

CLASS I ADMINISTRATIVE UPDATE

**Eureka Hunter Pipeline, LLC
Carbide Compressor Station
Wetzel County, West Virginia**

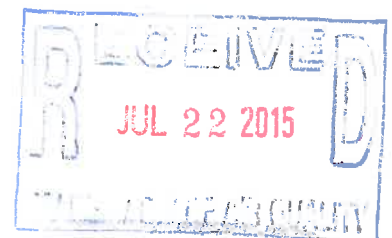
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SECTION I

Project Overview

EUREKA HUNTER PIPELINE, LLC
Carbide Compressor Station
Class I Administrative Update

PROJECT OVERVIEW

Eureka Hunter Pipeline, LLC owns and operates the Carbide Compressor Station located south of State Route 20 approximately two miles east from the community of Hastings in Wetzel County (See Appendix B – Site Location Map). The station receives natural gas and produced fluids from local production wells. This Inlet Gas is compressed, dehydrated and injected into pipelines for transportation to facilities owned by others for further processing. The received produced fluids are separated into Condensate and Produced Water (Brine) and accumulated in tanks prior to transportation to others.

The facility currently operates under Permit R13-3007B. Eureka Hunter is seeking to amend this permit through a Class I Administrative Update to remove two compressor engines and install a single compressor engine. This compressor/engine exchange will allow the Carbide Compressor Station greater operational flexibility. There are no other equipment or operational changes being requested at this time. Accordingly, only the requested permit changes have been addressed herein.

The impact of this compressor/engine exchange will be a lowering of overall facility potential emissions. As such, it is qualified for the Class I Administrative Update.

SECTION II

Application Form



WEST VIRGINIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

601 57th Street, SE
Charleston, WV 25304
(304) 926-0475
www.wvdep.org/daq

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

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

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

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

- ☐ ADMINISTRATIVE AMENDMENT ☐ MINOR MODIFICATION
☐ SIGNIFICANT MODIFICATION

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

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

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office): Eureka Hunter Pipeline, LLC		2. Federal Employer ID No. (FEIN): 27-1657844	
3. Name of facility (if different from above): Carbide Compressor Station		4. The applicant is the: ☐ OWNER ☐ OPERATOR ☒ BOTH	
5A. Applicant's mailing address: 27710 State Route 7 Marietta, Ohio 45750		5B. Facility's present physical address: 15448 Shortline Highway Hastings, WV 26419	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? ☐ YES ☒ NO – If YES, provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. – If NO, provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A.			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: Hunter Magnum Resources Corp.			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site? ☒ YES ☐ NO – If YES, please explain: Applicant owns the property – If NO, you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Natural Gas Compressor Station		10. Standard Industrial Classification (SIC) code for the facility: 1311	
11A. DAQ Plant ID No. (for existing facilities only): 103 – 000491		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): R13-3007B	
All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.			

12A.

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

From Hastings, proceed east on Route 20 approximately 2 miles to Union Carbide Road. Turn right on this road and follow the gravel road approximately one mile to the facility.

12.B. New site address (if applicable):

12C. Nearest city or town:

12D. County:

Hastings

Wetzel

12.E. UTM Northing (KM): **4376.709**

12F. UTM Easting (KM): **528.7365**

12G. UTM Zone: **17**

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

This Administrative Update is being submitted to address minor text corrections in the permit. There are no equipment or emission changes.

14A. Provide the date of anticipated installation or change: **Sept. 1 2015**

- If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen:

14B. Date of anticipated Start-Up if a permit is granted:

Sept. 10, 2015

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

15. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application:

Hours Per Day **24**

Days Per Week **7**

Weeks Per Year **52**

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

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

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

Section II. Additional attachments and supporting documents.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- | | | |
|--|--|--|
| ☐ Bulk Liquid Transfer Operations | ☐ Haul Road Emissions | ☐ Quarry |
| ☐ Chemical Processes | ☐ Hot Mix Asphalt Plant | ☐ Solid Materials Sizing, Handling and Storage Facilities |
| ☐ Concrete Batch Plant | ☐ Incinerator | ☐ Storage Tanks |
| ☐ Grey Iron and Steel Foundry | ☐ Indirect Heat Exchanger | |
| ☐ General Emission Unit, specify: | | |
| ☐ Natural Gas Compressor Engines | | |

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

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

- | | | |
|---|---|--|
| ☐ Absorption Systems | ☐ Baghouse | ☐ Flare |
| ☐ Adsorption Systems | ☐ Condenser | ☐ Mechanical Collector |
| ☐ Afterburner | ☐ Electrostatic Precipitator | ☐ Wet Collecting System |

☒ Other Collectors, specify: **Oxidation Catalysts on Engine Exhaust**

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

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

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

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

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

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

☐ YES ☒ NO

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

Section III. Certification of Information

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

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

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

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

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

Certification of Truth, Accuracy, and Completeness

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

Compliance Certification

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

SIGNATURE _____

(Please use blue ink)

DATE: _____

(Please use blue ink)

35B. Printed name of signee:

Chris Akers

35C. Title: **Executive Vice President**

35D. E-mail: **cakers@ehp.energy**

36E. Phone: **740/868-1325**

36F. FAX:

36A. Printed name of contact person (if different from above):

36B. Title:

36C. E-mail:

36D. Phone:

36E. FAX:

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

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

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

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

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

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

ATTACHMENT A

Business Registration



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

EUREKA HUNTER PIPELINE, LLC

Control Number: 9918W

a limited liability company, organized under the laws of the State of Delaware
has filed its "Application for Certificate of Authority" in my office according to the provisions
of West Virginia Code §31B-10-1002. I hereby declare the organization to be registered as a
foreign limited liability company from its effective date of January 25, 2010, until a certificate
of cancellation is filed with our office.

Therefore, I hereby issue this

CERTIFICATE OF AUTHORITY OF A FOREIGN LIMITED LIABILITY COMPANY

to the limited liability company authorizing it to transact business in West Virginia



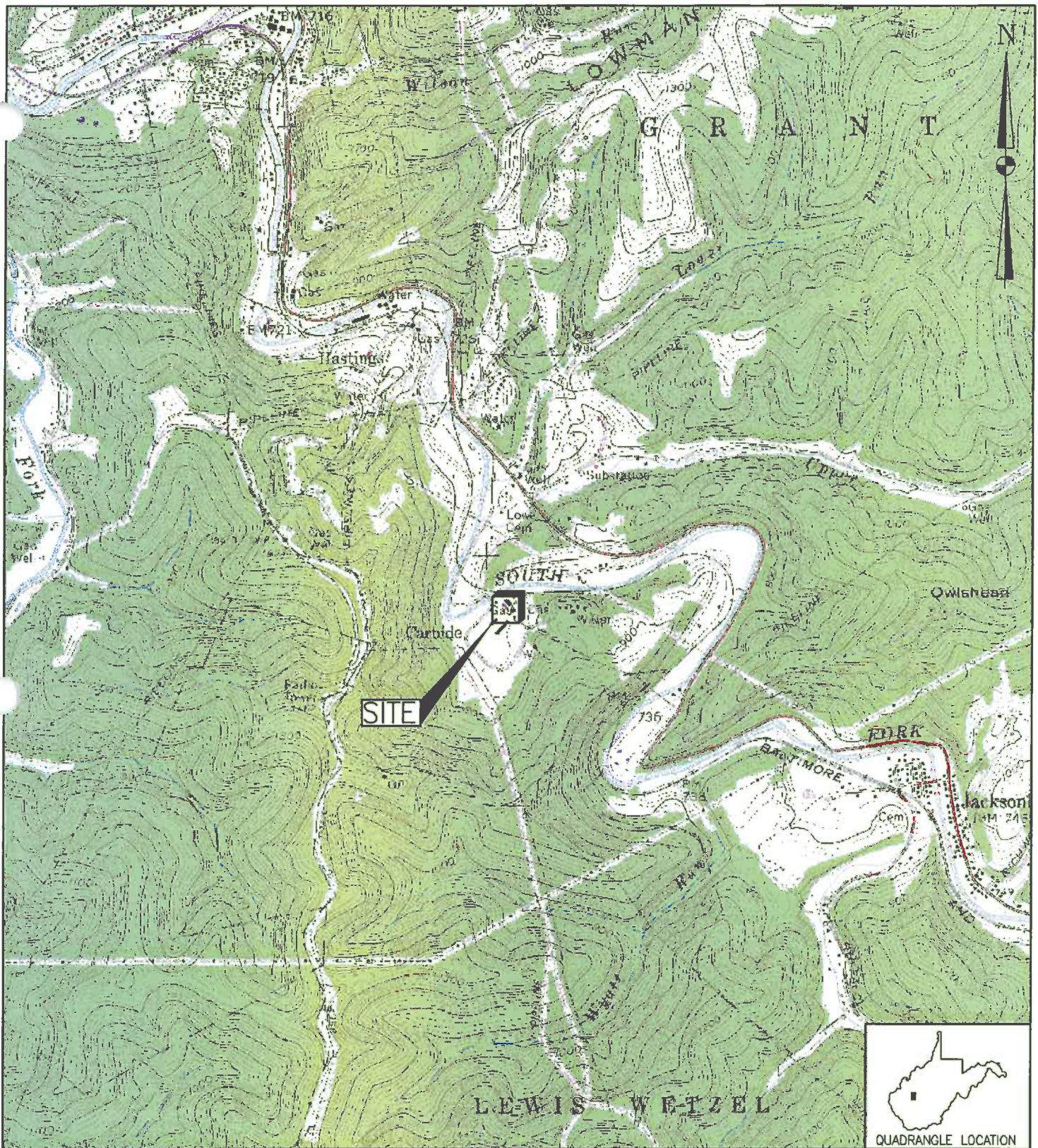
*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
January 25, 2010*

Natalie E. Tennant

Secretary of State

ATTACHMENT B

Site Location Map



REFERENCE: USGS 7.5' QUADRANGLE MAP OF: PINE GROVE, WEST VIRGINIA; DATED 1960, PHOTOREVISED 1976.

DRAWN BY	DJF
DATE	8/1/12
CHECKED BY	RAD
PROJECT NO.	212092
SET DWG FILE	CARBIDE_STATIONm01.dwg
DRAWING SCALE	1"=2000'



98 Vanadium Road Bridgeville, PA 15017 (412) 221-1100

EUREKA HUNTER PIPELINE, LLC

CARBIDE STATION
WETZEL COUNTY, WEST VIRGINIA
SITE LOCATION MAP

DRAWING NO.

FIGURE 1

REV.

0

ATTACHMENT C

Construction Schedule

ATTACHMENT C
EUREKA HUNTER PIPELINE, LLC
Carbide Compressor Station
Construction Schedule

The compressor and compressor driver exchange described in this application will be installed within two weeks of receipt of the permit approval..

ATTACHMENT D

Regulatory Analysis

ATTACHMENT D
EUREKA HUNTER PIPELINE, LLC
Carbide Compressor Station
Regulatory Analysis

Both State and Federal environmental regulations governing air emissions apply to Eureka Hunter Pipeline's Carbide Compressor Station near Hastings, West Virginia. The West Virginia Department of Environmental Protection (WVDEP) has been delegated the authority to implement certain federal air quality requirements for the state. Air quality regulations that potentially affect the expansion are discussed herein.

1.1 PSD and NSR

The facility will remain a minor source with respect to Prevention of Significant Deterioration (PSD) regulations as it will not have the potential to emit more than the annual emission thresholds of any PSD regulated pollutant.

The facility is not within any area designated as non-attainment for fine particulates (2.5 PM) or any other criteria pollutant. Consequently, NSR requirements are not applicable to this project at projected potential emission rates.

1.2 Title V Operating Permit Program

West Virginia has incorporated provisions of the federal Title V operating permit program. Thresholds for inclusion under the Title V program are 10 tpy of any single Hazardous Air Pollutant (HAP) or 25 tons of any combination of HAP and/or 100 tpy of all other regulated pollutants. Potential emissions at this facility are below these triggers. Additionally, any facility operating under certain federal standard falls under the Title V program, regardless of emission rates. The facility is regulated under certain New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs). However, none of these applicable standards trigger inclusion in the Title V program.

1.3 New Source Performance Standards

New Source Performance Standards (NSPS) regulations promulgated under 40 CFR 60 require new and reconstructed facilities to control emissions to the level achievable by Best-Available Control Technology (BACT). Specific NSPS requirements potentially applicable to the planned engine swap are as follows:

- 40 CFR 60, Subpart JJJJ – Stationary Spark Ignition Internal Combustion Engines

- 40 CFR 60, Subpart OOOO - Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

1.3.1 Subpart JJJJ

This subpart governs emissions from new stationary spark ignition internal combustion engines (SI ICE) manufactured after July 1, 2007. Currently, engines driving the compressors at this facility are SI ICE units manufactured after this date. Accordingly, this rule applies to those engines. The planned replacement engine associated with this Class I Administrative Update does not change this status. It will also be regulated under Subpart JJJJ in the same manner as the currently permitted compression engines.

1.3.2 Subpart OOOO

This NSPS specifically addresses certain operations and/or equipment within the oil and gas industry for facilities that are constructed or modified after August 23, 2011. This rule is applicable to the Carbide Compressor Station. More specifically, both the existing and the planned replacement compressor engines at this facility are regulated by this rule. Thus, the equipment changes associated with this Class I Administrative Update do not change this status

1.4 **National Emission Standards for Hazardous Air Pollutants**

National Emission Standards for Hazardous Air Pollutants (NESHAPs) promulgated under 40 CFR 63 regulate the emission of Hazardous Air Pollutants (HAPs) from certain industrial processes. In general, these rules apply to major sources of HAPs with a major source being defined as having the potential to emit more than 10 tpy of any individual HAP or 25 tpy of total HAPs. Emissions standards under these rules have been established as the Maximum Achievable Control Technology (MACT) for each source category. The following NESHAP source category standard is potentially applicable to the planned compressor engine swap:

- 40 CFR 63, Subpart ZZZZ – NESHAP from Stationary Reciprocating Internal Combustion Engines

1.4.1 Subpart ZZZZ

This Subpart governs emissions from a stationary reciprocating internal combustion engine (RICE) located both at major and area source of HAPs. The facility will not be a major source of HAPs, but will be considered an area source of HAPs. Hence, this rule is applicable to the facility. In accordance with 40 CFR 63.6590(a)(2)(iii), one of the existing engines at Carbide is considered an Existing Stationary RICE. That engine must the testing and maintenance requirements of this rule. The two engines being removed and the single replacement engine are considered New Stationary RICE and meet the requirement of Subpart ZZZZ via compliance

with NSPS Subpart JJJJ. Thus, the planned engine swap does not change the applicability of this rule.

1.5 Chemical Accident Prevention

Subparts B-D of 40 CFR 68 present the requirements for the assessment and subsequent preparation of a Risk Management Plan (RMP) for a facility that stores more than a threshold quantity of a regulated substance listed in 40 CFR 68.130. If a facility stores, handles or processes one or more regulated substances in an amount greater than its corresponding threshold, the facility must prepare and implement an RMP. The proposed facility will store more than 10,000 lbs of individual substances listed in Table 3 in 40 CFR 68.130 and flammable mixtures again containing several of the substances listed in Table 3 in 40 CFR 68.130. Hence, an RMP is required. An RMP will be prepared and submitted in accordance with 40 CFR 68.150 prior to the facility exceeding the threshold storage quantity.

The equipment changes associated with this Class I Administrative Update do not change this status

1.6 West Virginia State Requirements

1.6.1 45 CSR 2

The facility is subject to the opacity requirement of 45 CSR 2. Emissions from the facility cannot exceed 10% over any six minute period.

1.6.2 45 CSR 4

This regulation prohibits the emission of objectionable odors. Eureka Hunter Pipeline is obligated to run the station in a manner that does not produce objectionable odors.

1.6.3 45 CSR 10

This regulation limits emissions of sulfur oxides. As the sulfur content of the Inlet liquid contains no measurable sulfur, anticipated emissions of sulfur oxides is negligible. Thus, while parts of this rule may be applicable to the planned facility, no actions are required on the part of Eureka Hunter Pipeline to attain compliance.

1.6.4 45 CSR 13

The state regulations applicable to the permitting of the proposed construction are in Title 45 Series 13 of the Code of State Regulations. The proposed facility has the potential to emit VOCs

in excess of the thresholds that define a Stationary Source. Additionally, as the facility is regulated under a federal New Source Performance Standard, it is required to have a permit.

It is important to note that the facility's potential to emit is less than the thresholds that would classify the facility as a Major Source under 45 CSR 14.

1.6.5 45 CSR 16

This series of regulations is an incorporation, by reference, of the New Source Performance Standards codified under 40 CFR 60. As discussed under the federal regulations, the facility is subject to the emission limitations, monitoring, testing and recordkeeping of 40 CFR 60, Subpart JJJJ.

1.6.6 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. The planned facility, as noted above, does not have the potential to emit any regulated pollutant above the threshold that would define it as a major facility. Although the facility is subject to a New Source Performance Standard, it is not obligated to submit a Title V application and obtain a Title V permit.

The equipment changes associated with this Class I Administrative Update do not change this status.

1.6.7 Other Applicable Requirements

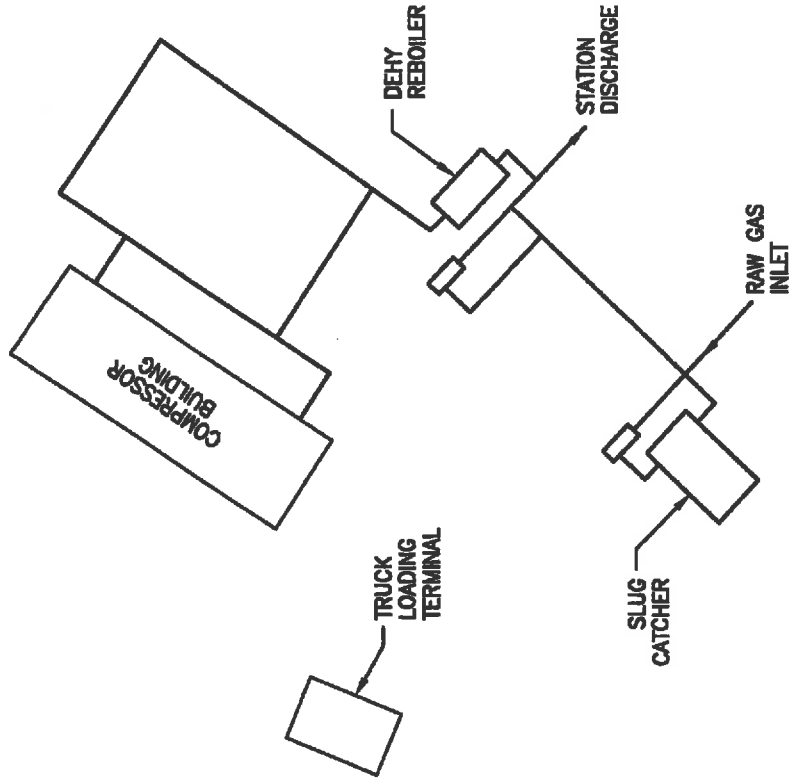
Through Series 34, WVDEP has adopted the National Emission Standards for Hazardous Air Pollutants for Source Categories. This topic has been addressed above.

ATTACHMENT E

Site Layout Diagram

PRODUCED
WATER
TANK

(10) CONDENSATE
TANKS



DRAWN BY DJF
DATE 10/3/13
CHECKED BY RAD
SET JOB NO. 213066-03
SET JOB FILE CARBIDE STATION.dwg
DRAWING SCALE N.T.S.



98 Vancoulin Road Bridgeville, PA 15017 (412) 221-1100

EUREKA HUNTER PIPELINE, LLC

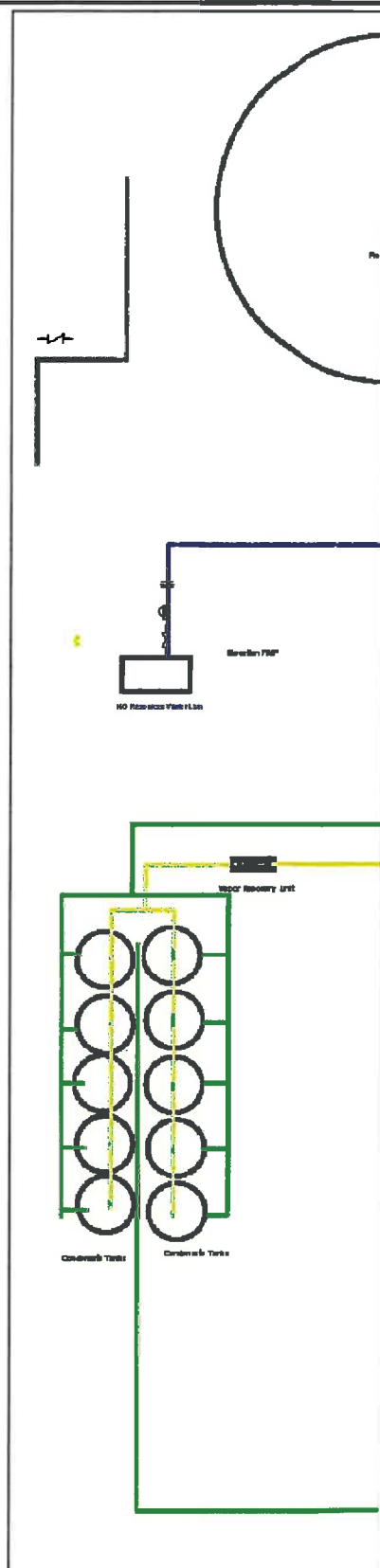
CARBIDE STATION
WETZEL COUNTY, WEST VIRGINIA
SITE LAYOUT

FIGURE 2

REV. 1

ATTACHMENT F

Process Flow Diagram



REFERENCE: EUREKA HUNTER PIPELINE, LLC

EUREKA HUNTER PIPELINE, LLC

CARBIDE STATION
WETZEL COUNTY, WEST VIRGINIA
PROCESS FLOW DIAGRAM

DRAWING NAME

FIGURE 3

REV.

1

ATTACHMENT G

Process Description

ATTACHMENT G
Eureka Hunter Pipeline, LLC
Carbide Compressor Station
Process Description

Raw gas and produced liquids are received at this facility from local production wells via three pipelines entering the station: 8-inch, 12-inch and 20-inch lines. The following text presents an overview of the operations at this facility and a description of the proposed modification to its permit.

High pressure gas is received via the 20-inch line, passed through a slug catcher and then returned to this high pressure gas line for transportation to a regional natural gas processing facility owned and operated by others. This gas is not passed through any other processes at this facility.

Low pressure inlet gas is received via a 12-inch pipeline and passed through an inlet separator, compressed, dehydrated, blended with the high pressure gas and injected into the 20-inch pipeline for transportation to the regional natural gas processing facility. Liquids separated from this gas stream are sent to a three-way separator where the pressure is reduced, allowing dissolved gases to flash off. This flash gas is compressed and re-blended with the low pressure inlet gas. The remaining liquids are separated into organic and water phases.

Produced Liquids are received at the facility via an 8-inch liquids line. These liquids are mostly produced water (brine), but also contain condensate. This liquid is passed through a three-way inlet separator where the pressure is reduced, allowing entrained gas to flash off. This flash gas is also routed to the flash gas compressor referenced above and blended with the low pressure inlet gas prior to compression. The three-way separator also separates the water (brine) and organic phases (condensate), routing them to separate accumulation tanks. Brine is accumulated in a single 2 million gallon tank. This brine is re-used by others for development of wells, thereby minimizing the demand for fresh water for that purpose.

Condensate is accumulated in a series of ten 630 BBL tanks prior to truck transportation to others for further processing. Emissions from these atmospheric pressure tanks are collected and compressed by a vapor recovery compressor where the vapors are sufficiently compressed to be introduced into the low pressure inlet gas line and processed with the low pressure inlet gas. The permitted control system for the condensate truck loading is an enclosed combustor.

This Class I Administrative Update seeks to gain approval for removing two of the permitted CAT 3516 compressor drivers and installing a single CAT 3608 compressor driver. This exchange will give the facility additional flexibility to manage gas flow and result in an overall decrease in emissions. No new NSPS or NESHAPS requirements are triggered by this engine swap. No increases in station liquid or gas throughput is being requested.

No other changes are proposed for any other equipment or process.

ATTACHMENT I

Emission Unit Table

Attachment I

Emission Units Table

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

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of Change	Control Device ⁴
S1	E1	CAT 3516B ENGINE	2012	1380 HP	EXIST	C1
S2	E2	CAT 3516B ENGINE	2012	1380 HP	EXIST	C2
S3	E3	CAT 3516B ENGINE	2012	1380 HP	EXIST	C3
S4	E4	CAT 3516B ENGINE	2012	1380 HP	EXIST	C4
S5A	E5A	CAT 3406 NA ENGINE	2013	215 HP	EXIST	C5A / NSCR
S6A	E6A	CAT 3406 NA ENGINE	2013	215 HP	EXIST	C6A / NSCR
S7	E7	DEHYDRATION RE-BOILER	2012	1.5 MM BTU/Hr	EXIST	None
S8	E8	CAT 3516B ENGINE	2012	1380 HP	EXIST	C8
S9	E9	CAT 3516B ENGINE	2012	1380 HP	EXIST	C9
S10	E10	CAT 3516B ENGINE	2012	1380 HP	EXIST	C10
S11	E11	CAT 3516B ENGINE	2012	1380 HP	EXIST	C11
S12	E12	CAT 3516B ENGINE	2012	1380 HP	REM	C12
S13	E13	CAT 3516B ENGINE	2012	1380 HP	REM	C13
S14	E16	TRUCK LOADING	2012	N/A	EXIST	VCU (S15)

S17	E17	LINE HEATER	2013	750 MBTU/Hr	EXIST	None
S15	E16	Truck Loading VCU	2014		EXIST	N/A
S15-A	E16	Truck Loading VCU Pilot	2014		EXIST	N/A
S18	---	Pigging and Blowdowns	2012	N/A	EXIST	None
S19	----	Fugitive Emissions	2012	N/A	EXIST	None
S20	E18	CAT 3608B ENGINE	2015	2750 HP	NEW	C20

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

² For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.

³ New, modification, removal

⁴ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

ATTACHMENT J

Emission Points Data Summary Sheet

ATTACHMENT J

Emission Points Data Summary Sheet

Table 1: Emissions Data

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ⁴)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E1	Upward Vertical Stack	S1	Engine #1	C1	SCR	C	8760	NO _x	1.52	6.66	1.52	6.66	Gas	EE	
								CO	8.82	38.64	0.61	2.67	Gas	EE	
								VOC	2.01	8.80	1.00	4.40	Gas	EE	
								PM10	0.103	0.45	0.103	0.45	Solid	EE	
								SO2	0.006	0.027	0.006	0.027	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0004	0.00	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.1825	0.80	Gas	EE	
E2	Upward Vertical Stack	S2	Engine #2	C2	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO2	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E3	Upward Vertical Stack	S3	Engine #3	C3	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO ₂	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
E4	Upward Vertical Stack	S4	Engine #4	C4	SCR	C	8760	Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	
								NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO ₂	0.006	0.027	0.007	0.029	Gas	EE	
E5A	Upward Vertical Stack	S5A	Flash Gas Comp.	C5A	NSCR	C	8760	Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	
								NO _x	7.669	33.59	0.46	2.02	Gas	EE	
								CO	7.669	33.59	0.46	2.02	Gas	EE	
								VOC	0.123	0.54	0.06	0.27	Gas	EE	
								PM10	0.037	0.16	0.037	0.16	Solid	EE	
								SO ₂	0.00	0.01	0.00	0.01	Gas	EE	
								Formaldehyde (50-00-0)	0.128	0.56	0.06	0.28	Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E6A	Upward Vertical Stack	S6A	VRU Comp.	C6A	NSCR	C	8760	NO _x	7.669	33.59	0.46	2.02	Gas	EE	
								CO	7.669	33.59	0.46	2.02	Gas	EE	
								VOC	0.123	0.54	0.06	0.27	Gas	EE	
								PM10	0.037	0.16	0.037	0.16	Solid	EE	
								SO2	0.00	0.01	0.00	0.01	Gas	EE	
								Formaldehyde (50-00-0)	0.128	0.56	0.06	0.28	Gas	EE	
E7	Upward Vertical Stack	S7	Dehy Reboiler Vent	None	C	8760	8760	NO _x	0.15	0.67	0.15	0.67	Gas	EE	
								CO	0.13	0.56	0.13	0.56	Gas	EE	
								VOC	0.23	1.01	0.23	1.01	Gas	EE	
								PM10	0.012	0.00	0.012	0.00	Solid	EE	
								SO2	0.001	0.00	0.001	0.00	Gas	EE	
								Benzene (71-43-2)	0.005	0.02	0.005	0.02	Gas	EE	
								Formaldehyde (50-00-0)	0.00	0.00	0.00	0.00	Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Specify VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ⁴)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E8	Upward Vertical Stack	S8	Engine #5	C8	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO2	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	
E9	Upward Vertical Stack	S9	Engine #6	C9	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO2	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Specify VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E10	Upward Vertical Stack	S10	Engine #7	C10	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO2	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	
E11	Upward Vertical Stack	S11	Engine #8	C11	SCR	C	8760	NO _x	1.52	6.66	5.91	25.88	Gas	EE	
								CO	8.82	38.64	0.28	1.23	Gas	EE	
								VOC	2.01	8.80	0.23	1.01	Gas	EE	
								PM10	0.103	0.45	0.11	0.48	Solid	EE	
								SO2	0.006	0.027	0.007	0.029	Gas	EE	
								Benzene (71-43-2)	0.0008	0.00	0.0014	0.01	Gas	EE	
								Formaldehyde (50-00-0)	1.247	5.46	0.0369	0.16	Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Specify VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ⁴)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E14	N/A	S14	N/A (Vapors to Tanks)		Vapor Balance	1Hr	8760	NO _x					Gas	EE	
								CO					Gas	EE	
								VOC	38	41.6	0.76	0.83	Gas	EE	
								PM10					Solid	EE	
								SO ₂					Gas	EE	
													Gas	EE	
													Gas	EE	
E15	Upward Vertical Stack	S17	Line Heater		None	C	8760	NO _x	0.08	0.33	0.08	0.33	Gas	EE	
								CO	0.06	0.28	0.06	0.28	Gas	EE	
								VOC	0.00	0.02	0.00	0.02	Gas	EE	
								PM10	0.01	0.03	0.01	0.03	Solid	EE	
								SO ₂	0.00	0.00	0.00	0.00	Gas	EE	
													Gas	EE	
													Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Specify VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E16	Upward Vertical Stack	S15	Truck Loading VCU		None	C	4380	NO _x	0.06	0.06	0.06	0.06	Gas	EE	
								CO	0.32	0.35	0.32	0.35	Gas	EE	
								VOC	0.38	0.41	0.38	0.41	Gas	EE	
								PM10	0.00	0.00	0.00	0.00	Solid	EE	
								SO2	0.00	0.00	0.00	0.00	Gas	EE	
								CO2e	172	126	172	126	Gas	EE	
													Gas	EE	
E16	Upward Vertical Stack	S15-A	Truck Loading VCU Pilot		None	C	4380	NO _x	0.12	0.26	0.12	0.26	Gas	EE	
								CO	0.10	0.22	0.10	0.22	Gas	EE	
								VOC	0.01	0.01	0.01	0.01	Gas	EE	
								PM10	0.01	0.02	0.01	0.02	Solid	EE	
								SO2	0.00	0.00	0.00	0.00	Gas	EE	
								CO2e	143	314	143	314	Gas	EE	
													Gas	EE	

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Specify VOCs & HAPs)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
E18	Upward Vertical Stack	S20	Upward Vertical Stack	C20	SCR	C	8760	NOx	2.61	11.44	2.61	11.44	Gas	EE	
								CO	14.37	62.93	1.04	4.58	Gas	EE	
								VOC	5.70	24.09	1.72	7.55	Gas	EE	
								PM10	0.16	0.71	0.16	0.71	Solid	EE	
								SO2	0.01	0.04	0.01	0.04	Gas	EE	
								CO2e	2304	10,092	2304	10,092	Gas	EE	
													Gas	EE	
								NOx					Gas	EE	
								CO					Gas	EE	
								VOC					Gas	EE	
								PM10					Solid	EE	
								SO2					Gas	EE	
								CO2e					Gas	EE	
													Gas	EE	

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

1. Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
2. Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
3. List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, etc. **DO NOT LIST** CO₂, H₂, H₂O, N₂, O₂, and Noble Gases.
4. Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g., 5 lb VOC/20 minute batch).
5. Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g., 5 lb VOC/20 minute batch).
6. Indicate method used to determine emission rate as follows:
 MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

Emission Points Data Summary Sheet

Table 2: Release Parameter Data						
Emission Point ID No. (Must match Emission Units Table)	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) at operating conditions	Velocity (fps)	Ground Level (Height above mean sea level)	Stack Height ² (Release height of emissions above ground level)
E1	1.67	1005	9216	70	740	22
E2	1.67	1005	9216	70	740	22
E3	1.67	1005	9216	70	740	22
E4	1.67	1005	9216	70	740	22
E5A	0.5	992	678	57	740	8
E6A	0.5	992	447	38	740	8
E7	0.667	600	700 (est.)	30	740	20
E8	1.67	1005	9216	70	740	22
E9	1.67	1005	9216	70	740	22
E10	1.67	1005	9216	70	740	22
E11	1.67	1005	9216	70	740	22
E12	Removed					
E13	Removed					
E16	1.58	1400	600 (est.)	25	740	20
E18 (NEW)	2.00	1050	16,187	82	740	22

¹ Give at operating conditions. Include inerts.² Release height of emissions above ground level.

ATTACHMENT L

Emission Unit Data Sheets

NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		S1		S2		S3	
Engine Manufacturer and Model		Caterpillar 3516B		Caterpillar 3516B		Caterpillar 3516B	
Manufacturer's Rated bhp/rpm		1380/1400		1380/1400		1380/1400	
Source Status ²		ES		ES		ES	
Date Installed/Modified/Removed ³		November 1, 2012		November 1, 2012		November 1, 2012	
Engine Manufactured/Reconstruction Date ⁴		After July 1, 2010		After July 1, 2010		After July 1, 2010	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁵		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁶	LB4S		LB4S		LB4S	
	APCD Type ⁷	A/F +SCR		A/F +SCR		A/F +SCR	
	Fuel Type ⁸	RG		RG		RG	
	H ₂ S (gr/100 scf)	<1		<1		<1	
	Operating bhp/rpm	1380/1400		1380/1400		1380/1400	
	BSFC (Btu/bhp-hr)	7430		7430		7430	
	Fuel throughput (ft ³ /hr)	10,180		10,180		10,180	
	Fuel throughput (MMft ³ /yr)	89.19		89.19		89.19	
	Operation (hrs/yr)	8760		8760		8760	
Reference ⁹	Potential Emissions ¹⁰	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD	NO _x	1.52	6.66	1.52	6.66	1.52	6.66
MD	CO	0.61	2.67	0.61	2.67	0.61	2.67
MD	VOC	1.00	4.40	1.00	4.40	1.00	4.40
AP	SO ₂	0.006	0.03	0.006	0.03	0.006	0.03
AP	PM ₁₀	0.103	0.45	0.103	0.45	0.103	0.45
MD	Formaldehyde	0.18	0.80	0.18	0.80	0.18	0.80
AP	Total HAPs	0.33	1.43	0.33	1.43	0.33	1.43

NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		S4		S8		S9	
Engine Manufacturer and Model		Caterpillar 3516B		Caterpillar 3516B		Caterpillar 3516B	
Manufacturer's Rated bhp/rpm		1380/1400		1380/1400		1380/1400	
Source Status ²		ES		ES		ES	
Date Installed/Modified/Removed ³		April 15, 2012		April 15, 2013		April 15, 2013	
Engine Manufactured/Reconstruction Date ⁴		After July 1, 2010		After July 1, 2010		After July 1, 2010	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁵		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁶	LB4S		LB4S		LB4S	
	APCD Type ⁷	A/F +SCR		A/F +SCR		A/F +SCR	
	Fuel Type ⁸	RG		RG		RG	
	H ₂ S (gr/100 scf)	<1		<1		<1	
	Operating bhp/rpm	1380/1400		1380/1400		1380/1400	
	BSFC (Btu/bhp-hr)	7430		7430		7430	
	Fuel throughput (ft ³ /hr)	10,180		10,180		10,180	
	Fuel throughput (MMft ³ /yr)	89.19		89.19		89.19	
	Operation (hrs/yr)	8760		8760		8760	
Reference ⁹	Potential Emissions ¹⁰	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD	NO _x	1.52	6.66	1.52	6.66	1.52	6.66
MD	CO	0.61	2.67	0.61	2.67	0.61	2.67
MD	VOC	1.00	4.40	1.00	4.40	1.00	4.40
AP	SO ₂	0.006	0.03	0.006	0.03	0.006	0.03
AP	PM ₁₀	0.103	0.45	0.103	0.45	0.103	0.45
MD	Formaldehyde	0.18	0.80	0.18	0.80	0.18	0.80
AP	Total HAPs	0.33	1.43	0.33	1.43	0.33	1.43

NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number ¹		S10		S11		S12	
Engine Manufacturer and Model		Caterpillar 3516B		Caterpillar 3516B		Caterpillar 3516B	
Manufacturer's Rated bhp/rpm		1380/1400		1380/1400		1380/1400	
Source Status ²		ES		ES		REM	
Date Installed/Modified/Removed ³		April 15, 2013		June 15, 2013		June 15, 2013	
Engine Manufactured/Reconstruction Date ⁴		After July 1, 2010		After July 1, 2010		After July 1, 2010	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁵		No		No		No	
Engine, Fuel and Combustion Data	Engine Type ⁶	LB4S		LB4S		LB4S	
	APCD Type ⁷	A/F +SCR		A/F +SCR		A/F +SCR	
	Fuel Type ⁸	RG		RG		RG	
	H ₂ S (gr/100 scf)	<1		<1		<1	
	Operating bhp/rpm	1380/1400		1380/1400		1380/1400	
	BSFC (Btu/bhp-hr)	7430		7430		7430	
	Fuel throughput (ft ³ /hr)	10,180		10,180		10,180	
	Fuel throughput (MMft ³ /yr)	89.19		89.19		89.19	
	Operation (hrs/yr)	8760		8760		8760	
Reference ⁹	Potential Emissions ¹⁰	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD	NO _x	1.52	6.66	1.52	6.66	1.52	6.66
MD	CO	0.61	2.67	0.61	2.67	0.61	2.67
MD	VOC	1.00	4.40	1.00	4.40	1.00	4.40
AP	SO ₂	0.006	0.03	0.006	0.03	0.006	0.03
AP	PM ₁₀	0.103	0.45	0.103	0.45	0.103	0.45
MD	Formaldehyde	0.18	0.80	0.18	0.80	0.18	0.80
AP	Total HAPs	0.33	1.43	0.33	1.43	0.33	1.43

Source Identification Number ¹		S13		S20			
Engine Manufacturer and Model		Caterpillar 3516B		Caterpillar 3608B			
Manufacturer's Rated bhp/rpm		1380/1400		2370/1000			
Source Status ²		REM		NEW			
Date Installed/Modified/Removed ³		June 15, 2013		Upon Receipt of Permit			
Engine Manufactured/Reconstruction Date ⁴		After July 1, 2010		After July 1, 2014			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁵		No		No			
Engine, Fuel and Combustion Data	Engine Type ⁶	LB4S		LB4S			
	APCD Type ⁷	A/F +SCR		A/F + SCR			
	Fuel Type ⁸	RG		RG			
	H ₂ S (gr/100 scf)	<1		<1			
	Operating bhp/rpm	1380/1400		2370/1000			
	BSFC (Btu/bhp-hr)	7430		6840			
	Fuel throughput (ft ³ /hr)	10,180		16,098			
	Fuel throughput (MMft ³ /yr)	89.19		141.02			
Operation (hrs/yr)	8760		8760				
Reference ⁹	Potential Emissions ¹⁰	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD	NO _x	1.52	6.66	2.61	11.44		
MD	CO	0.61	2.67	1.04	4.58		
MD	VOC	1.00	4.40	1.72	7.55		
AP	SO ₂	0.006	0.03	0.01	0.04		
AP	PM ₁₀	0.103	0.45	0.16	0.71		
MD	Formaldehyde	0.18	0.80	0.31	1.37		
AP	Total HAPs	0.33	1.43	0.54	2.35		

Source Identification Number ¹		S5A		S6A			
Engine Manufacturer and Model		Caterpillar 3406 NA		Caterpillar 3406 NA			
Manufacturer's Rated bhp/rpm		215/1800		215/1800			
Source Status ²		ES		ES			
Date Installed/Modified/Removed ³		2/01/2013		2/01/2013			
Engine Manufactured/Reconstruction Date ⁴		9/28/1993		9/22/2005			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) ⁵		No		No			
Engine, Fuel and Combustion Data	Engine Type ⁶	RB4S		RB4S			
	APCD Type ⁷	NSCR		NSCR			
	Fuel Type ⁸	RG		RG			
	H ₂ S (gr/100 scf)	<1		<1			
	Operating bhp/rpm	215/1800		215/1800			
	BSFC (Btu/bhp-hr)	8754		8754			
	Fuel throughput (ft ³ /hr)	1690		1690			
	Fuel throughput (MMft ³ /yr)	14.80		14.80			
	Operation (hrs/yr)	8760		8760			
Reference ⁹	Potential Emissions ¹⁰	lbs/hr	tons/yr	lbs/hr	tons/yr		
MD	NO _x	0.46	2.02	0.46	2.02		
MD	CO	0.46	2.02	0.46	2.02		
MD	VOC	0.06	0.28	0.06	0.28		
AP	SO ₂	0.00	0.00	0.00	0.00		
AP	PM ₁₀	0.03	0.15	0.03	0.15		
MD	Formaldehyde	0.07	0.29	0.07	0.29		
AP	Total HAPs	0.09	0.38	0.09	0.38		

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. 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)
MS Modification of Existing Source

ES Existing Source
RS Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification 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 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 according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

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

6. Enter the Engine Type designation(s) using the following codes:
- | | | | |
|------|-----------------------|------|-----------------------|
| LB2S | Lean Burn Two Stroke | RB4S | Rich Burn Four Stroke |
| LB4S | Lean Burn Four Stroke | | |
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 | SCR | Lean Burn & Selective Catalytic Reduction |
8. Enter the Fuel Type using the following codes:
- | | | | |
|----|------------------------------|----|-----------------|
| PQ | Pipeline Quality Natural Gas | RG | Raw Natural Gas |
|----|------------------------------|----|-----------------|
9. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.
- | | | | | |
|----|---------------------|----|-------------|---------------|
| 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*.

ATTACHMENT M

Air Pollution Control Device Sheet



1610 Woodstead Ct, Suite 245 The Woodlands, Texas 77380 USA
Tel: 877-967-9889 Fax: 817-687-2850 info@dcl-am.com www.dcl-am.com

GLOBAL LEADER IN EMISSION CONTROL SOLUTIONS

To:	Chris Magee
Company:	USA Compression
Date:	July 2, 2015

Phone:	814-746-6942
Email:	CMagee@usacompression.com
No. Pages:	1

Dear Chris,

We hereby guarantee that our Emit 36X15 specified below with six (6) elements installed as described below, and sized for the following engine:

Engine Data	
Engine Model	Caterpillar G3608
Power	2370HP
Fuel	PQNG
Exhaust Flow Rate	16,187 acfm
Exhaust Temperature	857°F

Catalyst Data	
Catalyst Model	Emit 36X15 replacement
Type	Oxidation- A
# of Elements	6
Cell Density	300 cpsi
Approx Dimensions	See attached drawing

will perform as follows:

Exhaust Component	Engine Output g/bhp-hr	Converter Output g/bhp-hr
CO	2.75	0.20
VOC	1.09	0.33
CH2O	0.26	0.06

for a period of 1 year or 8000 hours, whichever comes first, subject to all terms and conditions contained in the attached warranty document being respected and met.

Best Regards,

On behalf of DCL America Inc.

Lisa Barber

416-788-8021

G3608

GAS COMPRESSION APPLICATION

GAS ENGINE SITE SPECIFIC TECHNICAL DATA Eureka Hunter Carbide 7-2-15



ENGINE SPEED (rpm): 1000
COMPRESSION RATIO: 9.2:1
AFTERCOOLER TYPE: SCAC
AFTERCOOLER WATER INLET (°F): 130
JACKET WATER OUTLET (°F): 190
ASPIRATION: TA
COOLING SYSTEM: JW, OC+AC
CONTROL SYSTEM: CIS/ADEM3
EXHAUST MANIFOLD: DRY
COMBUSTION: LOW EMISSION
NOx EMISSION LEVEL (g/bhp-hr NOx): 0.5

RATING STRATEGY:
RATING LEVEL:
FUEL SYSTEM:

STANDARD
CONTINUOUS
GAV
WITH AIR FUEL RATIO CONTROL

SITE CONDITIONS:
FUEL:
FUEL PRESSURE RANGE(psig):
FUEL METHANE NUMBER:
FUEL LHV (Btu/scf):
ALTITUDE(ft):
MAXIMUM INLET AIR TEMPERATURE(°F):
STANDARD RATED POWER:

Eureka Hunter Carbide 3/2015
42.8-47.0
60.1
1113
1200
90
2370 bhp@1000rpm

RATING	NOTES	LOAD	MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE			
			100%	100%	75%	51%	
ENGINE POWER (WITHOUT FAN)	(1)	bhp	2370	2314	1736	1185	
INLET AIR TEMPERATURE		°F	58	90	90	90	90

ENGINE DATA							
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	6840	6863	7132	7785	
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	7549	7574	7871	8592	
AIR FLOW (@inlet air temp, 14.7 psia)	(3)(4) (WET)	ft ³ /min	6004	6232	4780	3371	
AIR FLOW	(3)(4) (WET)	lb/hr	27583	26979	20693	14595	
FUEL FLOW (60°F, 14.7 psia)		scfm	243	238	185	138	
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	75.2	73.5	56.4	40.9	
EXHAUST TEMPERATURE - ENGINE OUTLET	(6)	°F	857	861	903	978	
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(7)(4) (WET)	ft ³ /min	16187	15878	12570	9382	
EXHAUST GAS MASS FLOW	(7)(4) (WET)	lb/hr	28355	27737	21283	15035	

EMISSIONS DATA - ENGINE OUT							
NOx (as NO2)	(8)(9)	g/bhp-hr	0.50	0.50	0.50	0.50	
CO	(8)(9)	g/bhp-hr	2.75	2.75	2.75	2.75	
THC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	6.32	6.34	6.59	6.82	
NMHC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	2.38	2.39	2.48	2.57	
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)(10)	g/bhp-hr	1.09	1.09	1.13	1.17	
HCHO (Formaldehyde)	(8)(9)	g/bhp-hr	0.26	0.26	0.28	0.31	
CO2	(8)(9)	g/bhp-hr	441	443	463	506	
EXHAUST OXYGEN	(8)(11)	% DRY	12.0	12.0	11.7	11.4	

HEAT REJECTION							
HEAT REJ. TO JACKET WATER (JW)	(12)	Btu/min	25044	24792	20950	17407	
HEAT REJ. TO ATMOSPHERE	(12)	Btu/min	9456	9439	8855	8457	
HEAT REJ. TO LUBE OIL (OC)	(12)	Btu/min	12158	12161	11639	11532	
HEAT REJ. TO AFTERCOOLER (AC)	(12)(13)	Btu/min	20565	20565	8904	1934	

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW)	(13)	Btu/min	27549
TOTAL AFTERCOOLER CIRCUIT (OC+AC)	(13)(14)	Btu/min	36187
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.			

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1, adjusted for fuel, site altitude and site inlet air temperature. 100% rating at maximum inlet air temperature is the maximum engine capability for the specified fuel at site altitude and maximum site inlet air temperature. Maximum rating is the maximum capability at the specified aftercooler inlet temperature for the specified fuel at site altitude and reduced inlet air temperature. Lowest load point is the lowest continuous duty operating load allowed. No overload permitted at rating shown.

For notes information consult page three.

ATTACHMENT N

Supporting Calculations

Carbide Station
Wetzel County

Source	Description	NOx lb/hr	CO lb/hr	CO _{2e} lb/hr	VOC lb/hr	SO ₂ lb/hr	H ₂ S lb/hr	PM lb/hr	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
S1	Compressor Engine #1	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S2	Compressor Engine #2	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S3	Compressor Engine #3	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S4	Compressor Engine #4	1.52	0.61	1519.57	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S5	Flash Gas Compressor										
S5A	Rep. Flash Gas Compressor	0.46	0.46	280.82	0.06	0.005	0.00	0.037	0.0030	0.0664	0.0867
S6	VRU Compressor										
S6A	Replacement VRU Compressor	0.46	0.46	280.82	0.06	0.005	0.00	0.037	0.0030	0.0664	0.0867
S7	Dehy Reboiler Vent	0.15	0.13	183.53	0.23	0.001	0.00	0.012	0.0052		0.3210
S8	Compressor Engine #5	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S9	Compressor Engine #6	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S10	Compressor Engine #7	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S11	Compressor Engine #8	1.52	0.61	1519.34	1.00	0.006	0.00	0.103	0.0004	0.1825	0.3270
S12	Compressor Engine #9 (REM)	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.0000	0.0000	0.0000
S13	Compressor Engine #10 (REM)	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.0000	0.0000	0.0000
S14	Truck Loading (Un-Captured)				0.49						
S15	Truck Loading VCU	0.06	0.32	172.11	0.38			0.001			
S15-A	VCU Pilot	0.12	0.10	143.47	0.01			0.009			
S17	Line Heater	0.08	0.06	90.58	0.00	0.000	0.00	0.006			
S18	Pigging and Blowdowns				N/A						
S19	Fugitive				0.54						
S20	Compressor Engine #11 (NEW)	2.61	1.04	2306.07	1.72	0.010	0.00	0.161	0.0004	0.3135	0.5367
Total		16.11	7.45	15,612	9.81	0.07	0.00	1.13	0.02	1.96	3.76
Existing Permit		16.54	7.62	16,245	11.82	0.07	0.00	1.13	0.02	1.96	3.76
Change		-0.43	-0.17	-732.61	-2.01	0.00	0.00	-0.04	0.00	-0.05	-0.12

Source	Description	NOx tpy	CO tpy	CO _{2e} tpy	VOC tpy	SO ₂ tpy	H ₂ S tpy	PM tpy	benzene tpy	formaldehyde tpy	Total HAPs tpy
S1	Compressor Engine #1	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S2	Compressor Engine #2	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S3	Compressor Engine #3	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S4	Compressor Engine #4	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S5A	Rep. Flash Gas Compressor	2.02	2.02	1229.98	0.28	0.005	0.00	0.16	0.01	0.29	0.38
S6A	Replacement VRU Compressor	2.02	2.02	1229.98	0.28	0.005	0.00	0.16	0.01	0.29	0.38
S7	Dehy Reboiler Vent	0.67	0.56	803.88	1.01	0.001	0.00	0.00	0.02		1.41
S8	Compressor Engine #5	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S9	Compressor Engine #6	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S10	Compressor Engine #7	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S11	Compressor Engine #8	6.66	2.67	6654.70	4.40	0.027	0.00	0.45	0.00	0.80	1.43
S12	Compressor Engine #9 (REM)	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
S13	Compressor Engine #10 (REM)	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
S14	Truck Loading (Un-captured)				0.54						
S15	Truck Loading VCU	0.06	0.35	126.16	0.41			0.00			
S15-A	VCU Pilot	0.26	0.22	314.20	0.01			0.02			
S17	Line Heater	0.33	0.28	396.76	0.02	0.002	0.00	0.02			
S18	Pigging and Blowdowns				1.70						
S19	Fugitive				2.37						
S20	Compressor Engine #11 (NEW)	11.44	4.58	10100.58	7.55	0.043	0.00	0.71	0.00	1.37	2.35
Total		70.10	31.34	67439.11	49.36	0.27	0.00	4.70	0.07	8.35	15.98
Existing Permit		71.98	32.09	70,648	50.61	0.28	0.00	4.59	0.07	8.58	16.49
Change		-1.88	-0.75	-3208.81	-1.24	-0.01	0.00	-0.20	0.00	-0.23	-0.51

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S1

Engine Data:

Engine Manufacturer	CAT
Engine Model	3516B
Type (Rich-burn or Low Emission)	Low Emissions
Aspiration (Natural or Turbocharged)	Natural
Turbocharge Cooler Temperature	130 deg. F
Manufacturer Rating	1,380 hp
Speed at Above Rating	1,400 rpm
Configuration (In-line or Vee)	V-16
Number of Cylinders	16
Engine Bore	6.700 inches
Engine Stroke	7.500 inches
Fuel Heat Content (LHV)	1,007 BTU/scf
Engine Displacement	4,231 cu. in.
Fuel Consumption	7,500 Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ minute
Oxides of Nitrogen, NOx	0.50	1.52	6.68	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

AP-42
stroke/clean

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	g/ bhp-hr	lb/ hr	tons/ year
SO ₂	0.0062	0.0272	
PM2.5	0.0008	0.0035	
PM (Condensable)	0.1026	0.4493	
CH ₄ CO _{2e}	0.4793	2.0991	
N ₂ O CO _{2e}	0.7091	3.1058	
acrolein	0.0532	0.2330	
acetaldehyde	0.0865	0.3790	
formaldehyde	0.0800	0.1825	0.7995
biphenyl	0.0002	0.0009	0.0009
benzene	0.0004	0.0019	0.0019
toluene	0.0004	0.0017	0.0017
ethylbenzene	4E-05	0.0002	0.0002
xylene	0.0002	0.0008	0.0008
methanol	0.0024	0.0107	0.0107
n-hexane	0.0011	0.0047	0.0047
total HAPs	0.327	1.4324	

0.0006
0.0000771
0.00091
0.002205
0.000221
0.00514
0.00836
0.0528
0.000212
0.00044
0.000408
0.0000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm

Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec

Exhaust Stack Height	260	inches
	21.67	feet

Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter ,LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S2

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3518B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10
CO ₂	499	1518	6,649	688,620	36435.56

AP-42
4strokeclean
lb/ nmblu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0062	0.0272
PM2.5		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006
0.0000771
0.00991
0.002205
0.009221
0.00514
0.00836
0.0525
0.000212
0.00044
0.000408
0.0000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm

Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec

Exhaust Stack Height	260	inches
	21.67	feet

Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S3

Engine Data:

Engine Manufacturer	CAT
Engine Model	3516B
Type (Rich-burn or Low Emission)	Low Emissions
Aspiration (Natural or Turbocharged)	Natural
Turbocharge Cooler Temperature	130 deg. F
Manufacturer Rating	1,380 hp
Speed at Above Rating	1,400 rpm
Configuration (In-line or Vee)	V-16
Number of Cylinders	16
Engine Bore	6.700 inches
Engine Stroke	7.500 inches
Fuel Heat Content (LHV)	1,007 BTU/scf
Engine Displacement	4,231 cu. in.
Fuel Consumption	7,500 Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ mmbtu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

SO ₂	8,760	0.0062	0.0272
PM _{2.5}		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm

Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec

Exhaust Stack Height	260	inches
	21.67	feet

Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S4

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ mmobtu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

AP-42
4strokeclean
lb/ mmobtu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0062	0.0272
PM2.5		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006
0.0000771
0.00991
0.002206
0.00221
0.00514
0.00898
0.0528
0.000212
0.00044
0.000408
0.0000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S8

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ mmbtu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

AP-42
4 stroke lean

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0062	0.0272
PM2.5		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0008
0.0000771
0.00091
0.002205
0.00221
0.00514
0.00036
0.0528
0.000212
0.00044
0.000408
0.000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

New Source S9

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/ scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	AP-42 4strokelean lb/ rmbtu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0062	0.0272
PM _{2.5}		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006

0.0000771

0.00691

0.002205

0.003221

0.00514

0.00836

0.0528

0.00212

0.00044

0.000408

0.000397

0.000184

0.0025

0.00111

0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S10

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10
CO ₂	499	1518	6,649	688,620	36435.56

AP-42
4stroke clean
lb/ combustion

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	g/ bhp-hr	lb/ hr	tons/ year
SO ₂		0.0062	0.0272
PM2.5		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006

0.0000771

0.00091

0.002205

0.000221

0.00514

0.00836

0.0528

0.000212

0.00044

0.000408

0.0000397

0.000184

0.0025

0.00111

0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Existing Source S11

Engine Data:

Engine Manufacturer	CAT
Engine Model	3516B
Type (Rich-burn or Low Emission)	Low Emissions
Aspiration (Natural or Turbocharged)	Natural
Turbocharge Cooler Temperature	130 deg. F
Manufacturer Rating	1,380 hp
Speed at Above Rating	1,400 rpm
Configuration (In-line or Vee)	V-16
Number of Cylinders	16
Engine Bore	6.700 inches
Engine Stroke	7.500 inches
Fuel Heat Content (LHV)	1,007 BTU/scf
Engine Displacement	4,231 cu. in.
Fuel Consumption	7,500 Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ nmbsu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

AP-42
4-stroke clean
lb/ nmbsu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	g/ bhp-hr	lb/ hr	tons/ year
SO ₂		0.0062	0.0272
PM _{2.5}		0.0008	0.0035
PM		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006
0.0000771
0.00991
0.002205
0.000221
0.00514
0.00839
0.0528
0.000212
0.00044
0.008408
0.000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Source S12 (REMOVED)

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3516B	
Type (Rich-burn or Low Emission)	Low Emissions	
Aspiration (Natural or Turbocharged)	Natural	
Turbocharge Cooler Temperature	130	deg. F
Manufacturer Rating	1,380	hp
Speed at Above Rating	1,400	rpm
Configuration (In-line or Vee)	V-16	
Number of Cylinders	16	
Engine Bore	6.700	inches
Engine Stroke	7.500	inches
Fuel Heat Content (LHV)	1,007	BTU/scf
Engine Displacement	4,231	cu. in.
Fuel Consumption	7,500	Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	lb/ mmbtu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

AP-42
Astroblean
lb/ mmbtu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	g/ bhp-hr	lb/ hr	tons/ year
SO ₂		0.0062	0.0272
PM2.5		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7995
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0006
0.0000771
0.00991
0.002205
0.000221
0.00514
0.00836
0.0528
0.000212
0.00044
0.000408
0.0000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Source S13 (REMOVED)

Engine Data:

Engine Manufacturer	CAT
Engine Model	3516B
Type (Rich-burn or Low Emission)	Low Emissions
Aspiration (Natural or Turbocharged)	Natural
Turbocharge Cooler Temperature	130 deg. F
Manufacturer Rating	1,380 hp
Speed at Above Rating	1,400 rpm
Configuration (In-line or Vee)	V-16
Number of Cylinders	16
Engine Bore	6.700 inches
Engine Stroke	7.500 inches
Fuel Heat Content (LHV)	1,007 BTU/scf
Engine Displacement	4,231 cu. in.
Fuel Consumption	7,500 Btu/ bhp-hr

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day	AP-42 4stroke clean lb/nmbltu
Oxides of Nitrogen, NOx	0.50	1.52	6.66	690	36.51	
Carbon Monoxide CO	0.20	0.61	2.67	276	14.60	
VOC (NMNEHC)	0.33	1.00	4.40	455	24.10	
CO ₂	499	1518	6,649	688,620	36435.56	

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0062	0.0272
PM _{2.5}		0.0008	0.0035
PM (Condensable)		0.1026	0.4493
CH ₄ CO _{2e}		0.4793	2.0991
N ₂ O CO _{2e}		0.7091	3.1058
acrolein		0.0532	0.2330
acetaldehyde		0.0865	0.3790
formaldehyde	0.0600	0.1825	0.7905
biphenyl		0.0002	0.0009
benzene		0.0004	0.0019
toluene		0.0004	0.0017
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0008
methanol		0.0024	0.0107
n-hexane		0.0011	0.0047
total HAPs		0.327	1.4324

0.0066

0.0000771

0.00991

0.002206

0.000221

0.00514

0.00836

0.0528

0.000212

0.00044

0.000408

0.0000397

0.000184

0.0025

0.00111

0.0711937

Factor From 40 CFR 98, Table C-2

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,005	deg. F
Exhaust Gas Flow Rate	9216	acfm
Total Exhaust Gas Volume Flow, wet	9,216	acfm
Total Exhaust Gas Volume Flow, wet	153.6	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	20	inches
	1.667	feet

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

NEW Source S20

Engine Data:

Engine Manufacturer	CAT
Engine Model	3608B
Type (Rich-burn or Low Emission)	Low Emissions
Aspiration (Natural or Turbocharged)	Natural
Turbocharge Cooler Temperature	130 deg. F
Manufacturer Rating	2,370 hp
Speed at Above Rating	1,000 rpm
Configuration (In-line or Vee)	In Line
Number of Cylinders	8
Engine Bore	11.810 inches
Engine Stroke	11.810 inches
Fuel Heat Content (LHV)	1,007 BTU/scf
Engine Displacement	10,350 cu. in.
Fuel Consumption (LHV)	6,840 Btu/bhp-hr

CO 93% Control
VOC 50% Control

Emission Rates:

	g/ bhp-hr	lb/ hr	tons/ year	g/hr	lb/ day
Oxides of Nitrogen, NOx	0.50	2.61	11.44	1,185	62.70
Carbon Monoxide CO	0.20	1.04	4.58	474	25.08
VOC (NMNEHC)	0.33	1.72	7.55	782	41.38
CO ₂	441	2304	10,092	1,045,170	55300.98

AP-42
4 stroke lean
lb/ mmbtu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	g/ bhp-hr	lb/ hr	tons/ year
SO ₂		0.0097	0.0426
PM2.5		0.0012	0.0055
PM (Condensable)		0.1606	0.7036
CH ₄ CO _{2e}		0.7506	3.2878
N ₂ O CO _{2e}		1.1106	4.8644
acrolein		0.0833	0.3650
acetaldehyde		0.1355	0.5936
formaldehyde	0.0600	0.3135	1.3731
biphenyl		0.0002	0.0008
benzene		0.0004	0.0017
toluene		0.0004	0.0016
ethylbenzene		4E-05	0.0002
xylene		0.0002	0.0007
methanol		0.0022	0.0097
n-hexane		0.001	0.0043
total HAPs		0.5367	2.3507

g/ 0006
0.0000771
0.00091
0.002205
0.000221
0.00514
0.00836
0.0528
0.000212
0.00044
0.000408
0.0000397
0.000184
0.0025
0.00111
0.0711937

Factor From 40 CFR 98, Table C-2
Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	857	deg. F
Exhaust Gas Flow Rate	16187	acfm
Total Exhaust Gas Volume Flow, wet	16,187	acfm
Total Exhaust Gas Volume Flow, wet	269.8	acf per sec
Exhaust Stack Height	260	inches
	21.67	feet
Exhaust Stack Inside Diameter	24	inches
	2.000	feet

DEHYDRATOR EMISSIONS

Carbide Station
Wetzel County

Burner/Still Vent Emissions Existing Source S7

Reboiler Burner

Burner Duty Rating 1500.0 Mbtu/hr
Burner Efficiency 98.0 %
Gas Heat Content (LHV) 1006.9 Btu/scf
Total Gas Consumption 36484.7 scfd 13.32 MMscf/yr
H2S Concentration 0.000 Mole %

NOx	0.1520	lbs/hr	0.666	TPY
CO	0.1277	lbs/hr	0.559	TPY
CO2e	183.5	lbs/hr	803.9	TPY
VOC	0.0084	lbs/hr	0.037	TPY
SO2	0.0009	lbs/hr	0.004	TPY
PM	0.0116	lbs/hr	0.051	TPY

H2S 0.000251 lbs/hr 0.0010996 TPY

Still Vent Emissions

From Gri GlyCalc 4.0

Dry Gas Rate 80,000 MCFD
Glycol Circulation Rate 2.5 Gal/min
Treating Temperature 90 Deg F
Treating Pressure 900 psi

Total HC	0.5189	lbs/hr	2.273	TPY
Total VOC	0.2230	lbs/hr	0.977	TPY
Total HAP	0.3210	lbs/hr	1.406	TPY
benzene	0.0052	lbs/hr	0.023	TPY
toluene	0.0049	lbs/hr	0.021	TPY
ethyl benzene	0.0042	lbs/hr	0.018	TPY
xylene	0.0050	lbs/hr	0.022	TPY
n-hexane	0.129	lbs/hr	0.565	TPY

Total Dehy Emissions

NOx	0.1520	lbs/hr	0.666	TPY
CO	0.1277	lbs/hr	0.559	TPY
VOC	0.2314	lbs/hr	1.013	TPY
SO2	0.0009	lbs/hr	0.001	TPY
PM	0.0116	lbs/hr	0.000	TPY

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Source S5A

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3406 NA	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	natural	
Turbocharge Cooler Temperature	N/A	deg. F
Manufacturer Rating	215	hp
Speed at Above Rating	1,800	rpm
Configuration (In-line or Vee)	In Line	
Number of Cylinders	6	
Engine Bore	4.790	inches
Engine Stroke	6.000	inches
Fuel Heat Content (LHV)	1,114	BTU/scf
Engine Displacement	649	cu. in.
Fuel Consumption (HHV)	8,754	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	lb/mmmbtu
Oxides of Nitrogen, NOx	0.97	0.46	2.02	209	11.06	
Carbon Monoxide CO	0.97	0.46	2.02	209	11.06	
VOC (NMNEHC)	0.14	0.06	0.28	29	1.54	
CO ₂	573	272	1,190	123,195	6518.37	

AP-42
4-stroke rich
lb/mmmbtu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

	8,760		
SO ₂		0.0011	0.0049
PM _{2.5}		0.0179	0.0783
PM (Condensable)		0.0187	0.0817
CH ₄ CO _{2e}		9.0906	39.8168
N ₂ O CO _{2e}		0.1289	0.5648
acrolein		0.0049	0.0217
acetaldehyde		0.0053	0.0230
formaldehyde mfr control rate	0.1400	0.0664	0.2906
benzene		0.003	0.0130
toluene		0.0011	0.0046
methanol		0.0058	0.0252
xylene		0.0004	0.0016
total HAPs		0.0867	0.3798

0.0006

0.0095

0.00991

0.23

0.000221

0.00263

0.00279

0.0205

0.00158

0.00056

0.00306

0.00019

0.03131

Mfg. Spec Used

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,155	deg. F
Exhaust Gas Flow Rate	1032	acfm

Total Exhaust Gas Volume Flow, wet	1,032	acfm
Total Exhaust Gas Volume Flow, wet	17.2	acf per sec

Exhaust Stack Height	84	inches
	7.00	feet

Exhaust Stack Inside Diameter	6	inches
	0.500	feet

Exhaust Stack Velocity

87.6	ft/sec
5,255.9	ft/min

4	x	acfm
3.1416	x	(stack diameter) ²

Eureka Hunter, LLC
ENGINE EMISSIONS

Carbide Station
Wetzel County

Source S6A

Engine Data:

Engine Manufacturer	CAT	
Engine Model	3406 NA	
Type (Rich-burn or Low Emission)	Rich Burn	
Aspiration (Natural or Turbocharged)	natural	
Turbocharge Cooler Temperature	N/A	deg. F
Manufacturer Rating	215	hp
Speed at Above Rating	1,800	rpm
Configuration (In-line or Vee)	In Line	
Number of Cylinders	6	
Engine Bore	4.790	inches
Engine Stroke	6.000	inches
Fuel Heat Content (HHV)	1,114	BTU/scf
Engine Displacement	649	cu. in.
Fuel Consumption (HHV)	8,754	Btu/bhp-hr

Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day
Oxides of Nitrogen, NOx	0.97	0.46	2.02	209	11.06
Carbon Monoxide CO	0.97	0.46	2.02	209	11.06
VOC (NMNEHC)	0.14	0.06	0.28	29	1.54
CO ₂	573	272	1,190	123,195	6518.37

AP-42
4-stroke rich
lb/mmBtu

Comment

453.59 grams = 1 pound
2,000 pounds = 1 ton

Total Annual Hours of Operation

8,760

SO ₂	0.0011	0.0049
PM _{2.5}	0.0179	0.0783
PM (Condensable)	0.0187	0.0817
CH ₄ CO _{2e}	9.0906	39.8168
N ₂ O CO _{2e}	0.1289	0.5648
acrolein	0.0049	0.0217
acetaldehyde	0.0053	0.0230
formaldehyde mfr control rate	0.1400	0.0664
benzene	0.003	0.0130
toluene	0.0011	0.0046
methanol	0.0058	0.0252
xylene	0.0004	0.0016
total HAPs	0.0867	0.3798

0.0006
0.0095
0.00991
0.23
0.000221
0.00263
0.00279
0.0205
0.00158
0.00056
0.00306
0.00019
0.03131

Mfg. Spec Used

Factor From 40 CFR 98, Table C-2

Mfg. Spec Used

Exhaust Parameters:

Exhaust Gas Temperature	1,155	deg. F
Exhaust Gas Flow Rate	1032	acfm

Total Exhaust Gas Volume Flow, wet	1,032	acfm
Total Exhaust Gas Volume Flow, wet	17.2	acf per sec

Exhaust Stack Height	84	inches
	7.00	feet

Exhaust Stack Inside Diameter	6	inches
	0.500	feet

Exhaust Stack Velocity	87.6	ft/sec	4	x	acfm
	5,255.9	ft/min	3.1416	x	(stack diameter)^2

Eureka Hunter, LLC

Carbide Station
Wetzel County

Potential Emission Rates

Source VCU-1

Enclosed Vapor Combustor

Destruction Efficiency	99.0 %	
Gas Heat Content (HHV)	3000.0 Btu/scf (est.)	
Max Flow to T-E	0.0035 MMSCFD	0.6318 MMCF/Yr
Max BTUs to Flare	0.9 MMBTU/Hr	1,895 MMBTU/Yr

NOx	0.06	lbs/hr	0.06	tpy
CO	0.32	lbs/hr	0.35	tpy
CO2	102.28	lbs/hr	110.77	tpy
CO2e	172.11	lb/hr	126.16	tpy
VOC	0.38	lb/hr	0.41	tpy
CH4	0.00	lbs/hr	0.0021	tpy
N2O	0.0002	lbs/hr	0.0002	tpy
PM	0.0011	lb/hr	0.0024	tpy

Notes: Truck loading vapor to VCU is assumed to be 100% VOC.
Truck max Loading Emission are 3456 scfd (excluding displaced air)
Thus, max to flare is 0.0035 MMSCFD
Annual truck loading to flares is 0.6350 MMSCF/Yr.

Factors Used

AP-42 Table 13.5-1	NOx	0.068 Lbs/MMBTU
AP-42 Table 13.5-1	CO	0.37 Lbs/MMBTU
40 CFR 98 Table C-1	CO2	116.89 Lbs/MMBTU
40 CFR 98 Table C-2	CH4	0.0022 Lbs/MMBTU
40 CFR 98 Table C-2	N2O	0.00022 Lbs/MMBTU
AP-42 Table 1.4-2	PM	7.6 lb/MMSCF

Eureka Hunter, LLC

Carbide Station
Wetzel County

Potential Emission Rates

Source S15-A

Combustor Auxiliary Fuel

Burner Duty Rating 2400.00 Mbtu/hr
Burner Efficiency 99.0 %
Gas Heat Content (HHV) 2200.0 Btu/scf (Propane)
Total Gas Consumption 13223.1 scfd
H2S Concentration 0.000 Mole %
Hours of Operation 4380

NOx	0.1188	lbs/hr	0.260	TPY
CO	0.0998	lbs/hr	0.219	TPY
CO2e	143	lbs/hr	314	TPY
CO2	143	lbs/hr	312	TPY
CH4	0.0027	lbs/hr	0.006	TPY
N2O	0.0026	lbs/hr	0.006	TPY
VOC	0.0065	lbs/hr	0.014	TPY
SO2	0.0007	lbs/hr	0.002	TPY
PM10	0.0090	lbs/hr	0.020	TPY

Note: Only operates during truck loading. As truck loading is limited to 12 hrs per day. Auxiliary Fuel usage will be a max of 4380 hours per year.

AP-42 Factors Used

NOx	100 Lbs/MMCF	
CO	84 Lbs/MMCF	
CO ₂	120,000 Lbs/MMCF	Global Warming Potential = 1
VOC	5.5 Lbs/MMCF	
PM	7.6 Lbs/MMCF	
SO ₂	0.6 Lbs/MMCF	
CH ₄	2.3 Lbs/MMCF	Global Warming Potential = 21
N ₂ O	2.2 Lbs/MMCF	Global Warming Potential = 310

Note: EPA Emission factors are based on gas at 1020 BTU/CF. Thus, emission factors must be corrected for higher BTU gas.

Eureka Hunter, LLC

Carbide Station
Wetzel County

Potential Emission Rates

Source HTR-1

Line Heater

Burner Duty Rating 750.0 Mbtu/hr
Burner Efficiency 98.0 %
Gas Heat Content (HHV) 1114.2 Btu/scf
Total Gas Consumption 16484.5 scfd
H2S Concentration 0.000 Mole %
Hours of Operation 8760

NOx	0.0750	lbs/hr	0.329	TPY
CO	0.0630	lbs/hr	0.276	TPY
CO2e	91	lbs/hr	397	TPY
CO2	90	lbs/hr	394	TPY
CH4	0.0017	lbs/hr	0.008	TPY
N2O	0.0017	lbs/hr	0.007	TPY
VOC	0.0041	lbs/hr	0.018	TPY
SO2	0.0005	lbs/hr	0.002	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0057	lbs/hr	0.025	TPY

AP-42 Factors Used

NOx	100 Lbs/MMCF	
CO	84 Lbs/MMCF	
CO ₂	120,000 Lbs/MMCF	Global Warming Potential = 1
VOC	5.5 Lbs/MMCF	
PM	7.6 Lbs/MMCF	
SO ₂	0.6 Lbs/MMCF	
CH ₄	2.3 Lbs/MMCF	Global Warming Potential = 21
N ₂ O	2.2 Lbs/MMCF	Global Warming Potential = 310

Note: EPA Emission factors are based on gas at 1020 BTU/CF. Thus, emission factors must be corrected for higher BTU gas.

Eureka Hunter, LLC
FUGITIVE EMISSIONS

Carbide Station

Wetzel County

Fugitive VOC Emissions

Volatile Organic Compounds, non-methane and non-ethane from gas analysis:
Hydrogen Sulfide in Gas Stream

13.23 weight percent
0.00 ppm by volume

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	H2S, wt. %	H2S, lb/hr
Valves:						
Gas/Vapor:	40	0.00992 lb/hr	13.2	0.053	0.000	0.0000
Light Liquid:	8	0.00550 lb/hr	100.0	0.044		
Heavy Liquid (Oil):	-	0.00002 lb/hr	100.0	0.000		
Relief Valves:	16	0.01940 lb/hr	13.2	0.041	0.000	0.0000
Open-ended Lines, gas:		0.00441 lb/hr	13.2	0.000	0.000	0.0000
Open-ended Lines, liquid:	-	0.00031 lb/hr	100.0	0.000		
Pump Seals:						
Gas:	-	0.00529 lb/hr	100.0	0.000	0.000	0.0000
Light Liquid:	6	0.02866 lb/hr	100.0	0.172		
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000		
Compressor Seals, Gas:	74	0.01940 lb/hr	13.2	0.190	0.000	0.0000
Connectors:						
Gas:	160	0.00044 lb/hr	13.2	0.009	0.000	0.0000
Light Liquid:	30	0.00046 lb/hr	100.0	0.014		
Heavy Liquid (Oil):	-	0.00002 lb/hr	100.0	0.000		
Flanges:						
Gas:	120	0.00086 lb/hr	13.2	0.014	0.000	0.0000
Light Liquid:	24	0.00024 lb/hr	100.0	0.006		
Heavy Liquid:	0	0.00000086 lb/hr	100.0	0.000		

Fugitive Calculations:

	lb/hr	t/y
VOC	0.542	2.375
H2S	0.000	0.000

Notes: * TNRCC approved numbers per their interoffice memorandum dated November 29, 1995

Eureka Hunter, LLC
GAS ANALYSIS INFORMATION

Carbide Station
Wetzel County

Fuel Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.497	0.139	0.005	0.707			-		0.0050	
Carbon Dioxide, CO2	0.243	0.107	0.004	0.543			-		0.0024	
Hydrogen Sulfide, H2S	0.000	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	0.001	0.000	0.000	0.002			-		0.0000	
Methane, CH4	81.714	13.109	0.453	66.550	743.1	825.3	7.787		0.8155	
Ethane, C2H6	12.425	3.736	0.129	18.967	201.1	219.9	2.072		0.1232	3.305
Propane	3.412	1.505	0.052	7.638	79.0	85.8	0.813	7.638	0.0335	0.935
Iso-Butane	0.446	0.259	0.009	1.316	13.4	14.5	0.138	1.316	0.0043	0.145
Normal Butane	0.731	0.425	0.015	2.157	22.0	23.8	0.226	2.157	0.0071	0.229
Iso Pentane	0.196	0.141	0.005	0.718	7.3	7.8	0.075	0.718	0.0020	0.071
Normal Pentane	0.152	0.110	0.004	0.557	5.6	6.1	0.058	0.557	0.0015	0.055
Hexane	0.120	0.103	0.004	0.525	5.3	5.7	0.054	0.525	0.0012	0.049
Heptane	0.063	0.063	0.002	0.320	3.2	3.5	0.033	0.320	0.0006	0.029
100.000		19.698	0.680		1,080.0	1,192.5	11.257	13.231	0.9964	4.819

Ideal Gross (HHV)	1,192.5
Ideal Gross (sa'd)	1,172.5
GPM	-
Real Gross (HHV)	1,196.8
Real Net (LHV)	1,083.9

Eureka Hunter, LLC

Carbide Station
Wetzel County

Fuel Gas Composition Information:

	Fuel Gas mole %	Fuel M.W. lb/lb-mole	Fuel S.G.	Fuel Wt. %	LHV, dry Btu/scf	HHV, dry Btu/scf	AFR vol/vol	VOC NM / NE	Z Factor	GPM
Nitrogen, N2	0.504	0.141	0.005	0.776			-		0.0050	
Carbon Dioxide, CO2	0.250	0.110	0.004	0.605			-		0.0025	
Hydrogen Sulfide, H2S	0.000	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	0.001	0.000	0.000	0.002			-		0.0000	
Methane, CH4	87.600	14.054	0.485	77.279	796.6	884.8	8.348		0.8742	
Ethane, C2H6	9.925	2.984	0.103	16.411	160.7	175.6	1.655		0.0984	2.640
Propane	1.000	0.441	0.015	2.425	23.1	25.2	0.238	2.425	0.0098	0.274
Iso-Butane	0.150	0.087	0.003	0.479	4.5	4.9	0.046	0.479	0.0015	0.049
Normal Butane	0.400	0.232	0.008	1.278	12.0	13.0	0.124	1.278	0.0039	0.125
Iso Pentane	0.060	0.043	0.001	0.238	2.2	2.4	0.023	0.238	0.0006	0.022
Normal Pentane	0.040	0.029	0.001	0.159	1.5	1.6	0.015	0.159	0.0004	0.014
Hexane	0.050	0.043	0.001	0.237	2.2	2.4	0.023	0.237	0.0005	0.020
Heptane	0.020	0.020	0.001	0.110	1.0	1.1	0.010	0.110	0.0002	0.009
	100.000	18.186	0.628		1,003.9	1,111.0	10.484	4.927	0.9971	3.154

Ideal Gross (HHV) 1,111.0
Ideal Gross (sat'd) 1,092.4
GPM -
Real Gross (HHV) 1,114.2
Real Net (LHV) 1,006.9

GAS DATA INFORMATION

Specific Gravity of Air, @ 29.92 in. Hg and 60 -F, 28.9625
 One mole of gas occupies, @ 14.696 psia & 32 -F, 359.2 cu ft per lb-mole
 One mole of gas occupies, @ 14.696 psia & 60 -F, 379.64 cu ft per lb-mole

Hydrogen Sulfide (H₂S) conversion chart:

0 grains H ₂ S/100 scf	=	0.00000 mole % H ₂ S
		0.0 ppmv H ₂ S
0 mole % H ₂ S	=	0 grains H ₂ S/ 100 scf
		0.0 ppmv H ₂ S
0 ppmv H ₂ S	=	0.000 grains H ₂ S/ 100 scf
		0.00000 mole % H ₂ S

Ideal Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air/ 1 cu ft of gas	Z factor
Nitrogen	N ₂	28.013	0.9672	0.0738	13.552	0	0	0	0	0	0.9997
Carbon Dioxide	CO ₂	44.010	1.5196	0.1159	8.626	0	0	0	0	0	0.9964
Hydrogen Sulfide	H ₂ S	34.076	1.1766	0.0898	11.141	587	637	6,545	7,100	7.15	0.9846
Helium	He	4.003	0.1382	0.0105	94.848						1.0006
Oxygen	O ₂	31.999	1.1048	0.0843	11.864	0	0	0	0	0	0.9992
Methane	CH ₄	16.043	0.5539	0.0423	23.664	909.4	1,010.0	21,520	23,879	9.53	0.9980
Ethane	C ₂ H ₆	30.070	1.0382	0.0792	12.625	1,618.7	1,769.6	20,432	22,320	16.68	0.9919
Propane	C ₃ H ₈	44.097	1.5226	0.1162	8.609	2,314.9	2,516.1	19,944	21,661	23.82	0.9825
Iso-Butane	C ₄ H ₁₀	58.124	2.0069	0.1531	6.532	3,000.4	3,251.9	19,629	21,257	30.97	0.9711
Normal Butane	C ₄ H ₁₀	58.124	2.0069	0.1531	6.532	3,010.8	3,262.3	19,680	21,308	30.97	0.9667
Iso Pentane	C ₅ H ₁₂	72.151	2.4912	0.1901	5.262	3,699.0	4,000.9	19,478	21,052	38.11	1.0000
Normal Pentane	C ₅ H ₁₂	72.151	2.4912	0.1901	5.262	3,706.9	4,008.9	19,517	21,091	38.11	1.0000
Hexane	C ₆ H ₁₄	86.178	2.9755	0.2270	4.405	4,403.8	4,755.9	19,403	20,940	45.26	0.9879
Heptane	C ₇ H ₁₆	100.205	3.4598	0.2639	3.789	5,100.0	5,502.5	22,000	23,000	52.41	0.9947

Real Gas at 14.696 psia and 60°F

		MW lb/mol	Specific Gravity	Lb per Cu Ft	Cu Ft per Lb	LHV, dry Btu/scf	HHV, dry Btu/scf	LHV Btu/lb	HHV Btu/lb	cu ft of air/ 1 cu ft of gas	Gal/Mole
Nitrogen	N ₂	28.013	0.9672	0.0738	13.552	0	0	0	0	0	4.1513
Carbon Dioxide	CO ₂	44.010	1.5196	0.1159	8.626	0	0	0	0	0	6.4532
Hydrogen Sulfide	H ₂ S	34.076	1.1766	0.0898	11.141	621	672	6,545	7,100	7.15	5.1005
Helium	He	4.003	0.1382	0.0105	94.848						3.8376
Oxygen	O ₂	31.999	1.1048	0.0843	11.864	0	0	0	0	0	3.3605
Methane	CH ₄	16.043	0.5539	0.0423	23.664	911	1,012	21,520	23,879	9.53	6.4172
Ethane	C ₂ H ₆	30.070	1.0382	0.0792	12.625	1,631	1,783	20,432	22,320	16.68	10.126
Propane	C ₃ H ₈	44.097	1.5226	0.1162	8.609	2,353	3,354	19,944	21,661	23.82	10.433
Iso-Butane	C ₄ H ₁₀	58.124	2.0069	0.1531	6.532	3,101	3,369	19,629	21,257	30.97	12.386
Normal Butane	C ₄ H ₁₀	58.124	2.0069	0.1531	6.532	3,094	3,370	19,680	21,308	30.97	11.937
Iso Pentane	C ₅ H ₁₂	72.151	2.4912	0.1901	5.262	3,709	4,001	19,478	21,052	38.11	13.86
Normal Pentane	C ₅ H ₁₂	72.151	2.4912	0.1901	5.262	3,698	4,009	19,517	21,091	38.11	13.713
Hexane	C ₆ H ₁₄	86.178	2.9755	0.2270	4.405	4,404	4,756	19,403	20,940	45.26	15.566
Heptane	C ₇ H ₁₆	100.205	3.4598	0.2639	3.789	5,101	5,503	22,000	23,000	52.41	17.468

16.3227
17.468