

April 28, 2016

West Virginia Dept. of Environmental Protection  
Division of Air Quality – Permitting Section  
601 57<sup>th</sup> Street, SE  
Charleston, WV 25304

  
TECHNOLOGIES  
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BUILDING D, 2<sup>nd</sup> FLOOR  
BRIDGEVILLE, PA 15017  
(412) 221-1100  
(412) 257-6103 (FAX)  
<http://www.se-env.com>

**RE: Class II Administrative Update  
Buffalo Run Production Facility  
Triad Hunter, LLC  
Wetzel County, West Virginia  
Plant ID No. 103-00063  
Permit No. R13-3068 & R13-3068A**

To Whom It May Concern:

On behalf of our client, Triad Hunter Pipeline, LLC, we are pleased to submit one hard copy and two electronic copies of the Class II Administrative Update application for its Buffalo Run Production Facility in Wetzel County.

This update includes replacement of the permitted compressor unit engine with a Caterpillar G3306TA engine. This unit still falls under the same regulations as the permitted engine with no increase in total facility emissions. There are no other proposed modifications as part of this submittal.

An application fee in the amount of \$300 was determined to be applicable for a Class II administrative update application. A check, payable to WVDEP – Division of Air Quality has been included.

If there are any questions or concerns regarding this application, please contact me at 412/221-1100, Extension 202 or [rdhonau@se-env.com](mailto:rdhonau@se-env.com) and we will provide any needed clarification or additional information immediately.

Sincerely,



Roger A. Dhonau, PE, QEP  
Principal

Enclosures

Cc: Triad Hunter, LLC – Mike Horan

# **CLASS II ADMINISTRATIVE UPDATE**

## **Triad Hunter, LLC**

**Buffalo Run Well Pad Compressor Station**

**Wetzel County, West Virginia**

### **Table of Contents**

#### **I. Application Form**

#### **II. Attachments**

- **Attachment A – Business Registration**
- **Attachment C – Construction Schedule**
- **Attachment D - Regulatory Analysis**
- **Attachment I – Emission Unit Table**
- **Attachment J - Emission Points Data Summary Sheet**
- **Attachment L – Emission Unit Data Sheets**
- **Attachment N – Supporting Calculations**
- **Attachment P – Public Notice Affidavit**

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## **SECTION I**

### **Application Form**



WEST VIRGINIA DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**

601 57<sup>th</sup> Street, SE  
Charleston, WV 25304  
(304) 926-0475  
[www.dep.wv.gov/daq](http://www.dep.wv.gov/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): <b>Triad Hunter, LLC</b>		2. Federal Employer ID No. (FEIN): <b>27-1355830</b>	
3. Name of facility (if different from above): <b>Buffalo Run Production Facility</b>		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: <b>125 Putnam Street Marietta, Ohio 45750</b>		5B. Facility's present physical address: <b>2610 Buffalo Run Road Jacksonburg, West Virginia 26377</b>	
6. <b>West Virginia Business Registration.</b> Is the applicant a resident of the State of West Virginia? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO – If <b>YES</b> , provide a copy of the <b>Certificate of Incorporation/Organization/Limited Partnership</b> (one page) including any name change amendments or other Business Registration Certificate as <b>Attachment A</b> . – If <b>NO</b> , provide a copy of the <b>Certificate of Authority/Authority of L.L.C./Registration</b> (one page) including any name change amendments or other Business Certificate as <b>Attachment A</b> .			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation: <b>Magnum Hunter Resources</b>			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the <i>proposed site</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO – If <b>YES</b> , please explain: <b>Applicant owns the property for the subject facility.</b> – If <b>NO</b> , you are not eligible for a permit for this source.			
9. Type of plant or facility (stationary source) to be <b>constructed, modified, relocated, administratively updated</b> or <b>temporarily permitted</b> (e.g., coal preparation plant, primary crusher, etc.): <b>Natural Gas Compressor Station</b>		10. North American Industry Classification System (NAICS) code for the facility: <b>486210</b>	
11A. DAQ Plant ID No. (for existing facilities only): <b>103-00063</b>		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): <b>R13-3068; R13-3068A</b>	

**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 <b>Modifications, Administrative Updates or Temporary permits</b> at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road; – For <b>Construction or Relocation permits</b> , please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a <b>MAP</b> as <b>Attachment B</b> .  <b>From US Highway 2, in New Martinsville, go east on US Highway 7, for approximately 2.5 miles and turn right (south) on US Highway 20. Travel approximately 17 miles to Jacksonburg and make a right on Main Street. Follow Main Street approximately 0.2 miles and make a left turn on to Buffalo Run Road and drive approximately 2.4 miles and the Buffalo Run Well Pad Station will be on your left hand side.</b>		
12.B. New site address (if applicable):	12C. Nearest city or town: <b>Jacksonburg</b>	12D. County: <b>Wetzel</b>
12.E. UTM Northing (KM): <b>4372.7</b>	12F. UTM Easting (KM): <b>531.33</b>	12G. UTM Zone: <b>17</b>
13. Briefly describe the proposed change(s) at the facility: <b>Compress produced natural gas to allow discharge into a gathering line owned by others.</b>		
14A. Provide the date of anticipated installation or change: <b>Upon Approval</b> If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen:		14B. Date of anticipated Start-Up if a permit is granted: <b>Approx. 6/27/16</b>
14C. Provide a <b>Schedule</b> of the planned <b>Installation of/Change</b> to and <b>Start-Up</b> of each of the units proposed in this permit application as <b>Attachment C</b> (if more than one unit is involved).		
15. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application: Hours Per Day <b>24</b> Days Per Week <b>7</b> Weeks Per Year <b>52</b>		
16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> <b>YES</b> <input checked="" type="checkbox"/> <b>NO</b>		
17. <b>Risk Management Plans.</b> If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see <a href="http://www.epa.gov/ceppo">www.epa.gov/ceppo</a> ), submit your <b>Risk Management Plan (RMP)</b> to U. S. EPA Region III.		
18. <b>Regulatory Discussion.</b> List all Federal and State air pollution control regulations that you believe are applicable to the proposed process ( <i>if known</i> ). 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 ( <i>if known</i> ). Provide this information as <b>Attachment D</b> .		
<b>Section II. Additional attachments and supporting documents.</b>		
19. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).		
20. Include a <b>Table of Contents</b> as the first page of your application package.		
21. Provide a <b>Plot Plan</b> , 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 <b>Attachment E</b> (Refer to <b>Plot Plan Guidance</b> ) . – Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).		
22. Provide a <b>Detailed Process Flow Diagram(s)</b> showing each proposed or modified emissions unit, emission point and control device as <b>Attachment F</b> .		
23. Provide a <b>Process Description</b> as <b>Attachment G</b> . – Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).		
<b>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</b>		

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:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes*	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

☒ General Emission Unit, specify: **Natural Gas Compressor**

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

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

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

☒ Other Collectors, specify: **NSCR Catalyst – See manufacturer’s sheet (Attachment N)**.

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:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> 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: 4/27/16  
(Please use blue ink)

35B. Printed name of signer: **Mike Horan**

35C. Title: **Vice President of Appalachian Production**

35D. E-mail: **mhoran@triadhunter.com**

36E. Phone: **740-868-1324**

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:**

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

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## **SECTION II**

### **Attachments**



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## **ATTACHMENT A**

### **Business Registration**



## Certificate

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

Triad Hunter, LLC

has filed the appropriate registration documents in my office according to the provisions of the West Virginia Code and hereby declare the organization listed above as duly registered with the Secretary of State's Office.

*Given under my hand and  
the Great Seal of West Virginia  
on this day of  
January 29, 2010*



*Natalie E. Tennant*

*Secretary of State*

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# **ATTACHMENT C**

## **Construction Schedule**

**Triad Hunter, LLC**  
**Buffalo Run Production Facility**  
**Attachment C – Construction Schedule**

Triad Hunter, LLC seeks to install one compressor engine at its existing facility. The permitted Caterpillar G342NA HCR compressor engine will be replaced with a Caterpillar G3306TA compressor engine. The anticipated start-up date is approximately 6/27/2016. All previously permitted equipment is currently functioning at this existing well pad.

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## **ATTACHMENT D**

### **Regulatory Analysis**

**Triad Hunter, LLC**  
**Buffalo Run Production Facility**  
**Attachment D - Regulatory Analysis**

Both State and Federal environmental regulations governing air emissions apply to Triad Hunter, LLC's (Triad) Buffalo Run Production Facility near the community of Jacksonburg in Wetzel County, 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.

The following is a summary of relevant and applicable regulations governing air emissions from this facility. The planned modification to the Facility does not trigger the applicability of any additional regulations.

### **1.1 PSD and NSR**

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

The Facility is within an area designated as attainment for all criteria pollutants. Consequently, the Facility is not subject to the New Source Review (NSR) regulations. Additionally, potential emissions are below the annual emission thresholds triggering PSD. Consequently, neither PSD nor NSR requirements are applicable to this project.

### **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 both of these thresholds. In addition to this annual potential emissions threshold, any facility operating under certain federal New Source Performance Standards also fall under the Title V program. While the Facility is indeed regulated under certain New Source Performance Standards, none of these require participation in the Title V Operating Permit Program. Thus, a Title V operating permit is not required.

### **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 Facility are as follows:

- 40 CFR 60, Subpart K/Ka/Kb – Storage Vessels for Petroleum Liquids/Volatile Organic Liquids
- 40 CFR 60, Subpart KKK – Equipment Leaks of VOC from Onshore Natural Gas Processing Stations
- 40 CFR 60, Subpart LLL – Onshore Natural Gas Processing Stations: SO<sub>2</sub> Emissions
- 40 CFR 60, Subpart III – Stationary Compression Ignition Internal Combustion Engines
- 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 K/Ka/Kb

These three subparts apply to volatile organic liquid storage tanks of specific sizes constructed in certain timeframes. Subpart K applies to tanks constructed or modified between 1973 and 1978 while Subpart Ka applies to tanks constructed between 1978 and 1984. Subpart Kb applies to storage tanks constructed or modified after 1984. The Condensate Tanks are potentially subject to one or more of these rules, depending upon its date of manufacture. However, the capacity of these tanks (13,020 gallons each) is below the threshold for Subpart K and Ka (40,000 gallons), excluding it from these rules. As the expected tanks will have been manufactured after this date, they are potentially regulated under Subpart Kb. However, again, the capacities of these tanks are below the threshold for regulation under this rule (19,800 gallons or 75 cubic meters).

#### 1.3.2 Subpart KKK

This subpart regulates VOC emissions from equipment and piping connection leaks at natural gas processing plants, including fractionation facilities. The Buffalo Run Production Facility is not a gas processing or fractionation plant. Hence, this rule does not apply.

#### 1.3.3 Subpart LLL

This set of regulations governs emissions from processes used to remove sulfur gases from the field gas stream (sweetening unit) and subsequent sulfur recovery operations. The operations do not include any sulfur removal processes.



#### 1.3.4 Subpart IIII

This subpart governs emissions from new compression ignition internal combustion engines (CI ICE) manufactured after July 11, 2005. There are no compression ignition engines (e.g. diesel-fired emergency generator) at this station. Hence, this rule does not apply.

#### 1.3.5 Subpart JJJJ

This subpart governs emissions from new stationary spark ignition internal combustion engines (SI ICE) manufactured after July 1, 2007. The proposed replacement engine (Caterpillar G3306TA) was manufactured February 6, 2007. Hence, the rule does not apply.

#### 1.3.6 Subpart OOOO

The potentially applicable sections of this rule sets restrictions on any pneumatic controllers present at the Buffalo Run Production Facility; establishes maintenance requirements for the compressor engine and sets requirements for storage vessels with potential VOC emissions greater than 6 tons per year. These portions of Subpart OOOO potentially apply to the Facility. Those sections addressing gas wells, centrifugal compressors and leaks at natural gas processing plants do not apply.

One of the key components to this rule [40 CFR 60.5390(b)] is the requirement that all pneumatic controllers located between the well head and a processing plant must have a bleed rate of less than 6 scfh. All pneumatic controllers installed at the Facility must meet this criterion. All pneumatic controllers are of an intermittent bleed design. Thus, this aspect of the rule does not apply.

This rule also stipulates that storage vessels with VOC emissions equal to or greater than 6 tpy must control those emissions by 95% by October 15, 2013. The condensate tanks have a control system that captures all vapors and combusts them using a vapor combustion unit. Hence, Triad Hunter complies with the requirements of 40 CFR 60.5395. Thus, no action is required to comply with this element of Subpart OOOO.

### **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 Facility:

- 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 current engine (Caterpillar G3306TA) was manufactured February 6, 2007 and is considered a ZZZZ applicable engine. Hence, this rule applies to the current engine installed at the existing well pad.

### 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. However, in accordance with 68.115(c(ii), flammable naturally occurring mixtures at a location prior to entering a gas processing plant need not be considered when determining if the threshold quantity has been exceeded. Hence, an RMP is not required for this facility.

### 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. Triad Hunter 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 Facility, no actions are required on the part of Triad Hunter to attain compliance.

#### 1.6.4 45 CSR 13

The state regulations applicable are in Title 45 Series 13 of the Code of State Regulations. The Facility has the potential to emit NO<sub>x</sub>, CO and 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 incorporated, 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 several NSPS Subparts.

#### 1.6.6 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. The 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 obtain a Title V permit under this Standard. This federal exclusion has been adopted by WVDEP.

#### 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.

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## **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 <sup>1</sup>	Emission Point ID <sup>2</sup>	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type <sup>3</sup> and Date of Change	Control Device <sup>4</sup>
1S	1E	Caterpillar G3306TA	2016	203 Hp	New	1C
1S	1E	Caterpillar G 342 NA HCR	2011	225 Hp	Removal	1C
T01	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
T02	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
T03	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
T04	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
T05	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
T06	2E	Produced Fluids Tank	2011	400 bbl	Existing	2C
1C		Miratech NSCR Catalyst	2011	18,732 scfh	Existing	
2C		HYBON Vapor Combustor Unit	2013	2.39 MMBtu/Hr	Existing	
3S	3E	(3) Heated Separators	2011	1 MMBtu/hr	Existing	
T07	4E	Produced Water Tank	2011	210 bbl	Existing	
T08	4E	Produced Water Tank	2011	210 bbl	Existing	
4S	5E	Line Heater	2011	0.15 MMBtu/HR	Existing	

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

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

<sup>3</sup> New, modification, removal

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

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## **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 <sup>1</sup>	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 <sup>3</sup>  (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration <sup>7</sup> (ppmv or mg/m <sup>4</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>2</sup>	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
1E	Upward Vertical Stack	1E	1S	1C	Catalyst	C	8760	NOx	7.23	31.66	0.58	2.53	Gas	EE	
								CO	7.23	31.66	0.65	2.85	Gas	EE	
								VOC	0.05	0.24	0.01	0.04	Gas	EE	
								SO2	0.001	0.0047	0.001	0.0047	Gas	EE	
								PM/PM10	0.018	0.0794	0.018	0.0794	Gas	EE	
								Formaldehyde	0.1119	0.4901	0.009	0.0392	Gas	EE	
								CO2	201	880.38	201	880.38	Gas	EE	
2E	Upward Vertical Stack	2E	T01 – T06	2C	VCU	C	8760	VOC	0.53	0.12	0.01	0.02	Gas	EE	
								NOx	0.09	0.37	0.09	0.37	Gas	EE	
								CO	0.07	00.31	0.07	00.31	Gas	EE	
								PM	0.01	0.03	0.01	0.03	Gas	EE	
								SO2	0.001	0.002	0.001	0.002	Gas	EE	
								HAPs	0.25	1.1	0.0108	0.0025	Gas	EE	
3E	Upward Vertical Stack	3E	3S	N/A	N/A	C	8760	NOx	0.29	1.29	0.29	1.29	Gas	EE	
								CO	0.25	1.08	0.25	1.08	Gas	EE	
								VOC	0.02	0.07	0.02	0.07	Gas	EE	
								SO2	0.002	0.008	0.002	0.008	Gas	EE	
								PM	0.022	0.10	0.022	0.10	Gas	EE	
5E	Upward Vertical Stack	5E	4S	N/A	N/A	C	8760	NOx	0.015	0.065	0.015	0.065	Gas	EE	
								CO	0.012	0.054	0.012	0.054	Gas	EE	
								VOC	0.001	0.004	0.001	0.004	Gas	EE	
								SO2	0.0001	0.0004	0.0001	0.0004	Gas	EE	
								PM	0.001	0.005	0.001	0.005	Gas	EE	

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the 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. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for



fugitive emission activities.

- <sup>1</sup> Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- <sup>2</sup> Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
- <sup>3</sup> List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>3</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. **DO NOT LIST** H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
- <sup>4</sup> 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).
- <sup>5</sup> 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).
- <sup>6</sup> 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).
- <sup>7</sup> Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10).

**Attachment J**  
**EMISSION POINTS DATA SUMMARY SHEET**

Table 2: Release Parameter Data								
Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height <sup>2</sup> <i>(Release height of emissions above ground level)</i>	Northing	Easting
1E	0.83	1170	88	161.84		10		
2E	1.73	100	14.20	0.1008		12		
3E	0.16	800				4		
5E	0.16	800				4		

<sup>1</sup> Give at operating conditions. Include inerts.

<sup>2</sup> Release height of emissions above ground level.

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## **ATTACHMENT L**

### **Emission Unit Data Sheets**

# NATURAL GAS COMPRESSOR/GENERATOR ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		S1		S1			
Engine Manufacturer and Model		Caterpillar G 342 NA HCR		Caterpillar G3306TA			
Manufacturer's Rated bhp/rpm		225 bhp/1,200 rpm		203 bhp/1,800 rpm			
Source Status <sup>2</sup>		RS		NS			
Date Installed/Modified/Removed <sup>3</sup>		2011		2016			
Engine Manufactured/Reconstruction Date <sup>4</sup>		Pre June 12, 2006		February 6, 2007			
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>5</sup>		No		No			
Engine, Fuel and Combustion Data	Engine Type <sup>6</sup>	RB4S		RB4S			
	APCD Type <sup>7</sup>	NSCR		NSCR			
	Fuel Type <sup>8</sup>	RG		RG			
	H <sub>2</sub> S (gr/100 scf)	< 1		< 1			
	Operating bhp/rpm	225 bhp/1,200 rpm		203 bhp/1,800 rpm			
	BSFC (Btu/bhp-hr)	9,630		9,006			
	Fuel throughput (ft <sup>3</sup> /hr)	2,124		1,584			
	Fuel throughput (MMft <sup>3</sup> /yr)	18,609		13.88			
	Operation (hrs/yr)	8760		8760			
Reference <sup>9</sup>	Potential Emissions <sup>10</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
MD	NO <sub>x</sub>	0.64	2.80	0.58	2.53		
MD	CO	0.68	2.98	0.65	2.85		
MD	VOC	0.01	0.04	0.01	0.04		
AP	SO <sub>2</sub>	0.0013	0.0056	0.001	0.005		
AP	PM <sub>10</sub>	0.0215	0.0940	0.018	0.079		
MD	Formaldehyde	0.009	0.04	0.009	0.04		
AP	Total HAPs	0.0679	0.2974	0.0679	0.2974		

- 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.
- 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
- 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*.

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## **ATTACHMENT N**

### **Supporting Calculations**

**Triad Hunter, LLC**  
EMISSIONS SUMMARY

Buffalo Run Station  
Wetzel County

Source	Description	NOx lb/hr	CO lb/hr	CO2 lb/hr	VOC lb/hr	SO2 lb/hr	H2S lb/hr	PM lb/hr	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
1S	Compressor Engine #1	0.58	0.65	201.00	0.01	0.001	0.00	0.018	0.0029	0.0090	0.0679
---	Blowdowns				N/A						
2S	Condensate Tanks <sup>1</sup>				0.53						0.0108
---	Vapor Combustor Unit	0.08	0.07	278.77	0.005	0.001		0.006			
3S - HTR1	Heated Separators	0.29	0.25	343.05	0.02	0.002		0.022			
4S - HTR 2	Line Heater	0.015	0.012	17.17	0.001	0.0001		0.001			
---	Truck Loading				1.19						
---	Fugitive				0.17						
<b>Total</b>		0.97	0.98	840	1.92	0.00	0.00	0.05	0.00	0.01	0.08

Source		NOx tpy	CO tpy	CO2 tpy	VOC tpy	SO2 tpy	H2S tpy	PM tpy	benzene tpy	formaldehyde tpy	Total HAPs tpy
1S	Compressor Engine #1	2.53	2.85	880	0.04	0.005	0.00	0.16	0.01	0.04	0.297
---	Blowdowns <sup>1</sup>				0.15						
2S	Condensate Tanks <sup>2</sup>				0.12						0.0025
---	Vapor Combustion Unit	0.37	0.31	1221.05	0.02	0.002		0.03			
3S - HTR1	Heated Separators	1.29	1.08	1502.61	0.07	0.008		0.10			
4S - HTR 2	Line Heater	0.065	0.054	75.23	0.004	0.0004		0.005			
---	Truck Loading				0.37						
---	Fugitive				0.76						
<b>Total</b>		4.25	4.29	3,679	1.54	0.02	0.00	0.29	0.01	0.04	0.30

<sup>1</sup> Condensate tanks equipped with Vapor Combustor Unit (VCU)  
with 99% Destruction Efficiency.



**Triad Hunter, LLC**  
**ENGINE EMISSIONS**

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**Buffalo Run Station**  
**Wetzel County**

**Proposed Emission Rates**  
**Uncontrolled Emissions**

**Source 1S**  
**Engine 1**

**Engine Data:**

Engine Manufacturer	CATERPILLAR
Engine Model	G3306TA
Type (Rich-burn or Low Emission)	Rich-Burn
Aspiration (Natural or Turbocharged)	Natural

Manufacturer Rating	203	hp
Speed at Above Rating	1,800	rpm
Number of Cylinders	4	
Fuel Consumption	9,006	Btu/bhp-hr
Fuel Throughput	13.88	MMcf/yr

AP-42  
4strokeRich  
lb/mmbtu

**Emission Rates:**

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day
Oxides of Nitrogen, NOx	16.15	7.23	31.66	3,278	173.47
Carbon Monoxide CO	16.15	7.23	31.66	3,278	173.47
VOC (NMNEHC)	0.12	0.05	0.24	24	1.29
CO2		201.00	880.38		4824.00

Comment

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

**Total Annual Hours of Operation**

**8,760**

SO2	0.0011	0.0047	0.000588
PM2.5	0.0174	0.0761	0.0095
PM (Condensable)	0.0181	0.0794	0.00991
acrolein	0.0048	0.0211	0.00263
acetaldehyde	0.0051	0.0223	0.00279
formaldehyde	0.2500	0.1119	0.4901
benzene	0.0029	0.0127	0.0611988
toluene	0.001	0.0045	0.00158
ethylbenzene	5E-05	0.0002	0.000558
xylene	0.0004	0.0016	0.000248
methanol	0.0056	0.0245	0.000195
total HAPs	0.1317	0.5768	0.00306
			0.0720366

Mfg. Spec Used

**Exhaust Parameters:**

Exhaust Gas Temperature	1,080	deg. F
Exhaust Gas Flow Rate	984	acfm

Total Exhaust Gas Volume Flow, wet	984	acfm
Total Exhaust Gas Volume Flow, wet	16.4	acf per sec

Exhaust Stack Height	96	inches
	8.00	feet

Exhaust Stack Inside Diameter	6	inches
	0.500	feet

Exhaust Stack Velocity	83.5	ft/sec	4	x	acfm
	5,011.5	ft/min	3.1416	x	( stack diameter )^2

## Triad Hunter, LLC

Buffalo Run Station  
Wetzel County

### Proposed Emission Rates Controlled Emissions

#### Source 1S Engine 1

#### Engine Data:

Engine Manufacturer CATERPILLAR  
Engine Model G3306TA  
Type (Rich-burn or Low Emission) Rich-Burn  
Aspiration (Natural or Turbocharged) Natural

Manufacturer Rating 203 hp  
Speed at Above Rating 1,800 rpm  
Number of Cylinders 4  
Fuel Consumption 9,006 Btu/bhp-hr  
Fuel Throughput 13.88 MMcf/yr

#### Emission Rates:

	g/bhp-hr	lb/hr	tons/year	g/hr	lb/day	AP-42 4strokeRich lb/mmbtu
Oxides of Nitrogen, NOx	1.29	0.58	2.53	262	13.88	
Carbon Monoxide CO	1.45	0.65	2.85	295	15.61	
VOC (NMNEHC)	0.02	0.01	0.04	4	0.23	
CO2		201.00	880.38		4824.00	

Comment

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

#### Total Annual Hours of Operation

8,760

	SO2	PM2.5	PM (Condensable)	acrolein	acetaldehyde	formaldehyde	benzene	toluene	ethylbenzene	xylene	methanol	total HAPs
	0.0011	0.0174	0.0181	0.0048	0.0051	0.009	0.0029	0.001	5E-05	0.0004	0.0056	0.0679
	0.0047	0.0761	0.0794	0.0211	0.0223	0.0392	0.0127	0.0045	0.0002	0.0016	0.0245	0.2974
	0.000588	0.0095	0.00991	0.00263	0.00279	0.0205	0.00158	0.000558	0.0000248	0.000195	0.00306	0.0313378

Mfg. Spec Used

#### Exhaust Parameters:

Exhaust Gas Temperature 1,080 deg. F  
Exhaust Gas Flow Rate 984 acfm

Total Exhaust Gas Volume Flow, wet 984 acfm  
Total Exhaust Gas Volume Flow, wet 16.4 acf per sec

Exhaust Stack Height 96 inches  
8.00 feet

Exhaust Stack Inside Diameter 6 inches  
0.500 feet

Exhaust Stack Velocity 83.5 ft/sec  
5,011.5 ft/min

$$\frac{4 \times \text{acfm}}{3.1416 \times (\text{stack diameter})^2}$$

**Triad Hunter, LLC**  
**VAPOR COMBUSTION UNIT EMISSIONS**

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Buffalo Run Station  
Wetzel County

**Proposed Emission Rates**

**Source 2C**  
**Vapor Combustor Unit**

Destruction Efficiency                      99 %  
Fuel Burner Rate                            2.39 MMBtu/hr  
Total Gas Consumption                    7.30 MMcf/year

NOx	0.083	lbs/hr	0.37	tpy
CO	0.070	lbs/hr	0.31	tpy
VOC	0.005	lbs/hr	0.02	tpy
SO2	0.001	lbs/hr	0.00	tpy
PM	0.006	lbs/hr	0.03	tpy
CO2	278.77	lbs/hr	1221.05	tpy

**AP-42 Emission Factors**

NOx	100 lbs/MMcf
CO	84 lbs/MMcf
VOC	5.5 lbs/MMcf
SO2	0.6 lbs/MMcf
PM	7.6 lbs/MMcf
CO2	53.02 kg/MMBtu

Buffalo Run Station  
Wetzel County

Proposed Emission Rates

**Source 3S - HTR1**  
**(3) Heated Separators**

Fuel Rating 1 MMBtu/hr  
Total Gas Consumption 25.764 MMcf/year

NOx	0.294	lbs/hr	1.288	tpy
CO	0.247	lbs/hr	1.082	tpy
VOC	0.016	lbs/hr	0.071	tpy
SO2	0.002	lbs/hr	0.008	tpy
PM	0.022	lbs/hr	0.098	tpy
CO2	343.05	lbs/hr	1502.61	tpy

**AP-42 Emission Factors**

NOx	100 lbs/MMcf
CO	84 lbs/MMcf
VOC	5.5 lbs/MMcf
SO2	0.6 lbs/MMcf
PM	7.6 lbs/MMcf
CO2	53.02 kg/MMBtu

**Triad Hunter, LLC**  
LINE HEATER EMISSIONS

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Buffalo Run Station  
Wetzel County

Proposed Emission Rates

**Source 4S - HTR2**  
**Line Heater**

Fuel Rating 0.15 MMBtu/hr  
Total Gas Consumption 1.290 MMcf/year

NOx	0.015	lbs/hr	0.065	tpy
CO	0.012	lbs/hr	0.054	tpy
VOC	0.001	lbs/hr	0.004	tpy
SO2	0.0001	lbs/hr	0.0004	tpy
PM	0.001	lbs/hr	0.005	tpy
CO2	17.17	lbs/hr	75.23	tpy

**AP-42 Emission Factors**

NOx	100 lbs/MMcf
CO	84 lbs/MMcf
VOC	5.5 lbs/MMcf
SO2	0.6 lbs/MMcf
PM	7.6 lbs/MMcf
CO2	53.02 kg/MMBtu

<b>Emission Factor</b>	VOC	0.12 lb/cf
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**Triad Hunter, LLC**  
**TANK EMISSIONS**

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**Buffalo Run Station**  
**Wetzel County**

**Proposed Emission Rates**

**Tanks**

Measured VOC Emissions <b>(HY-BON)</b>	52.63 tons per year <b>(prior to control device)</b>
Measured HAPs Emissions <b>(HY-BON)</b>	1.1 tons per year <b>(prior to control device)</b>
Destruction Efficiency (Vapor Combustor Unit)	99.0 %
Control Device	

VOC	0.526	lb/hr	0.12	tpy
HAPs	0.0108	lb/hr	0.0025	tpy



**Triad Hunter, LLC**  
FUGITIVE EMISSIONS

Buffalo Run Station  
Wetzel County

**Fugitive VOC Emissions**

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

13.35 weight percent  
0.00 ppm by volume

Emission Source:	Number	Oil & Gas Production*	VOC %	VOC, lb/hr	H2S, wt. %	H2S, lb/hr
<b>Valves:</b>						
Gas/Vapor:	35	0.00992 lb/hr	13.4	0.046	0.000	0.0000
Light Liquid:	6	0.00550 lb/hr	100.0	0.033		
Heavy Liquid (Oil):	-	0.00002 lb/hr	100.0	0.000		
<b>Relief Valves:</b>	3	0.01940 lb/hr	13.4	0.008	0.000	0.0000
<b>Open-ended Lines, gas:</b>		0.00441 lb/hr	13.4	0.000	0.000	0.0000
<b>Open-ended Lines, liquid:</b>	-	0.00031 lb/hr	100.0	0.000		
<b>Pump Seals:</b>						
Gas:	-	0.00529 lb/hr	100.0	0.000	0.000	0.0000
Light Liquid:	2	0.02866 lb/hr	100.0	0.057		
Heavy Liquid (Oil):	-	0.00133 lb/hr	100.0	0.000		
<b>Compressor Seals, Gas:</b>	6	0.01940 lb/hr	13.4	0.016	0.000	0.0000
<b>Connectors:</b>						
Gas:	15	0.00044 lb/hr	13.4	0.001	0.000	0.0000
Light Liquid:	18	0.00046 lb/hr	100.0	0.008		
Heavy Liquid (Oil):	-	0.00002 lb/hr	100.0	0.000		
<b>Flanges:</b>						
Gas:	38	0.00086 lb/hr	13.4	0.004	0.000	0.0000
Light Liquid:	3	0.00024 lb/hr	100.0	0.001		
Heavy Liquid:	0	0.00000086 lb/hr	100.0	0.000		

*Fugitive Calculations:*

	lb/hr	t/y
VOC	0.174	0.763
H2S	0.000	0.000

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

## Triad Hunter, LLC

Buffalo Run 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	0.359	0.101	0.003	0.513			-		0.0036	
Carbon Dioxide, CO2	0.172	0.076	0.003	0.386			-		0.0017	
Hydrogen Sulfide, H2S	0.000	0.000	0.000	0.000	0.0	0.0	0.000		0.0000	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	82.899	13.299	0.459	67.892	753.9	837.3	7.900		0.8273	
Ethane, C2H6	11.632	3.498	0.121	17.855	188.3	205.8	1.940		0.1154	3.094
Propane	3.046	1.343	0.046	6.857	70.5	76.6	0.726	6.857	0.0299	0.835
Iso-Butane	0.430	0.250	0.009	1.276	12.9	14.0	0.133	1.276	0.0042	0.140
Normal Butane	0.679	0.395	0.014	2.015	20.4	22.2	0.210	2.015	0.0066	0.213
Iso Pentane	0.190	0.137	0.005	0.700	7.0	7.6	0.072	0.700	0.0019	0.069
Normal Pentane	0.144	0.104	0.004	0.530	5.3	5.8	0.055	0.530	0.0014	0.052
Hexane	0.449	0.387	0.013	1.975	19.8	21.4	0.203	1.975	0.0044	0.193
Heptane	-	-	-	-			-	-	-	-
100.000		19.589	0.676		1,078.2	1,190.6	11.240	13.353	0.9965	4.595

Ideal Gross (HHV) 1,190.6  
Ideal Gross (sat'd) 1,170.7  
GPM -  
Real Gross (HHV) 1,194.9  
Real Net (LHV) 1,082.0



### Unit 1859 Caterpillar G3306TA Engine Emissions

Date of Manufacture	February 6, 2007	Engine Serial Number	G6X02948	Date Modified/Reconstructed	N/A
Driver Rated HP	203	Rated Speed in RPM	1800	Combustion Type	Spark Ignited 4 Stroke
Number of Cylinders	6	Compression Ratio	10.5:1	Combustion Setting	Rich Burn
Displacement, in <sup>3</sup>	640	Fuel Delivery Method	Carburetor	Combustion Air Treatment	T.C/ Aftercooled

#### Raw Engine Emissions

Fuel Consumption 8144 LHV BTU/bhp-hr or 9006 HHV BTU/bhp-hr  
Altitude 1200 ft  
Maximum Air Inlet Temp 90 F

	<u>g/bhp-hr<sup>1</sup></u>	<u>lb/MMBTU<sup>2</sup></u>	<u>lb/hr</u>	<u>TPY</u>
Nitrogen Oxides (NOx)	16.15		7.228	31.657
Carbon Monoxide (CO)	16.15		7.228	31.657
Volatile Organic Compounds (VOC or NMNEHC)	0.12		0.054	0.235
Formaldehyde (CH2O)	0.25		0.112	0.490
Particulate Matter (PM) <small>Filterable+Condensable</small>		1.94E-02	0.035	0.155
Sulfur Dioxide (SO2)		5.88E-04	0.001	0.005
	<u>g/bhp-hr<sup>1</sup></u>	<u>lb/MMBTU<sup>2</sup></u>	<u>lb/hr</u>	<u>Metric Tonne/yr</u>
Carbon Dioxide (CO2)	537	110.0	201	799
Methane (CH4)	0.8	0.23	0.420	1.671

<sup>1</sup> g/bhp-hr are based on Caterpillar Specifications. Note that g/bhp-hr values are based on 100% Load Operation.

It is recommended to add a safety margin to emissions to allow for operational flexibility and fuel gas composition variability.

<sup>2</sup> Emission Factor obtained from EPA's AP-42, Fifth Edition, Volume I, Chapter 3: Stationary Internal Combustion Sources (Section 3.2 Natural Gas-Fired Reciprocating Engines, Table 3.2-3).

#### Catalytic Converter Emissions

Catalytic Converter Make and Model: Miratech, Model RCS-1816-06  
Element Type: 3-Way  
Number of Elements in Housing: 1  
Air/Fuel Ratio Control Compliance Controls, AFR-9

	<u>% Reduction</u>	<u>lb/hr</u>	<u>TPY</u>
Nitrogen Oxides (NOx)	92	0.58	2.53
Carbon Monoxide (CO)	91.0	0.65	2.85
Volatile Organic Compounds (VOC or NMNEHC)	82	0.01	0.04
Formaldehyde (CH2O)	92	0.01	0.04
Particulate Matter (PM)	0	3.55E-02	1.55E-01
Sulfur Dioxide (SO2)	0	1.07E-03	4.71E-03
	<u>% Reduction</u>	<u>lb/hr</u>	<u>Metric Tonne/yr</u>
Carbon Dioxide (CO2)	0	201	799
Methane (CH4)	0	0.42	1.67



## ICE Catalyst Sizing Program

ENGINE INPUT (Manufacturer, Model, Type) - Caterpillar G3306TA G3306TA - 203bhp -1800RPM - EXPERT MODE

### Input Mass Flow Rate

	lbs/hr	"scfm"	"scfh"	"acfm"	"acfh"	Estimated Exhaust Gas Composition		
lb/hr(Estimated):	1,470	332	19,936	984	59,040	N2	74.5	vol%
Brake Horse Power:	203					O2	0.3	vol%
						H2O	10	vol%
						CO2	10	vol%
Molecular weight:	28.50							

### Inlet Temperature

Enter permitted grams per brake horse power hour (g/bhp-hr)

Process Temperature (F):	1080	NOx**	CO**	VOC(NMNE)**	H2CO**
		1.292	1.45	.054	.02

### Catalyst Type

### Catalyst Module Details

	Module Shape	Diam (inch)	Module/Layer	1	Layers	1
Natural Gas (Stoichiometric)	Round		14.5		cpsi	300s
					Depth	3.0

Open area for gas flow (ft2):	1.15	Calculated Space Velocity:	69,539	Safety Value	2
Linear Velocity(ft/min):	858				
Foil thickness (inches):	0.002				

### Pressure Drop

### Inlet Pollutants

			g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd%O2*
100	0.42						
174	0.41	NOx	16.15	7.23	31.66	2,992.00	856.93
200/230	0.57	CO	16.15	7.23	31.66	2,992.00	856.93
260	0.90	VOC	0.30	0.13	0.59	55.58	15.92
300	1.22	H2CO	0.25	0.11	0.49	46.32	13.27
400	1.55						

### Target Conversions

### Required Output Pollutants

			g/bhp-hr	lb/hr	tons/year	ppmv	ppmvd%O2*
NOx	92.0%	NOx	1.292	0.58	2.53	239.36	68.55
CO	91.0%	CO	1.45	0.65	2.84	268.63	76.94
VOC(NMNE)	82.0%	VOC	.054	0.02	0.11	10.00	2.87
H2CO	92.0%	H2CO	.02	0.01	0.04	3.71	1.06

Customer: USA Compression

Sales Person: Josh Martin

Date: 04/7/2016

Project: UNIT 1859

Contact: Chris Magee

\* Calculated ppm at 15% Oxygen. Estimated with O2 value provided in "Estimated Exhaust Gas Composition". For accurate value insert actual engine O2.

\*\* Insert required conversion rates.

cpsi\$: For stoichiometric engine, must select 300ST.

##: Must be greater than 2.0 inches.

Safety Value: 4 = no risk; 1 = high risk; 2 = default

# GAS ENGINE SITE SPECIFIC TECHNICAL DATA

## JayBee Oil & Gas "Buffalo Run" CS 4/7/16

ENGINE SPEED (rpm): 1800  
 COMPRESSION RATIO: 8  
 AFTERCOOLER TYPE: SCAC  
 AFTERCOOLER WATER INLET (°F): 130  
 JACKET WATER OUTLET (°F): 210  
 ASPIRATION: TA  
 COOLING SYSTEM: JW+OC, AC  
 CONTROL SYSTEM: MAG  
 EXHAUST MANIFOLD: WC  
 COMBUSTION: CATALYST SETTING  
 EXHAUST OXYGEN (% O2): 0.5  
 SET POINT TIMING: 30

RATING STRATEGY: STANDARD  
 RATING LEVEL: CONTINUOUS  
 FUEL SYSTEM: HPG IMPCO  
 WITH CUSTOMER SUPPLIED AIR FUEL RATIO CONTROL  
**SITE CONDITIONS:**  
 FUEL: Gas Analysis  
 FUEL PRESSURE RANGE(psig): 12.0-24.9  
 FUEL METHANE NUMBER: 66.7  
 FUEL LHV (Btu/scf): 1043  
 ALTITUDE(ft): 1200  
 MAXIMUM INLET AIR TEMPERATURE(°F): 90  
 STANDARD RATED POWER: 203 bhp@1800rpm

				MAXIMUM RATING	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE		
RATING	NOTES	LOAD	100%	100%	75%	51%	
ENGINE POWER (WITHOUT FAN)	(1)	bhp	203	201	150	101	
INLET AIR TEMPERATURE		°F	83	90	90	90	

ENGINE DATA						
FUEL CONSUMPTION (LHV)	(2)	Btu/bhp-hr	8144	8160	8514	9247
FUEL CONSUMPTION (HHV)	(2)	Btu/bhp-hr	9006	9024	9415	10226
AIR FLOW (@inlet air temp, 14.7 psia) (WET)	(3)(4)	ft3/min	312	313	250	184
AIR FLOW (WET)	(3)(4)	lb/hr	1367	1355	1082	798
FUEL FLOW (60°F, 14.7 psia)		scfm	26	26	20	15
INLET MANIFOLD PRESSURE	(5)	in Hg(abs)	38.1	37.9	31.8	24.7
EXHAUST TEMPERATURE - ENGINE OUTLET	(6)	°F	1080	1078	1044	1003
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia) (WET)	(7)(4)	ft3/min	984	974	759	544
EXHAUST GAS MASS FLOW (WET)	(7)(4)	lb/hr	1445	1432	1143	842

EMISSIONS DATA - ENGINE OUT						
NOx (as NO2)	(8)(9)	g/bhp-hr	16.15	16.12	15.77	13.43
CO	(8)(9)	g/bhp-hr	16.15	16.12	15.77	13.43
THC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	1.10	1.11	1.28	1.53
NMHC (mol. wt. of 15.84)	(8)(9)	g/bhp-hr	0.30	0.30	0.35	0.42
NMNEHC (VOCs) (mol. wt. of 15.84)	(8)(9)(10)	g/bhp-hr	0.12	0.12	0.14	0.16
HCHO (Formaldehyde)	(8)(9)	g/bhp-hr	0.25	0.25	0.25	0.25
CO2	(8)(9)	g/bhp-hr	537	539	578	639
EXHAUST OXYGEN	(8)(11)	% DRY	0.5	0.5	0.5	0.5

HEAT REJECTION						
HEAT REJ. TO JACKET WATER (JW)	(12)	Btu/min	9044	8989	7510	6045
HEAT REJ. TO ATMOSPHERE	(12)	Btu/min	1102	1091	854	625
HEAT REJ. TO LUBE OIL (OC)	(12)	Btu/min	1430	1421	1187	956
HEAT REJ. TO AFTERCOOLER (AC)	(12)(13)	Btu/min	681	681	265	40

COOLING SYSTEM SIZING CRITERIA			
TOTAL JACKET WATER CIRCUIT (JW+OC)	(13)	Btu/min	11664
TOTAL AFTERCOOLER CIRCUIT (AC)	(13)(14)	Btu/min	715
A cooling system safety factor of 0% has been added to the cooling system sizing criteria.			

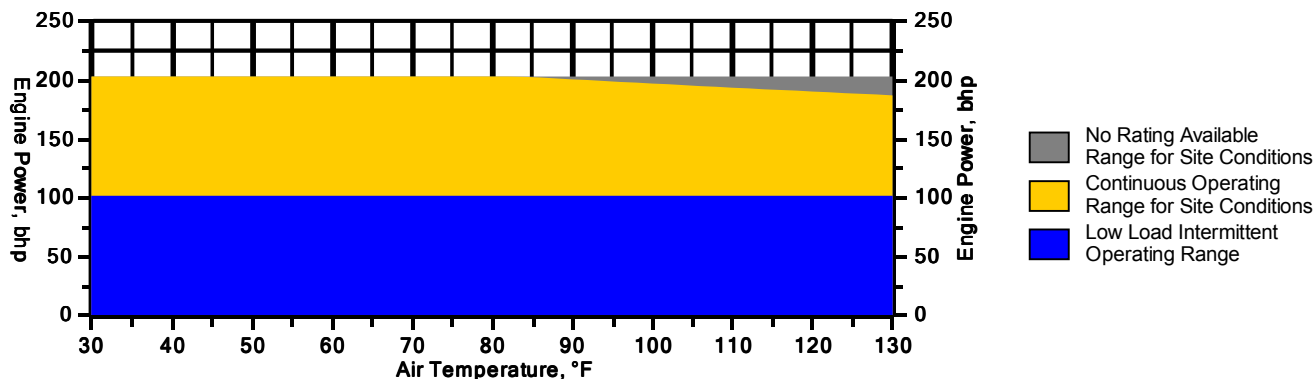
**CONDITIONS AND DEFINITIONS**

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.

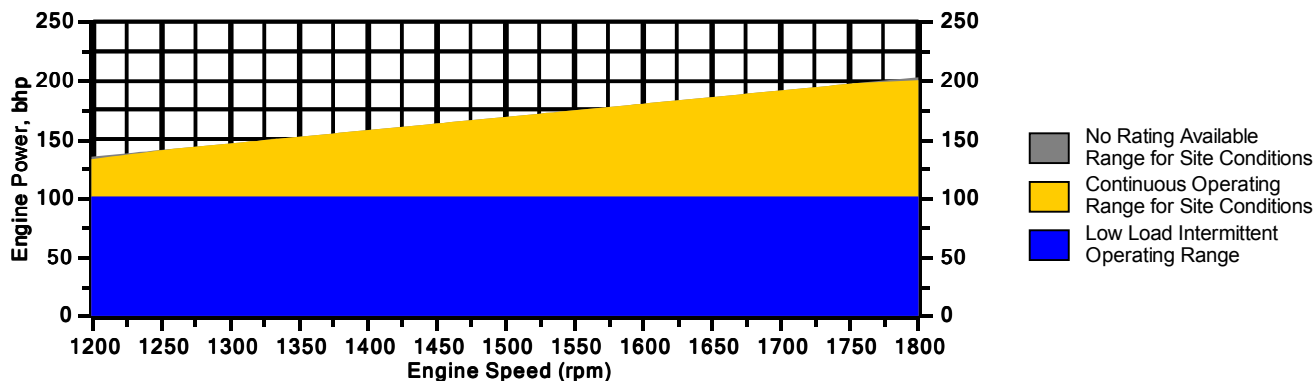
For notes information consult page three.

**Engine Power vs. Inlet Air Temperature**

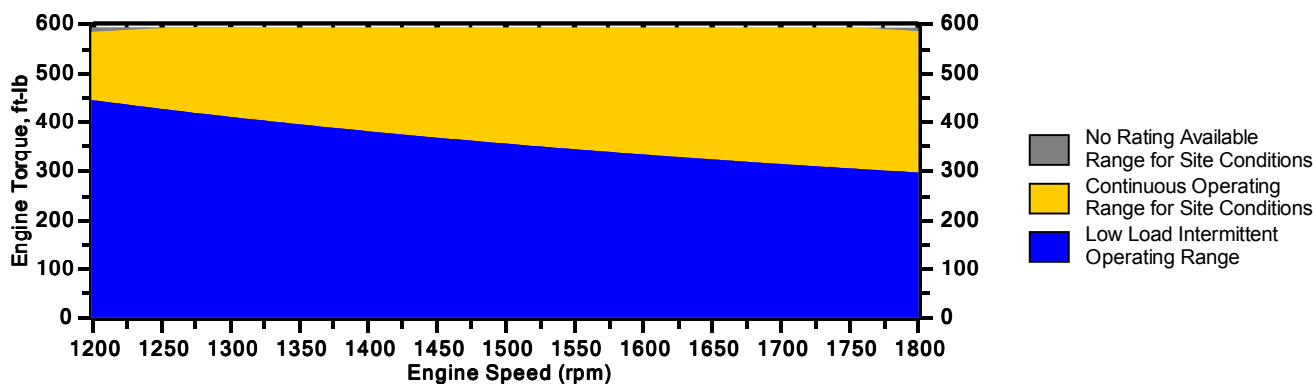
Data represents temperature sweep at 1200 ft and 1800 rpm

**Engine Power vs. Engine Speed**

Data represents speed sweep at 1200 ft and 90 °F

**Engine Torque vs. Engine Speed**

Data represents speed sweep at 1200 ft and 90 °F



Note: At site conditions of 1200 ft and 90°F inlet air temp., constant torque can be maintained down to 1210 rpm. The minimum speed for loading at these conditions is 1200 rpm.

## **NOTES**

1. Engine rating is with two engine driven water pumps. Tolerance is  $\pm 3\%$  of full load.
2. Fuel consumption tolerance is  $\pm 5.0\%$  of full load data.
3. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of  $\pm 5\%$ .
4. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.
5. Inlet manifold pressure is a nominal value with a tolerance of  $\pm 5\%$ .
6. Exhaust temperature is a nominal value with a tolerance of  $(+63^{\circ}\text{F}, -54^{\circ}\text{F})$ .
7. Exhaust flow value is on a "wet" basis. Flow is a nominal value with a tolerance of  $\pm 6\%$ .
8. Emissions data is at engine exhaust flange prior to any after treatment.
9. Emission values are based on engine operating at steady state conditions. Fuel methane number cannot vary more than  $\pm 3$ . Values listed are higher than nominal levels to allow for instrumentation, measurement, and engine-to-engine variations. They indicate "Not to Exceed" values. THC, NMHC, and NMNEHC do not include aldehydes. Part Load data requires customer supplied air fuel ratio control.
10. VOCs - Volatile organic compounds as defined in US EPA 40 CFR 60, subpart JJJJ
11. Exhaust Oxygen tolerance is  $\pm 0.2$ .
12. Heat rejection values are nominal. Tolerances, based on treated water, are  $\pm 10\%$  for jacket water circuit,  $\pm 50\%$  for radiation,  $\pm 20\%$  for lube oil circuit, and  $\pm 5\%$  for aftercooler circuit.
13. Aftercooler heat rejection includes an aftercooler heat rejection factor for the site elevation and inlet air temperature specified. Aftercooler heat rejection values at part load are for reference only. Do not use part load data for heat exchanger sizing.
14. Cooling system sizing criteria are maximum circuit heat rejection for the site, with applied tolerances.

Constituent	Abbrev	Mole %	Norm
Water Vapor	H2O	0.0000	0.0000
Methane	CH4	86.0980	86.0971
Ethane	C2H6	9.9680	9.9679
Propane	C3H8	2.5360	2.5360
Isobutane	iso-C4H10	0.3180	0.3180
Norbutane	nor-C4H10	0.4690	0.4690
Isopentane	iso-C5H12	0.1220	0.1220
Norpentane	nor-C5H12	0.0940	0.0940
Hexane	C6H14	0.1270	0.1270
Heptane	C7H16	0.0000	0.0000
Nitrogen	N2	0.0000	0.0000
Carbon Dioxide	CO2	0.2690	0.2690
Hydrogen Sulfide	H2S	0.0000	0.0000
Carbon Monoxide	CO	0.0000	0.0000
Hydrogen	H2	0.0000	0.0000
Oxygen	O2	0.0000	0.0000
Helium	HE	0.0000	0.0000
Neopentane	neo-C5H12	0.0000	0.0000
Octane	C8H18	0.0000	0.0000
Nonane	C9H20	0.0000	0.0000
Ethylene	C2H4	0.0000	0.0000
Propylene	C3H6	0.0000	0.0000
TOTAL (Volume %)		100.0010	100.0000

Fuel Makeup:

Gas Analysis

Unit of Measure:

English

#### Calculated Fuel Properties

Caterpillar Methane Number:	66.7
Lower Heating Value (Btu/scf):	1043
Higher Heating Value (Btu/scf):	1153
WOBBE Index (Btu/scf):	1296
THC: Free Inert Ratio:	370.75
Total % Inerts (% N2, CO2, He):	0.27%
RPC (%) (To 905 Btu/scf Fuel):	100%
Compressibility Factor:	0.997
Stoich A/F Ratio (Vol/Vol):	10.85
Stoich A/F Ratio (Mass/Mass):	16.75
Specific Gravity (Relative to Air):	0.648
Specific Heat Constant (K):	1.294

#### CONDITIONS AND DEFINITIONS

Caterpillar Methane Number represents the knock resistance of a gaseous fuel. It should be used with the Caterpillar Fuel Usage Guide for the engine and rating to determine the rating for the fuel specified. A Fuel Usage Guide for each rating is included on page 2 of its standard technical data sheet.

RPC always applies to naturally aspirated (NA) engines, and turbocharged (TA or LE) engines only when they are derated for altitude and ambient site conditions.

Project specific technical data sheets generated by the Caterpillar Gas Engine Rating Pro program take the Caterpillar Methane Number and RPC into account when generating a site rating.

Fuel properties for Btu/scf calculations are at 60F and 14.696 psia.

Caterpillar shall have no liability in law or equity, for damages, consequently or otherwise, arising from use of program and related material or any part thereof.

#### FUEL LIQUIDS

Field gases, well head gases, and associated gases typically contain liquid water and heavy hydrocarbons entrained in the gas. To prevent detonation and severe damage to the engine, hydrocarbon liquids must not be allowed to enter the engine fuel system. To remove liquids, a liquid separator and coalescing filter are recommended, with an automatic drain and collection tank to prevent contamination of the ground in accordance with local codes and standards.

To avoid water condensation in the engine or fuel lines, limit the relative humidity of water in the fuel to 80% at the minimum fuel operating temperature.



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## **ATTACHMENT P**

### **Public Notice Affidavit**

## **AIR QUALITY PERMIT NOTICE**

### **Notice of Application**

Notice is given that Triad Hunter, LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update for its Buffalo Run Production Facility off of 2610 Buffalo Road near Jacksonburg in Wetzel County, West Virginia. (Lat. 39.50364, Long. -80.63578)

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

0.27 tons of Nitrogen Oxides per year  
0.13 tons of Carbon Monoxide per year  
226 tons of Green House Gases per year  
0.02 tons of Particulate Matter per year

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

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

Dated this the (Day) day of (Month), (Year).

By: Mr. Mike Horan, Vice President of Appalachian Production  
Triad Hunter, LLC  
125 Putnam Road  
Marietta, Ohio 45750