G70-C PERMIT REGISTRATION APPLICATION

CUNNINGHAM ENERGY, LLC

COCHRAN PAD

BOMONT, CLAY COUNTY, WEST VIRGINIA

SEPTEMBER 2016

COMM ENGINEERING

www.**comm**engineering.com

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G70-C General Permit Registration Application

Cunningham Energy, LLC
Cochran Pad

Attachment A	Single Source Determination Form
Attachment B	Sitting Criteria Waiver
Attachment C	Current Business Certificate
Attachment D	Process Flow Diagram
Attachment E	Process Description
Attachment F	Plot Plan
Attachment G	Area Map
Attachment H	G70-C Section Applicability Form
Attachment I	Emission Units / Emission Reduction Devices (ERD) Table
Attachment J	Fugitive Emissions Summary Sheet
Attachment L	Storage Vessel Data Sheet
Attachment N	Internal Combustion Engine Data Sheet
Attachment O	Tanker Truck Loading Data Sheet
Attachment Q	Pneumatic Controllers Data Sheet
Attachment R	Air Pollution Control Device / Emission Reduction Device Sheets
Attachment S	Emissions Calculations
Attachment T	Facility Wide Controlled Emissions Summary Sheet
Attachment U	Class I Legal Advertisement

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25 4
Phone (304) 926-0475
Fax (304) 926-0479
www.dep.wv.gov

G70-C 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): Cunningham Energy, LLC

Federal Employer ID No. (FEIN): 26-2169186

Applicant's Mailing Address: 3230 Pennsylvania Ave.

City: Charleston	State: WV	ZIP Code: 25302

Facility Name: Cochran Pad

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

City: Bomont, WV	Zip Code: 25030	County: Clay

Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Latitude: 38.427525
Longitude: -81.220647

SIC Code: 1311 NAICS Code: 211111	DAQ Facility ID No. (For existing facilities)

CERTIFICATION OF INFORMATION

This G70-C 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-C Registration Application will be returned to the applicant. Furthermore, if the G70-C forms are not utilized, the application will be returned to the applicant. No substitution of forms is allowed.**

I hereby certify that Ryan Cunningham 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-C 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: Ryan Cunningham, President — Phone: 304-344-9291 — Fax: 304-344-9290
Email: ryan.cunningham@cunninghamenergy.com — Date:

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

If applicable:
Environmental Contact
Name and Title: Ethan McMahon, Environmental Engineer — Phone: 337-237-4373 — Fax: 337-234-1805
Email: ermcmahon@commengineering.com — Date: 9/6/2016

OPERATING SITE INFORMATION
Briefly describe the proposed new operation and/or any change(s) to the facility: Production from six on-site wells flows to one of six high pressure, three phase separators. Natural Gas is sent directly to sales. Condensate/crude oil flows to the Oil Storage Tanks. Produced water flows to the Water Storage Tanks.
Directions to the facility: From Bomont, WV: Travel east on CR-1 for 2.0 miles. Turn east on CR-6 for 1.2 miles. Turn north on local roads for 76 yards. Arrive at location.

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): ☒$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-C 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

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:

Attachment B

Not applicable

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

G70-C 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

ATTACHMENT C – CURRENT BUSINESS CERTIFICATE

If the applicant is a resident of West Virginia, the applicant should provide a copy of the current Business Registration Certificate issued to them from the West Virginia Secretary of State's Office. If the applicant is not a resident of the State of West Virginia, the registrant should provide a copy of the Certificate of Authority/Authority of LLC/Registration. This information is required for all sources to operate a business in West Virginia regardless of whether it is a construction, modification, or administrative update.

If you are a new business to West Virginia and have applied to the West Virginia Secretary of State's Office for a business license, please include a copy of your application.

Please note: Under the West Virginia Bureau of Employment Programs, 96CSR1, the DAQ may not grant, issue, or renew approval of any permit, general permit registration, or Certificate to Operate to any employing unit whose account is in default with the Bureau of Employment Programs Unemployment Compensation Division.

State of West Virginia

Certificate

I, Betty Ireland, Secretary of State of the State of West Virginia, hereby certify that

CUNNINGHAM ENERGY LLC

Control Number: 10526

has filed its "Articles of Organization" in my office according to the provisions of West Virginia Code §§31B-2-203 and 206. I hereby declare the organization to be registered as a limited liability company from its effective date of March 10, 2008 until the expiration of the term or termination of the company.

Therefore, I hereby issue this

CERTIFICATE OF A LIMITED LIABILITY COMPANY

Given under my hand and the Great Seal of the State of West Virginia on this day of March 10, 2008

Betty Ireland

Secretary of State

Attachment D

ATTACHMENT D – PROCESS FLOW DIAGRAM

Provide a diagram or schematic that supplements the process description of the operation. The process flow diagram must show all sources, components or facets of the operation in an understandable line sequence of operation. The process flow diagram should include the emission unit ID numbers, the pollution control device ID numbers, and the emission point ID numbers consistent with references in other attachments of the application. For a proposed modification, clearly identify the process areas, emission units, emission points, and/or control devices that will be modified, and specify the nature and extent of the modification.

Use the following guidelines to ensure a complete process flow diagram:

- The process flow diagram shall logically follow the entire process from beginning to end.
- Identify each emission source and air pollution control device with proper and consistent emission unit identification numbers, emission point identification numbers, and control device identification numbers.
- The process flow lines may appear different for clarity. For example, dotted lines may be used for vapor flow and solid lines used for liquid flow and arrows for direction of flow.
- The process flow lines may be color coded. For example: new or modified equipment may be red; old or existing equipment may be blue; different stages of preparation such as raw material may be green; and, finished product or refuse, another color.

HP GAS OUT

DEPARTING PIPELINE

Well 4H
Cochran Pad
SN:
(OIL WELL)

Well 5H
Cochran Pad
SN:
(OIL WELL)

Well 6H
Cochran Pad
SN:
(OIL WELL)

Well 7H
Cochran Pad
SN:
(OIL WELL)

Well 8H
Cochran Pad
SN:
(OIL WELL)

Well 9H
Cochran Pad
SN:
(OIL WELL)

HP SEP

HP GAS OUT

CONDENSATE/CRUDE OUT

PRODUCED WATER OUT

OST 2S 2E
OST 6S 6E
OST 10S 10E
OST 3S 3E
OST 7S 7E
OST 11S 11E
OST 4S 4E
OST 8S 8E
OST 12S 12E
OST 5S 5E
OST 9S 9E
OST 13S 13E

OIL STORAGE TANK BATTERY

CONDENSATE/CRUDE OUT

1S 1E

TRUCK TO SALES

VENT GAS TO VRU

VRU GAS TO SALES

M

NATURAL GAS COMPRESSOR 15S/15E

VAPOR RECOVERY UNIT SKID

WST 16S 16E
WST 20S 20E
WST 24S 24E
WST 17S 17E
WST 21S 21E
WST 25S 25E
WST 18S 18E
WST 22S 22E
WST 26S 26E
WST 19S 19E
WST 23S 23E
WST 27S 27E

WATER STORAGE TANK BATTERY

VENT GAS TO VRU

PRODUCED WATER OUT

28S 28E

TRUCK TO DISPOSAL

PROJECT ID 15143-PF-101		COMM ENGINEERING	CUNNINGHAM ENERGY		
DESIGN JMS	DESIGN DATE 9/1/2016	COCHRAN PAD BOMONT, WV PROCESS FLOW DIAGRAM			
DRAWN JMS	DRAWN DATE 9/2/2016				
CHECKED	CHECKED DATE				
ISSUED FOR APPROVAL	IFR DATE	SIZE D	JOB NO 151543	LAYOUT PF-101	REV 1
APPD FOR CONSTRUCTION	AFC DATE			SHEET 1 OF 1	

Attachment E

ATTACHMENT E – PROCESS DESCRIPTION

Provide a detailed written description of the operation for which the applicant is seeking a permit. The process description is used in conjunction with the process flow diagram to provide the reviewing engineer a complete understanding of the activity at the operation. Describe in detail and order the complete process operation.

Use the following guidelines to ensure a complete Process Description:

- The process flow diagram should be prepared first and used as a guide when preparing the process description. The written description shall follow the logical order of the process flow diagram.
- All emission sources, emission points, and air pollution control devices must be included in the process description.
- When modifications are proposed, describe the modifications and the effect the changes will have on the emission sources, emission points, control devices and the potential emissions.
- Proper emission source ID numbers must be used consistently in the process description, the process flow diagram, the emissions calculations, and the emissions summary information provided.
- Include any additional information that may facilitate the reviewers understanding of the process operation.

The process description is required for all sources regardless of whether it is a construction, modification, or administrative update.

Cunningham Energy, LLC
Cochran Pad

Process Description

The Cochran Pad is a crude oil and natural gas production facility in Clay County, West Virginia, which handles sweet natural gas (less than 24 ppm H_2S) and condensate/crude oil. The facility handles all stages of production. The facility annually processes approximately:

21,900 barrels of condensate/crude oil,
47.45 million standard cubic feet natural gas, and
13,140 barrels of produced water.

Separation
Production from six on site wells flows to one of six high pressure, three phase separators. Each separator contains two pneumatic controllers (Unit/Point ID: 14S / 14 E). Natural gas is sent directly to the sales pipeline. Condensate/crude oil flows to the Oil Storage Tanks (Unit/Point ID: 2S – 13S / 2E – 13E). Produced water flows to the Water Storage Tanks (Unit/Point ID: 16S – 27S / 16E – 27E).

Condensate/Crude Oil Storage and Load Out
Condensate/crude oil is stored in twelve (12) 210 barrel Oil Storage Tanks (Unit/Point ID: 2S – 13S / 2E – 13E). Flash, standing, and working losses are vented to Vapor Recovery System (Unit/Point ID: 1C / 1C) with a 95 % capture efficiency. The Vapor Recovery System is powered by the VRU Natural Gas Compressor Engine (Unit/Point ID: 15S / 15E). The vapors recovered by the Vapor Recovery System are sent directly to the sales pipeline. The stored condensate/crude oil is shipped via tank trucks to sales. Volatile Organic Compounds (VOCs) emissions resulting from the Tank Truck Oil/Condensate Loading Losses (Unit/Point ID: 1S / 1E) are vented to the atmosphere. The facility handles condensate/crude oil prior to lease custody transfer.

Produced Water Storage and Disposal
Produced water is stored in twelve (12) 210 barrel Water Storage Tanks (Unit/Point ID: 16S – 27S / 16E – 27E). Flash, standing, and working losses are vented to Vapor Recovery System (Unit/Point ID: 1C / 1C) with a 95 % capture efficiency. The Vapor Recovery System is powered by the VRU Natural Gas Compressor Engine (Unit/Point ID: 15S / 15E). The vapors recovered by the Vapor Recovery System are sent directly to the sales pipeline. The stored produced water is shipped via tank trucks for disposal. Volatile Organic Compounds (VOCs) emissions resulting from the Tank Truck Water Loading Losses (Unit/Point ID: 28S / 28E) are vented to the atmosphere.

Miscellaneous Sources
Fugitive natural gas and light liquid emissions (EPN: FE-01) occur from potential leaks from flanges, valves, and piping connections. Fugitive emissions are calculated using typical Cunningham Energy, LLC facility component counts and emission factors in EPA 4531, R-95-017.

Site contains 6 electric pump engines (10 Horsepower).

Site specific oil analysis was available and used for all respective calculations (included in attachment S). Site specific gas analysis was not available. A representative gas analysis from the EPA average emission factors was used for all applicable calculations (included in attachment S).

NSPS Subpart OOOOa does not apply to this site. Wells were completed before September 18, 2015 but after August 23, 2011.

Attachment F

ATTACHMENT F – PLOT PLAN

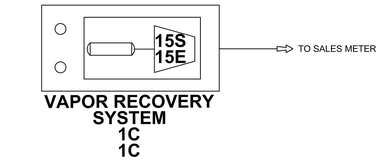
Provide an accurately scaled and detailed Plot Plan showing the locations of all emission units, emission points, and air pollution control devices. Show all emission units, affected facilities, enclosures, buildings and plant entrances and exits from the nearest public road(s) as appropriate. Note height, width and length of proposed or existing buildings and structures.

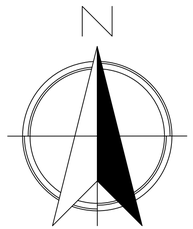
A scale between 1"=10' and 1"=200' should be used with the determining factor being the level of detail necessary to show operation or plant areas, affected facilities, emission unit sources, transfer points, etc. An overall small scale plot plan (e.g., 1"=300') should be submitted in addition to larger scale plot plans for process or activity areas (e.g., 1"=50') if the plant is too large to allow adequate detail on a single plot plan. Process or activity areas may be grouped for the enlargements as long as sufficient detail is shown.

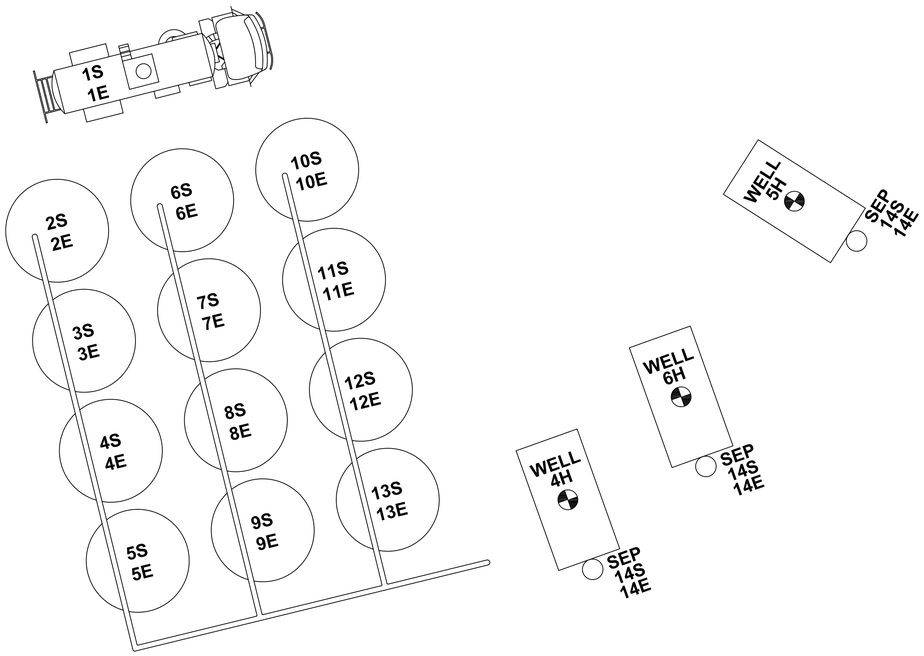
Use the following guidelines to ensure a complete Plot Plan:

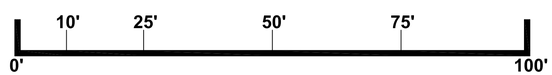
- Facility name
- Company name
- Company facility ID number (for existing facilities)
- Plot scale, north arrow, date drawn, and submittal date.
- Facility boundary lines
- Base elevation
- Lat/Long reference coordinates from the area map and corresponding reference point elevation
- Location of all point sources labeled with proper and consistent source identification numbers

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.









PROJECT ID 15143-PF-101		COMM ENGINEERING	CUNNINGHAM ENERGY		
DESIGN JMS	DESIGN DATE 9/1/2016	COCHRAN PAD BOMONT, WV			
DRAWN JMS	DRAWN DATE 9/2/2016	PROCESS FLOW DIAGRAM			
CHECKED	CHECKED DATE				
ISSUED FOR APPROVAL	IFR DATE	SIZE D	JOB NO 151543	LAYOUT PF-101	REV 1
APPD FOR CONSTRUCTION	AFC DATE			SHEET 1 OF 1	

Attachment G

ATTACHMENT G – AREA MAP

Provide an Area Map showing the current or proposed location of the operation. On this map, identify plant or operation property lines, access roads and any adjacent dwelling, business, public building, school, church, cemetery, community or institutional building or public park within a 300' boundary circle of the collective emission units.

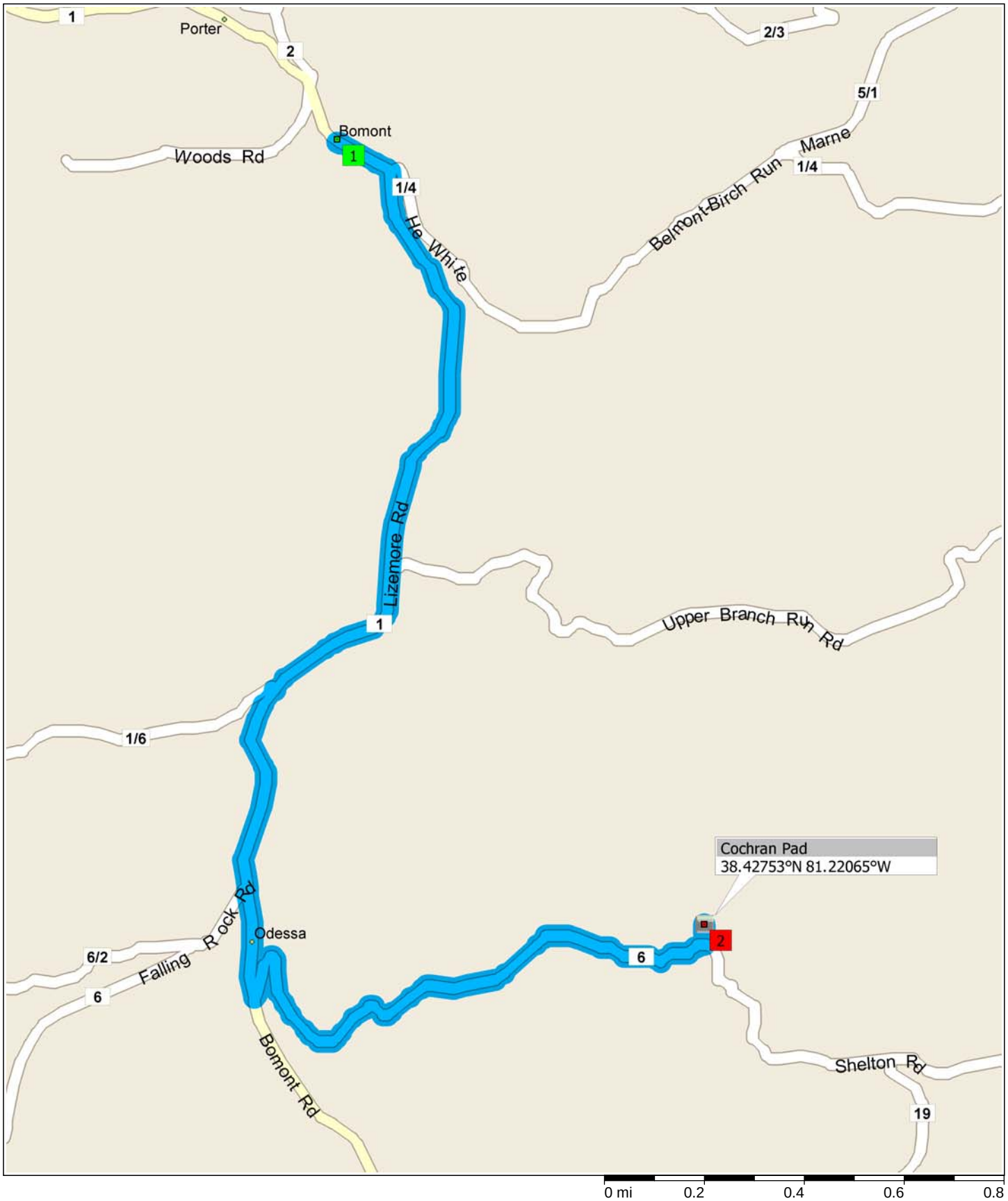
Please provide a 300' boundary circle on the map surrounding the proposed emission units collectively.

This information is required for all sources regardless of whether it is a construction, modification, or administrative update.


Cunningham Energy, LLC
300' Boundary Map
Legend
(Cochran) 38.427525,-81.220647
(Cochran) 38.427525,-81.220647
Shelton Rd
Google earth
© 2016 Google
N
500 ft

Cunningham Energy, LLC - Cochran Pad

3.3 miles; 7 minutes



9:00 AM	0.0 mi	1 Depart Bomont on CR-1 [Lizemore Rd] (East) for 1.8 mi
9:03 AM	1.8 mi	Keep STRAIGHT onto CR-1 [Bomont Rd] for 0.2 mi
9:03 AM	2.0 mi	Turn LEFT (East) onto CR-6 [Shelton Rd] for 1.2 mi
9:07 AM	3.2 mi	Bear LEFT (North) onto Local road(s) for 76 yds
9:07 AM	3.3 mi	2 Arrive Cochran Pad

Attachment H

General Permit G70-C Registration
Section Applicability Form

General Permit G70-C 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-C 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-C APPLICABLE SECTIONS	
☐Section 5.0	Gas Well Affected Facility (NSPS, Subpart OOOO)
X Section 6.0	Storage Vessels Containing Condensate and/or Produced Water[1]
X Section 7.0	Storage Vessel Affected Facility (NSPS, Subpart OOOO)
☐Section 8.0	Control Devices and Emission Reduction Devices not subject to NSPS Subpart OOOO and/or NESHAP Subpart HH
☐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]
X 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

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]
1S	1E	Tank Truck Oil/Condensate Loading Losses	2015	N/A	N/A	N/A	N/A	N/A
2S	2E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
3S	3E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
4S	4E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
5S	5E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
6S	6E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
7S	7E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
8S	8E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
9S	9E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
10S	10E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
11S	11E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
12S	12E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
13S	13E	Oil Storage Tank	2015	2015	210 bbls.	New	1C	N/A
14S	14E	Pneumatic Controllers	2015	2015	N/A	New	N/A	N/A
1C	1C	Vapor Recovery System	2016	2015	5 osig	New	N/A	N/A
15S	15E	VRU Natural Gas Compressor Engine	2016	2015	101 HP	New	N/A	N/A
16S	16E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
17S	17E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
18S	18E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
19S	19E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
20S	20E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
21S	21E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
22S	22E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
23S	23E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
24S	24E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
25S	25E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
26S	26E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A
27S	27E	Water Storage Tank	2015	2015	210 bbls.	New	1C	N/A

28S	28E	Tank Truck Water Loading Losses	2015	N/A	N/A	N/A	N/A	N/A

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] 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

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: FE-01

Leak Detection Method Used	☒ Audible, visual, and olfactory (AVO) inspections	☐ Infrared (FLIR) cameras	☐ Other (please describe)	☐ 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	0		☐ Gas ☐ Liquid ☐ Both	N/A	N/A	N/A
Valves	☒ Yes ☐ No	682	EPA 4531, R-95-017	☐ Gas ☐ Liquid ☒ Both	4.423	0.083	291.953
Safety Relief Valves	☐ Yes ☐ No	0		☐ Gas ☐ Liquid ☐ Both	N/A	N/A	N/A
Open Ended Lines	☒ Yes ☐ No	68	EPA 4531, R-95-017	☐ Gas ☐ Liquid ☒ Both	0.232	0.004	14.814
Sampling Connections	☐ Yes ☐ No	0		☐ Gas ☐ Liquid ☐ Both	N/A	N/A	N/A
Connections (Not sampling)	☒ Yes ☐ No	2046	EPA 4531, R-95-017	☐ Gas ☐ Liquid ☒ Both	0.961	0.011	59.155
Compressors	☒ Yes ☐ No	1	EPA 4531, R-95-017	☒ Gas ☐ Liquid ☐ Both	0.48	0.03	44.75
Flanges	☒ Yes ☐ No	682	EPA 4531, R-95-017	☐ Gas ☐ Liquid ☒ Both	0.250	0.007	18.382
Other[1]	☒ Yes ☐ No	34	EPA 4531, R-95-017	☐ Gas ☐ Liquid ☒ Both	0.603	0.008	39.581

[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.):
6 Gas and Oil Wellheads, 6 HP Separators, 1 Gas Sales Meter, 12 Oil Storage Tanks, 6 Oil Transfer Pumps – Electric, 1 Gas Compressor, 2 Number of Stages for Compressor, 1 Compressor Seal.

Please indicate if there are any closed vent bypasses (include component): N/A
Specify all equipment used in the closed vent system (e.g. VRU, ERD, thief hatches, tanker truck loading, etc.) VRU

Attachment L

ATTACHMENT L – STORAGE VESSEL DATA SHEET

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

The following information is REQUIRED:

☒ Composition of the representative sample used for the simulation
☒ For each stream that contributes to flashing emissions:
- ☒ Temperature and pressure (inlet and outlet from separator(s))
- ☒ Simulation-predicted composition
- ☒ Molecular weight
- ☒ Flow rate

☒ Resulting flash emission factor or flashing emissions from simulation
☒ Working/breathing loss emissions from tanks and/or loading emissions if simulation is used to quantify those emissions

Additional information may be requested if necessary.

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name: Oil Storage Tanks	2. Tank Name: OST-01 - OST-12
3. Emission Unit ID number: 2S-13S	4. Emission Point ID number: 2E-13E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2015 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. 210 barrels	
9A. Tank Internal Diameter (ft.) 10	9B. Tank Internal Height (ft.) 15
10A. Maximum Liquid Height (ft.) 13	10B. Average Liquid Height (ft.) 7.5
11A. Maximum Vapor Space Height (ft.) 13	11B. Average Vapor Space Height (ft.) 7.5
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume". 210 bbls	
13A. Maximum annual throughput (gal/yr) 76,650	13B. Maximum daily throughput (gal/day) 210
14. Number of tank turnovers per year: 9	15. Maximum tank fill rate (gal/min): 0.1458
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)

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name	**Flashing Loss**		**Breathing Loss**		**Working Loss**		**Total Emissions Loss**		**Estimation Method[1]**
	lb/hr	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
HAPs	-	-	-	-	-	-	0.004	0.017	E & P Tanks
VOC	-	-	-	-	-	-	0.451	1.975	E & P Tanks

[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)			
21A. Shell Color: Black	21B. Roof Color: Black	21C. Year Last Painted: 2015	
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): 0.3125 **Must be listed for tanks using VRUs with closed vent system.**			
24. Is the tank a **Vertical Fixed Roof Tank**? ☒ Yes ☐ No	24A. If yes, for dome roof provide radius (ft): 10	24B. If yes, for cone roof, provide slop (ft/ft): N/A	
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): 54.75	31. Annual Avg. Maximum Temperature (°F): 65.5		
32. Annual Avg. Minimum Temperature (°F): 44.0	33. Avg. Wind Speed (mph): 4.5		
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): 1123.0	35. Atmospheric Pressure (psia): 14.70		
LIQUID INFORMATION			
36. Avg. daily temperature range of bulk liquid (°F): 80	36A. Minimum (°F): 70	36B. Maximum (°F): 90	
37. Avg. operating pressure range of tank (psig): 0.2343	37A. Minimum (psig): 0.15625	37B. Maximum (psig): 0.3125	
38A. Minimum liquid surface temperature (°F): 70	38B. Corresponding vapor pressure (psia):-14.54		
39A. Avg. liquid surface temperature (°F): 85	39B. Corresponding vapor pressure (psia):-14.46		
40A. Maximum liquid surface temperature (°F): 100	40B. Corresponding vapor pressure (psia):-14.38		
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:	Crude Oil		
41B. CAS number:	8002-05-9		
41C. Liquid density (lb/gal):	6.19		
41D. Liquid molecular weight (lb/lb-mole):	130.9		
41E. Vapor molecular weight (lb/lb-mole):	39.97		
41F. Maximum true vapor pressure (psia):	5.7		
41G. Maximum Reid vapor pressure (psia):	6.63		
41H. Months Storage per year. From: To:	12		

42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	174 psig and 72 F		

GENERAL INFORMATION (REQUIRED)

1. Bulk Storage Area Name: Water Storage Tanks	2. Tank Name: WST-01 - WST-12
3. Emission Unit ID number: 16S-27S	4. Emission Point ID number: 16E-27E
5. Date Installed , Modified or Relocated *(for existing tanks)* 2015 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. 210 barrels	
9A. Tank Internal Diameter (ft.) 10	9B. Tank Internal Height (ft.) 15
10A. Maximum Liquid Height (ft.) 13	10B. Average Liquid Height (ft.) 7.5
11A. Maximum Vapor Space Height (ft.) 13	11B. Average Vapor Space Height (ft.) 7.5
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume". 210 bbls	
13A. Maximum annual throughput (gal/yr) 45,990	13B. Maximum daily throughput (gal/day) 126
14. Number of tank turnovers per year: 6	15. Maximum tank fill rate (gal/min): 0.0875
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)	

Vacuum Setting Pressure Setting

☐ Thief Hatch Weighted ☐ Yes ☐ No

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
HAPs	-	-	-	-	-	-	0.000	0.000	E & P Tanks
VOC	-	-	-	-	-	-	0.002	0.011	E & P Tanks

[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)

21A. Shell Color: Black	21B. Roof Color: Black	21C. Year Last Painted: 2015

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): 0.3125

Must be listed for tanks using VRUs with closed vent system.

24. Is the tank a **Vertical Fixed Roof Tank**? ☒ Yes ☐ No	24A. If yes, for dome roof provide radius (ft): 10	24B. If yes, for cone roof, provide slop (ft/ft): N/A

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): 54.75	31. Annual Avg. Maximum Temperature (°F): 65.5
32. Annual Avg. Minimum Temperature (°F): 44.0	33. Avg. Wind Speed (mph): 4.5
34. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): 1123.0	35. Atmospheric Pressure (psia): 14.70

LIQUID INFORMATION

36. Avg. daily temperature range of bulk liquid (°F): 80	36A. Minimum (°F): 70		36B. Maximum (°F): 90
37. Avg. operating pressure range of tank (psig): 0.2343	37A. Minimum (psig): 0.15625		37B. Maximum (psig): 0.3125
38A. Minimum liquid surface temperature (°F): 70		38B. Corresponding vapor pressure (psia):-14.54	
39A. Avg. liquid surface temperature (°F): 85		39B. Corresponding vapor pressure (psia):-14.46	
40A. Maximum liquid surface temperature (°F): 100		40B. Corresponding vapor pressure (psia):-14.38	
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 Water		
41B. CAS number:	N/A		
41C. Liquid density (lb/gal):	8.3121		
41D. Liquid molecular weight (lb/lb-mole):	N/A		
41E. Vapor molecular weight (lb/lb-mole):	N/A		
41F. Maximum true vapor pressure (psia):	N/A		
41G. Maximum Reid vapor pressure (psia):	N/A		
41H. Months Storage per year. From: To:	12		
42. Final maximum gauge pressure and temperature prior to transfer into tank used as inputs into flashing emission calculations.	174 psig and 72 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]

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 N

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]	15S		
Engine Manufacturer/Model	Ajax / DPC - 105		
Manufacturers Rated bhp/rpm	101 / 425		
Source Status[2]	NS		
Date Installed/ Modified/Removed/Relocated[3]	2015		
Engine Manufactured /Reconstruction Date[4]	N/A		
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]	2SLB		
APCD Type[7]	N/A		
Fuel Type[8]	PQ		
H_2S (gr/100 scf)	0.2		
Operating bhp/rpm	101 / 425		
BSFC (BTU/bhp-hr)	8800		
Hourly Fuel Throughput	388 ft^3/hr 2902.44 gal/hr	ft^3/hr gal/hr	ft^3/hr gal/hr
Annual Fuel Throughput (Must use 8,760 hrs/yr unless emergency generator)	3.4 $MMft^3$/yr 25425374.4 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	0.982	4.30				
MD	CO	0.625	2.737				
MD	VOC	0.112	0.491				
AP-42	SO_2	0.001	0.004				
AP-42	PM_{10}	0.000	0.000				
MD	Formaldehyde	0.067	0.293				
MD	Total HAPs	0.075	0.328				
AP-42	GHG (CO_2e)	320.382	1403.275				

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# , 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:

Manufacturer:	Model #:
Design Operating Temperature: °F	Design gas volume: scfm
Service life of catalyst:	Provide manufacturer data? ☐Yes ☐ No
Volume of gas handled: acfm at °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): 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)?

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,

Attachment O

ATTACHMENT O – TANKER TRUCK LOADING DATA SHEET

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

Truck Loadout Collection Efficiencies

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

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

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

Emission Unit ID#:	Emission Point ID#:	Year Installed/Modified:
Emission Unit Description:		
Loading Area Data		
Number of Pumps:	Number of Liquids Loaded:	Max number of trucks loading at one (1) time:
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. N/A		
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				
Days/week				

Bulk Liquid Data (use extra pages as necessary)

Liquid Name	Crude Oil	Produced Water	
Max. Daily Throughput (1000 gal/day)	2.520	1.512	
Max. Annual Throughput (1000 gal/yr)	920.4	552.2	
Loading Method[1]	BF	BF	
Max. Fill Rate (gal/min)	133	133	
Average Fill Time (min/loading)	66	66	
Max. Bulk Liquid Temperature (°F)	90	80	
True Vapor Pressure[2]	0.32 psig	N/A	
Cargo Vessel Condition[3]	C	C	
Control Equipment or Method[4]	N/A	N/A	
Max. Collection Efficiency (%)	0%	0%	

Max. Control Efficiency (%)				
Max.VOC Emission Rate	Loading (lb/hr)	23.1572	0.2316	
	Annual (ton/yr)	1.3346	0.0080	
Max.HAP Emission Rate	Loading (lb/hr)	0.0255	0.0255	
	Annual (ton/yr)	0.0015	0.0009	
Estimation Method[5]		AP-42	AP-42	

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

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

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: 1C	Make/Model:
Primary Control Device ID: 1C	Make/Model: TE Services / Vapor Recovery System
Control Efficiency (%): 95	APCD/ERD Data Sheet Completed: ☐ Yes ☐ No
Secondary Control Device ID:	Make/Model:
Control Efficiency (%):	APCD/ERD Data Sheet Completed: ☐ Yes ☐ No

VAPOR RECOVERY UNIT

General Information

Emission Unit ID#: 1C	Installation Date: 8/25/2016 ☒ New ☐ Modified ☐ Relocated

Device Information

Manufacturer: TE Services
Model: Vapor Recovery System

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

Emission Unit ID#	Emission Source Description	Emission Unit ID#	Emission Source Description
2S	Oil Storage Tank	16S	Water Storage Tank
3S	Oil Storage Tank	17S	Water Storage Tank
4S	Oil Storage Tank	18S	Water Storage Tank
5S	Oil Storage Tank	19S	Water Storage Tank
6S	Oil Storage Tank	20S	Water Storage Tank
7S	Oil Storage Tank	21S	Water Storage Tank
8S	Oil Storage Tank	22S	Water Storage Tank
9S	Oil Storage Tank	23S	Water Storage Tank
10S	Oil Storage Tank	24S	Water Storage Tank
11S	Oil Storage Tank	25S	Water Storage Tank
12S	Oil Storage Tank	26S	Water Storage Tank
13S	Oil Storage Tank	27S	Water Storage Tank

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

Additional information attached? ☐ Yes ☒ No
Please attach copies of manufacturer's data sheets, drawings, and performance testing.

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

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

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

Attachment S

ATTACHMENT S – EMISSIONS CALCULATIONS

Provide detailed potential to emit (PTE) emission calculations for criteria and hazardous air pollutants (HAPs) for each emission point identified in the application. For hazardous air pollutants and volatile organic compounds (VOCs), the speciated emission calculations must be included.

Use the following guidelines to ensure complete emission calculations:

- All emission sources and fugitive emissions are included in the emission calculations, as well as all methods used to calculate the emissions.
- Proper emission point identification numbers and APCD and ERD identification numbers are used consistently in the emission calculations that are used throughout the application.
- A printout of the emission summary sheets is attached to the registration application.
- Printouts of any modeling must be included with the emission calculations. The modeling printout must show all inputs/outputs or assumptions that the modeled emissions are based upon.
- If emissions are provided from the manufacturer, the manufacturer's documentation and/or certified emissions must also be included.
- The emission calculations results must match the emissions provided on the emissions summary sheet.
- If calculations are based on a compositional analysis of the gas, attach the laboratory analysis. Include the following information: the location that the sample was taken (and whether the sample was taken from the actual site or a representative site); the date the sample was taken; and, if the sample is considered representative, the reasons that it is considered representative (same gas field, same formation and depth, distance from actual site, etc.).
- Provide any additional clarification as necessary. Additional clarification or information is especially helpful when reviewing modeling calculations to assist the engineer in understanding the basis of assumptions and/or inputs.

Please follow specific guidance provided on the emissions summary sheet when providing the calculations.

Company Name: Cunningham Energy, LLC
Facility Name: Cochran Pad
Emission Unit ID: 1S
Emission Point ID: 1E
Control Devices: None
Source Description: Tank Truck Oil/Condensate Loading Losses

Using equation L_L = 12.46* SPM/T from AP-42, Chapter 5, Section 5.2-4

S =	0.6	= Saturation Factor
P =	4	= True vapor pressure of liquid loaded (psia)
M =	52.37	= Molecular Weight of Vapors (lb/lb-mole)
T =	539.67	= Temperature of bulk liquid loaded (in degrees Rankine)
Hourly Loading Rate	7980	= Gallons Loaded per Hour
Annual Loading Rate	919800	= Gallons Loaded per Year
Control	0	= Efficiency of any Control Device (e.g. a VRU)
L_L =	2.9019	= Loading Loss (in pounds of VOC released per 1000 gallons of liquid loaded)
VOC lb/hr =	23.1572	
VOC tpy =	1.3346	
HAP lb/hr* =	0.0255	
HAP tpy* =	0.0015	

Note: Use default wt% for HAP = 0.11%

Oil Storage Tanks
Emission Unit ID: 2S - 13S Emision Point ID: 2E - 13E Control Device: 1C

```
*****************************************************************************
*     Project Setup Information                                             *
*****************************************************************************
Project File              : T:\Customers\Cunningham Energy\Air\Cochran Pad\1. Application\OST Calcs.ept
Flowsheet Selection       : Oil Tank with Separator
Calculation Method        : RVP Distillation
Control Efficiency        : 0.0%
Known Separator Stream    : Low Pressure Oil
Entering Air Composition  : No

Filed Name                : Cunningham Energy, LLC
Well Name                 : Cochran Pad
Well ID                   : Oil Storage Tanks
Date                      : 2016.08.31


*****************************************************************************
*     Data Input                                                            *
*****************************************************************************

Separator Pressure        : 174.00[psig]
Separator Temperature     : 72.00[F]
Ambient Pressure          : 14.70[psia]
Ambient Temperature       : 60.00[F]
C10+ SG                   : 0.7431
C10+ MW                   : 130.90

-- Low Pressure Oil ---------------------------------------------------------
   No.    Component            mol %
   1      H2S                   0.0000
   2      O2                    0.0000
   3      CO2                   0.0000
   4      N2                    0.0360
   5      C1                    3.5710
   6      C2                    7.2560
   7      C3                   11.1570
   8      i-C4                  3.3760
   9      n-C4                  9.3480
   10     i-C5                  5.2890
   11     n-C5                  4.9970
   12     C6                    4.1790
   13     C7                    7.1590
   14     C8                    7.6010
   15     C9                    3.6390
   16     C10+                 27.1430
   17     Benzene               0.3230
   18     Toluene               0.5110
   19     E-Benzene             0.2940
   20     Xylenes               1.0610
   21     n-C6                  3.0600
   22     224Trimethylp         0.0000

-- Sales Oil ----------------------------------------------------------------
Production Rate           : 5[bbl/day]
Days of Annual Operation  : 365 [days/year]
API Gravity               : 49.84
Reid Vapor Pressure       : 6.63[psia]


*****************************************************************************
*     Calculation Results                                                   *
*****************************************************************************

-- Emission Summary ---------------------------------------------------------
Item               Uncontrolled   Uncontrolled
                   [ton/yr]       [lb/hr]
```

Total HAPs	0.350	0.080
Total HC	48.551	11.085
VOCs, C2+	46.671	10.655
VOCs, C3+	39.511	9.021

Flash, standing, and working losses are sent directly to a Vapor Recovery System. Per WVDEP Vapor Recovery Systems receive a control efficiency of 95%.

Uncontrolled Recovery Info.		
Vapor	2.2800	[MSCFD]
HC Vapor	2.2800	[MSCFD]
GOR	456.00	[SCF/bbl]

-- Emission Composition ----------

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]
1	H2S	0.000	0.000
2	O2	0.000	0.000
3	CO2	0.000	0.000
4	N2	0.033	0.008
5	C1	1.880	0.429
6	C2	7.160	1.635
7	C3	16.071	3.669
8	i-C4	5.501	1.256
9	n-C4	11.862	2.708
10	i-C5	2.761	0.630
11	n-C5	1.831	0.418
12	C6	0.523	0.119
13	C7	0.314	0.072
14	C8	0.110	0.025
15	C9	0.019	0.004
16	C10+	0.172	0.039
17	Benzene	0.026	0.006
18	Toluene	0.013	0.003
19	E-Benzene	0.003	0.001
20	Xylenes	0.008	0.002
21	n-C6	0.298	0.068
22	224Trimethylp	0.000	0.000
	Total	48.585	11.092

-- Stream Data ----------

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	N2	28.01	0.0360	0.0003	0.0000	0.1769	0.0018	0.1075
5	C1	16.04	3.5710	0.1122	0.0000	17.2175	0.6739	10.6604
6	C2	30.07	7.2560	1.4076	0.0002	30.3302	8.4571	21.6607
7	C3	44.10	11.1570	6.0428	0.0766	31.3345	35.9272	33.1549
8	i-C4	58.12	3.3760	2.9119	0.7396	5.2070	13.7925	8.6099
9	n-C4	58.12	9.3480	9.0117	4.7044	10.6749	30.5842	18.5660
10	i-C5	72.15	5.2890	6.0169	6.1995	2.4170	5.1031	3.4817
11	n-C5	72.15	4.9970	5.8474	6.3515	1.6420	3.3226	2.3081
12	C6	86.16	4.1790	5.1355	5.9989	0.4054	0.8107	0.5660
13	C7	100.20	7.1590	8.9225	10.6167	0.2013	0.4368	0.2946
14	C8	114.23	7.6010	9.5129	11.3843	0.0578	0.1397	0.0902
15	C9	128.28	3.6390	4.5593	5.4648	0.0082	0.0236	0.0143
16	C10+	130.90	27.1430	34.0050	40.7552	0.0697	0.1947	0.1193
17	Benzene	78.11	0.3230	0.3993	0.4702	0.0218	0.0445	0.0308
18	Toluene	92.13	0.5110	0.6384	0.7622	0.0083	0.0187	0.0124
19	E-Benzene	106.17	0.2940	0.3682	0.4410	0.0014	0.0034	0.0022
20	Xylenes	106.17	1.0610	1.3289	1.5921	0.0041	0.0106	0.0067
21	n-C6	86.18	3.0600	3.7793	4.4430	0.2221	0.4551	0.3144
22	224Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		86.23	98.24	107.40	38.83	52.37	44.20
	Stream Mole Ratio		1.0000	0.7978	0.6650	0.2022	0.1328	0.3350
	Heating Value	[BTU/SCF]				2230.98	2954.39	2517.71
	Gas Gravity	[Gas/Air]				1.34	1.81	1.53
	Bubble Pt. @ 100F	[psia]	188.66	33.99	7.02			

RVP @ 100F	[psia]	75.48	24.47	6.68
Spec. Gravity @ 100F		0.662	0.685	0.699

Company: Cunningham Energy, LLC
Facility: Cochran Pad
Emission Unit ID: 14S
Emission Point ID: 14E
Control Devices: None
Source Description: Pneumatic Controllers

Quantity of controllers:	12	
Gas Vent Rate:	1.2	SCFH*
Annual Operation:	8760	hr/yr
Total Gas Vented:	14.40	SCFH
Emissions:	1.476	lb/hr gas (total gas stream)
	12929.76	lb/year gas
	6.465	ton/year gas

Emission Speciation:

Component	Mole Percentage	Molecular Weight	Mole Fraction x Molec Weight	Weight Fraction	avg lbs/hr	tons/yr
Nitrogen	0.177%	28.013	0.050	0.0013	0.0019	0.0084
Carbon Dioxide	0.000%	44.010	0.000	0.0000	0.0000	0.0000
Methane	17.218%	16.043	2.762	0.0711	0.1049	0.4597
Ethane	30.330%	30.070	9.120	0.2347	0.3464	1.5173
Propane	31.335%	44.097	13.818	0.3556	0.5249	2.2990
iso-Butane	5.207%	58.123	3.027	0.0779	0.1150	0.5036
n-Butane	10.675%	58.123	6.205	0.1597	0.2357	1.0325
iso-Pentane	2.417%	72.150	1.744	0.0449	0.0663	0.2903
n-Pentane	1.642%	72.150	1.185	0.0305	0.0450	0.1972
Other Hexanes	0.405%	86.178	0.349	0.0090	0.0133	0.0582
***n-Hexane**	0.222%	86.178	0.191	0.0049	**0.0072**	**0.0317**
***Benzene**	0.022%	78.114	0.017	0.0004	**0.0006**	**0.0026**
***Toluene**	0.008%	92.141	0.008	0.0002	**0.0003**	**0.0013**
***Ethylbenzene**	0.001%	106.167	0.002	0.0000	**0.0001**	**0.0003**
***Xylenes**	0.004%	106.167	0.004	0.0001	**0.0002**	**0.0007**
***Trimethylpentane**	0.000%	114.231	0.000	0.0000	**0.0000**	**0.0000**
Heptanes	0.201%	100.272	0.202	0.0052	0.0077	0.0336
Octanes	0.058%	114.231	0.066	0.0017	0.0025	0.0110
Nonanes	0.008%	128.258	0.011	0.0003	0.0004	0.0017
Decanes+	0.070%	142.280	0.099	0.0026	0.0038	0.0165
	100.000%	Molecular Weight =	38.8582	1.0001		

Total Non-Toxic VOCs	1.0146	4.4436
Total Toxic VOCs	0.0084	0.0366
Total VOCs (includes toxics)	**1.0230**	**4.4802**

Notes:

Component lbs/hr = (lbs HC/hr)(component weight fraction)

Component tons/yr = (tons HC/yr)(component weight fraction)

Company Name: Cunningham Energy, LLC
Facility: Cochran Pad
Emission Unit ID: 15S
Emission Point ID: 15E
Control Device: None
Source Description: VRU Natural Gas Compressor Engine
Engine Type: Lean-burn, 4-stroke

Emission Calculations:

Rated Engine Capacity:	101	hp
Btu Value of Fuel Gas:	2291.54	Btu/scf
Engine Heat Input:	8800	Btu/hp-hr
Hours Operated for Year:	8760	hrs
Calculated Heat Rate:	0.89	MMBtu/hr
Calculated Fuel Use:	388	cu. ft./hr;
	3.4	MMCF/yr
Percent Operation for Year:	100.00	%

	Pollutant	Factor lb/MMBTU	g/hp-hr	Avg. lbs/hr	Total tons/yr	Source of Factor
CRITERIA	NOx	1.103	4.40	0.982	4.300	Manufacturer Data
	CO	0.702	2.80	0.625	2.737	Manufacturer Data
	PM_{10}	7.71E-05	0.0003	0.000	0.000	AP-42, Table 3.2-2, 7/00
	SO_2 [1]	9.19E-04	0.004	0.001	0.004	AP-42, Table 3.2-2, 7/00 - Adjusted [1]
	VOC	0.125	0.500	0.112	0.491	Manufacturer Data
TOXIC AIR POLLUTANTS	N-Hexanes	1.11E-03	0.004	0.001	0.004	AP-42, Table 3.2-2, 7/00
	Formaldehyde	0.0752	0.300	0.067	0.293	Manufacturer Data
	Acetaldehyde	8.36E-03	0.033	0.007	0.031	AP-42, Table 3.2-2, 7/00
	Benzene	4.40E-04	0.002	0.000	0.000	AP-42, Table 3.2-2, 7/00
	Toluene	4.08E-04	0.002	0.000	0.000	AP-42, Table 3.2-2, 7/00
	Ethylbenzene	3.97E-05	0.0002	0.000	0.000	AP-42, Table 3.2-2, 7/00
	Xylenes	1.84E-04	0.001	0.000	0.000	AP-42, Table 3.2-2, 7/00
	Total TAP			**0.075**	**0.328**	
OTHER	Methane	1.25E+00	4.990	1.113	4.875	AP-42, Table 3.2-2, 7/00
	Ethane	1.05E-01	0.419	0.093	0.407	AP-42, Table 3.2-2, 7/00
	TOC	1.47E+00	5.868	1.308	5.729	AP-42, Table 3.2-2, 7/00
	Non-toxic VOC (Heptane+)			0.037	0.163	= VOC - Total TAPs
	CO_{2E}				1403.275	

Additional Notes:

1. The AP-42 factor for SO_2 is based on a fuel content of 2000 gr $H_2S/10^6$ scf (3.2 ppm). This calculation adjusts the factor for 5 ppm H_2S.

Company Name: Cunningham Energy, LLC
Facility: Cochran Pad
Emission Unit ID: FE-01
Emission Point ID: None
Control Device: None
Source Description: Fugitive Emissions
Based on: Typical Facility Component counts

Total Component Count

number	component
634	Valve
0	Pump Seal
1902	Connector
634	Flange
63	Open-ended Line
32	Other

Gas

number	component	emission factor (kg/hr per component)*	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
174	Valve	0.0045	0.00992	1.726229	7.560881	17.1	0	0.295	1.293	68.7	0	1.186	5.194	1.1	0	0.019	0.083
0	Pump Seal	0.0024	0.00529	0	0	17.1	0	0.000	0.000	68.7	0	0.000	0.000	1.1	0	0.000	0.000
522	Connector	0.0002	0.00044	0.230164	1.008117	17.1	0	0.039	0.172	68.7	0	0.158	0.693	1.1	0	0.003	0.011
174	Flange	0.00039	0.00086	0.149606	0.655276	17.1	0	0.026	0.112	68.7	0	0.103	0.450	1.1	0	0.002	0.007
17	Open-ended Line	0.002	0.00441	0.074958	0.328314	17.1	0	0.013	0.056	68.7	0	0.051	0.226	1.1	0	0.001	0.004
9	Other	0.0088	0.01940	0.174607	0.764779	17.1	0	0.030	0.131	68.7	0	0.120	0.525	1.1	0	0.002	0.008

Total Emissions Per Component (CO2e)

tpy	component
291.953	Valve
0.000	Pump Seal
59.155	Connector
18.382	Flange
14.814	Open-ended Line
39.581	Other

Light Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
438	Valve	0.0025	0.00551	2.414074	10.57365	29.6	0	0.715	3.130	61.2	0	1.477	6.471	61.2	0	0.000	0.000
0	Pump Seal	0.013	0.02866	0	0	29.6	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
1314	Connector	0.00021	0.00046	0.608347	2.664559	29.6	0	0.180	0.789	61.2	0	0.372	1.631	61.2	0	0.000	0.000
438	Flange	0.00011	0.00024	0.106219	0.46524	29.6	0	0.031	0.138	61.2	0	0.065	0.285	61.2	0	0.000	0.000
44	Open-ended Line	0.0014	0.00309	0.135805	0.594828	29.6	0	0.040	0.176	61.2	0	0.083	0.364	61.2	0	0.000	0.000
22	Other	0.0075	0.01653	0.363765	1.593289	29.6	0	0.108	0.472	61.2	0	0.223	0.975	61.2	0	0.000	0.000

Total Emissions Per Component (VOC)

lb/hr	tpy	component
1.010	4.423	Valve
0.000	0.000	Pump Seal
0.219	0.961	Connector
0.057	0.250	Flange
0.053	0.232	Open-ended Line
0.138	0.603	Other

Heavy Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
0	Valve	0.0000084	0.0000185	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Pump Seal**	-	0.00113	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Connector	0.0000075	0.0000165	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Flange	0.00000039	0.0000009	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Open-ended Line	0.00014	0.0003086	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Other**	-	0.0006830	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000

Total Emissions Per Component (Methane)

lb/hr	tpy	component
2.666	11.678	Valve
0.000	0.000	Pump Seal
0.540	2.366	Connector
0.168	0.735	Flange
0.135	0.593	Open-ended Line
0.361	1.583	Other

Water/Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
22	Valve	0.000098	0.0002161	0.004753	0.020819	0.296	0	0.000	0.000	61.2	0	0.003	0.013	61.2	0	0.000	0.000
0	Pump Seal	0.000024	0.0000529	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
66	Connector	0.00011	0.0002425	0.016006	0.070105	0.296	0	0.000	0.000	61.2	0	0.010	0.043	61.2	0	0.000	0.000
22	Flange	0.0000029	0.0000064	0.000141	0.000616	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
2	Open-ended Line	0.00025	0.0005512	0.001102	0.004828	0.296	0	0.000	0.000	61.2	0	0.001	0.003	61.2	0	0.000	0.000
1	Other	0.014	0.0308649	0.030865	0.135188	0.296	0	0.000	0.000	61.2	0	0.019	0.083	61.2	0	0.000	0.000

Total Emissions Per Component (HAP)

lb/hr	tpy	component
0.019	0.083	Valve
0.000	0.000	Pump Seal
0.003	0.011	Connector
0.002	0.007	Flange
0.001	0.004	Open-ended Line
0.002	0.008	Other

	lb/hr	tpy
Uncontrolled THC emissions:	6.0366	26.4405
VOC emissions:	**1.48**	**6.47**
Methane emissions:	**3.87**	**16.96**
HAP emissions:	**0.03**	**0.11**

* Emission factors are for oil and gas production facilities (not refineries), and come from the EPA's "Protocol for Equipment Leak Emission Estimates" November 1995, EPA 4531, R-95-017, Table 2-4.

Company Name: Cunningham Energy, LLC
Facility: Cochran Pad
Emission Unit ID: FE-01
Emission Point ID: None
Control Device: None
Source Descripti: Fugitive Emissions (Compressor)
Based on: Typical Facility Component counts

Gas

number	component	emission factor (kg/hr per component)*	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
40	Valve	0.0045	0.00992	0.396834	1.738134	17.1	0	0.068	0.297	68.7	0	0.273	1.194	1.1	0	0.004	0.019
0	Pump Seal	0.0024	0.00529	0	0	17.1	0	0.000	0.000	68.7	0	0.000	0.000	1.1	0	0.000	0.000
120	Connector	0.0002	0.00044	0.052911	0.231751	17.1	0	0.009	0.040	68.7	0	0.036	0.159	1.1	0	0.001	0.003
40	Flange	0.00039	0.00086	0.034392	0.150638	17.1	0	0.006	0.026	68.7	0	0.024	0.103	1.1	0	0.000	0.002
4	Open-ended Line	0.002	0.00441	0.017637	0.07725	17.1	0	0.003	0.013	68.7	0	0.012	0.053	1.1	0	0.000	0.001
2	Other	0.0088	0.01940	0.038802	0.169951	17.1	0	0.007	0.029	68.7	0	0.027	0.117	1.1	0	0.000	0.002

Total Component Count

number	component
48	Valve
0	Pump Seal
144	Connector
48	Flange
5	Open-ended Line
2	Other

Light Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
8	Valve	0.0025	0.00551	0.044093	0.193126	29.6	0	0.013	0.057	61.2	0	0.027	0.118	61.2	0	0.000	0.000
0	Pump Seal	0.013	0.02866	0	0	29.6	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
24	Connector	0.00021	0.00046	0.011111	0.048668	29.6	0	0.003	0.014	61.2	0	0.007	0.030	61.2	0	0.000	0.000
8	Flange	0.00011	0.00024	0.00194	0.008498	29.6	0	0.001	0.003	61.2	0	0.001	0.005	61.2	0	0.000	0.000
1	Open-ended Line	0.0014	0.00309	0.003086	0.013519	29.6	0	0.001	0.004	61.2	0	0.002	0.008	61.2	0	0.000	0.000
0	Other	0.0075	0.01653	0	0	29.6	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000

Heavy Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
0	Valve	0.0000084	0.0000185	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Pump Seal**	-	0.00113	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Connector	0.0000075	0.0000165	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Flange	0.00000039	0.0000009	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Open-ended Line	0.00014	0.0003086	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Other**	-	0.0006830	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000

Water/Oil

number	component	emission factor (kg/hr per component)	emission factor (lb/hr of TOC per component)	lb/hr	tpy	VOC content* (wt %)	Control Efficiency (%)	lb/hr	tpy	Methane content* (wt %)	Control Efficiency (%)	lb/hr	tpy	HAP content* (wt %)	Control Efficiency (%)	lb/hr	tpy
0	Valve	0.000098	0.0002161	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Pump Seal	0.000024	0.0000529	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Connector	0.00011	0.0002425	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Flange	0.0000029	0.0000064	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Open-ended Line	0.00025	0.0005512	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000
0	Other	0.014	0.0308649	0	0	0.296	0	0.000	0.000	61.2	0	0.000	0.000	61.2	0	0.000	0.000

	lb/hr	tpy
Uncontrolled THC emissions:	0.6008	2.6315
VOC emissions:	**0.11**	**0.48**
Methane emissions:	**0.41**	**1.79**
HAP emissions:	**0.01**	**0.03**

* Emission factors are for oil and gas production facilities (not refineries), and come from the EPA's "Protocol for Equipment Leak Emission Estimates" November 1995, EPA 4531, R-95-017, Table 2-4.

Water Storage Tanks

Emission Unit ID: 16S - 27S Emision Point ID: 16E - 27E Control Device: 1C

```
**********************************************************************************
*     Project Setup Information                                                  *
**********************************************************************************
Project File              : T:\Customers\Cunningham Energy\Air\Cochran Pad\1. Application\OST Calcs.ept
Flowsheet Selection       : Oil Tank with Separator
Calculation Method        : RVP Distillation
Control Efficiency        : 0.0%
Known Separator Stream    : Low Pressure Oil
Entering Air Composition  : No

Filed Name                : Cunningham Energy, LLC
Well Name                 : Cochran Pad
Well ID                   : Oil Storage Tanks
Date                      : 2016.08.31


**********************************************************************************
*     Data Input                                                                 *
**********************************************************************************

Separator Pressure        : 174.00[psig]
Separator Temperature     : 72.00[F]
Ambient Pressure          : 14.70[psia]
Ambient Temperature       : 60.00[F]
C10+ SG                   : 0.7431
C10+ MW                   : 130.90

-- Low Pressure Oil ------------------------------------------------------------
   No.    Component             mol %
   1      H2S                    0.0000
   2      O2                     0.0000
   3      CO2                    0.0000
   4      N2                     0.0360
   5      C1                     3.5710
   6      C2                     7.2560
   7      C3                    11.1570
   8      i-C4                   3.3760
   9      n-C4                   9.3480
   10     i-C5                   5.2890
   11     n-C5                   4.9970
   12     C6                     4.1790
   13     C7                     7.1590
   14     C8                     7.6010
   15     C9                     3.6390
   16     C10+                  27.1430
   17     Benzene                0.3230
   18     Toluene                0.5110
   19     E-Benzene              0.2940
   20     Xylenes                1.0610
   21     n-C6                   3.0600
   22     224Trimethylp          0.0000

-- Sales Oil -------------------------------------------------------------------
Production Rate           : 3[bbl/day]
Days of Annual Operation  : 365 [days/year]
API Gravity               : 49.84
Reid Vapor Pressure       : 6.63[psia]


**********************************************************************************
*     Calculation Results                                                        *
**********************************************************************************

-- Emission Summary ------------------------------------------------------------
Item               Uncontrolled   Uncontrolled
                   [ton/yr]       [lb/hr]
```

Total HAPs	0.210	0.048
Total HC	29.131	6.651
VOCs, C2+	28.003	6.393
VOCs, C3+	23.707	5.413

Water storage tank emissions were calculated using crude oil/condensate properties and water production rate. Emissions are then estimated at one percent of the calculated value.

Uncontrolled Recovery Info.		
Vapor	1.3700	[MSCFD]
HC Vapor	1.3700	[MSCFD]
GOR	456.67	[SCF/bbl]

Flash, standing, and working losses are sent directly to a Vapor Recovery System. Per WVDEP Vapor Recovery Systems receive a control efficiency of 95%.

-- Emission Composition ----------

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]
1	H2S	0.000	0.000
2	O2	0.000	0.000
3	CO2	0.000	0.000
4	N2	0.020	0.005
5	C1	1.128	0.258
6	C2	4.296	0.981
7	C3	9.643	2.202
8	i-C4	3.301	0.754
9	n-C4	7.117	1.625
10	i-C5	1.657	0.378
11	n-C5	1.098	0.251
12	C6	0.314	0.072
13	C7	0.188	0.043
14	C8	0.066	0.015
15	C9	0.012	0.003
16	C10+	0.103	0.024
17	Benzene	0.016	0.004
18	Toluene	0.008	0.002
19	E-Benzene	0.002	0.000
20	Xylenes	0.005	0.001
21	n-C6	0.179	0.041
22	224Trimethylp	0.000	0.000
	Total	29.153	6.656

-- Stream Data ----------

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	N2	28.01	0.0360	0.0003	0.0000	0.1769	0.0018	0.1075
5	C1	16.04	3.5710	0.1122	0.0000	17.2175	0.6739	10.6604
6	C2	30.07	7.2560	1.4076	0.0002	30.3302	8.4571	21.6607
7	C3	44.10	11.1570	6.0428	0.0766	31.3345	35.9272	33.1549
8	i-C4	58.12	3.3760	2.9119	0.7396	5.2070	13.7925	8.6099
9	n-C4	58.12	9.3480	9.0117	4.7044	10.6749	30.5842	18.5660
10	i-C5	72.15	5.2890	6.0169	6.1995	2.4170	5.1031	3.4817
11	n-C5	72.15	4.9970	5.8474	6.3515	1.6420	3.3226	2.3081
12	C6	86.16	4.1790	5.1355	5.9989	0.4054	0.8107	0.5660
13	C7	100.20	7.1590	8.9225	10.6167	0.2013	0.4368	0.2946
14	C8	114.23	7.6010	9.5129	11.3843	0.0578	0.1397	0.0902
15	C9	128.28	3.6390	4.5593	5.4648	0.0082	0.0236	0.0143
16	C10+	130.90	27.1430	34.0050	40.7552	0.0697	0.1947	0.1193
17	Benzene	78.11	0.3230	0.3993	0.4702	0.0218	0.0445	0.0308
18	Toluene	92.13	0.5110	0.6384	0.7622	0.0083	0.0187	0.0124
19	E-Benzene	106.17	0.2940	0.3682	0.4410	0.0014	0.0034	0.0022
20	Xylenes	106.17	1.0610	1.3289	1.5921	0.0041	0.0106	0.0067
21	n-C6	86.18	3.0600	3.7793	4.4430	0.2221	0.4551	0.3144
22	224Trimethylp	114.24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	MW		86.23	98.24	107.40	38.83	52.37	44.20
	Stream Mole Ratio		1.0000	0.7978	0.6650	0.2022	0.1328	0.3350
	Heating Value	[BTU/SCF]				2230.98	2954.39	2517.71
	Gas Gravity	[Gas/Air]				1.34	1.81	1.53
	Bubble Pt. @ 100F	[psia]	188.66	33.99	7.02			

RVP @ 100F	[psia]	75.48	24.47	6.68
Spec. Gravity @ 100F		0.662	0.685	0.699

Company Name: Cunningham Energy, LLC
Facility Name: Cochran Pad
Emission Unit ID: 28S
Emission Point ID: 28E
Control Devices: None
Source Description: Tank Truck Water Loading Losses

Using equation L_L = 12.46* SPM/T from AP-42, Chapter 5, Section 5.2-4

S =	0.6	= Saturation Factor
P =	4	= True vapor pressure of liquid loaded (psia)
M =	52.37	= Molecular Weight of Vapors (lb/lb-mole)
T =	539.67	= Temperature of bulk liquid loaded (in degrees Rankine)
Hourly Loading Rate	7980.000	= Gallons Loaded per Hour
Annual Loading Rate	551880	= Gallons Loaded per Year
Control	0	= Efficiency of any Control Device (e.g. a VRU)
L_L =	2.9019	= Loading Loss (in pounds of VOC released per 1000 gallons of liquid loaded)
VOC lb/hr =	23.1572	
VOC tpy =	0.8008	
Assume 1% VOC lb/hr =	0.2316	
Assume 1% VOC tpy =	0.0080	
HAP lb/hr* =	0.0255	
HAP tpy* =	0.0009	

Note: Use default wt% for HAP = .11%

January 30, 2015

FESCO, Ltd.
1100 FESCO Avenue - Alice, Texas 78332

For: Cunningham Energy
3230 Pennsylvania Ave
Charleston, WV 25302

Sample: Cochran 5H
Well Head Hydrocarbon Liquid
Sampled @ 145 psig & 72 °F

Date Sampled: 11/04/14 Job Number: 46154.002

CHROMATOGRAPH EXTENDED ANALYSIS - GPA 2186-M

COMPONENT	MOL %	LIQ VOL %	WT %
Nitrogen	0.036	0.007	0.008
Carbon Dioxide	0.000	0.000	0.000
Methane	3.571	1.084	0.438
Ethane	7.256	3.476	1.667
Propane	11.157	5.506	3.758
Isobutane	3.376	1.979	1.499
n-Butane	9.186	5.188	4.079
2,2 Dimethylpropane	0.162	0.111	0.089
Isopentane	5.289	3.465	2.915
n-Pentane	4.997	3.245	2.754
2,2 Dimethylbutane	0.227	0.170	0.150
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.426	0.312	0.280
2 Methylpentane	2.226	1.655	1.466
3 Methylpentane	1.299	0.950	0.855
n-Hexane	3.060	2.253	2.014
Heptanes Plus	47.732	70.598	78.030
Totals:	100.000	100.000	100.000

Characteristics of Heptanes Plus:

Specific Gravity	0.8213	(Water=1)
°API Gravity	40.78	@ 60°F
Molecular Weight	214.0	
Vapor Volume	12.18	CF/Gal
Weight	6.84	Lbs/Gal

Characteristics of Total Sample:

Specific Gravity	0.7431	(Water=1)
°API Gravity	58.92	@ 60°F
Molecular Weight	130.9	
Vapor Volume	18.02	CF/Gal
Weight	6.19	Lbs/Gal

Base Conditions: 14.650 PSI & 60 °F

Certified: FESCO, Ltd. - Alice, Texas

Analyst: XG
Processor: XGdjv
Cylinder ID: W-2144

David Dannhaus 361-661-7015

TANKS DATA INPUT REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Carbon Dioxide	0.000	0.000	0.000
Nitrogen	0.036	0.007	0.008
Methane	3.571	1.084	0.438
Ethane	7.256	3.476	1.667
Propane	11.157	5.506	3.758
Isobutane	3.376	1.979	1.499
n-Butane	9.348	5.299	4.168
Isopentane	5.289	3.465	2.915
n-Pentane	4.997	3.245	2.754
Other C-6's	4.179	3.088	2.751
Heptanes	7.159	5.538	5.253
Octanes	7.601	6.347	6.244
Nonanes	3.639	3.578	3.529
Decanes Plus	27.143	53.732	61.352
Benzene	0.323	0.162	0.193
Toluene	0.511	0.307	0.360
E-Benzene	0.294	0.203	0.238
Xylenes	1.061	0.731	0.861
n-Hexane	3.060	2.253	2.014
2,2,4 Trimethylpentane	0.000	0.000	0.000
Totals:	100.000	100.000	100.000

Characteristics of Total Sample:

Specific Gravity	0.7431	(Water=1)
°API Gravity	58.92	@ 60°F
Molecular Weight	130.9	
Vapor Volume	18.02	CF/Gal
Weight	6.19	Lbs/Gal

Characteristics of Decanes (C10) Plus:

Specific Gravity	0.8485	(Water=1)
Molecular Weight	295.9	

Characteristics of Atmospheric Sample:

°API Gravity	49.84	@ 60°F
Reid Vapor Pressure (ASTM D-5191)	6.63	psi

QUALITY CONTROL CHECK			
	Sampling Conditions	Test Samples	
Cylinder Number	------	W-2144*	W-2517
Pressure, PSIG	145	147	149
Temperature, °F	72	70	70

* Sample used for analysis

TOTAL EXTENDED REPORT - GPA 2186-M

COMPONENT	Mol %	LiqVol %	Wt %
Nitrogen	0.036	0.007	0.008
Carbon Dioxide	0.000	0.000	0.000
Methane	3.571	1.084	0.438
Ethane	7.256	3.476	1.667
Propane	11.157	5.506	3.758
Isobutane	3.376	1.979	1.499
n-Butane	9.186	5.188	4.079
2,2 Dimethylpropane	0.162	0.111	0.089
Isopentane	5.289	3.465	2.915
n-Pentane	4.997	3.245	2.754
2,2 Dimethylbutane	0.227	0.170	0.150
Cyclopentane	0.000	0.000	0.000
2,3 Dimethylbutane	0.426	0.312	0.280
2 Methylpentane	2.226	1.655	1.466
3 Methylpentane	1.299	0.950	0.855
n-Hexane	3.060	2.253	2.014
Methylcyclopentane	0.936	0.594	0.602
Benzene	0.323	0.162	0.193
Cyclohexane	0.869	0.530	0.558
2-Methylhexane	1.452	1.209	1.111
3-Methylhexane	1.077	0.886	0.824
2,2,4 Trimethylpentane	0.000	0.000	0.000
Other C-7's	0.724	0.584	0.549
n-Heptane	2.101	1.736	1.608
Methylcyclohexane	2.234	1.609	1.676
Toluene	0.511	0.307	0.360
Other C-8's	3.731	3.238	3.141
n-Octane	1.635	1.500	1.426
E-Benzene	0.294	0.203	0.238
M & P Xylenes	0.594	0.413	0.482
O-Xylene	0.467	0.318	0.379
Other C-9's	2.333	2.261	2.250
n-Nonane	1.306	1.316	1.279
Other C-10's	3.089	3.290	3.334
n-decane	1.004	1.104	1.091
Undecanes(11)	3.148	3.441	3.535
Dodecanes(12)	2.337	2.758	2.874
Tridecanes(13)	2.127	2.693	2.844
Tetradecanes(14)	1.735	2.352	2.518
Pentadecanes(15)	1.442	2.094	2.269
Hexadecanes(16)	1.091	1.693	1.849
Heptadecanes(17)	0.940	1.542	1.701
Octadecanes(18)	0.810	1.400	1.553
Nonadecanes(19)	0.756	1.360	1.518
Eicosanes(20)	0.585	1.094	1.228
Heneicosanes(21)	0.465	0.916	1.035
Docosanes(22)	0.459	0.942	1.070
Tricosanes(23)	0.324	0.690	0.788
Tetracosanes(24)	0.349	0.769	0.883
Pentacosanes(25)	0.214	0.489	0.564
Hexacosanes(26)	0.205	0.486	0.562
Heptacosanes(27)	0.239	0.587	0.682
Octacosanes(28)	0.170	0.432	0.504
Nonacosanes(29)	0.177	0.465	0.544
Triacontanes(30)	0.124	0.337	0.395
Hentriacontanes Plus(31+)	5.353	22.797	28.010
Total	100.000	100.000	100.000

CAMERON

AJAX

Estimated Exhaust Emissions Based On PLQNG, 1500 FASL Elevation and an average Ambient Temperature of 65 Degrees F

For Emissions Permits, please contact Ajax for emissions data based on specific site conditions

Ajax Engine Model	Emissions (Gm / Bhph)					BSFC	RPM	BHP	BMEP	Exhaust Stack						No. Of Cyl's	Bore	Stroke
	NOx	CO	NMHC	VOC	H2CO					Dia. (in.)	Height (in.)	Temp (Deg.F)	Flow (acfm)	Flow (lb/m)	Velocity (ft/m)			
EA-15	4.4	3.3	0.7	0.5	0.3	9900	900	14	49.6	4	31	500	140	5	1604	1	5	6.5
EA-22	4.4	3.3	0.7	0.5	0.3	9900	650	21	48.5	5	64	500	200	8	1467	1	6.5	8
EA-30	4.4	3.3	0.7	0.5	0.3	9900	650	29	53.1	5	80	500	250	10	1833	1	7.25	8
C-30	4.4	3.3	0.7	0.5	0.3	9400	525	29	49.2	5	101	450	260	11	1907	1	7.5	10
C-42	4.4	3.3	0.7	0.5	0.3	9900	525	40	53.6	6	137	565	380	14	1935	1	8.5	10
E-42	4.4	3.3	0.7	0.5	0.3	9900	525	40	53.6	6	137	565	380	14	1935	1	8.5	10
DP-60	4.4	1.7	0.6	0.5	0.3	9000	475	58	56.5	8	150	540	500	18	1432	1	9.5	12
DP-80	4.4	2.8	0.7	0.5	0.3	8900	400	77	57.1	10	164	470	610	24	1118	1	11.0	14
DP-81	6.6	1.1	0.5	0.5	0.3	8500	475	78	62.4	10	164	545	610	22	1118	1	10.5	12
DP-115	4.4	2.4	0.9	0.6	0.3	9000	360	110	55.0	12	190	440	880	36	1120	1	13.25	16
DP-125	5.0	2.7	0.8	0.6	0.3	8500	380	120	56.7	12	190	470	960	38	1222	1	13.25	16
DP-160	4.4	2.8	0.7	0.5	0.3	8900	400	154	57.1	10	164	470	1220	48	2237	2	11	14
DP-165	6.0	3.0	0.8	0.6	0.3	8500	380	158	58.4	13.25	260	450	1210	49	1264	1	15	16
DP-230	4.4	2.4	0.9	0.6	0.3	9000	360	221	55.0	12	190	440	1770	72	2254	2	13.25	16
DP-250	5.5	3.0	0.8	0.6	0.3	8500	380	240	56.7	12	190	460	1910	76	2432	2	13.25	16
DP-325	5.5	1.7	0.8	0.6	0.3	8400	380	312	57.5	13.25	260	450	2420	98	2527	2	15	16
DPC-60	4.4	1.7	0.6	0.5	0.3	9000	475	58	56.5	8	150	540	500	18	1432	1	9.5	12
DPC-80	4.4	2.8	0.7	0.5	0.3	8900	400	77	57.1	10	164	470	610	24	1118	1	11	14
DPC-81	6.6	1.1	0.5	0.5	0.3	8500	475	78	62.4	10	164	545	610	22	1118	1	10.5	12
DPC-105	4.4	2.8	0.6	0.5	0.3	8800	425	101	59.3	12	193	480	780	31	993	1	12	14
DPC-115	4.4	2.4	0.9	0.6	0.3	8700	360	110	55.0	12	190	440	870	36	1108	1	13.25	16
DPC-115 LE	2.0	2.2	0.7	0.5	0.3	8100	360	110	55.0	12	190	400	830	36	1057	1	13.25	16
DPC-120	5.5	1.7	0.6	0.5	0.3	9000	475	115	56.5	8	150	540	1000	37	2865	2	9.5	12
DPC-140	10.5	1.3	0.6	0.5	0.3	8200	400	134	60.3	12	190	490	1040	40	1324	1	13.25	16
DPC-140 LE	2.0	1.4	0.6	0.5	0.3	7800	400	134	60.3	12	190	450	1010	41	1286	1	13.25	16
DPC-160	4.4	2.7	0.7	0.5	0.3	8900	400	154	57.1	10	164	470	1220	48	2237	2	11	14
DPC-162	6.6	1.1	0.5	0.5	0.3	8500	475	156	62.4	10	164	545	1230	45	2255	2	10.5	12
DPC-180	6.3	1.4	0.9	0.6	0.3	8400	400	173	60.5	13.25	256	460	1290	52	1347	1	15	16
DPC-180 LE	2.0	1.1	0.6	0.5	0.3	7900	400	173	60.5	13.25	256	555	1450	53	1514	1	15	16

Site Altitude = 0 - 1500 FASL Date: March 2011

Site Fuel Composition = Pipeline Quality Natural Gas (PLQNG)

Ambient Temp For Defining Maximum Load = 100 Deg F

Ambient Temp For Defining Exhaust Emissions = 65 Deg F

NOx = Nitrogen Oxide

CO = Carbon Monoxide

H2CO = Formaldehyde

FASL = Feet Above Sea Level

ACFM = Actual Cubic Feet Per Minute

BMEP = Brake Mean Effective Pressure (Psi)

NMHC= Non-Methane Hydrocarbons reported as Propane

VOC = Non-Methane, Non-Ethane & Non-Formaldehyde reported as Propane

BSFC = Brake Specific Fuel Consumption (Btu / Bhp-hr)

Gm / Bhph = Gram / Brake Horse Power-Hour

The above emissions and performance data is contingent on:

1.) Engine must be maintained in good working order.

2.) Engine modifications or upgrades from the original factory configuration must meet Ajax specifications and installation guidelines.

3.) Engine operating parameters must be consistent with those specified in the Ajax manual.

Fuel Composition (PLQNG):

Compound	Formula	% Volume
Nitrogen	N2	0.72
Carbon Dioxide	CO2	1.14
Methane	CH4	92.84
Ethane	C2H6	4.10
Propane	C3H8	1.20
Total Volume % =		100.00

For additional information, please contact Application Engineering at (405) 670-4121

Cameron Compression Systems, 2101 SE 18th Street Oklahoma City, OK USA

Estimated Exhaust Emissions Based On PLQNG, 1500 FASL Elevation and an average Ambient Temperature of 65 Degrees F

For Emissions Permits, please contact Ajax for emissions data based on specific site conditions

Ajax Engine Model	Emissions (Gm / Bhph)					BSFC	RPM	BHP	BMEP	Exhaust Stack						No. Of Cyl's	Bore	Stroke
	NOx	CO	NMHC	VOC	H2CO					Dia. (in.)	Height (in.)	Temp (Deg.F)	Flow (acfm)	Flow (lb/m)	Velocity (ft/m)			
DPC-230	4.4	2.4	0.9	0.6	0.3	8700	360	221	55.0	12	190	440	1730	71	2203	2	13.25	16
DPC-230 LE	2.0	2.2	0.7	0.5	0.3	8100	360	221	55.0	12	190	400	1670	72	2126	2	13.25	16
DPC-280	11.4	1.3	0.6	0.5	0.3	8200	400	269	60.3	12	190	470	2030	80	2585	2	13.25	16
DPC-280 LE	2.0	1.4	0.6	0.5	0.3	7800	400	269	60.3	12	190	450	1990	81	2534	2	13.25	16
DPC-300	4.1	1.9	1.0	0.6	0.3	8700	360	288	56.0	13.25	260	435	2210	91	2308	2	15	16
DPC-300 LE	2.0	1.6	0.7	0.5	0.3	8200	360	288	56.0	13.25	260	435	2230	92	2329	2	15	16
DPC-360	6.3	1.4	0.9	0.6	0.3	8400	400	346	60.5	13.25	260	480	2630	103	2747	2	15	16
DPC-360 LE	2.0	1.1	0.6	0.5	0.3	7900	400	346	60.5	13.25	260	480	2690	105	2809	2	15	16
DPC-450 LE	2.7	1.2	0.6	0.5	0.3	7800	400	432	64.6	17.25	190	500	3220	124	1984	3	13.25	16
DPC-540	8.6	1.3	0.8	0.6	0.3	8300	400	540	63.0	17.25	303	465	3890	155	2397	3	15	16
DPC-540 LE	2.0	1.0	0.6	0.5	0.3	7800	400	540	63.0	17.25	303	465	3970	158	2446	3	15	16
DPC-600	13.0	1.2	0.7	0.5	0.3	8200	400	576	67.2	17.25	303	515	4110	155	2532	3	15	16
DPC-600 LE	6.5	0.9	0.6	0.5	0.3	7800	400	576	67.2	17.25	303	515	4190	158	2582	3	15	16
DPC-720	9.5	1.3	0.7	0.5	0.3	8300	400	720	63.0	17.25	241	465	5190	207	3198	4	15	16
DPC-720 LE	2.0	1.0	0.6	0.5	0.3	7800	400	720	63.0	17.25	241	465	5300	211	3266	4	15	16
DPC-800	13.0	1.2	0.7	0.5	0.3	8200	400	768	67.2	17.25	241	515	5480	207	3377	4	15	16
DPC-800 LE	6.5	1.0	0.6	0.5	0.3	7800	400	768	67.2	17.25	241	515	5590	211	3444	4	15	16
DPC-2201	10.0	1.3	0.6	0.5	0.3	8000	440	148	60.4	12	190	490	1160	45	1477	1	13.25	16
DPC-2201 LE	2.0	1.4	0.6	0.5	0.3	7800	440	148	60.4	12	190	490	1200	47	1528	1	13.25	16
DPC-2202	10.0	1.3	0.6	0.5	0.3	8000	440	296	60.4	12	190	470	2280	90	2903	2	13.25	16
DPC-2202 LE	2.0	1.4	0.6	0.5	0.3	7800	440	296	60.4	12	190	470	2350	93	2992	2	13.25	16
DPC-2801	5.5	1.4	0.8	0.5	0.3	8200	440	192	61.1	13.25	256	460	1450	58	1514	1	15	16
DPC-2801 LE	2.0	1.2	0.6	0.5	0.3	7800	440	192	61.1	13.25	256	460	1490	60	1556	1	15	16
DPC-2802	5.5	1.3	0.8	0.5	0.3	8200	440	422	67.2	13.25	260	465	2910	116	3039	2	15	16
DPC-2802 LE	2.0	1.2	0.6	0.5	0.3	7800	440	384	61.1	13.25	260	465	3000	119	3133	2	15	16
DPC-2802 LE*	2.0	1.2	0.6	0.5	0.3	7800	440	384	61.1	14.13	260	465	3000	119	2757	2	15	16
DPC-2803	12.0	1.2	0.8	0.5	0.3	8000	440	634	67.3	17.25	303	465	4380	174	2699	3	15	16
DPC-2803 LE	2.0	1.2	0.6	0.5	0.3	7800	440	600	63.7	17.25	241	515	4740	179	2921	3	15	16
DPC-2804	12.0	1.2	0.8	0.5	0.3	8000	440	845	67.2	17.25	241	465	5840	233	3598	4	15	16
DPC-2804 LE	2.0	1.2	0.6	0.5	0.3	7800	440	800	63.7	17.25	241	515	6320	239	3894	4	15	16
DPC-3401 LE	2.0	1.1	0.6	0.5	0.3	7800	440	232	61.0	13.25	256	460	1800	72	1880	1	16.5	16
DPC-3402 LE	2.0	1.1	0.6	0.5	0.3	7800	440	465	61.2	13.25	260	465	3630	145	3791	2	16.5	16
DPC-3403 LE	2.0	1.1	0.6	0.5	0.3	7800	440	726	63.7	17.25	241	515	5740	217	3537	3	16.5	16
DPC-3404 LE	2.0	1.1	0.6	0.5	0.3	7800	440	970	63.8	17.25	241	515	7650	289	4714	4	16.5	16

Date: March 2011, Site Altitude = 0 - 1500 FASL, Site Fuel Composition = Pipeline Quality Natural Gas (PLQNG)
Ambient Temp For Defining Maximum Load = 100 Deg F, Ambient Temp For Defining Exhaust Emissions = 65 Deg F
The above emissions and performance data is contingent on: 1.) Engine must be maintained in good working order. 2.) Engine modifications or upgrades from the original factory configuration must meet Ajax specifications and installation guidelines. 3.) Engine operating parameters must be consistent with those specified in the Ajax manual. NOx = Nitrogen Oxide, CO = Carbon Monoxide, NMHC = Non-Methane Hydrocarbons reported as Propane
VOC = non-methane, non-ethane and non-Formaldehyde reported as propane, H2CO = Formaldehyde
FASL=Feet Above Sea Level, ACFM=Actual Cubic Feet Per Minute, BMEP=Brake Mean Effective Pressure, BSFC=Brake Specific Fuel Consumption (Btu/Bhp-Hr)
Pipe Line Quality Natural Gas (PLQNG): Nitrogen = 0.72%, Carbon Dioxide = 1.14%, Methane = 92.84%, Ethane = 4.1%, Propane = 1.2%
* = DPC-2802LE Tilt Muffler Package
For additional info, please contact Applications Engineering at (405) 670-4121, Cameron Compression Systems, 2101 SE 18th Street, Oklahoma City, OK 73129

American Petroleum Institute

STEP
Strategies for Today's Environmental Partnership

Calculation Workbook For Oil and Gas Production Equipment Fugitive Emissions

Health and Environmental Sciences Department
Publication Number 4638
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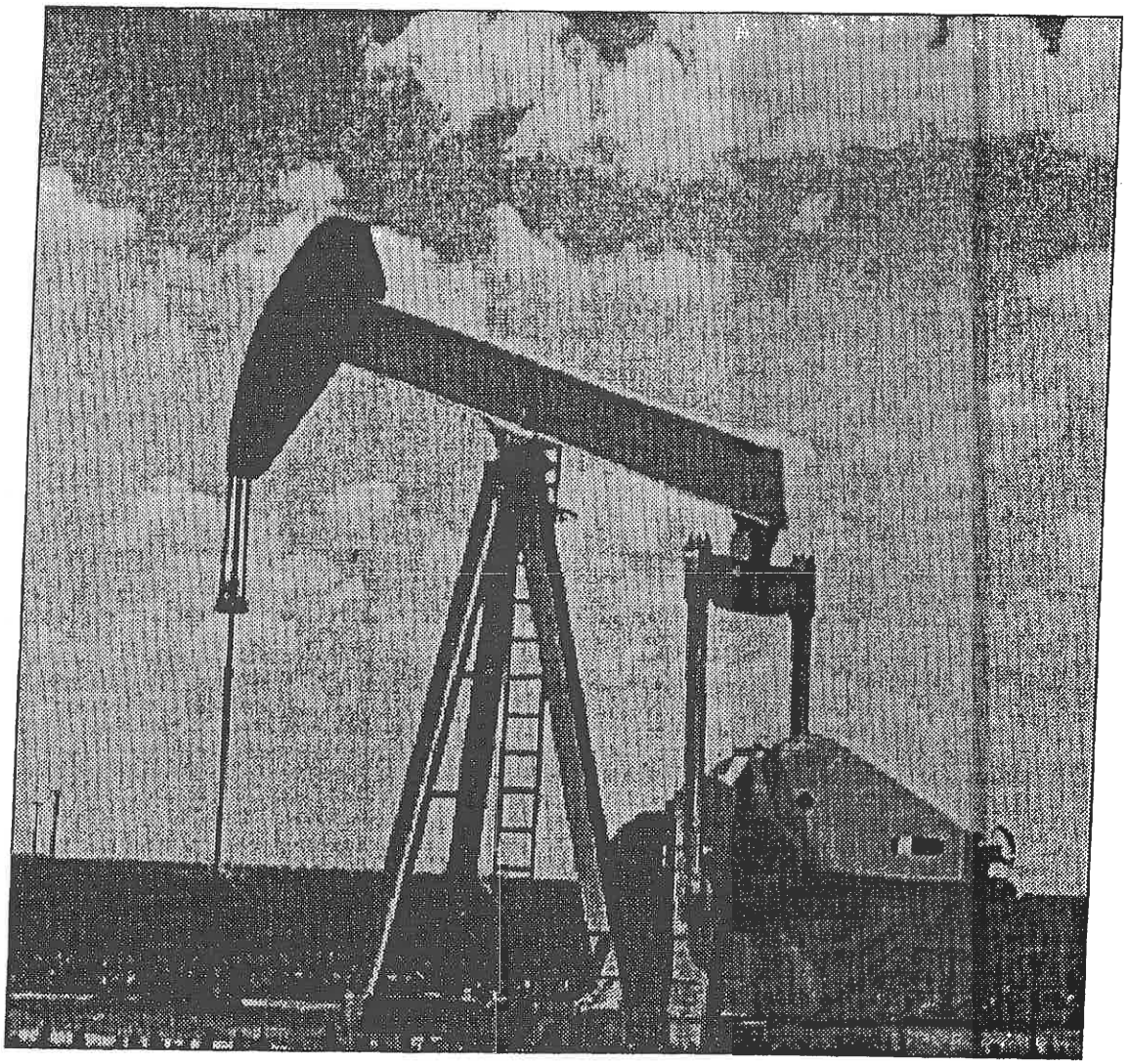

Example 3 shows how to speciate total fugitive hydrocarbon emissions calculated using EPA Average Emission Factors.

Table 2. Speciation Fractions for Total Hydrocarbon (THC) Emissions Calculated Using EPA Average Emission Factors

	Gas	Heavy Oil	Light Oil	Water/Oil
Methane	0.687	0.942	0.612	0.612
Non-methane	0.313	0.058	0.388	0.388
VOC	0.171	0.030	0.296	0.296
C6+ *	0.00693	0.00752	0.02300	0.02300
Benzene	0.00069	0.00935	0.00121	0.00121
Toluene	0.00038	0.00344	0.00105	0.00105
Ethyl-Benzene	0.00003	0.00051	0.00016	0.00016
Xylenes	0.00009	0.00372	0.00033	0.00033

* The C6+ fraction can be used to calculate an upper limit for n-hexane

EXAMPLE 1 -- Using EPA Average Emission Factors and Actual Component Counts to Calculate Total Hydrocarbon Emissions

Example 1 shows the calculation of total hydrocarbon emissions from a typical light crude oil production operation. Column A of the table shows the actual count of components grouped by component type and stream; Column B of the table shows EPA Average Emission Factors repeated from Table 1; Column C shows calculated total hydrocarbon emissions found by multiplying the respective sub-columns in Columns A and B. The calculated total hydrocarbon emissions are 34.6 lb/day from gas service components, 360 lb/day from light oil service components, and 1.3 lb/day from water/oil service components for a total of 396 lb/day.

EXAMPLE 1. Table of Calculated Values

	(A) Count				(B) THC Emission Factors (lb/comp-day)			(C) Calculated THC Emissions (lb/day)			
	Gas	Lt Oil	Water/Oil	Total	Gas	Lt Oil	Water/Oil	Gas	Lt Oil	Water/Oil	Total
Connectors	291	5,332	69	5,692	1.1E-02	1.1E-02	5.8E-03	3.20	58.7	0.40	62.3
Flanges	107	1,756	28	1,891	2.1E-02	5.8E-03	1.5E-04	2.25	10.2	0.00	12.4
Open-Ends	10	176	3	189	1.1E-01	7.4E-02	1.3E-02	1.10	13.0	0.04	14.2
Others	6	98	1	105	4.7E-01	4.0E-01	7.4E-01	2.82	39.2	0.74	42.8
Pump Seals	0	5	0	5	1.3E-01	6.9E-01	1.3E-03	0.00	3.5	0.00	3.5
Valves	105	1,811	24	1,940	2.4E-01	1.3E-01	5.2E-03	25.20	235.4	0.12	260.8
ALL	519	9,178	125	9,822				34.6	360.0	1.30	396.0

Attachment T

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_{10}		$PM_{2.5}$		GHG (CO_2e)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1E	0.0	0.0	0.0	0.0	23.157	1.335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
3E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
4E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
5E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
6E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
7E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
8E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
9E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
10E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
11E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
12E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
13E	0.0	0.0	0.0	0.0	0.451	1.975	0.0	0.0	0.0	0.0	0.0	0.0	0.536	2.35
14E	0.0	0.0	0.0	0.0	1.023	4.4802	0.0	0.0	0.0	0.0	0.0	0.0	2.623	11.49
1C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15E	0.982	4.300	0.625	2.737	0.112	0.491	0.001	0.004	0.0	0.0	0.0	0.0	320.381	1403.27
16E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
17E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
18E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
19E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
20E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141

21E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
22E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
23E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
24E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
25E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
26E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
27E	0.0	0.0	0.0	0.0	0.003	0.011	0.0	0.0	0.0	0.0	0.0	0.0	0.003	0.0141
28E	0.0	0.0	0.0	0.0	0.2316	0.008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	0.982	4.300	0.625	2.737	29.9716	30.146	0.001	0.004	0.0	0.0	0.0	0.0	329.472	1443.129

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
1E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0255	0.0015
2E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
3E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
4E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
5E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
6E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
7E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
8E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
9E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
10E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
11E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
12E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
13E	0.0	0.0	0.0003	0.001	0.0001	0.0006	0.0000	0.0001	0.0001	0.0004	0.0034	0.0149	0.004	0.017
14E	0.0	0.0	0.0006	0.0026	0.0003	0.0013	0.0001	0.0003	0.0002	0.0007	0.0072	0.0317	0.0084	0.0366
1C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15E	0.067	0.293	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.001	0.004	0.075	0.328
16E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

21E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0255	0.0009
TOTAL	0.067	0.293	0.0042	0.0146	0.0015	0.0085	0.0001	0.0015	0.0014	0.0055	0.049	0.2145	0.1824	0.571

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

ATTACHMENT U – CLASS I LEGAL ADVERTISEMENT

Publication of a proper Class I legal advertisement is a requirement of the G70-C registration process. In the event the applicant's legal advertisement fails to follow the requirements of 45CSR13, Section 8 or the requirements of Chapter 59, Article 3, of the West Virginia Code, the application will be considered incomplete and no further review of the application will occur until this is corrected.

The applicant, utilizing the format for the Class I legal advertisement example provided on the following page, shall have the legal advertisement appear a minimum of one (1) day in the newspaper most commonly read in the area where the facility exists or will be constructed. The notice must be published no earlier than five (5) working days of receipt by this office of your application. The original affidavit of publication must be received by this office no later than the last day of the public comment period.

The advertisement shall contain, at a minimum, the name of the applicant, the type and location of the source, the type and amount of air pollutants that will be discharged (excluding fugitive emissions), the nature of the permit being sought, the proposed start-up date for the source, and a contact telephone number for more information.

The location of the source should be as specific as possible starting with: 1.) the street address of the source; 2.) the nearest street or road; 3.) the nearest town or unincorporated area, 4.) the county, and 5.) latitude and longitude coordinates in decimal format.

Types and amounts of pollutants discharged must include all regulated pollutants (Nitrogen Oxides, Carbon Monoxide, Particulate Matter-2.5, Particulate Matter-10, Volatile Organic Compounds, Sulfur Dioxide, Formaldehyde, Benzene, Toluene, Ethylbenzene, Xylenes, Hexane, Total Hazardous Air Pollutants and their potential to emit or the permit level being sought in units of tons per year.

In the event the 30th day is a Saturday, Sunday, or legal holiday, the comment period will be extended until 5:00 p.m. on the following regularly scheduled business day.

A list of qualified newspapers that are eligible to publish legal ads may be found:

http://www.sos.wv.gov/elections/resource/Documents/Qualified%20Newspapers.pdf

RECOMMENDED PUBLIC NOTICE TEMPLATE

AIR QUALITY PERMIT NOTICE
Notice of Application

Notice is given that **Cunningham Energy, LLC** has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a G70-C **(General Permit Registration)** for a natural gas production facility located on **Shelton Rd near Bomont** in **Clay** County, West Virginia. The latitude and longitude coordinates are: **(38.427525,-81.220647)**

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: **Nitrogen Oxides = 4.30 TPY, Carbon Monoxide = 2.737 TPY, Particulate Matter-2.5 = 0.0 TPY, Particulate Matter-10 = 0.0 TPY, Volatile Organic Compounds = 30.14 TPY, Sulfur Dioxide = 0.004 TPY, Formaldehyde = .293 TPY, Benzene = 0.0146 TPY, Toluene = 0.0085 TPY, Ethylbenzene = 0.0015 TPY, Xylenes = 0.0055 TPY, Hexane = 0.2145 TPY, and Total Hazardous Air Pollutants = 0.571 TPY.**

Startup of operation is planned to begin on or about **July (2015)**. 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 **6th** day of **September**, **2016.**

By: **Cunningham Energy, LLC**
(Ryan Cunningham
President
3230 Pennsylvania Ave.
Charleston, WV 25302