	3.79
CO_2	15.30	67.00
CH_4	<0.01	<0.01
Total CO_2e	15.30	67.00

Notes:

- Emission rates for Produced Fluid Tanks S010 - S017 were calculated using ProMax software. ProMax output sheets for the PUL-96 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 S010 - S017 is modeled as being received through a single tank. The throughput value represents the total throughput for all eight (8) 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. Yearly Emissions using ProMax (tons/yr)
VOCs	17.01	3.11
HAPs	0.55	0.10
Hexane	0.44	0.08
Benzene	0.85	0.15
Toluene	0.50	0.09
Ethylbenzene	0.02	<0.01
Xylene	0.07	0.01
CO_2	1.64	0.30
CH_4	<0.01	<0.01
Total CO_2e	1.64	0.30

Notes:

- Blowdown operations are conducted on the PUL-96 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 (365 days per year).
- Emissions from the Sand Trap Blowdown Tank are routed to an enclosed combustion device. The values displayed above a pre-control emission rates.
- Emission rates for the Sand Trap Blowdown Tank were calculated using ProMax software. ProMax output sheets for the PUL-96 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 S020

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	0.19	0.82	70%	98%	<0.01	0.01	0.06	0.25
HAPs	<0.01	<0.01	70%	98%	<0.01	<0.01	<0.01	<0.01
CO_2	<0.01	<0.01	70%	98%	0.49	2.17	<0.01	<0.01
CH_4	<0.01	<0.01	70%	98%	<0.01	<0.01	<0.01	<0.01
Total CO_2e	0.04	0.17	--	--	0.50	2.17	0.01	0.05

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

Notes:

- Emission rates for liquid unloading operations were calculated using ProMax software. ProMax summary sheets are attached.
- Vapors from tank unloading operations are vapor-balanced to the produced fluid tanks and realized at one of the two enclosed combustion devices. AP-42 calculation methods were used to estimate the collection efficiency from tank unloading operations. Emissions that are not collected during the unloading events are realized at the Loading Rack Emission Point, E020.

Enclosed Ground Flares C019

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)
Produced Fluids Tanks S008 - S015	VOCs	121.45	531.94	98%	2.43	10.64
	HAPs	6.47	28.33	98%	0.13	0.57
	Hexane	6.03	26.39	98%	0.12	0.53
	Benzene	9.21	40.35	98%	0.18	0.81
	Toluene	5.77	25.26	98%	0.12	0.51
	Ethylbenzene	0.19	0.85	98%	<0.01	0.02
	Xylene	0.87	3.79	98%	0.02	0.08
	CO_2	15.30	67.00	98%	329.15	1,441.69
	CH_4	<0.01	<0.01	98%	<0.01	<0.01
Sand Trap Blowdown Tank - S016	VOCs	17.01	3.11	98%	0.34	0.06
	HAPs	0.55	0.10	98%	0.01	<0.01
	Hexane	0.44	0.08	98%	<0.01	<0.01
	Benzene	0.85	0.15	98%	0.02	<0.01
	Toluene	0.50	0.09	98%	<0.01	<0.01
	Ethylbenzene	0.02	<0.01	98%	<0.01	<0.01
	Xylene	0.07	0.01	98%	<0.01	<0.01
	CO_2	1.64	0.30	98%	486.32	2,130.06
	CH_4	<0.01	<0.01	98%	<0.01	<0.01
Truck Loading - S017	VOCs	0.19	0.82	98%	<0.01	0.01
	HAPs	<0.01	<0.01	98%	<0.01	<0.01
	CO_2	<0.01	<0.01	98%	0.49	2.17
	CH_4	<0.01	<0.01	98%	<0.01	<0.01
Totals	VOCs	138.65	535.87	--	2.77	10.71
	HAPs	7.02	28.44	--	0.14	0.57
	Hexane	6.46	26.47	--	0.13	0.53
	Benzene	10.06	40.51	--	0.20	0.81
	Toluene	6.27	25.35	--	0.13	0.51
	Ethylbenzene	0.21	0.85	--	<0.01	0.02
	Xylene	0.94	3.81	--	0.02	0.08
	CO_2	16.94	67.30	--	815.96	3,573.92
	CH_4	<0.01	<0.01	--	<0.01	<0.01
	CO2e	16.98	67.47	--	815.96	3,573.93

Gas Composition of Vent Gas

Gas Stream	Mole Fraction
Methane	0.16
Ethane	0.28
Propane	0.20
Butane	0.10
Pentanes	0.05
Carbon Dioxide	0.011

Vent Gas Properties

Vent Gas Properties	Mass Flow Rate (lb/hr)	Density (lb/ft^3)
Produced Fluids Tank	146.78	0.10
Blowdown Tank	167.33	0.08

Emissions from Pilot Operations

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factors (kg XX/MMBtu)	Heat Value of Natural Gas (Btu/scf)	Enclosed Ground Flare Pilot Rating (Btu/hr)	Enclosed Ground Flare Burner Rating (Btu/hr)	Pilot Max. Hourly Emissions (lb/yr)	Pilot 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	5.50	--	1,088	30,000	19,220,000	<0.01	<0.01	--	--	<0.01	<0.01
Hexane	1.80	--	1,088	30,000	19,220,000	<0.01	<0.01	--	--	<0.01	<0.01
Formaldehyde	0.075	--	1,088	30,000	19,220,000	<0.01	<0.01	--	--	<0.01	<0.01
CO	84	--	1,088	30,000	19,220,000	<0.01	0.01	1.48	6.50	1.49	6.51
NO_x	100	--	1,088	30,000	19,220,000	<0.01	0.01	1.77	7.74	1.77	7.75
$PM_{Condensable}$	5.70	--	1,088	30,000	19,220,000	<0.01	<0.01	0.10	0.44	0.10	0.44
$PM_{Filterable}$	1.90	--	1,088	30,000	19,220,000	<0.01	<0.01	0.03	0.15	0.03	0.15
PM_{Total}	7.60	--	1,088	30,000	19,220,000	<0.01	<0.01	0.13	0.59	0.13	0.59
SO_2	0.60	--	1,088	30,000	19,220,000	<0.01	<0.01	0.01	0.05	0.01	0.05
CO_2	120,000	53.06	1,088	30,000	19,220,000	3.51	15.37	2,248.30	9,847.56	2,251.81	9,862.93
CH_4	2.3	0.001	1,088	30,000	19,220,000	<0.01	<0.01	0.04	0.19	0.04	0.19
N_2O	2.2	<0.001	1,088	30,000	19,220,000	<0.01	<0.01	<0.01	0.02	<0.01	0.02
Total HAPs										<0.01	<0.01
CO_2e										2,254.14	9,873.11

Total Enclosed Combustion Device Emissions

Pollutant	Max. Hourly Emissions (lb/hr)	Max. Yearly Emissions (tons/yr)
VOCs	2.77	10.71
HAPs	0.14	0.57
CO	1.49	6.51
NO_x	1.77	7.75
$PM_{Condensable}$	0.10	0.44
$PM_{Filterable}$	0.03	0.15
PM_{Total}	0.13	0.59
SO_2	0.01	0.05
CO_2	3,067.77	13,436.85
CH_4	0.04	0.19
N_2O	<0.01	0.02
CO_2e	3,070.10	13,447.04

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

$$E_{a,CH_4}(un-combusted) = V_a * (1-\eta) * X_{CH4} \qquad \text{(Eq. W-19)}$$

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

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

Where:

Ea,CH_4(un-combusted) = Contribution of annual un-combusted CH4 emissions from Enclosed Combustion Device stack in cubic feet, under actual conditions.

Ea,CO_2(un-combusted) = Contribution of annual un-combusted CO2 emissions from Enclosed Combustion Device stack in cubic feet, under actual conditions.

Ea,CO_2(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		Particle size multiplier [1]
s	4.8	Silt content of road surface material (%) [2]
p	150	Number of days per year with precipitation >0.01 in. [3]

Item Number	Description	Number of Wheels	W 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 (%)	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	10	1.60	1	80	NA	NA	6.85	0.27	1.75	0.07	0.17	<0.01
2	Employee Vehicles	4	3	10	1.60	1	200	NA	NA	2.43	0.24	0.62	0.06	0.06	<0.01
									Totals:	**9.29**	**0.52**	**2.37**	**0.13**	**0.24**	**0.013**

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 in[3] 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	8
Separators	8
Meters/Piping	9
Compressors	0
In-line Heaters	9
Dehydrators	0

Gas Composition						
Emissions from Flaring Operations	**Propane**	**Butane**	**Pentanes**	**Hexanes+**	**CO_2**	**CH_4**
Mole %	4.00	1.78	0.64	0.58	0.15	78.13
MW	44	58	72	86.00	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)**	**Hexane (lbs/hr)**	**Hexane (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	306	0.027	8760	0.08	0.35	0.01	0.05	0.011	0.05	<0.01	<0.01	0.27	1.17	6.70	29.34
Connectors	1342	0.003	8760	0.04	0.17	<0.01	0.02	<0.01	0.02	<0.01	<0.01	0.13	0.57	3.26	14.30
Open-ended Lines	22	0.061	8760	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.19	1.09	4.77
Pressure Relief Valves	9	0.040	8760	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.05	0.29	1.28
			Total Emissions:	**0.14**	**0.60**	**0.02**	**0.08**	**0.02**	**0.08**	**<0.01**	**0.01**	**0.45**	**1.99**	**11.34**	**49.69**

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

Notes:
-Gas Composition data for PUL-96 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 PUL 96 Site Emission Levels

	VOCs		HAPs		CO		NO_x		PM_{Total}		$PM_{Filterable}$		$PM_{Condensable}$		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**	**lb/hr**	**tons/yr**	**lb/hr**	**tons/yr**
Line Heater (E001)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E002)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E003)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E004)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E005)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E006)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E007)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E008)	<0.01	0.03	<0.01	0.01	0.10	0.45	0.12	0.53	<0.01	0.04	<0.01	0.01	<0.01	0.03	<0.01	<0.01	180.14	789.03	<0.01	0.01	<0.01	<0.01	180.33	789.85
Line Heater (E009)	<0.01	0.02	<0.01	<0.01	0.08	0.34	0.09	0.40	<0.01	0.03	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	134.52	589.21	<0.01	0.01	<0.01	<0.01	134.66	589.82
TEG (E022)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.52	6.66	<0.01	<0.01	<0.01	<0.01	1.52	6.67
TEG (E023)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.52	6.66	<0.01	<0.01	<0.01	<0.01	1.52	6.67
Compressor Engine (E021)	0.29	1.29	0.02	0.07	0.88	3.85	0.42	1.85	0.014	0.06	<0.01	0.03	<0.01	0.03	<0.01	<0.01	82.49	361.32	<0.01	<0.01	<0.01	<0.01	82.58	361.69
Enclosed Combustion Unit (E019)	2.77	10.71	0.14	0.57	1.49	6.51	1.77	7.75	0.13	0.59	0.03	0.15	0.10	0.44	0.011	0.05	3,067.77	13,436.85	0.04	0.19	<0.01	0.02	3,070.10	13,447.04
*Tank Truck Loading Operations (E020)	0.06	0.25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	--	--	--	--	--	--	<0.01	<0.01	0.00	0.00	0.00	0.00	<0.01	<0.01	0.01	0.05
Haul Roads	--	--	--	--	--	--	--	--	9.29	0.52	9.29	0.52	<0.01	<0.01	--	--	--	--	--	--	--	--	--	--
Fugitives Leaks	0.14	0.60	0.02	0.08	--	--	--	--	--	--	--	--	--	--	--	--	<0.01	0.01	0.45	1.99	--	--	11.34	49.69
Totals	**3.32**	**13.10**	**0.20**	**0.81**	**3.26**	**14.29**	**3.26**	**14.28**	**9.51**	**1.52**	**9.35**	**0.78**	**0.17**	**0.74**	**0.02**	**0.08**	**4,728.99**	**20,712.99**	**0.53**	**2.31**	**0.01**	**0.03**	**4,744.39**	**20,780.42**

*Emissions from Tank Truck Loading Operations are routed to the vapor combustion unit. The collection efficiency of the vapors has been calculated using AP-42 methodologies. Emissions that are not collected and routed the VDU are realized at the Tank Truck Loading Operations Emission Point.

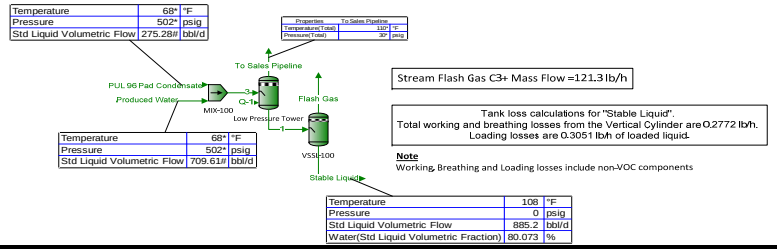
Total PUL-96 Site Emission Levels - HAP Speciation

	Total HAPs		Formaldehyde		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**	**lb/hr**	**tons/yr**
Line Heater (E001)	<0.01	0.01	<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 (E002)	<0.01	0.01	<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 (E003)	<0.01	0.01	<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 (E004)	<0.01	0.01	<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 (E005)	<0.01	0.01	<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 (E006)	<0.01	0.01	<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 (E007)	<0.01	0.01	<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 (E008)	<0.01	0.01	<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 (E009)	<0.01	<0.01	<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 (E022)	<0.01	<0.01	<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 (E023)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Compressor Engine (E021)	0.02	0.07	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Enclosed Combustion Unit (E019)	0.14	0.57	<0.01	<0.01	0.13	0.53	0.02	<0.01	0.12	0.51	<0.01	<0.01	0.02	0.08
Tank Truck Loading Activities (E020)	<0.01	<0.01	<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	0.02	0.08	<0.01	<0.01	0.02	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Totals	**0.20**	**0.81**	**0.02**	**0.07**	**0.15**	**0.61**	**0.02**	**<0.01**	**0.12**	**0.51**	**<0.01**	**<0.01**	**0.02**	**0.08**

Flowsheet1
Plant Schematic

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

EQT PUL 90 Well Pad
100% Contingency



Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Connections

	Flash Gas	Produced Water	PUL 96 Pad Condensate	Stable Liquid	To Sales Pipeline
From Block	VSSL-100	--	--	VSSL-100	Low Pressure Tower
To Block	--	MIX-100	MIX-100	--	--

Stream Composition

Mole Fraction	Flash Gas %	Produced Water %	PUL 96 Pad Condensate %	Stable Liquid %	To Sales Pipeline %
Nitrogen	0	0 *	0 *	0	0
Methane	3.56876	0 *	13.84 *	0.000547039	30.536
Carbon Dioxide	0.0514122	0 *	0.056 *	3.60314E-05	0.116075
Ethane	11.7232	0 *	11.604 *	0.0087014	23.8259
Propane	21.7053	0 *	10.834 *	0.0506719	18.801
Isobutane	7.81513	0 *	3.233 *	0.0429043	4.3111
n-Butane	19.2242	0 *	8.093 *	0.146279	9.3426
Isopentane	8.38478	0 *	4.712 *	0.153044	3.27958
n-Pentane	8.30988	0 *	5.407 *	0.197733	3.12575
Isohexane	4.19044	0 *	4.842 *	0.225779	1.45541
n-Hexane	2.62629	0 *	3.864 *	0.190028	0.899706
Benzene	0.0969724	0 *	0.148 *	0.00732168	0.0333923
Cyclohexane	0.403648	0 *	0.738 *	0.0375985	0.137673
Heptane	2.35779	0 *	8.689 *	0.474244	0.797986
Toluene	0.141191	0 *	0.609 *	0.0335584	0.0475776
Octane	0.952616	0 *	9.628 *	0.547102	0.324464
Ethylbenzene	0.00690387	0 *	0.081 *	0.00461733	0.00235053
o-Xylene	0.0583075	0 *	0.882 *	0.050497	0.0199098
Nonane	0.16536	0 *	4.579 *	0.26396	0.056599
Decane	0.0675793	0 *	5.147 *	0.298242	0.023768
C11	0.00604299	0 *	1.371 *	0.0796016	0.00216183
C12	0.00155615	0 *	0.834 *	0.0484513	0.000565363
C13	0.000154094	0 *	0.255 *	0.0148186	5.74613E-05
C14	0.000106442	0 *	0.554 *	0.0321973	4.06907E-05
Water	8.14235	100 *	0 *	97.0921	2.86025

Mass Fraction	Flash Gas %	Produced Water %	PUL 96 Pad Condensate %	Stable Liquid %	To Sales Pipeline %
Nitrogen	0	0 *	0 *	0	0
Methane	1.07657	0 *	3.073 *	0.000427552	13.2409
Carbon Dioxide	0.0425468	0 *	0.0341107 *	7.7255E-05	0.138076
Ethane	6.62859	0 *	4.82929 *	0.012747	19.3643
Propane	17.9977	0 *	6.61211 *	0.108858	22.4083
Isobutane	8.54147	0 *	2.60078 *	0.121491	6.77272
n-Butane	21.0109	0 *	6.5104 *	0.414214	14.6772
Isopentane	11.3756	0 *	4.70533 *	0.537954	6.39558
n-Pentane	11.274	0 *	5.39935 *	0.695036	6.09559
Isohexane	6.79042	0 *	5.77516 *	0.947909	3.39002
n-Hexane	4.2558	0 *	4.60868 *	0.79781	2.09564
Benzene	0.142436	0 *	0.160005 *	0.027863	0.070501
Cyclohexane	0.638793	0 *	0.859638 *	0.15416	0.313174
Heptane	4.44259	0 *	12.0504 *	2.31514	2.16125
Toluene	0.244626	0 *	0.77663 *	0.150641	0.118489
Octane	2.04619	0 *	15.2218 *	3.04469	1.00178
Ethylbenzene	0.0137825	0 *	0.119021 *	0.023882	0.00674497
o-Xylene	0.116402	0 *	1.296 *	0.261184	0.0571321
Nonane	0.398804	0 *	8.12833 *	1.64935	0.196208
Decane	0.180808	0 *	10.1358 *	2.06737	0.091406
C11	0.0177618	0 *	2.96603 *	0.606182	0.00913348
C12	0.00498437	0 *	1.96619 *	0.402077	0.00260294

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Mass Fraction	Flash Gas %	Produced Water %	PUL 96 Pad Condensate %	Stable Liquid %	To Sales Pipeline %
C13	0.000534207	0 *	0.650678 *	0.1331	0.000286338
C14	0.000397084	0 *	1.52118 *	0.311197	0.000218194
Water	2.75832	100 *	0 *	85.2166	1.39277

Mass Flow	Flash Gas lb/h	Produced Water lb/h	PUL 96 Pad Condensate lb/h	Stable Liquid lb/h	To Sales Pipeline lb/h
Nitrogen	0	0 *	0 *	0	0
Methane	1.45896	0 *	76.296 *	0.0518864	74.7852
Carbon Dioxide	0.0576592	0 *	0.846895 *	0.00937544	0.77986
Ethane	8.98304	0 *	119.901 *	1.54694	109.371
Propane	24.3904	0 *	164.164 *	13.2107	126.563
Isobutane	11.5754	0 *	64.5718 *	14.7437	38.2527
n-Butane	28.4739	0 *	161.639 *	50.2678	82.8975
Isopentane	15.4162	0 *	116.823 *	65.2845	36.1226
n-Pentane	15.2785	0 *	134.054 *	84.3475	34.4282
Isohexane	9.20235	0 *	143.385 *	115.035	19.147
n-Hexane	5.76744	0 *	114.423 *	96.8198	11.8363
Benzene	0.193028	0 *	3.97259 *	3.38137	0.398194
Cyclohexane	0.865689	0 *	21.3429 *	18.7084	1.76882
Heptane	6.02058	0 *	299.186 *	280.958	12.2068
Toluene	0.331515	0 *	19.282 *	18.2813	0.66923
Octane	2.77299	0 *	377.925 *	369.494	5.65813
Ethylbenzene	0.018678	0 *	2.95503 *	2.89825	0.038096
o-Xylene	0.157747	0 *	32.177 *	31.6965	0.322685
Nonane	0.540457	0 *	201.809 *	200.16	1.10819
Decane	0.24503	0 *	251.651 *	250.889	0.516266
C11	0.0240708	0 *	73.6401 *	73.5644	0.0515864
C12	0.0067548	0 *	48.8163 *	48.7948	0.0147015
C13	0.000723954	0 *	16.1549 *	16.1526	0.00161725
C14	0.000538126	0 *	37.7677 *	37.7659	0.00123237
Water	3.73807	10353.2 *	0 *	10341.6	7.86642

Stream Properties

Property	Units	Flash Gas	Produced Water	PUL 96 Pad Condensate	Stable Liquid	To Sales Pipeline
Temperature	°F	107.981	68 *	68 *	107.981	110 *
Pressure	psia	14.6959 *	516.696 *	516.696 *	14.6959	44.6959 *
Mole Fraction Vapor	%	100	0	0	0	100
Mole Fraction Light Liquid	%	0	100	100	2.90895	0
Mole Fraction Heavy Liquid	%	0	0	0	97.091	0
Molecular Weight	lb/lbmol	53.1797	18.0153	72.251	20.5258	36.9971
Mass Density	lb/ft^3	0.130888	62.3219	39.8305	57.9022	0.278785
Molar Flow	lbmol/h	2.54833	574.692	34.3633	591.241	15.2662
Mass Flow	lb/h	135.52	10353.2	2482.78	12135.7	564.806
Vapor Volumetric Flow	ft^3/h	1035.39	166.125	62.3337	209.589	2025.95
Liquid Volumetric Flow	gpm	129.087	20.7117	7.77147	26.1306	252.587
Std Vapor Volumetric Flow	MMSCFD	0.0232093	5.23408	0.312968	5.3848	0.139039
Std Liquid Volumetric Flow	sgpm	0.476858	20.6969 *	8.02895 *	25.8184	2.43058
Compressibility		0.980165	0.026376	0.165515	0.00085518	0.970239
Specific Gravity		1.83615	0.999244	0.638627	0.928381	1.27741
API Gravity			9.95096	88.4445	19.0659	
Enthalpy	Btu/h	-145121	-7.07024E+07	-2.53078E+06	-7.18605E+07	-673066
Mass Enthalpy	Btu/lb	-1070.85	-6829.01	-1019.33	-5921.41	-1191.68
Mass Cp	Btu/(lb*°F)	0.421959	0.98244	0.528322	0.914034	0.444781
Ideal Gas CpCv Ratio		1.09786	1.32594	1.0756	1.27859	1.13979
Dynamic Viscosity	cP	0.0083734	1.0284	0.247634	0.58783	0.009574
Kinematic Viscosity	cSt	3.99376	1.03015	0.388127	0.627858	2.14389
Thermal Conductivity	Btu/(h*ft*°F)	0.0106577	0.346162	0.067231	0.303628	0.0138944

* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Stream Properties

Property	Units	Flash Gas	Produced Water	PUL 96 Pad Condensate	Stable Liquid	To Sales Pipeline
Surface Tension	lbf/ft		0.0050581	0.000865521 ?	0.00404781 ?	
Net Ideal Gas Heating Value	Btu/ft^3	2677.38	0	3700.05	153.797	1925.3
Net Liquid Heating Value	Btu/lb	18923.9	-1059.76	19280.3	1916.87	19599.1
Gross Ideal Gas Heating Value	Btu/ft^3	2905.64	50.31	3998.81	214.597	2098.87
Gross Liquid Heating Value	Btu/lb	20552.7	0	20849.4	3040.95	21379.4

Remarks

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Connections

	1	3			
From Block	Low Pressure Tower	MIX-100			
To Block	VSSL-100	Low Pressure Tower			

Stream Composition

Mole Fraction	1 %	3 %			
Nitrogen	0	0			
Methane	0.0158605	0.780862			
Carbon Dioxide	0.00025652	0.00315956			
Ethane	0.0589761	0.654705			
Propane	0.143606	0.611262			
Isobutane	0.07626	0.182408			
n-Butane	0.228155	0.456612			
Isopentane	0.188372	0.265854			
n-Pentane	0.232547	0.305067			
Isohexane	0.242794	0.273189			
n-Hexane	0.200483	0.218009			
Benzene	0.00770643	0.00835026			
Cyclohexane	0.0391694	0.0416385			
Heptane	0.482327	0.490239			
Toluene	0.0340204	0.0343602			
Octane	0.548842	0.543218			
Ethylbenzene	0.00462714	0.00457007			
o-Xylene	0.0505306	0.049763			
Nonane	0.263537	0.25835			
Decane	0.297252	0.290397			
C11	0.0792859	0.0773527			
C12	0.0482501	0.0470548			
C13	0.0147557	0.0143873			
C14	0.0320596	0.0312571			
Water	96.7103	94.3579			

Mass Fraction	1 %	3 %			
Nitrogen	0	0			
Methane	0.0123121	0.59439			
Carbon Dioxide	0.000546276	0.0065978			
Ethane	0.0858104	0.934097			
Propane	0.306417	1.27894			
Isobutane	0.214478	0.503051			
n-Butane	0.641678	1.25926			
Isopentane	0.657642	0.91012			
n-Pentane	0.811867	1.04436			
Isohexane	1.01243	1.11705			
n-Hexane	0.835999	0.891425			
Benzene	0.0291283	0.0309488			
Cyclohexane	0.159512	0.166274			
Heptane	2.33863	2.33083			
Toluene	0.151679	0.150218			
Octane	3.03366	2.94425			
Ethylbenzene	0.0237705	0.0230214			
o-Xylene	0.259585	0.250677			
Nonane	1.63554	1.57221			
Decane	2.04653	1.9605			
C11	0.599684	0.573699			
C12	0.397691	0.380307			
C13	0.131636	0.125856			
C14	0.307764	0.294232			

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT
Location:	PUL 96
Flowsheet:	Flowsheet1
Job:	100% Contingency

Mass Fraction	1 %	3 %			
Water	84.306	80.6577			

Mass Flow	1 lb/h	3 lb/h			
Nitrogen	0	0			
Methane	1.51085	76.296			
Carbon Dioxide	0.0670347	0.846895			
Ethane	10.53	119.901			
Propane	37.6011	164.164			
Isobutane	26.3191	64.5718			
n-Butane	78.7416	161.639			
Isopentane	80.7007	116.823			
n-Pentane	99.6259	134.054			
Isohexane	124.238	143.385			
n-Hexane	102.587	114.423			
Benzene	3.57439	3.97259			
Cyclohexane	19.5741	21.3429			
Heptane	286.979	299.186			
Toluene	18.6128	19.282			
Octane	372.267	377.925			
Ethylbenzene	2.91693	2.95503			
o-Xylene	31.8543	32.177			
Nonane	200.701	201.809			
Decane	251.134	251.651			
C11	73.5885	73.6401			
C12	48.8016	48.8163			
C13	16.1533	16.1549			
C14	37.7664	37.7677			
Water	10345.4	10353.2			

Stream Properties

Property	Units	1	3			
Temperature	°F	110	68.046			
Pressure	psia	44.6959	516.696			
Mole Fraction Vapor	%	0	0			
Mole Fraction Light Liquid	%	3.28736	5.57428			
Mole Fraction Heavy Liquid	%	96.7126	94.4257			
Molecular Weight	lb/lbmol	20.6659	21.0753			
Mass Density	lb/ft^3	57.4791	56.2137			
Molar Flow	lbmol/h	593.789	609.055			
Mass Flow	lb/h	12271.2	12836			
Vapor Volumetric Flow	ft^3/h	213.49	228.343			
Liquid Volumetric Flow	gpm	26.6169	28.4688			
Std Vapor Volumetric Flow	MMSCFD	5.40801	5.54705			
Std Liquid Volumetric Flow	sgpm	26.2952	28.7258			
Compressibility		0.00262861	0.034206			
Specific Gravity		0.921597	0.901309			
API Gravity		20.0096	25.1307			
Enthalpy	Btu/h	-7.20056E+07	-7.32332E+07			
Mass Enthalpy	Btu/lb	-5867.85	-5705.29			
Mass Cp	Btu/(lb*°F)	0.910722	0.895104			
Ideal Gas CpCv Ratio		1.27618	1.27462			
Dynamic Viscosity	cP	0.565543	0.812601			
Kinematic Viscosity	cSt	0.605697	0.852955			
Thermal Conductivity	Btu/(h*ft*°F)	0.299795	0.269709			
Surface Tension	lbf/ft	0.00397277 ?	0.00391811 ?			
Net Ideal Gas Heating Value	Btu/ft^3	164.627	208.759			
Net Liquid Heating Value	Btu/lb	2104.69	2874.47			
Gross Ideal Gas Heating Value	Btu/ft^3	226.146	273.087			
Gross Liquid Heating Value	Btu/lb	3234.35	4032.76			

* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Remarks

Energy Stream Report

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
Flowsheet:	Flowsheet1	

Energy Streams

Energy Stream	Energy Rate	Power	From Block	To Block
Q-1	554484 Btu/h	217.92 hp	--	Low Pressure Tower

Remarks

Blocks
Low Pressure Tower
Separator Report

Client Name:	EQT	Job: 100% Contingency	
Location:	PUL 96	Modified: 11:05 AM, 1/21/2016	
Flowsheet:	Flowsheet1	Status: Solved 9:42 AM, 2/15/2016	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
3	Inlet	MIX-100	To Sales Pipeline	Vapor Outlet	
1	Light Liquid Outlet	VSSL-100	Q-1	Energy	

Block Parameters

Pressure Drop	472	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	2.50654	%	Heat Duty	554484	Btu/h
Mole Fraction Light Liquid	3.20496	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	94.2885	%	Heat Release Curve Increments	5	

Remarks

Blocks
MIX-100
Mixer/Splitter Report

Client Name:	EQT	Job: 100% Contingency	
Location:	PUL 96	Modified: 2:14 PM, 7/24/2014	
Flowsheet:	Flowsheet1	Status: Solved 9:42 AM, 2/15/2016	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Produced Water	Inlet		PUL 96 Pad Condensate	Inlet	
3	Outlet	Low Pressure Tower			

Block Parameters

Pressure Drop	0 psi	Fraction to PStream 3	100 %

Remarks

Blocks
VSSL-100
Separator Report

Client Name:	EQT	Job: 100% Contingency	
Location:	PUL 96	Modified: 12:29 PM, 12/3/2015	
Flowsheet:	Flowsheet1	Status: Solved 9:42 AM, 2/15/2016	

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
1	Inlet	Low Pressure Tower	Flash Gas	Vapor Outlet	
Stable Liquid	Light Liquid Outlet				

Block Parameters

Pressure Drop	30	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	0.429165	%	Heat Duty	0	Btu/h
Mole Fraction Light Liquid	2.89647	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	96.6744	%	Heat Release Curve Increments	5	

Remarks

Flowsheet Environment
Environment1

Client Name:	EQT	Job: 100% Contingency
Location:	PUL 96	
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	Heptane	False	False
Methane	False	False	Toluene	False	False
Carbon Dioxide	False	False	Octane	False	False
Ethane	False	False	Ethylbenzene	False	False
Propane	False	False	o-Xylene	False	False
Isobutane	False	False	Nonane	False	False
n-Butane	False	False	Decane	False	False
Isopentane	False	False	C11	False	False
n-Pentane	False	False	C12	False	False
Isohexane	False	False	C13	False	False
n-Hexane	False	False	C14	False	False
Benzene	False	False	Water	False	True
Cyclohexane	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: 100% Contingency
Location:	PUL 96	

Simple Solver 1

Source Code

Residual Error (for CV1) = TF / 885.1642531 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!PUL 96 Pad Condensate!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	275.278
Unit	bbl/d

Measured Variable [TF]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Stable Liquid!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	885.202
Unit	bbl/d

Solver Properties

Status: Solved

Error	4.23218E-05		Iterations	4
Calculated Value	8.02895	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) = WP /80 - 1

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Produced Water!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	709.607
Unit	bbl/d

Measured Variable [WP]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Stable Liquid!Phases!Total!Composition!Std. Liquid Volumetric Fraction!Water
Value	80.0735
Unit	%

Solver Properties

Status: Solved

Error	0.000918197		Iterations	4
Calculated Value	20.6969	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: 100% Contingency
Location:	PUL 96	

Cn+ Flow/Frac.

User Value [CnPlusSum]

* Parameter	121.282	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	883.46	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: 100% Contingency
Location:	PUL 96	

User Value [TVP]

* Parameter	0.417101 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	0.27719 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	0.12016 ton/yr	Upper Bound	
Lower Bound	ton/yr	* Enforce Bounds	False

User Value [StandingLosses]

* Parameter	0.0316019 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	0.305068 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	0.0327431 kg/mol	Upper Bound	
Lower Bound		* Enforce Bounds	False

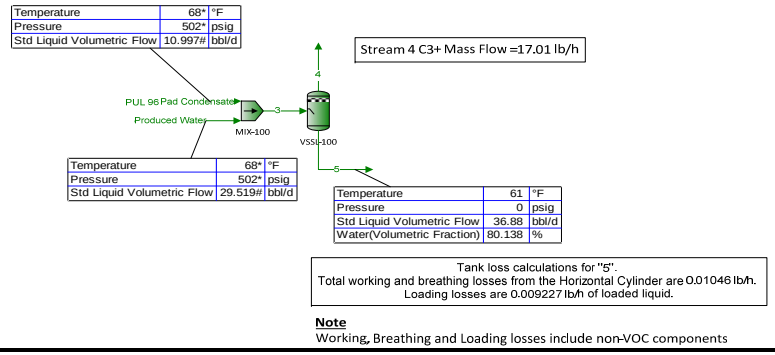
Remarks

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

Flowsheet1
Plant Schematic

Client Name:	EQT	Job: Blowdown Tank
Location:	PUL 96 Well Pad	
Flowsheet:	Flowsheet1	

EQT PUL 96 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: Blowdown Tank
Location:	PUL 96 Well Pad	
Flowsheet:	Flowsheet1	

Connections

	Produced Water	PUL 96 Pad Condensate	3	4	5
From Block	--	--	MIX-100	VSSL-100	VSSL-100
To Block	MIX-100	MIX-100	VSSL-100	--	--

Stream Composition

Mole Fraction	Produced Water %	PUL 96 Pad Condensate %	3 %	4 %	5 %
Nitrogen	0 *	0 *	0	0	0
Methane	0 *	13.84 *	0.751578	28.8854	0.00536481
Carbon Dioxide	0 *	0.056 *	0.00304107	0.113166	0.000120135
Ethane	0 *	11.604 *	0.630152	23.4021	0.0261554
Propane	0 *	10.834 *	0.588338	19.6715	0.0821819
Isobutane	0 *	3.233 *	0.175567	4.79272	0.053103
n-Butane	0 *	8.093 *	0.439488	10.5591	0.171079
Isopentane	0 *	4.712 *	0.255884	3.73116	0.163707
n-Pentane	0 *	5.407 *	0.293626	3.48393	0.209007
Isohexane	0 *	4.842 *	0.262944	1.504	0.230026
n-Hexane	0 *	3.864 *	0.209834	0.886376	0.191889
Benzene	0 *	0.148 *	0.0080371	0.0334913	0.00736196
Cyclohexane	0 *	0.738 *	0.0400769	0.13405	0.0375844
Heptane	0 *	8.689 *	0.471854	0.665967	0.466705
Toluene	0 *	0.609 *	0.0330716	0.0400273	0.0328871
Octane	0 *	9.628 *	0.522846	0.225742	0.530726
Ethylbenzene	0 *	0.081 *	0.00439868	0.0016503	0.00447158
o-Xylene	0 *	0.882 *	0.0478968	0.0133544	0.048813
Nonane	0 *	4.579 *	0.248661	0.0331556	0.254377
Decane	0 *	5.147 *	0.279506	0.0116212	0.286612
C11	0 *	1.371 *	0.0744518	0.000876963	0.0764033
C12	0 *	0.834 *	0.0452902	0.000200036	0.0464861
C13	0 *	0.255 *	0.0138477	1.63744E-05	0.0142146
C14	0 *	0.554 *	0.0300848	9.38313E-06	0.0308825
Water	100 *	0 *	94.5695	1.81048	97.0298

Mass Fraction	Produced Water %	PUL 96 Pad Condensate %	3 %	4 %	5 %
Nitrogen	0 *	0 *	0	0	0
Methane	0 *	3.073 *	0.575231	12.1667	0.00419699
Carbon Dioxide	0 *	0.0341107 *	0.00638513	0.130763	0.000257827
Ethane	0 *	4.82929 *	0.903988	18.4755	0.0383525
Propane	0 *	6.61211 *	1.23771	22.7748	0.17672
Isobutane	0 *	2.60078 *	0.486836	7.31387	0.150513
n-Butane	0 *	6.5104 *	1.21867	16.1135	0.484899
Isopentane	0 *	4.70533 *	0.880784	7.06798	0.575982
n-Pentane	0 *	5.39935 *	1.0107	6.59966	0.735365
Isohexane	0 *	5.77516 *	1.08104	3.40294	0.966659
n-Hexane	0 *	4.60868 *	0.862692	2.00551	0.806392
Benzene	0 *	0.160005 *	0.0299512	0.0686865	0.0280429
Cyclohexane	0 *	0.859638 *	0.160914	0.296205	0.154249
Heptane	0 *	12.0504 *	2.2557	1.75207	2.28051
Toluene	0 *	0.77663 *	0.145376	0.0968322	0.147768
Octane	0 *	15.2218 *	2.84935	0.677032	2.95637
Ethylbenzene	0 *	0.119021 *	0.0222793	0.00460009	0.0231502
o-Xylene	0 *	1.296 *	0.242597	0.0372246	0.252714
Nonane	0 *	8.12833 *	1.52153	0.111649	1.59099
Decane	0 *	10.1358 *	1.89731	0.0434132	1.98864
C11	0 *	2.96603 *	0.555207	0.00359903	0.582381
C12	0 *	1.96619 *	0.368048	0.000894613	0.386136
C13	0 *	0.650678 *	0.1218	7.9261E-05	0.127796

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: Blowdown Tank
Location:	PUL 96 Well Pad	
Flowsheet:	Flowsheet1	

Mass Fraction	Produced Water %	PUL 96 Pad Condensate %	3 %	4 %	5 %
C14	0 *	1.52118 *	0.284748	4.88749E-05	0.298773
Water	100 *	0 *	81.2811	0.856362	85.2431

Mass Flow	Produced Water lb/h	PUL 96 Pad Condensate lb/h	3 lb/h	4 lb/h	5 lb/h
Nitrogen	0 *	0 *	0	0	0
Methane	0 *	3.04795 *	3.04795	3.02675	0.0211943
Carbon Dioxide	0 *	0.0338326 *	0.0338326	0.0325306	0.00130199
Ethane	0 *	4.78991 *	4.78991	4.59624	0.193676
Propane	0 *	6.5582 *	6.5582	5.66579	0.892412
Isobutane	0 *	2.57957 *	2.57957	1.8195	0.760072
n-Butane	0 *	6.45732 *	6.45732	4.00863	2.44868
Isopentane	0 *	4.66697 *	4.66697	1.75833	2.90864
n-Pentane	0 *	5.35532 *	5.35532	1.64183	3.7135
Isohexane	0 *	5.72807 *	5.72807	0.846562	4.88151
n-Hexane	0 *	4.5711 *	4.5711	0.498918	4.07218
Benzene	0 *	0.158701 *	0.158701	0.0170874	0.141613
Cyclohexane	0 *	0.852628 *	0.852628	0.0736881	0.77894
Heptane	0 *	11.9522 *	11.9522	0.43587	11.5163
Toluene	0 *	0.770297 *	0.770297	0.0240893	0.746208
Octane	0 *	15.0977 *	15.0977	0.168428	14.9293
Ethylbenzene	0 *	0.11805 *	0.11805	0.00114438	0.116906
o-Xylene	0 *	1.28544 *	1.28544	0.00926052	1.27618
Nonane	0 *	8.06205 *	8.06205	0.0277754	8.03428
Decane	0 *	10.0532 *	10.0532	0.0108001	10.0424
C11	0 *	2.94184 *	2.94184	0.000895347	2.94095
C12	0 *	1.95016 *	1.95016	0.000222557	1.94994
C13	0 *	0.645373 *	0.645373	1.97181E-05	0.645353
C14	0 *	1.50878 *	1.50878	1.21588E-05	1.50877
Water	430.68 *	0 *	430.68	0.213041	430.467

Stream Properties

Property	Units	Produced Water	PUL 96 Pad Condensate	3	4	5
Temperature	°F	68 *	68 *	68.0467	61.049	61.049
Pressure	psia	516.696 *	516.696 *	516.696	14.6959 *	14.6959
Mole Fraction Vapor	%	0	0	0	100	0
Mole Fraction Light Liquid	%	100	100	5.3626	0	2.96783
Mole Fraction Heavy Liquid	%	0	0	94.6374	0	97.0322
Molecular Weight	lb/lbmol	18.0153	72.251	20.9605	38.087	20.5063
Mass Density	lb/ft^3	62.3219	39.8305	56.3929	0.101506	58.6217
Molar Flow	lbmol/h	23.9064	1.37278	25.2792	0.653173	24.626
Mass Flow	lb/h	430.68	99.1846	529.865	24.8774	504.987
Vapor Volumetric Flow	ft^3/h	6.91058	2.49017	9.39594	245.083	8.61434
Liquid Volumetric Flow	gpm	0.861579	0.310462	1.17144	30.5558	1.074
Std Vapor Volumetric Flow	MMSCFD	0.21773	0.0125028	0.230233	0.00594886	0.224284
Std Liquid Volumetric Flow	sgpm	0.860961 *	0.320748 *	1.18171	0.106042	1.07567
Compressibility		0.026376	0.165515	0.0339116	0.986767	0.000919937
Specific Gravity		0.999244	0.638627	0.904182	1.31504	0.939918
API Gravity		9.95096	88.4445	24.6391		19.0111
Enthalpy	Btu/h	-2.94112E+06	-101102	-3.04222E+06	-29177.6	-3.01304E+06
Mass Enthalpy	Btu/lb	-6829.01	-1019.33	-5741.51	-1172.86	-5966.57
Mass Cp	Btu/(lb*°F)	0.98244	0.528322	0.897938	0.41206	0.911653
Ideal Gas CpCv Ratio		1.32594	1.0756	1.27625	1.146	1.28385
Dynamic Viscosity	cP	1.0284	0.247634	0.818783	0.00863735	0.98938
Kinematic Viscosity	cSt	1.03015	0.388127	0.85804	5.31211	1.0307
Thermal Conductivity	Btu/(h*ft*°F)	0.346162	0.067231	0.271926	0.011788	0.289148
Surface Tension	lbf/ft	0.0050581	0.000865521 ?	0.0039515 ?		0.00437763 ?

* User Specified Values
? Extrapolated or Approximate Values

Process Streams Report
All Streams
Tabulated by Total Phase

Client Name:	EQT	Job: Blowdown Tank
Location:	PUL 96 Well Pad	
Flowsheet:	Flowsheet1	

Stream Properties

Property	Units	Produced Water	PUL 96 Pad Condensate	3	4	5
Net Ideal Gas Heating Value	Btu/ft^3	0	3700.05	200.93	1990.36	153.468
Net Liquid Heating Value	Btu/lb	-1059.76	19280.3	2747.66	19685.3	1913.25
Gross Ideal Gas Heating Value	Btu/ft^3	50.31	3998.81	264.732	2168.47	214.238
Gross Liquid Heating Value	Btu/lb	0	20849.4	3902.77	21459.9	3037.84

Remarks

Blocks
MIX-100
Mixer/Splitter Report

Client Name:	EQT	Job: Blowdown Tank
Location:	PUL 96 Well Pad	Modified: 2:14 PM, 7/24/2014
Flowsheet:	Flowsheet1	Status: Solved 10:10 AM, 2/15/2016

Connections

Stream	Connection Type	Other Block	Stream	Connection Type	Other Block
Produced Water	Inlet		PUL 96 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: Blowdown Tank	
Location:	PUL 96 Well Pad	Modified: 1:11 PM, 7/17/2014	
Flowsheet:	Flowsheet1	Status: Solved 10:10 AM, 2/15/2016	

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	502	psi	Main Liquid Phase	Light Liquid	
Mole Fraction Vapor	2.58384	%	Heat Duty	0	Btu/h
Mole Fraction Light Liquid	2.89115	%	Heat Release Curve Type	Plug Flow	
Mole Fraction Heavy Liquid	94.525	%	Heat Release Curve Increments	5	

Remarks

Flowsheet Environment
Environment1

Client Name:	EQT	Job: Blowdown Tank
Location:	PUL 96 Well Pad	
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	Heptane	False	False
Methane	False	False	Toluene	False	False
Carbon Dioxide	False	False	Octane	False	False
Ethane	False	False	Ethylbenzene	False	False
Propane	False	False	o-Xylene	False	False
Isobutane	False	False	Nonane	False	False
n-Butane	False	False	Decane	False	False
Isopentane	False	False	C11	False	False
n-Pentane	False	False	C12	False	False
Isohexane	False	False	C13	False	False
n-Hexane	False	False	C14	False	False
Benzene	False	False	Water	False	True
Cyclohexane	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: Blowdown Tank
Location:	PUL 96 Well Pad	

Simple Solver 1

Source Code

Residual Error (for CV1) = Water-80

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!Produced Water!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	29.5187
Unit	bbl/d

Measured Variable [Water]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Composition!Std. Liquid Volumetric Fraction!Water
Value	80.0001
Unit	%

Solver Properties

Status: Solved

Error	0.00013922		Iterations	12
Calculated Value	0.860961	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) = Flow-36.88

Calculated Variable [CV1]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!PUL 96 Pad Condensate!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	10.9971
Unit	bbl/d

Measured Variable [Flow]

SourceMoniker	ProMax:ProMax!Project!Flowsheets!Flowsheet1!PStreams!5!Phases!Total!Properties!Std Liquid Volumetric Flow
Value	36.88
Unit	bbl/d

Solver Properties

Status: Solved

Error	8.73232E-06		Iterations	12
Calculated Value	0.320748	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: Blowdown Tank
Location:	PUL 96 Well Pad	

Cn+ Flow/Frac.

User Value [CnPlusSum]

* Parameter	17.0089	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: Blowdown Tank
Location:	PUL 96 Well Pad	

User Value [TVP]

* Parameter	0.558156 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	0.0104598 lb/h	Upper Bound	
Lower Bound	lb/h	* Enforce Bounds	False

User Value [WorkingLosses]

* Parameter	0.045814 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	0.00922721 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	0.30633 ton/yr	Upper Bound	
Lower Bound		* Enforce Bounds	False

User Value [GasMoleWeight]

* Parameter	0.0329302 kg/mol	Upper Bound	
Lower Bound		* Enforce Bounds	False

Remarks

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

GAS ANALYTICAL SERVICES

C6+ Gas Analysis Report

Gas Analytical

Report Date: Sep 14, 2015 9:23a

Client:	Equitable Production	Date Sampled:	Sep 8, 2015 11:00a
Site:	514394	Analysis Date:	Sep 11, 2015 2:17p
Field No:	9998	Collected By:	J. Brown
Meter:	514394	Date Effective:	Sep 8, 2015 12:00a
Source Laboratory	Clarksburg (Bridgeport), WV	Sample Pressure (PSI):	70.0
Lab File No:	**X_CH1-6024.CHR**	Sample Temp (°F):	
Sample Type:	Spot	Field H2O:	No Test
Reviewed By:		Field H2S:	No Test

Component	Mol %	Gal/MSCF
Methane	78.1311	
Ethane	14.2559	3.79
Propane	4.0036	1.10
I-Butane	0.5947	0.19
N-Butane	1.1890	0.37
I-Pentane	0.3163	0.12
N-Pentane	0.3248	0.12
Nitrogen	0.4544	
Oxygen	<MDL	
Carbon Dioxide	0.1535	
Hexanes+	0.5767	0.24
TOTAL	100.0000	5.93

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	1,262.4954 BTU/ft³
BTU/SCF (Saturated):	1,241.4002 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99644
Z Factor (Saturated):	0.99604

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	1,262.4954 BTU/ft³
BTU/SCF (Saturated):	1,241.4002 BTU/ft³
PSIA:	14.730 PSI
Temperature (°F):	60.00 °F
Z Factor (Dry):	0.99644
Z Factor (Saturated):	0.99604

Calculated Specific Gravities			
Ideal Gravity:	0.7188	Real Gravity:	0.7211
Molecular Wt:	20.8177 lb/lbmol		

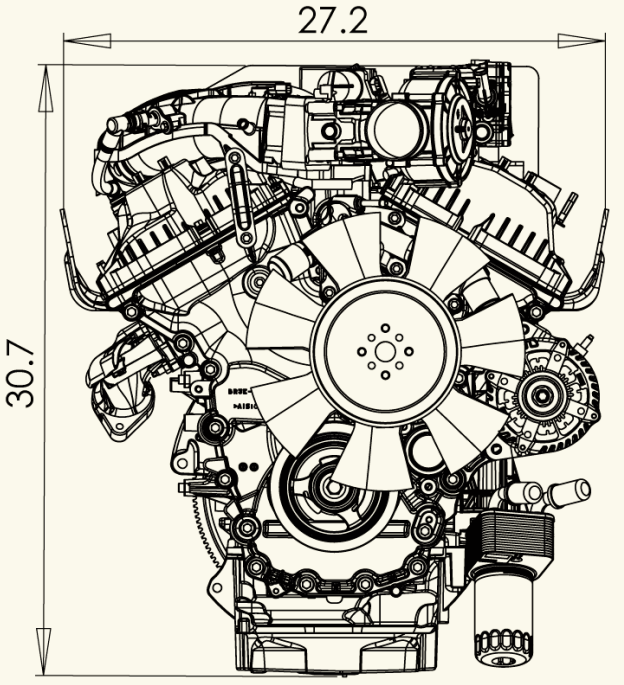
Gross Heating Values are Based on:
GPA 2145-09, 2186
Compressibility is Calculated using AGA-8.

Source	Date	Notes
Gas Analytical	Sep 11, 2015	results to Bob Gum

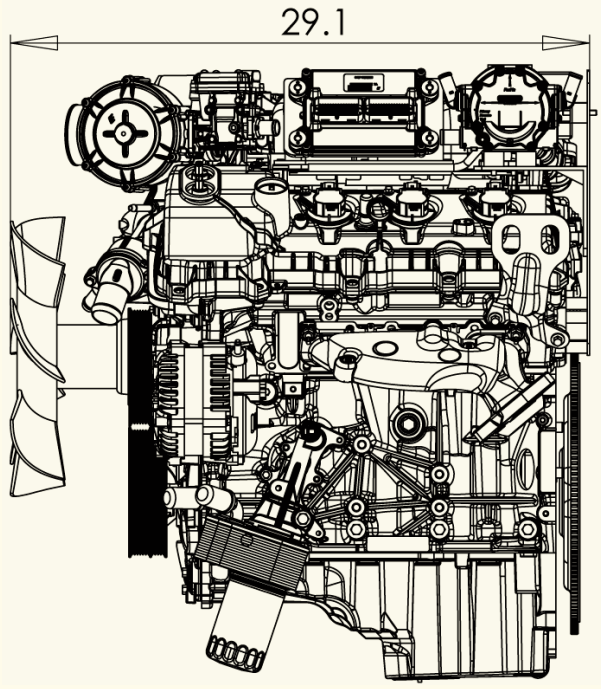
<MDL = Less than Method Detection Limits, NG = Not Given, NT = Not Tested

Installation Drawings

Front End View

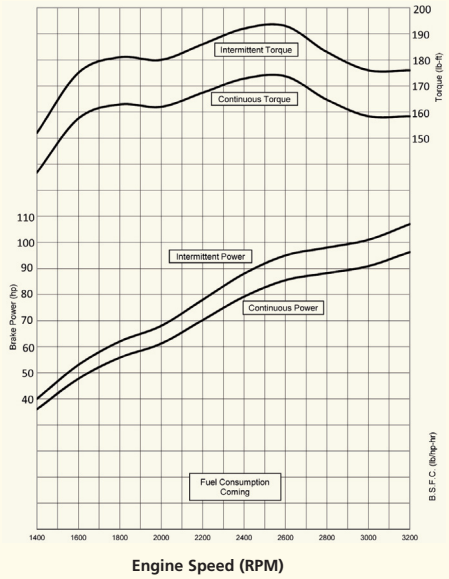


Left Side View

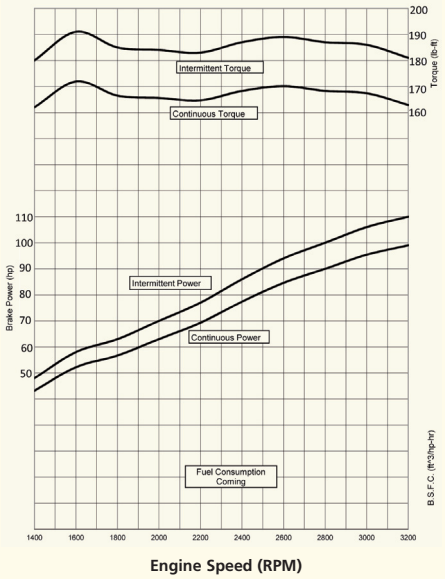


Power Curves (corrected per SAE J1349)

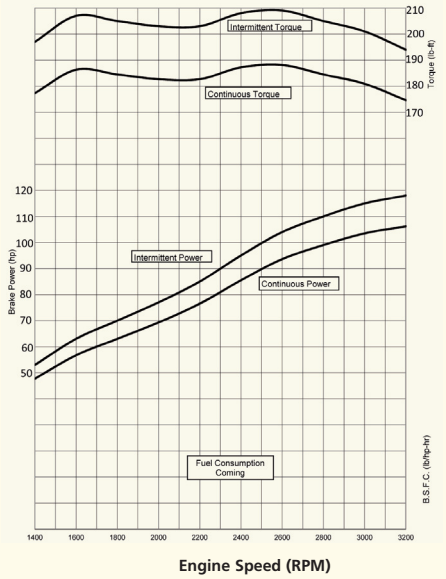
Gasoline



Natural Gas



Liquefied Petroleum Gas



Ford Power Products

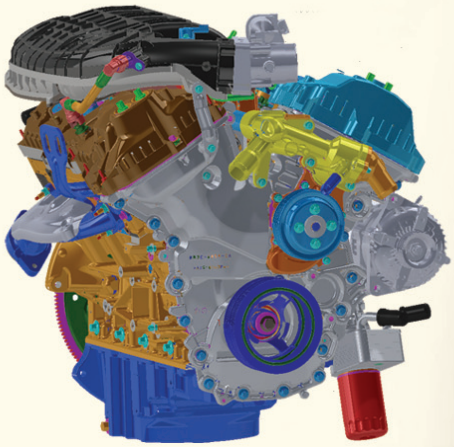
Powertrain Assemblies & Components Provided By Ford Component Sales

For additional information Contact:

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

CSG-637 EFI

3.7 Liter
6-Cylinder



Options

Engine Cooling Fans
- 14" (355mm) diameter suction
- 14" (355mm) diameter pusher

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

Flywheel Housings
- SAE #3

Exhaust Manifold
- rear dump down

Power Steering Pump
Air Conditioning
Wiring Harnesses
Discrete Speed Switch
Variable Speed Hand Throttle
Variable Speed Foot Pedal
Engine Mounts
- Automotive with insulators
- Open power unit

Electronic Instrument Panel, Gauges
Three Way Catalyst / Muffler Standard

Transmissions

6R80 electronic shift

Emissions Information

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

Warranty

Contact Engine Distributors, Inc
for warranty details.

Power Products

Powertrain Assemblies
& Components
Provided By Ford
Component Sales

Specifications

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

Gasoline (corrected per SAE J1349)

Unleaded 87 or 89 octane

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

Natural Gas (corrected per SAE J1349)

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

Liquefied Petroleum Gas (corrected per SAE J1349)

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

Standard Features / Benefits

Set-for-life valvetrain

Deep skirted, ribbed cylinder block casting for rigidity

150 AMP Alternator

Aluminum cylinder block and heads.

Chain driven dual camshafts with automatic tensioning system

Structural front cover and deep sump oil pan

Alternate fuel ready valvetrain components

Individual coil on plug electronic ignition

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

Gasoline Sequential Port Fuel Injection

Closed loop fuel control for all fuels

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

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

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

Forged steel crankshaft

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

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Engine Distributors, Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: FEDIB03.7CSG-006

Effective Date: 06/08/2015

Expiration Date: 12/31/2015

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 06/08/2015

Revision Date: N/A

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

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

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

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

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

Attachment T

FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

ATTACHMENT T – FACILITY-WIDE CONTROLLED EMISSIONS SUMMARY SHEET

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

Emission Point ID#	NO_x		CO		VOC		SO_2		$PM_{Filterable}$		$PM_{Condrnsable}$		GHG (CO_2e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Line Heater (S001)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S002)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S003)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S004)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S005)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S006)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S007)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S008)	0.12	0.53	0.10	0.45	<0.01	0.03	<0.01	<0.01	<0.01	0.01	<0.01	0.03	180.33	789.85
Line Heater (S009)	0.09	0.40	0.08	0.34	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	134.66	589.82
TEG (S022)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.52	6.67
TEG (S023)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.52	6.67
Enclosed Combustion Unit (E019)	1.77	7.75	1.49	6.51	2.77	10.71	0.01	0.05	0.03	0.15	0.10	0.44	3,070.10	13,447.04
Tank Truck Loading Activities (E020)	<0.01	<0.01	<0.01	<0.01	0.06	0.25	<0.01	<0.01	--	--	--	--	0.01	0.05
Compressor Engine (E021)	0.42	1.85	0.88	3.85	0.29	1.29	<0.01	<0.01	<0.01	0.03	<0.01	0.03	82.58	361.69
TOTAL	**3.26**	**14.28**	**3.26**	**14.29**	**3.18**	**12.50**	**0.02**	**0.08**	**0.06**	**0.27**	**0.17**	**0.74**	**4,773.04**	**20,730.73**

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

ATTACHMENT T – FACILITY-WIDE HAP CONTROLLED EMISSIONS SUMMARY SHEET

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

Emission Point ID#	Formaldehyde		Benzene		Toluene		Ethylbenzene		Xylenes		Hexane		Total HAPs	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
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	<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	<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	<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	<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	<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	<0.01	0.01
Line Heater (S007)	<0.01	<0.01	<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 (S008)	<0.01	<0.01	<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 (S009)	<0.01	<0.01	<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 (S022)	<0.01	<0.01	<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 (S023)	<0.01	<0.01	<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 (E019)	<0.01	<0.01	0.02	<0.01	0.12	0.51	<0.01	<0.01	0.02	0.08	0.13	0.53	0.14	0.57
Tank Truck Loading Activities (E020)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Compressor Engine (E021)	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.07
TOTAL	**0.02**	**0.07**	**0.02**	**<0.01**	**0.12**	**0.51**	**<0.01**	**<0.01**	**0.02**	**0.08**	**0.13**	**0.53**	**0.18**	**0.73**

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

Attachment U

CLASS I LEGAL ADVERTISEMENT

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that EQT Production Company has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-B General Permit for the PUL-96 natural gas production facility located in Pullman, Ritchie County, West Virginia. The latitude and longitude coordinates are: 39.21090 and -80.98619.

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

Carbon Monoxide (CO) = 14.29 tpy
Nitrogen Oxides (NO_x) = 14.28 tpy
Particulate Matter – Total = 1.52 tpy
Sulfur Dioxide (SO_2) = 0.08 tpy
Volatile Organic Compounds (VOC) = 13.10 tpy
Formaldehyde = 0.07 tpy
Hexane = 0.61 tpy
Hazardous Air Pollutants (HAPs) = 0.81 tpy
Carbon Dioxide Equivalents (CO_2e) = 20,780.42 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 1250, during normal business hours.

Dated this the XXth day of March, 2016.

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