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TRIAD HUNTER, LLC

APPLICATION FOR G70-A GENERAL PERMIT REGISTRATION

WVDNR PAD No. 6 Production Facility
Wetzel County, West Virginia

SE TECHNOLOGIES

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

APPLICATION FOR G70-A GENERAL PERMIT

TRIAD HUNTER, LLC

WVDNR Pad No. 6 Production Facility

Wetzel County, West Virginia

Table of Contents

SECTION I

Application Form

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

APPLICATION FOR GENERAL PERMIT REGISTRATION

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

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

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

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

SECTION I. GENERAL INFORMATION

1. Name of applicant (as registered with the WV Secretary of State's Office):
Triad Hunter, LLC

2. Federal Employer ID No. **(FEIN):**
27-1355830

3. Applicant's mailing address:
125 Putnam Street
Marietta, Ohio 45750

4. Applicant's physical address:
125 Putnam Street
Marietta, Ohio 45750

5. If Applicant is a subsidiary corporation, please provide the name of parent corporation.
Magnum Hunter Resources Corporation

WV BUSINESS REGISTRATION. Is the applicant a resident of the State of West Virginia? ☒ **YES** ☐ **NO**

- IF **YES,** provide a copy of the Certificate of **Incorporation/ Organization / Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A.**

- IF **NO,** provide a copy of the **Certificate of Authority / Authority of LLC / Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A.**

SECTION II. FACILITY INFORMATION

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

8a. Standard Industrial Classification (SIC) code: **1311**

AND

8b. North American Industry System (NAICS) code: **211111**

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

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

A: PRIMARY OPERATING SITE INFORMATION

11A. Facility name of primary operating site:	12A. Address of primary operating site:
WVDNR Pad No. 6 Production Facility	Mailing: **None** Physical:

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

→ IF **YES**, please explain: **Applicant has a lease agreement with the land owner for installation of** the Well Pad and associated equipment

→ IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

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

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

From Clarksburg, proceed west on US Route 50 to Gregory Run (CR 9). Proceed north on Gregory Run 6.8 miles to WV Route 20. Turn Left on WV Route 20 and proceed 22.9 miles. When entering the community of Jacksonburg, turn left onto Main Street. Proceed approximately 0.7 miles to lease road entrance. The pad is 2.88 miles down the lease road.

15A. Nearest city or town:	16A. County:	17A. UTM Coordinates:
Jacksonburg	**Wetzel**	Northing (KM): 4372.904 Easting (KM): 529.446 Zone: 17

18A. Briefly describe the proposed new operation or change (s) to the facility:	19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):
Natural gas production and separation of liquids.	Latitude: 39.505258 Longitude: -80.657496

B: 1ST ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)

11B. Name of 1st alternate operating site:	12B. Address of 1st alternate operating site:
	Mailing: Physical:

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

→ IF **YES**, please explain:

→ IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

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

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

15B. Nearest city or town:	16B. County:	17B. UTM Coordinates: Northing (KM): Easting (KM): Zone:
18B. Briefly describe the proposed new operation or change (s) to the facility:		19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: Longitude:

C: 2ND ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits):

11C. Name of 2nd alternate operating site:	12C. Address of 2nd alternate operating site: Mailing: Physical:

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

→ IF **YES**, please explain:

→ IF **NO**, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.

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

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

15C. Nearest city or town:	16C. County:	17C. UTM Coordinates: Northing (KM): Easting (KM): Zone:
18C. Briefly describe the proposed new operation or change (s) to the facility:		19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits): Latitude: Longitude:

20. Provide the date of anticipated installation or change:	21. Date of anticipated Start-up if registration is granted:
5 / 15 /15 If this is an **After-The-Fact** permit application, provide the date upon which the proposed change did happen: : ____/____/____	5/ 20 / 15

22. Provide maximum projected **Operating Schedule** of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).

Hours per day 24 Days per week 7 Weeks per year 52 Percentage of operation 100

SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

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

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

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

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

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

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

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

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

FOR A PARTNERSHIP

☐ I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

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

FOR AN ASSOCIATION

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

FOR A JOINT VENTURE

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

FOR A SOLE PROPRIETORSHIP

☐ I certify that I am the Owner and Proprietor

☐ *I hereby certify that* (please print or type) _____

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

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

Signature _____
(please use blue ink) Responsible Official Date

Name & Title **Rocky Roberts Senior Vice President**
(please print or type)

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

Applicant's Name _____

Phone & Fax **740/374-2940**
Phone Fax

Email **rroberts@triadhunter.com**

ATTACHMENT A

Business Registration

ATTACHMENT B

Process Description

Triad Hunter, LLC
WVDNR Pad No. 6 Production Facility
Attachment B
Process Description

Natural gas and Produced Fluids (condensate and water) is received from seven wells on this location and passed through Gas Processing Units (one per well) to avoid ice formation during subsequent pressure drops. These materials are then passed through a three-way separator where gas, condensate and water are separated. The gas is routed to a gathering pipeline owned and operated by others. Under normal operating conditions, the two liquids (condensate and produced water) are combined and injected (via pumps driven by electric motors) into a separate liquids line for transportation to a facility where they are separated and managed accordingly.

Due to the inherent complexities of transporting mixed phase liquids, Triad Hunter is seeking to installed four 400 BBL tanks to receive the Condensate and Produced Water (two for Condensate and two for Produced Water), pending truck transportation by others. The Condensate will be transported to a regional processing facility and the Produced Water a regional disposal facility. Flash, working and breathing losses from these tanks and associated truck loading will be routed to an enclosed combustor. While is anticipated that these tanks will be utilized less than 20 days per year, this application has been structured in accordance with the G70-A limitations to represent the potential emissions associated with full time use of the tanks and associated truck loading.

A Process Flow Diagram depicting these features is provided in Attachment D.

There are no gas-fired compressor engines or dehydration units proposed for this facility.

All natural gas fired equipment (GPUs) use natural gas produced at the site as fuel.

40 CFR 60, Subpart OOOO requires that VOC emissions from each "storage vessel affected facility" installed after April 12, 2013 (GROUP 2) must be controlled by at least 95% by April 15, 2014 when the VOC uncontrolled emissions exceed 6 tpy. As described in 40 CFR 60.5365(e), *the determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a Federal, State, local or tribal authority.* The control systems proposed in this application will reduce not VOC emissions from the condensate tank to rates below the 6 tpy limit per tank. Thus, the condensate tank at this facility will be regulated under 40 CFR 60, Subpart OOOO.

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]
GPU-1	1E	Gas Processing Unit	Pending Permit	2.0 MMBTU/Hr	EXIST	None
GPU-2	2E	Gas Processing Unit	Pending Permit	2.0 MMBTU/Hr	EXIST	None
GPU-3	3E	Gas Processing Unit	Pending Permit	2.0 MMBTU/Hr	EXIST	None
GPU-4	4E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	EXIST	None
GPU-5	5E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	EXIST	None
GPU-6	6E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	EXIST	None
GPU-7	7E	Gas Processing Unit	Pending Permit	1.0 MMBTU/Hr	EXIST	None
T01	8E	Condensate Tank	Pending Permit	400 BBL	NEW	C-1
T02	8E	Condensate Tank	Pending Permit	400 BBL	NEW	C-1
T03	8E	Produced Water Tank	Pending Permit	400 BBL	NEW	C-1
T04	8E	Produced Water Tank	Pending Permit	400 BBL	NEW	C-1
TL-1	8E	Condensate Truck Loading	Pending Permit	88,600 BBL/Yr.	NEW	C-1
TL-2	Fugitive	Produced Water Loading	Pending Permit	290,000 BBL/Yr.	NEW	C-1
CP-1	9E	Combustor Pilot	Permit Pending	14 MBTU/Hr	New	None
---	---	Fugitive VOC Emissions – Fittings and Connections	Pending Permit	N/A	NEW	None
---	---	Haul Roads	Pending Permit	6 Trucks per day max.	NEW	None

[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 C

Description of Fugitive Emissions

Triad Hunter, LLC Corporation
WVDNR Pad No. 6 Production Facility
Attachment C – Fugitive Emissions Data

Equipment Fugitive Emissions

As noted in the process description, Triad Hunter plans to install various equipment at the No. 6 Production Facility. This equipment will contain a variety of piping containing natural gas and separated liquids under pressure. During the normal course of operation minor leaks from valves, pressure release devices and various fittings associated with this piping may occur. The number of valves, flanges, etc. has been estimated to reflect the equipment that will be installed with this permit. A potential emission rate of 4.5 tpy of VOCs and 15.7 tpy CO_2e has been estimated.

Estimates of these emissions are included in the calculations (Attachment I) and summarized on the form included in this section. These calculations are based on emission factors accepted by the American Petroleum Institute and EPA.

Truck Loading Estimates

Estimates of potential VOC emissions from truck loading of condensate and produced water are presented in the calculations in Attachment I and summarized on the table in the fugitive emissions form. Calculations were completed using methodology presented in AP-42.

Pigging Emission Estimates

There will be a no pig launchers or receivers at this facility.

Facility Blowdown Emission Estimates

As there are no compressors at this facility, there are no routine blowdowns.

Storage Tank and Haul Road Fugitive Emissions

Water and condensate received by this facility will (during times when the liquids line is unavailable) be accumulated in tanks prior to off-site shipment In addition to flash, working and breathing losses from these tanks (presented in Attachment I), there will be emissions associated with the loading of the condensate tanks and fugitive dust emissions from the tank trucks entering and exiting the site.

Emissions from these sources are summarized in the attached form and the calculations are presented in Attachment I.

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process 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).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☒ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☐ Yes ☒ No ☐ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☒ Yes ☐ No ☒ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☒ Yes ☐ No ☒ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads	PM	55.8	8.37	55.8	8.37	EE
Storage Pile Emissions						
Loading/Unloading Operations **(Uncaptured Emissions Only)**	VOCs	0.87	1.91	0.87	1.91	EE
Wastewater Treatment Evaporation & Operations						
Equipment Leaks	Inlet Natural Gas(VOCs)	1.03	4.50	1.03	4.50	EE
General Clean-up VOC Emissions						
Other: Blowdowns and Pig Launching	Inlet Natural Gas(VOCs)	N/A	N/A	N/A	N/A	EE

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

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

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

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

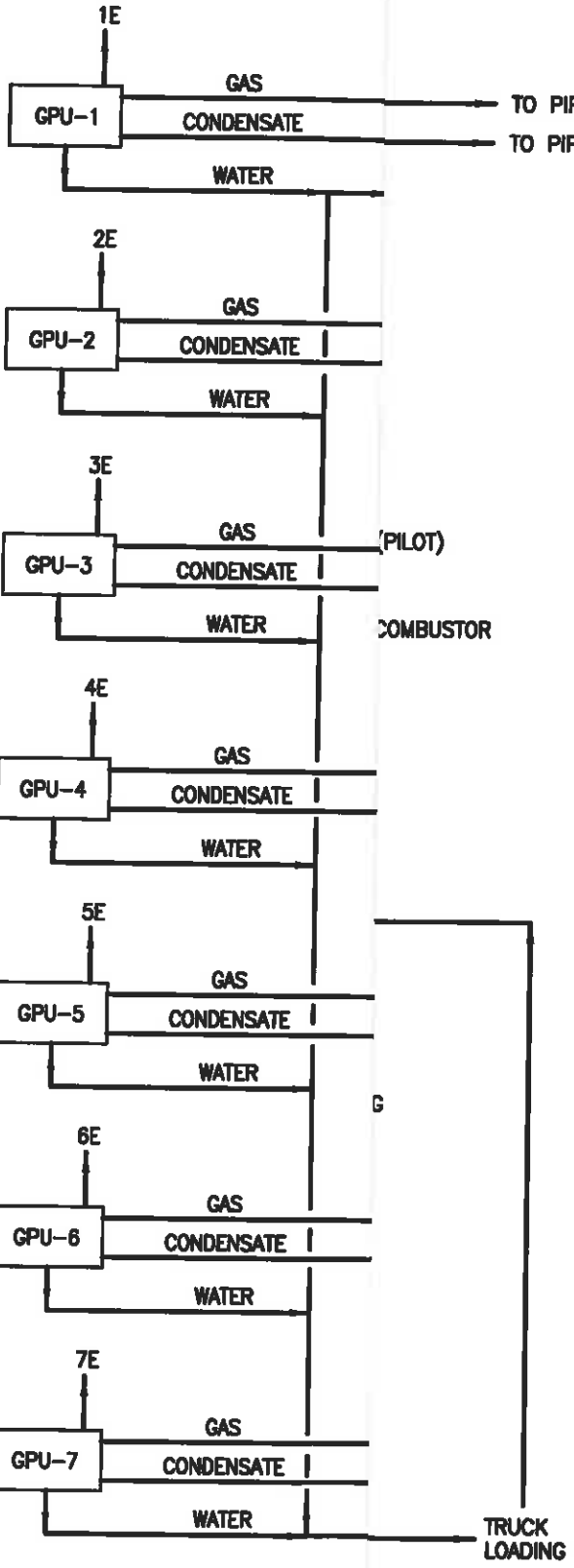
LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components[1]	Number of Components Monitored by Frequency[2]	Average Time to Repair (days)[3]	Estimated Annual Emission Rate (lb/yr)[4]
Pumps[5]	light liquid VOC[6,7]	3	0/0/0/0/3/0	5	EPA 40 CFR 98
	heavy liquid VOC[8]				
	Non-VOC[9]				
Valves[10]	Gas VOC	38	0/0/0/0/38/0	5	EPA 40 CFR 98
	Light Liquid VOC	4	0/0/0/0/4/0		EPA 40 CFR 98
	Heavy Liquid VOC				
	Non-VOC				
Safety Relief Valves[11]	Gas VOC	24	0/0/0/0/25/0	5	EPA 40 CFR 98
	Non VOC				
Open-ended Lines[12]	VOC				
	Non-VOC				
Sampling Connections[13]	VOC	4	0/0/0/0/4/0	5	
	Non-VOC				
Compressor Seals	VOC				
	Non-VOC				
Flanges/Connectors	VOC	487	0/0/0/0/487/0	5	EPA 40 CFR 98
	Non-VOC	156	0/0/0/0/156/0	5	N/A
Other Low Bleed Pneumatic	VOC	34	0/0/0/0/34/0	5	EPA 40 CFR 98
	Non-VOC				

See Fugitive Emission Calculation Sheet in Attachment I

ATTACHMENT D

Process Flow Diagram



TRIAD HUNTER, LLC

WVDNR PAD No. 6 PRODUCTION FACILITY
WETZEL COUNTY, WEST VIRGINIA
PROCESS FLOW DIAGRAM

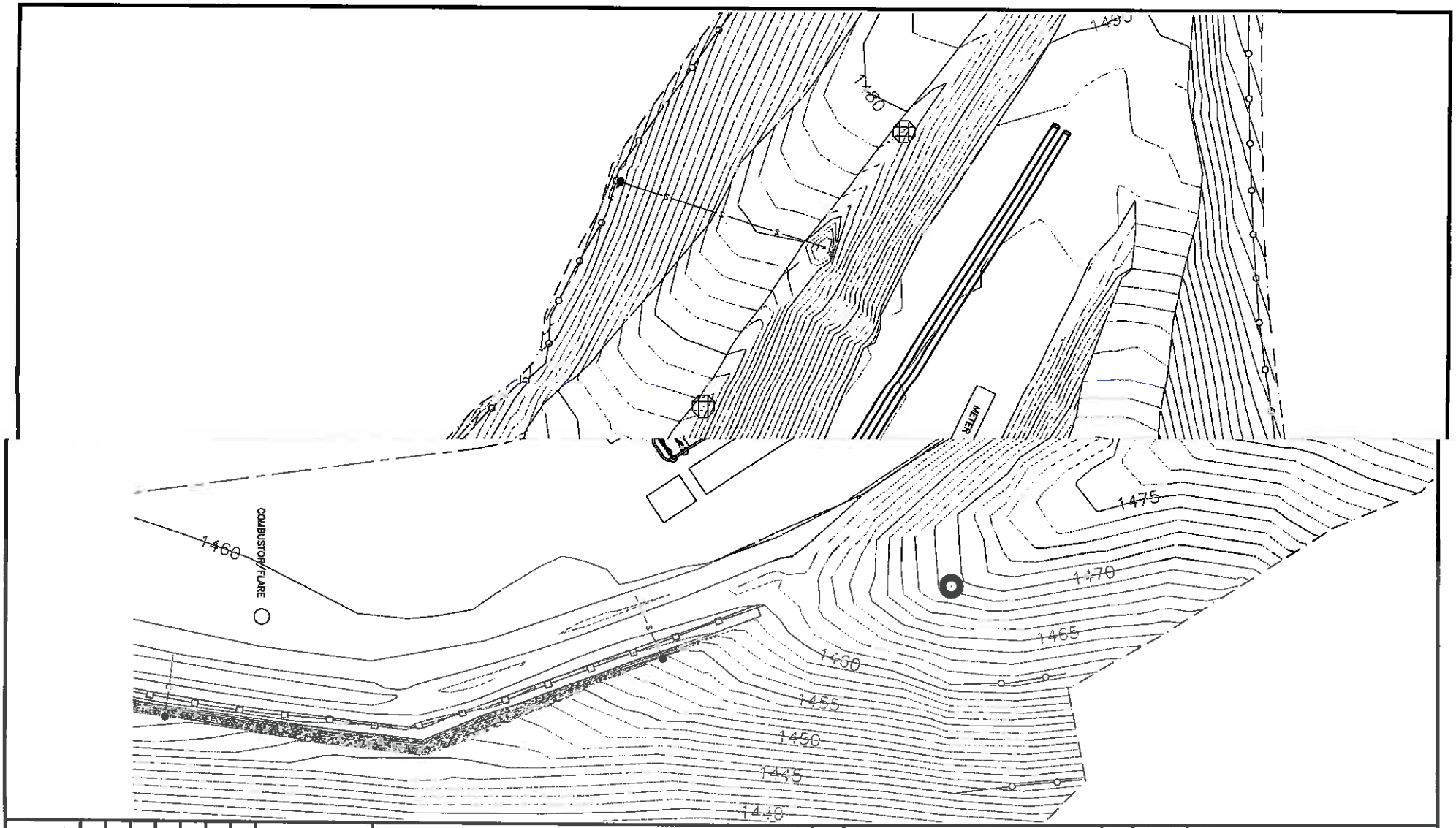
DRAWING NAME: FIGURE 2

REV. 0

Plot: env045 03/03/2015 09:39 G:\TRIAD HUNTER\214115\WVDNR

ATTACHMENT E

Plot Plan



Drawing Number:	P1.1
Revision:	A
Plot Date:	02/24/15
Scale:	AS SHOWN
Approved By:	DAB
Drawn By:	AMP
Designed By:	AMP
Project:	2139025

Drawing Description

TRIAD HUNTER, LLC

WEST VIRGINIA DIVISION OF NATURAL RESOURCES #6

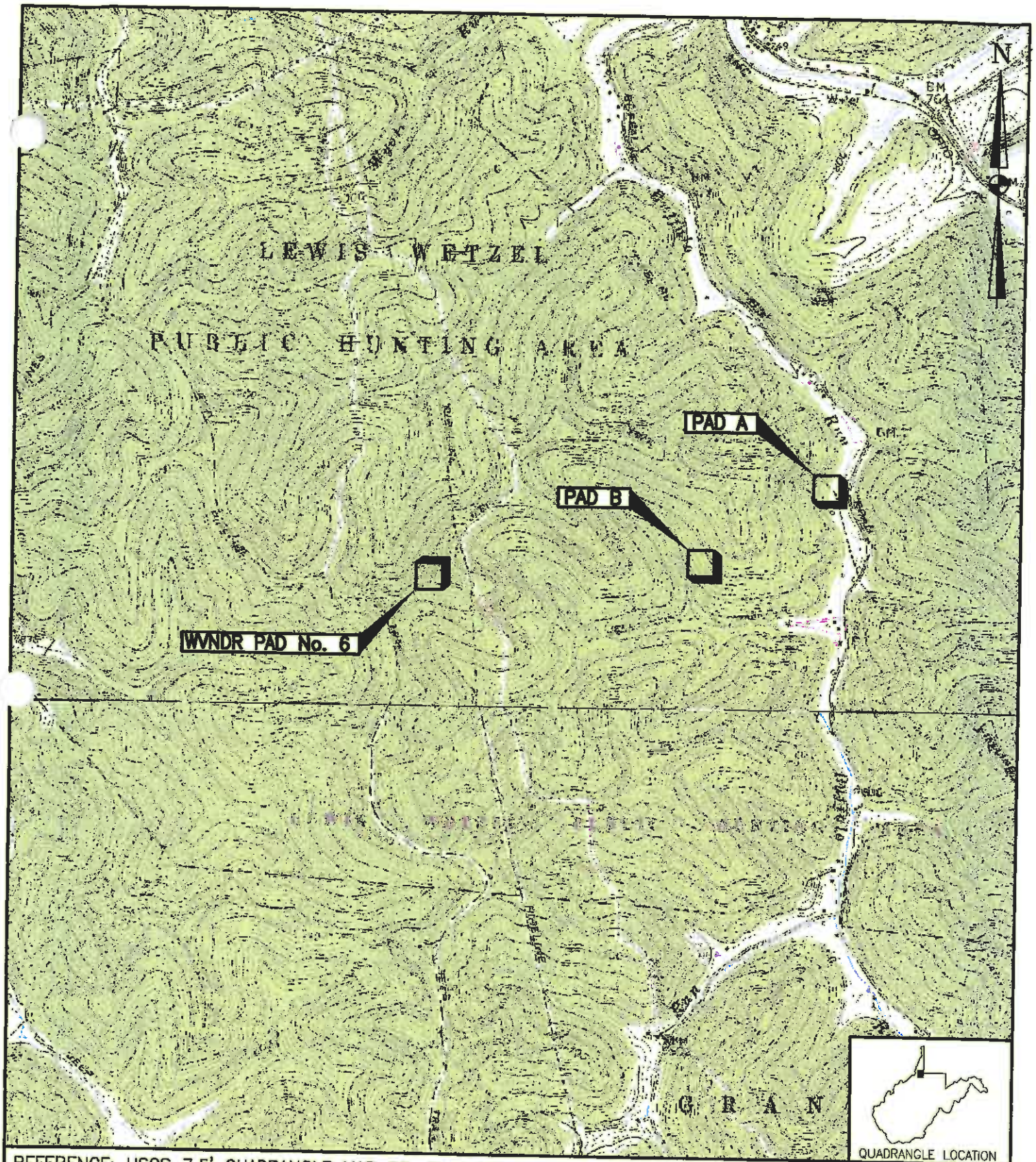
PROPOSED SITE EQUIPMENT PLAN

Rev.	Description	By	Date
A	ISSUED FOR REVIEW	DAB	02/24/15

PICKERING ASSOCIATES
Architects • Engineers • Surveyors
11283 Emerson Avenue
Parkersburg, West Virginia 26104
Phone: (304) 464-5305
Fax: (304) 464-4428

ATTACHMENT F

Area Map



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

DRAWN BY	DJF
DATE	2/19/15
CKED BY	RAD
SET JOB NO.	214115
SET DWG FILE	WVDNR PAD 6m01.dwg
DRAWING SCALE	1"=2000'

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

TRIAD HUNTER, LLC

WVDNR PAD No. 6 PRODUCTION FACILITY
WETZEL COUNTY, WEST VIRGINIA
SITE LOCATION MAP

DRAWING NO. FIGURE 1

REV. 0

Plot: env045 02/19/2015 10:54 G:\TRIAD HUNTER\214115\WVNDR PAD 6m01.dwg

ATTACHMENT G

Equipment Data Sheets and Registration Section Applicability Form

General Permit G70-A Registration
Section Applicability Form

General Permit G70-A was developed to allow qualified applicants to seek registration for a variety of sources. These sources include natural gas well affected facilities, storage tanks, natural gas-fired compressor engines (RICE), natural gas producing units, natural gas-fired in-line heaters, pneumatic controllers, heater treaters, tank truck loading, glycol dehydration units, completion combustion devices, flares, enclosed combustion devices, and vapor recovery systems. All registered facilities will be subject to Sections 1.0, 2.0, 3.0, and 4.0.

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

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

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

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

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

NATURAL GAS FIRED FUEL BURNING UNITS
EMISSION DATA SHEET

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

Emission Unit ID #[1]	Emission Point ID#[2]	Emission Unit Description (Manufacturer / Model #)	Year Installed/ Modified	Type[3] and Date of Change	Control Device[4]	Design Heat Input (mmBtu/hr)[5]	Fuel Heating Value (Btu/scf)[6]
GPU-1	1E	Pride of the Hills	2015	EXIST	None	2.0	1251
GPU-2	2E	Pride of the Hills	2015	EXIST	None	2.0	1251
GPU-3	3E	Pride of the Hills	2015	EXIST	None	2.0	1251
GPU-4	4E	Pride of the Hills	2015	EXIST	None	1.0	1251
GPU-5	5E	Pride of the Hills	2015	EXIST	None	1.0	1251
GPU-6	6E	Pride of the Hills	2015	EXIST	None	1.0	1251
GPU-7	7E	Pride of the Hills	2015	EXIST	None	1.0	1251

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

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

3 New, modification, removal

4 Complete appropriate air pollution control device sheet for any control device.

5 Enter design heat input capacity in mmBtu/hr.

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

NATURAL GAS FIRED FUEL BURNING UNITS
EMISSION DATA SHEET

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

Emission Unit ID #[1]	Emission Point ID#[2]	Emission Unit Description (Manufacturer / Model #)	Year Installed/ Modified	Type[3] and Date of Change	Control Device[4]	Design Heat Input (mmBtu/hr)[5]	Fuel Heating Value (Btu/scf)[6]
GPU-1	1E	Pride of the Hills	2013	EXIST	None	2.0	1251
GPU-2	2E	Pride of the Hills	2013	EXIST	None	2.0	1251
GPU-3	3E	Pride of the Hills	2013	EXIST	None	2.0	1251

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

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

3 New, modification, removal

4 Complete appropriate air pollution control device sheet for any control device.

5 Enter design heat input capacity in mmBtu/hr.

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

TANK TRUCK LOADING
EMISSION UNIT DATA SHEET

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

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

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

Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	**12**	**12**	**12**	**12**
days/week	**7**	**7**	**7**	**7**

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

Liquid Name	**Condensate**	**Produced Water**	
Max. daily throughput (1000 gal/day)	**10.2**	**33.3**	
Max. annual throughput (1000 gal/yr)	**3,720**	**12,170**	
Loading Method [1]	**BF**	**SP**	
Max. Fill Rate (gal/min)	**60**	**60**	
Average Fill Time (min/loading)	**120**	**120**	
Max. Bulk Liquid Temperature (°F)	**70**	**70**	
True Vapor Pressure [2]	**7.5**	**0.5**	
Cargo Vessel Condition[3]	**U**	**U**	
Control Equipment or Method [4]	ECD	ECD	
Minimum collection efficiency (%)	**70%**	**70%**	
Minimum control efficiency (%)	**98%**	**98%**	

* *Continued on next page*

Maximum Emission Rate	Loading (lb/hr)	0.90 (Uncaptured + Uncontrolled)	0.10 (Uncaptured + Uncontrolled)	
	Annual (ton/yr)	1.97 (Uncaptured + Uncontrolled)	0.23 (Uncaptured + Uncontrolled)	
Estimation Method [5]		**AP-42**	**AP-42**	

Notes:

[1] BF = Bottom Fill SP = Splash Fill SUB = Submerged Fill

[2] At maximum bulk liquid temperature

[3] B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)

[4] List as many as apply (complete and submit appropriate *Air Pollution Control Device Sheets as Attachment "H"*):
CA = Carbon Adsorption
VB = Dedicated Vapor Balance (closed system)
ECD = Enclosed Combustion Device
F = Flare
TO = Thermal Oxidation or Incineration

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

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

MONITORING *Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation/air pollution control device.* **Truck load-outs per month and volume of Condensate and Produced Water removed each load-out**	RECORDKEEPING *Please describe the proposed recordkeeping that will accompany the monitoring.* **Truck load-outs per month and volume of Condensate and Produced Water removed each load-out**
REPORTING *Please describe the proposed frequency of reporting of the recordkeeping.* **Truck load-outs per month and volume of Condensate removed each load-out**	TESTING *Please describe any proposed emissions testing for this process equipment/air pollution control device.* **None**

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

See Combustion Control Device Sheet

TANK TRUCK LOADING
EMISSION UNIT DATA SHEET

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

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

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

Maximum	Jan. - Mar.	Apr. - June	July - Sept.	Oct. - Dec.
hours/day	**12**	**12**	**12**	**12**
days/week	**7**	**7**	**7**	**7**

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

Liquid Name	**Condensate**	**Produced Water**	
Max. daily throughput (1000 gal/day)	**10.2**	**33.3**	
Max. annual throughput (1000 gal/yr)	**3,720**	**12,170**	
Loading Method [1]	**BF**	**SP**	
Max. Fill Rate (gal/min)	**60**	**60**	
Average Fill Time (min/loading)	**120**	**120**	
Max. Bulk Liquid Temperature (°F)	**70**	**70**	
True Vapor Pressure [2]	**7.5**	**0.5**	
Cargo Vessel Condition[3]	**U**	**U**	
Control Equipment or Method [4]	ECD	None	
Minimum collection efficiency (%)	**70%**	**N/A**	
Minimum control efficiency (%)	**98%**	**N/A**	

* *Continued on next page*

Maximum Emission Rate	Loading (lb/hr)	0.90 (Uncaptured + Uncontrolled)	0.33 (Uncaptured + Uncontrolled)	
	Annual (ton/yr)	1.97 (Uncaptured + Uncontrolled)	0.73 (Uncaptured + Uncontrolled)	
Estimation Method [5]		**AP-42**	**AP-42**	

Notes:

[1] BF = Bottom Fill SP = Splash Fill SUB = Submerged Fill

[2] At maximum bulk liquid temperature

[3] B = Ballasted Vessel, C = Cleaned, U = Uncleaned (dedicated service), O = other (describe)

[4] List as many as apply (complete and submit appropriate *Air Pollution Control Device Sheets as Attachment "H"*):
CA = Carbon Adsorption
VB = Dedicated Vapor Balance (closed system)
ECD = Enclosed Combustion Device
F = Flare
TO = Thermal Oxidation or Incineration

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

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

MONITORING *Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation/air pollution control device.* **Truck load-outs per month and volume of Condensate and Produced Water removed each load-out**	RECORDKEEPING *Please describe the proposed recordkeeping that will accompany the monitoring.* **Truck load-outs per month and volume of Condensate and Produced Water removed each load-out**
REPORTING *Please describe the proposed frequency of reporting of the recordkeeping.* **Truck load-outs per month and volume of Condensate removed each load-out**	TESTING *Please describe any proposed emissions testing for this process equipment/air pollution control device.* **None**

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

See Combustion Control Device Sheet

STORAGE VESSEL EMISSION UNIT DATA SHEET

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

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **WVDNR Pad No. 6 Production Facility**	2. Tank Name **Tank 1**
3. Emission Unit ID number **T01**	4. Emission Point ID number **6E**
5. Date Installed or Modified *(for existing tanks)*	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **None**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons)*. Use the internal cross-sectional area multiplied by internal height. **400 BBL**	
9A. Tank Internal Diameter (ft.) **11.9**	9B. Tank Internal Height (ft.) **19.8**
10A. Maximum Liquid Height (ft.) **19.5**	10B. Average Liquid Height (ft.) **8**
11A. Maximum Vapor Space Height (ft.) **18.5**	11B. Average Vapor Space Height (ft.) **11.8**
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume.**400 BBL (16,800 gallons)**	
13A. Maximum annual throughput (gal/yr) **1,862,500**	13B. Maximum daily throughput (gal/day) **10,200**
14. Number of tank turnovers per year **110**	15. Maximum tank fill rate (gal/min) **8 gpm**
16. Tank fill method ☐ Submerged ☐ Splash ☒ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☒ Fixed Roof __X_ vertical ___ horizontal __X_ flat roof ___ cone roof ___ dome roof ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)	

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

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

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

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

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

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

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

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

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

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Condensate Vapors	**415**	**1818**	**0.24**	**1**	**0.80**	**4**	**416**	**1823**	O (ProMax Model)
									For Flash.
									EPA (Tanks) for
									Working & Breathing

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

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

TANK CONSTRUCTION AND OPERATION INFORMATION

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

20A. Shell Color:	20B. Roof Color:	20C. Year Last Painted:

21. Shell Condition (if metal and unlined):
☒ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig):

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

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one)*: ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** ☒ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based:			
28. Daily Avg. Ambient Temperature (°F):		29. Annual Avg. Maximum Temperature (°F):	
30. Annual Avg. Minimum Temperature (°F):		31. Avg. Wind Speed (mph):	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):		33. Atmospheric Pressure (psia):	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F):	34A. Minimum (°F):	34B. Maximum (°F):	
35. Avg. operating pressure range of tank (psig):	35A. Minimum (psig):	35B. Maximum (psig):	
36A. Minimum liquid surface temperature (°F):		36B. Corresponding vapor pressure (psia):	
37A. Avg. liquid surface temperature (°F):		37B. Corresponding vapor pressure (psia):	
38A. Maximum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:			
39B. CAS number:	Mixture of Various Compounds See MSDS Sheet		
39C. Liquid density (lb/gal):			
39D. Liquid molecular weight (lb/lb-mole):			
39E. Vapor molecular weight (lb/lb-mole):			
39F. Maximum true vapor pressure (psia):			
39G. Maxim Reid vapor pressure (psia):			
39H. Months Storage per year. From: To:	Continuous		

STORAGE VESSEL EMISSION UNIT DATA SHEET

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

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **WVDNR Pad No. 6 Production Facility**	2. Tank Name **Tank 2**
3. Emission Unit ID number **T02**	4. Emission Point ID number **6E**
5. Date Installed or Modified *(for existing tanks)*	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **None**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons)*. Use the internal cross-sectional area multiplied by internal height. **400 BBL**		
9A. Tank Internal Diameter (ft.) **11.9**	9B. Tank Internal Height (ft.) **19.8**	
10A. Maximum Liquid Height (ft.) **19.5**	10B. Average Liquid Height (ft.) **8**	
11A. Maximum Vapor Space Height (ft.) **18.5**	11B. Average Vapor Space Height (ft.) **11.8**	
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume.**400 BBL (16,800 gallons)**		
13A. Maximum annual throughput (gal/yr) **1,862,500**	13B. Maximum daily throughput (gal/day) **10,200**	
14. Number of tank turnovers per year **110**	15. Maximum tank fill rate (gal/min) **8 gpm**	
16. Tank fill method ☐ Submerged ☐ Splash	☒ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?		
18. Type of tank (check all that apply): ☒ Fixed Roof __X_ vertical ___ horizontal __X_ flat roof ___ cone roof ___ dome roof ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)		

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

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

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

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

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

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

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

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

☐ Does Not Apply
☐ Carbon Adsorption[1]
☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers)
☐ Condenser[1]
☐ Other[1] (describe)

☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____
☐ Conservation Vent (psig
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Condensate Vapors	**415**	**1818**	**0.24**	**1**	**0.80**	**4**	**416**	**1823**	O (ProMax Model)
									For Flash.
									EPA (Tanks) for
									Working & Breathing

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

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

TANK CONSTRUCTION AND OPERATION INFORMATION

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

20A. Shell Color:	20B. Roof Color:	20C. Year Last Painted:

21. Shell Condition (if metal and unlined):
☒ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☐ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig):

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

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☐

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one)*: ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** ☒ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based:			
28. Daily Avg. Ambient Temperature (°F):		29. Annual Avg. Maximum Temperature (°F):	
30. Annual Avg. Minimum Temperature (°F):		31. Avg. Wind Speed (mph):	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day):		33. Atmospheric Pressure (psia):	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F):	34A. Minimum (°F):	34B. Maximum (°F):	
35. Avg. operating pressure range of tank (psig):	35A. Minimum (psig):	35B. Maximum (psig):	
36A. Minimum liquid surface temperature (°F):		36B. Corresponding vapor pressure (psia):	
37A. Avg. liquid surface temperature (°F):		37B. Corresponding vapor pressure (psia):	
38A. Maximum liquid surface temperature (°F):		38B. Corresponding vapor pressure (psia):	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:			
39B. CAS number:	Mixture of Various Compounds See MSDS Sheet		
39C. Liquid density (lb/gal):			
39D. Liquid molecular weight (lb/lb-mole):			
39E. Vapor molecular weight (lb/lb-mole):			
39F. Maximum true vapor pressure (psia):			
39G. Maxim Reid vapor pressure (psia):			
39H. Months Storage per year. From: To:	Continuous		

STORAGE VESSEL EMISSION UNIT DATA SHEET

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

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **WVDNR Pad No. 6 Production Facility**	2. Tank Name **Tank 3**
3. Emission Unit ID number **T03**	4. Emission Point ID number **6E**
5. Date Installed or Modified *(for existing tanks)*	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **None**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons).* Use the internal cross-sectional area multiplied by internal height. **400 BBL**	
9A. Tank Internal Diameter (ft.) **11.9**	9B. Tank Internal Height (ft.) **19.8**
10A. Maximum Liquid Height (ft.) **19.5**	10B. Average Liquid Height (ft.) **8**
11A. Maximum Vapor Space Height (ft.) **18.5**	11B. Average Vapor Space Height (ft.) **11.8**
12. Nominal Capacity *(specify barrels or gallons).* This is also known as "working volume.**400 BBL (16,800 gallons)**	
13A. Maximum annual throughput (gal/yr) **6,077,000**	13B. Maximum daily throughput (gal/day) **16,650**
14. Number of tank turnovers per year **365**	15. Maximum tank fill rate (gal/min) **13 gpm**
16. Tank fill method ☐ Submerged ☐ Splash	☒ Bottom Loading
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☒ Fixed Roof __X_ vertical ___ horizontal __X_ flat roof ___ cone roof ___ dome roof ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)	

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

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

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

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

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

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

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

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

☐ Does Not Apply
☐ Carbon Adsorption[1]
☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers)
☐ Condenser[1]
☐ Other[1] (describe)

☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____
☐ Conservation Vent (psig
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Condensate Vapors	**0.12**	**0.5**	**N/A**	**N/A**	**N/A**	**N/A**	**0.12**	**0.5**	O (ProMax Model)
									For Flash.
									No W&B Losses
									Anticipated

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

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

TANK CONSTRUCTION AND OPERATION INFORMATION

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

20A. Shell Color: **Blue**	20B. Roof Color: **Blue**	20C. Year Last Painted: **New**

21. Shell Condition (if metal and unlined):
☒ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☒ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig): **0-0.3**

24. Is the tank a **Vertical Fixed Roof Tank?** ☒ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft): **0.04**

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☒

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one)*: ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** ☒ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based: **Huntington, WV**			
28. Daily Avg. Ambient Temperature (°F): **54.8**		29. Annual Avg. Maximum Temperature (°F): **64.9**	
30. Annual Avg. Minimum Temperature (°F): **44.8**		31. Avg. Wind Speed (mph): **6.6**	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,246**		33. Atmospheric Pressure (psia): **14.3**	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F): **10**	34A. Minimum (°F): **60**	34B. Maximum (°F): **70**	
35. Avg. operating pressure range of tank (psig): **0.1**	35A. Minimum (psig): **0.01**	35B. Maximum (psig): **0.3**	
36A. Minimum liquid surface temperature (°F): **60**		36B. Corresponding vapor pressure (psia):**0.26**	
37A. Avg. liquid surface temperature (°F): **68**		37B. Corresponding vapor pressure (psia): **0.33**	
38A. Maximum liquid surface temperature (°F):**70**		38B. Corresponding vapor pressure (psia): **0.37**	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:		**Water**	
39B. CAS number:			
39C. Liquid density (lb/gal):		**8.34**	
39D. Liquid molecular weight (lb/lb-mole):		**18.02**	
39E. Vapor molecular weight (lb/lb-mole):		**20.5**	
39F. Maximum true vapor pressure (psia):		**0.37**	
39G. Maxim Reid vapor pressure (psia):		**1.0**	
39H. Months Storage per year. From: To:		**Continuous**	

STORAGE VESSEL EMISSION UNIT DATA SHEET

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

I. GENERAL INFORMATION (required)

1. Bulk Storage Area Name **WVDNR Pad No. 6 Production Facility**	2. Tank Name **Tank 4**
3. Emission Unit ID number **T04**	4. Emission Point ID number **6E**
5. Date Installed or Modified *(for existing tanks)*	6. Type of change: ☒ New construction ☐ New stored material ☐ Other
7A. Description of Tank Modification *(if applicable)*	
7B. Will more than one material be stored in this tank? *If so, a separate form must be completed for each material.* ☐ Yes ☒ No	
7C. Provide any limitations on source operation affecting emissions. (production variation, etc.) **None**	

II. TANK INFORMATION (required)

8. Design Capacity *(specify barrels or gallons)*. Use the internal cross-sectional area multiplied by internal height. **400 BBL**	
9A. Tank Internal Diameter (ft.) **11.9**	9B. Tank Internal Height (ft.) **19.8**
10A. Maximum Liquid Height (ft.) **19.5**	10B. Average Liquid Height (ft.) **8**
11A. Maximum Vapor Space Height (ft.) **18.5**	11B. Average Vapor Space Height (ft.) **11.8**
12. Nominal Capacity *(specify barrels or gallons)*. This is also known as "working volume.**400 BBL (16,800 gallons)**	
13A. Maximum annual throughput (gal/yr) **6,077,000**	13B. Maximum daily throughput (gal/day) **16,650**
14. Number of tank turnovers per year **365**	15. Maximum tank fill rate (gal/min) **13 gpm**
16. Tank fill method ☐ Submerged ☐ Splash ☒ Bottom Loading	
17. Is the tank system a variable vapor space system? ☐ Yes ☒ No If yes, (A) What is the volume expansion capacity of the system (gal)? (B) What are the number of transfers into the system per year?	
18. Type of tank (check all that apply): ☒ Fixed Roof __X_ vertical ___ horizontal __X_ flat roof ___ cone roof ___ dome roof ___ other (describe) ☐ External Floating Roof ___ pontoon roof ___ double deck roof ☐ Domed External (or Covered) Floating Roof ☐ Internal Floating Roof ___ vertical column support ___ self-supporting ☐ Variable Vapor Space ___ lifter roof ___ diaphragm ☐ Pressurized ___ spherical ___ cylindrical ☐ Underground ☐ Other (describe)	

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

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

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

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

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

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

VI. EMISSIONS AND CONTROL DEVICE DATA (required)

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

☐ Does Not Apply
☐ Carbon Adsorption[1]
☒ Vent to Vapor Combustion Device[1] (vapor combustors, flares, thermal oxidizers)
☐ Condenser[1]
☐ Other[1] (describe)

☐ Rupture Disc (psig)
☐ Inert Gas Blanket of _____
☐ Conservation Vent (psig
Vacuum Setting Pressure Setting
☐ Emergency Relief Valve (psig)

[1] Complete appropriate Air Pollution Control Device Sheet

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

Material Name and CAS No.	Flashing Loss		Breathing Loss		Working Loss		Total Emissions Loss		Estimation Method[1]
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	
Condensate Vapors	**0.12**	**0.5**	**N/A**	**N/A**	**N/A**	**N/A**	**0.12**	**0.5**	O (ProMax Model)
									For Flash.
									No W&B Losses
									Anticipated

[1] EPA = EPA Emission Factor, MB = Material Balance, SS = Similar Source, ST = Similar Source Test, Throughput Data, O = Other (specify)

Remember to attach emissions calculations, including TANKS Summary Sheets and other modeling summary sheets if applicable.

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

TANK CONSTRUCTION AND OPERATION INFORMATION

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

20A. Shell Color: **Blue**	20B. Roof Color: **Blue**	20C. Year Last Painted: **New**

21. Shell Condition (if metal and unlined):
☒ No Rust ☐ Light Rust ☐ Dense Rust ☐ Not applicable

22A. Is the tank heated? ☐ Yes ☒ No	22B. If yes, operating temperature:	22C. If yes, how is heat provided to tank?

23. Operating Pressure Range (psig): **0-0.3**

24. Is the tank a **Vertical Fixed Roof Tank**? ☒ Yes ☐ No	24A. If yes, for dome roof provide radius (ft):	24B. If yes, for cone roof, provide slop (ft/ft): **0.04**

25. Complete item 25 for **Floating Roof Tanks** ☐ Does not apply ☒

25A. Year Internal Floaters Installed:

25B. Primary Seal Type *(check one)*: ☐ Metallic (mechanical) shoe seal ☐ Liquid mounted resilient seal ☐ Vapor mounted resilient seal ☐ Other (describe):

25C. Is the Floating Roof equipped with a secondary seal? ☐ Yes ☐ No

25D. If yes, how is the secondary seal mounted? *(check one)* ☐ Shoe ☐ Rim ☐ Other (describe):

25E. Is the floating roof equipped with a weather shield? ☐ Yes ☐ No			
25F. Describe deck fittings:			
26. Complete the following section for **Internal Floating Roof Tanks** ☒ Does not apply			
26A. Deck Type: ☐ Bolted ☐ Welded		26B. For bolted decks, provide deck construction:	
26C. Deck seam. Continuous sheet construction: ☐ 5 ft. wide ☐ 6 ft. wide ☐ 7 ft. wide ☐ 5 x 7.5 ft. wide ☐ 5 x 12 ft. wide ☐ other (describe)			
26D. Deck seam length (ft.):	26E. Area of deck (ft^2):	26F. For column supported tanks, # of columns:	26G. For column supported tanks, diameter of column:
SITE INFORMATION:			
27. Provide the city and state on which the data in this section are based: **Huntington, WV**			
28. Daily Avg. Ambient Temperature (°F): **54.8**		29. Annual Avg. Maximum Temperature (°F): **64.9**	
30. Annual Avg. Minimum Temperature (°F): **44.8**		31. Avg. Wind Speed (mph): **6.6**	
32. Annual Avg. Solar Insulation Factor (BTU/ft^2-day): **1,246**		33. Atmospheric Pressure (psia): **14.3**	
LIQUID INFORMATION:			
34. Avg. daily temperature range of bulk liquid (°F): **10**	34A. Minimum (°F): **60**		34B. Maximum (°F): **70**
35. Avg. operating pressure range of tank (psig): **0.1**	35A. Minimum (psig): **0.01**		35B. Maximum (psig): **0.3**
36A. Minimum liquid surface temperature (°F): **60**		36B. Corresponding vapor pressure (psia):**0.26**	
37A. Avg. liquid surface temperature (°F): **68**		37B. Corresponding vapor pressure (psia): **0.33**	
38A. Maximum liquid surface temperature (°F):**70**		38B. Corresponding vapor pressure (psia): **0.37**	
39. Provide the following for each liquid or gas to be stored in the tank. Add additional pages if necessary.			
39A. Material name and composition:		**Water**	
39B. CAS number:			
39C. Liquid density (lb/gal):		**8.34**	
39D. Liquid molecular weight (lb/lb-mole):		**18.02**	
39E. Vapor molecular weight (lb/lb-mole):		**20.5**	
39F. Maximum true vapor pressure (psia):		**0.37**	
39G. Maxim Reid vapor pressure (psia):		**1.0**	
39H. Months Storage per year. From: To:		**Continuous**	

ATTACHMENT H

Air Pollution Control Device Sheets

508 West Wall, Suite 550
Midland, Texas 79701
Phone 432-262-2700
Fax 432-561-5480

PROPOSAL

TO: **RGWSolutions**
Attn: **Brian Miller**

DATE: December 18, 2014
QUOTE NO: D-14-243 R2
PROJECT: **Pad 6 - Enclosed**

We take great pleasure in offering you our proposal in response to your RFQ to furnish the following:

One (1) - Model FKEF-H25-28 mmBTU/hr-EOOOOA Flare King Variable Port Tip in a 25' OAH Self-Supported Stack

The Scope of Supply Includes:

- Application/Engineering
- General Arrangement Drawing
- All Materials and Labor
- Flare King Standard Weld Inspection
- One (1) 48" dia x 25' Tall, Carbon Steel Enclosed Flare Stack.
- One (1) Insulation Package (keeps flare externals at safe levels)
- One (1) 3" 304 Stainless Steel Variable Port Flare Tip
- One (1) 2" 150# FF Inlet Flange
- One (1) Quad-O Compliance Package including:
  - One (1) Retractable Continuous Pilot with 'K' type Thermocouple (ref 60.5417.1.1.iii)
  - One (1) Pilot Fuel Gas Regulator, Teflon/Stainless Steel Fuel Gas Line.
  - One (1) 0-60 psi Pressure Transmitter for pilot pressure (ref 60.5417.d)
  - One (1) 110 VAC Quad-O Ignition Controls capable of:
    - Monitoring Pilot Temperature (ref 60.5417.1.1.iii)
    - Monitoring Pilot Fuel Gas Pressure (ref 60.5417.d)
    - Recording above data for durations up to 13 months (ref 60.5417.1.1.iii)
    - Ability to interface with SCADA systems.
    - Adjustable Alarm settings (ref 60.5415.e.2.vii and 60.5420.c.5.iii)
    - One (1) Available Recorded Thermocouple Input
    - One (1) Available Recorded 4-20 mA Pressure transducer Input
    - One (1) Available Recorded 4-20 mA Open Input
  - One (1) Control Stand with the Controls mounted
- Surface Cleaning
- Primer & Paint per NGSGI Specifications as Required (carbon steel only, Color: Gloss Black)
- Preparation for Shipping

PRICE: $42,288.00 Each, ExWorks. - Midland, TX
Estimated Weight: 2,000 Pounds

VALIDITY: 60 Days From Date of this Proposal

NGSGI also recommends installing a flame arrestor at the inlet to the flare. This would include:

- One (1) 2" Enardo Series 7 Flame Arrestor

PRICE: $1,225.00, ExWorks. - Midland, TX
Estimated Weight: 50 Pounds

RGWSolutions requested an option for a 6" inlet to reduce pressure loss through the arrestor. This would include:

- One (1) 6" 150# FF Inlet Flange
- One (1) 6" Enardo Series 7 Flame Arrestor

PRICE: $2,650.00, ExWorks. - Midland, TX
Estimated Weight: 150 Pounds

NGSGI also has the option for solar controls in lieu of the 110 VAC controls. This would include:

- One (1) Solar Quad O Ignition Controls System capable of all functions of the 110V System with 'K' type Thermocouple Monitor including:
  - One (1) 50 W Solar Panel
  - One (1) Heavy Duty Battery
  - One (1) Battery Box-
  - One (1) Control Stand with the Controls and Solar Panel mounted

PRICE: $790.00, ExWorks. - Midland, TX
Estimated Weight: 150 Pounds

DELIVERY: 4 - 6 Weeks ARO

Delivery times quoted are based upon routine manufacturing and key supplier deliveries. Any "Change Orders" from clients or component delays from critical suppliers may have an impact upon final delivery. Delivery is based on single item orders. Orders for multiple units of the same model may be spread over a longer time period.

Shipping of the flare is to be arranged within 2 weeks of flare completion. We work with several companies that can do the shipping and bill you directly.

Commissioning is available at $95 per hour travel time, $95 per hour while on location, $142.50 for hours in excess of 8 hours in a single day, $2.75 per mile portal to portal, actual cost of meals, and lodging.

TERMS: This Proposal is based upon NGSG's standard terms and conditions of sale which are attached to and made a part of this quotation or previously agreed upon T&C's if such exist. Any variance in credit terms will be specified upon acceptance of order.

CANCELLATION: 150% of documented incurred costs at time of cancellation

CERTIFICATIONS, SPECIFICATIONS, and WARRANTY:

Flares built for this quotation will be certified as being built to the following codes and specifications:

NGSG QMS Policy and Procedures
API 537 and 521
ANSI B31.3
AISC-ASD
ASME Sect. VIII Div. 1
ASME Sect. IX
ASW
NEMA 4
TNRCC Regulations

Warranty for flares built for this proposal are based upon NGSG's standard terms and conditions of sale and warranty which are attached to and made a part of this quotation.

EXCLUSIONS:

- Any equipment, materials, or services not specifically stated in this proposal
- Installation or Commissioning.
- Any applicable sales tax, tariffs, use tax, or duties.
- Compliance to any other code than those listed above.
- Any interconnecting piping or wiring.
- Field touch-up of paint.
- Release of proprietary working drawings.
- Cost of NDT other than those required by the NGSG QMS Policy.
- Cost for transportation.

All calculations for this flare were based on data given to NGSGI for analysis. The waste stream data is as follows:

Flow: 304,000 standard ft^3 per day (0.304 MMscfd)
Max flow 0.320 MMscfd.

Gas Mix:	Unknown
H_2S Content:	0 ppm
N_2:	0%
H_2O:	2%
CO_2:	0%
Methane:	49%

Ethane:	3%
Propane:	6%
Butane:	10%
Pentane:	18%
Hexane+:	12%
Inlet Pressure:	0.125 psi
Gas Temperature:	70 °F
Power is available	
Pilot Gas is available.	

Calculations were made to verify the stack was capable of sustaining standard high winds using MecaStack software Ver. 5.2.4.2.

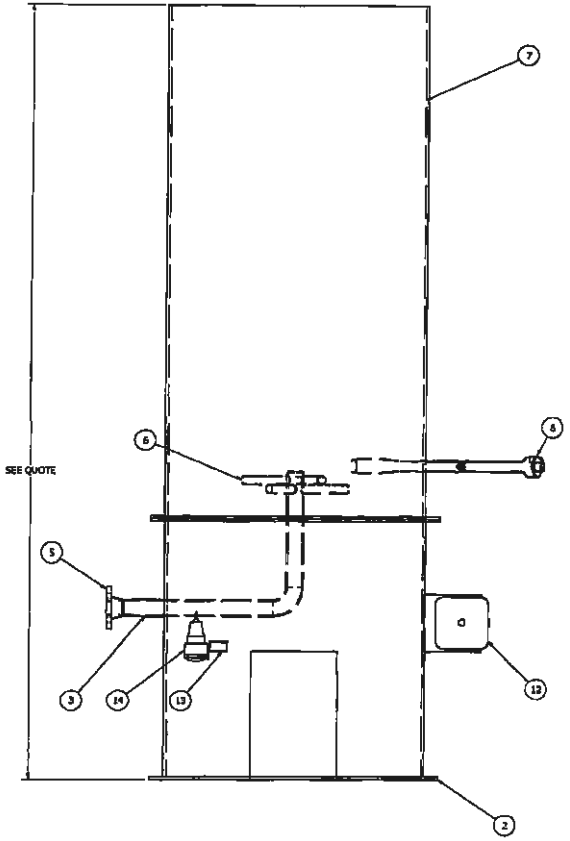
We appreciate your interest in our product and in giving us the opportunity to offer this quotation. We trust this proposal is satisfactory; however, should you require any additional information or clarification, please do not hesitate to call on us.

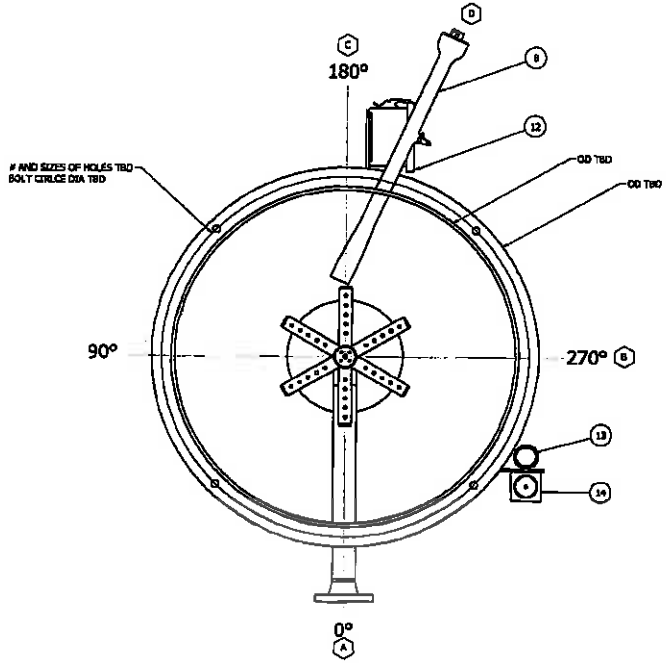
Sincerely,

Rayme Dean / John Geib

Customer Signature: _____

PARTS LIST		
ITEM	DESCRIPTION	MATERIAL
2	BASE PLATE, OD AND BOLT HOLES TBD	A-36
3	PIPE, OD SEE QUOTE	304 SS
4	SPARK SOURCE/BOOSTER BOX (NOT SHOWN)	NEMA 4
5	TBD x 150# FFWN FLANGE (GAS INLET)	A-105
6	TIP, SEE TIP	304 SS
7	FLARE STACK, OD PER QUOTE	A-53
8	PILOT, FIXED	304 SS
12	BOOSTER BOX	-
13	GAUGE PRESS 0-30lbs	-
14	REGULATOR, 300 BAF	-





SCHEDULE OF OPENINGS / COMPONENTS					
ITEM	DESCRIPTION	TYPE	RATING	SIZE	ORIENTATION
A	INLET FLANGE	RFWN	150#	SEE QUOTE	0°
B	LOUVERS	-	-	SEE QUOTE	270°
C	BLOWER	SEE QUOTE	SEE QUOTE	SEE QUOTE	180°
D	PILOT	FIXED	-	1/4" TBE	285°
E					
F					
G					
H					
J					
K					

REVISION HISTORY				
REV	DESCRIPTION	DATE	AUTHOR	ENG APPROVAL DATE
0	INITIAL DESIGN	4/29/2013	Oscar S.	
1	UPDATED ORIENTING	12/7/2017	Jacob A.	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES ± 0.1 FOR REFERENCE.

LENGTH	ANGLE	DIMS
± 1/8"	±1°	<48"
± 1/4"	±1°	>48"
± 1/4" / 25'		OVERALL

DO NOT SCALE PRINT

NGSG
NATURAL GAS SERVICES GROUP, INC.
12301 W. Co. Rd. 123
Odessa, Texas 79765
TEL: (432) 262-2700
FAX: (432) 262-2701
www.ngsg.com Email: NGS

CUSTOMER: NGSG	
CUSTOMER JOB #:	FLO20xxx
DRAFTSMAN	DATE DRAWN
Jonn Gelb	10/16/2012

ENCLOSED FLARE

JOB NO.	SIZE	DRAWING NO.	REV.
ENCLOSED FLARE	D	FKEF-Hx-x mmBTU-CA	1

SCALE: Enclosed CA Flare_vdw SHEET 1 OF 1

FLARE KING, INC.

Customer: MRC
Job: Pad 6

Date: 12/19/2014 9:17

DATA ENTRY SECTION:				CALCULATED DATA:		
Relief Fluid Data:	Mol %	Duty(mmscfd):	0.304	Relief Fluid Data:		
H_2S	0.0000					
N_2	0.0000	Temp. °F	70	Total Flow	0.304	mmscfd
O_2	0.0000			MW/SG:	40.85	1.410
H_2	0.0000	Inlet Pres psi	0.125	Density:	0.1078	lb/scf
H_2O	2.4697			LHV:	2120.9	btu/scf
CO_2	0.0000	Pilot	X	LHV:	19680.1	btu/lb
Methane - C_1	48.7026			k (Cp/Cv):	1.205	
Ethane - C_2	2.7226	Sparker		Z Compressibility:	0.9732	
Propane - C_3	6.4189			Viscosity	0.008	cp
IsoButane - iC_4	4.7624	Retrackable	X	C:H ratio:	[redacted]	
neoButane - nC_4	5.1555			Flow:	1362.3	lb/hr
isoPentane - iC_5	9.2320	Guyed	X	Duty:	26.81	mmBTU/hr
neoPentane - nC_5	8.3776			Flow:	3.849	acfs
Hexane - C_6	12.1586	Free Standing		Air Req'd:	4628.4	scfm
Heptane - C_7	0.0000			Air Req'd(ft^3air / ft^3gas):	21.95	
Octane - C_8	0.0000	Solar		Flare Data:		
Ethylene	0.0000			Calc'd Emissivity:	0.307	
Propylene	0.0000	Enclosed	X	Tip ΔP:	3.09	in H_2O
Benzene	0.0000			Tip Velocity:	78.4	fps
Toluene	0.0000			Sonic Velocity:	881.7	fps
Ethylbenzene	0.0000			Mach Number:	0.09	
m-Xylene	0.0000			Flame Length (less assist air):	17.0	ft
Total:	100.0			Min. Flare Height:	18.0	ft @base
Gas Assist Target LHV	btu/scf			# Pilots Req'd	1	ea
Assist Air:	scfm			U_{wind}/U_{exit}:	0.37	
				Δx:	16.1	ft
Radiation Criteria:				Δy:	3.5	ft
Max Rad@Base:	1500 btu/hr.ft^2			Sound level	105.7	db
Emissivity:	0.307			Vmax=	400.0	ft/s
Atm. Temp:	70 °F			Air Assit Vmax=	209.5	ft/s
Relative Humidity:	50 %	Dist, horiz.(ft)		Radiation(btu/hr.ft^2)	Rad Factor	
Wind velocity:	29.3 fps	0.0		0.0	0.89	
Flare Tip ϕ:	3 in	15.0		0.0	0.89	
Flare Height(oah):	25 ft	30.0		0.0	0.88	
Tip Press.	13.7 psia	50.0		0.0	0.86	
Altitude	2000 ft	75.0		0.0	0.84	
Rad Factor:		100.0		0.0	0.83	
		150.0		0.0	0.81	
Rev. A		200.0		0.0	0.79	

FLARE KING, INC.

TECHNICAL DATA

DESCRIPTION: 26.81 mmBTU/hr ENCLOSED FLARE WITH A 3" EFFECTIVE TIP IN A 25' OAH GUYED ENCLOSED FLARE STACK

CUSTOMER: MRC

DESIGN PARAMETERS:

FLOW RATE:	0.304 mmscfd
TEMPERATURE:	70 °F
MOLECULAR WEIGHT:	40.9 lb/lb-mol
TIP PRESSURE DROP:	0.11 psig
EXIT VELOCITY:	78.4 fps
MACH NO.:	0.09

UTILITIES:

PURGE GAS (w/seal):	N/A
PURGE GAS (w/o seal):	N/A
ASSIST GAS:	N/A
PILOT GAS:	8-12 cfh @ 10 psig

ELECTRIC:

IGNITION:	3 amps @ 120V-1Ph-60Hz
CONTROLS:	3 amps @ 120V-1Ph-60Hz
BLOWER:	N/A

ENVIRONMENTAL:

RADIATION ON GRADE @DESIGN FLOW RATE, Btu/SF/Hr:

	(@Distance from base, ft)				Wind@	20.0	mph.	
@ BASE	15	30	50	75	100	150	200	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

NOTE: Radiation does not include solar radiation (approx. 250 btu/hr).

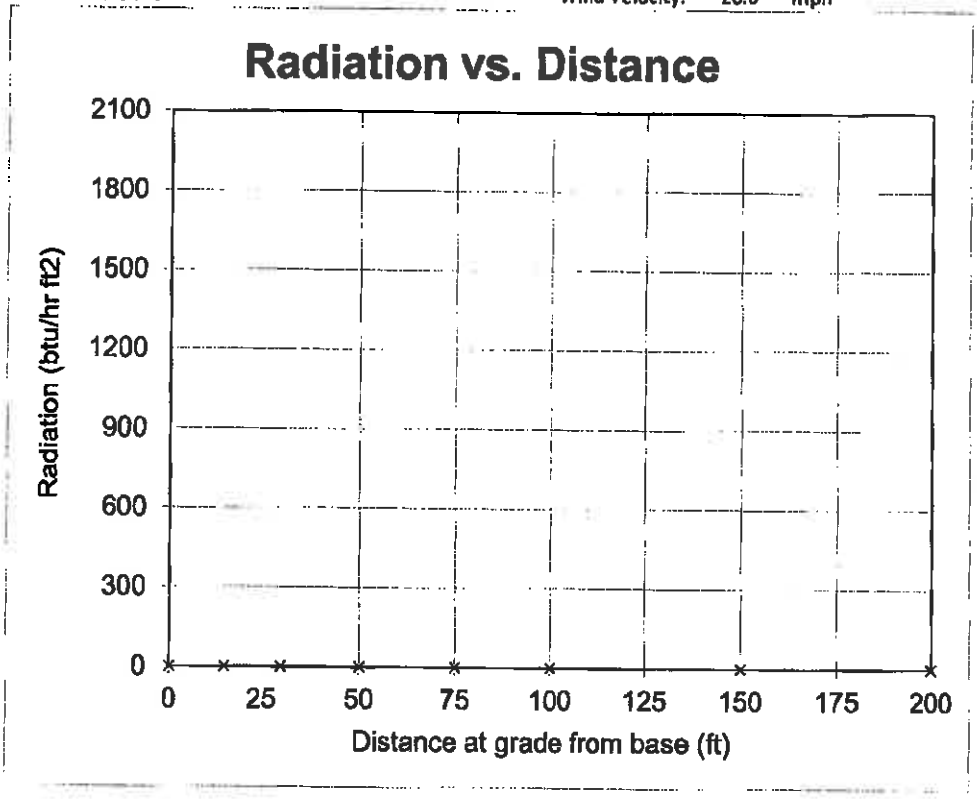
DESTRUCTION EFFICIENCY: 98%

FLARE KING, INC.

Customer: MRC

Job: Pad 6

Wind Velocity: 20.0 mph



NOTE: Radiation does not include solar radiation (approx. 250 btu/hr).

Recommended Design Total Radiation (from API RP-521)

Permissible Design Level (K) (BTU/hr·ft^2)	Conditions
5000	Heat intensity on structures and in areas where operators are not likely to be performing duties and where shelter from radiant heat is available (for example, behind equipment).
3000	Value of K at design flare release at any location to which people have access (for example, at grade below the flare or a service platform of a nearby tower); exposure should be limited to a few seconds, sufficient for escape only.
2000	Heat intensity in areas where emergency actions lasting up to 1 minute may be required by personnel without shielding but with appropriate clothing.
1500	Heat intensity in areas where emergency actions lasting several minutes may be required by personnel without shielding but with appropriate clothing.
500	Value of K at any location where personnel with appropriate clothing may be continuously exposed.

FLARE KING, INC.

EMISSION ESTIMATE

Customer: MRC

Relief Fluid Data:	Mol %	Flow Rate: (scfh)	0.6 (lb/hr)	Efficiency %	Emissions (lb/hr)	Emissions (lb mol/hr)	w/ Comb.Prod. (lb mol/hr)	(mol %)
H_2S	0.000	0.0	0.00	98.0	0.000	0.000	0.000	0.000
N_2	0.000	0.0	0.00	0.0	0.00	0.000	0.000	0.000
O_2	0.000	0.0	0.00	100.0	0.00	0.000	0.000	0.000
H_2	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
H_2O	2.470	312.5	14.84	0.0	14.84	0.824	122.371	57.549
CO_2	0.000	0.0	0.00	0.0	0.00	0.000	89.647	42.159
C_1	48.703	6163.1	260.49	98.0	5.21	0.325	0.325	0.153
C_2	2.723	344.5	27.30	99.0	0.27	0.009	0.009	0.004
C_3	6.419	812.3	94.39	99.0	0.94	0.021	0.021	0.010
nC_4	4.762	602.7	92.31	98.0	1.85	0.032	0.032	0.015
iC_4	5.155	652.4	99.92	98.0	2.00	0.034	0.034	0.016
nC_5	9.232	1168.3	222.10	98.0	4.44	0.062	0.062	0.029
iC_5	8.378	1060.1	201.55	98.0	4.03	0.056	0.056	0.026
C_6	12.159	1538.6	349.37	98.0	6.99	0.081	0.081	0.038
C_7	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_8	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_2H_4	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_3H_6	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_6H_6	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_7H_8	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
C_8H_{10}	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
m-C_8H_{10}	0.000	0.0	0.00	98.0	0.00	0.000	0.000	0.000
SO_2	N/A	N/A	N/A	N/A	N/A	N/A	0.0000	0.000
Total:	100.000	12654.6	1362.3		40.57	1.444	212.637	100.00

Duty(mmscfd): 0.3037

LHV(btu/scf): 2120.9

NO_x	0.1380 b/MMBtu =	3.6997 lb/hr	16.205 ton NO_x/yr
CO	0.2755 b/MMBtu =	1.0605 lb/hr	4.645 ton CO/yr
SO_2		0.0000 lb/hr	0.000 ton SO_2/yr

H_2S 0.000 (ppmv)

H_2S 0.000 (ppmv)dry

* Per TNRCC 106.352 Subchapter 'O'

ATTACHMENT I

Emissions Calculations

Triad Hunter, LLC
EMISSIONS SUMMARY

Pad 6 Production Facility

Tyler County

Source	Description	NOx lb/hr	CO lb/hr	CO_{2e} lb/hr	VOC lb/hr	SO2 lb/hr	H2S lb/hr	PM lb/hr	n-Hexane lb/hr	benzene lb/hr	formaldehyde lb/hr	Total HAPs lb/hr
GPU-1 to GPU-3	Three 2.0 MMBTU/Hr GPUs	0.60	0.50	724.73	0.03	0.004	0.00	0.046	0.0108	0.0000	0.0005	0.0113
GPU-4 to GPU-7	Four 1.0 MMBTU/Hr GPUs	0.40	0.34	483.15	0.02	0.002	0.00	0.030	0.0072	0.0000	0.0003	0.0075
CP-1	Combustor Pilot	0.00	0.00	1.69	0.00	0.000		0.000	0.0000	0.0000		0.0000
VCU-1	Condensate Tanks Emissions[1]	1.22	6.64	2102.21	12.06	0.000		0.058	0.4597	0.0070	0.0006	0.5247
VCU-1	Water Tank Emissions[1]	0.01	0.07	23.56	0.02	0.000		0.001	0.0003	0.0000	0.0000	0.0016
VCU-1	Captured Condensate Truck Loading Emissions[2]	0.00	0.02	6.06	0.04			0.000	0.0006	0.0000		0.0007
---	Cond. Truck Loading - Uncaptured				0.90				0.0200			
---	Water Truck Loading - Uncaptured				0.33							
---	Haul Roads							55.8				
---	Fugitive Gases			3.58	1.03							
Total		2.24	7.57	3344.98	14.43	0.01	0.00	55.94	0.50	0.01	0.00	0.55

Source		NOx tpy	CO tpy	CO_{2e} tpy	VOC tpy	SO2 tpy	H2S tpy	PM tpy	n-Hexane tpy	benzene tpy	formaldehyde tpy	Total HAPs tpy
GPU-1 to GPU-3	Three 2.0 MMBTU/Hr GPUs	2.63	2.21	3,174	0.14	0.016	0.00	0.20	0.047	0.000	0.002	0.049
GPU-4 to GPU-7	Four 1.0 MMBTU/Hr GPUs	1.75	1.47	2,116	0.10	0.011	0.00	0.13	0.032	0.000	0.001	0.033
CP-1	Combustor Pilot	0.01	0.01	7	0.00	0.000	0.00	0.00	0.000	0.000		0.000
VCU-1	Condensate Tanks Emissions[1]	5.35	29.10	9,203	52.81			0.25	2.020	0.030	0.003	2.053
VCU-1	Water Tank Emissions[1]	0.06	0.32	100	0.10			0.01	0.001	0.000	0.000	0.001
VCU-1	Captured Condensate Truck Loading Emissions[2]	0.01	0.04	12	0.09			0.00	0.001	0.000		0.001
---	Cond. Truck Loading - Uncaptured				1.97				0.120			
---	Water Truck Loading - Uncaptured				0.73							
---	Haul Roads							8.37				
---	Fugitive Gases			16	4.50							
Total		9.80	33.14	14,628	60.44	0.03	0.00	8.96	2.22	0.030	0.006	2.138

[1] Condensate and Water Tanks equipped with VCU. Emissions determined from ProMax, controlled at 98%
[2] Captured Truck Loading Emissions Routed to Combustor

Pad 6 Production Facility
Tyler County, WV

'otential Emission Rate

Sources GPU-1 through GPU-3

Burner Duty Rating	6000.0 Mbtu/hr	Three Units at 2.0 Mbtu/Hr Each
Burner Efficiency	98.0 %	
Gas Heat Content (HHV)	1251.0 Btu/scf	
Total Gas Consumption	117457.1 scfd	
H2S Concentration	0.000 Mole %	
Hours of Operation	8760	

NOx	0.6002	lbs/hr	2.629	TPY
CO	0.5042	lbs/hr	2.208	TPY
CO2	720.3	lbs/hr	3154.9	TPY
CO2e	725	lbs/hr	3,174	TPY
VOC	0.0330	lbs/hr	0.145	TPY
SO2	0.0036	lbs/hr	0.016	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0456	lbs/hr	0.200	TPY
CHOH	0.0005	lbs/hr	0.002	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0108	lbs/hr	0.047	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0113	lbs/hr	0.049	TPY

AP-42 Factors Used (Tables 1.4.1-1.4.3)

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 = 25**
N_2O	**2.2 Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075 Lbs/MMCF**	
Benzene	**0.0021 Lbs/MMCF**	
n-Hexane	**1.8 Lbs/MMCF**	
Toluene	**0.0034 Lbs/MMCF**	

Pad 6 Production Facility
Tyler County, WV

'otential Emission Rate

Sources GPU-4 through GPU-7

Burner Duty Rating	4000.0 Mbtu/hr	Four Units at 1.0 Mbtu/Hr Each
Burner Efficiency	98.0 %	
Gas Heat Content (HHV)	1251.0 Btu/scf	
Total Gas Consumption	78304.7 scfd	
H2S Concentration	0.000 Mole %	
Hours of Operation	8760	

NOx	0.4002	lbs/hr	1.753	TPY
CO	0.3361	lbs/hr	1.472	TPY
CO2	480.2	lbs/hr	2103.2	TPY
CO2e	483	lbs/hr	2,116	TPY
VOC	0.0220	lbs/hr	0.096	TPY
SO2	0.0024	lbs/hr	0.011	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0304	lbs/hr	0.133	TPY
CHOH	0.0003	lbs/hr	0.001	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hexane	0.0072	lbs/hr	0.032	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0075	lbs/hr	0.033	TPY

AP-42 Factors Used (Tables 1.4.1-1.4.3)

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 = 25**
N_2O	**2.2 Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075 Lbs/MMCF**	
Benzene	**0.0021 Lbs/MMCF**	
n-Hexane	**1.8 Lbs/MMCF**	
Toluene	**0.0034 Lbs/MMCF**	

Pad 6 Production Facility
Tyler County, WV

'otential Emission Rate

VCU Pilot

Burner Duty Rating	14.0 Mbtu/hr
Burner Efficiency	98.0 %
Gas Heat Content (HHV)	1251.0 Btu/scf
Total Gas Consumption	274.1 scfd
H2S Concentration	0.000 Mole %
Hours of Operation	8760

NOx	0.0014	lbs/hr	0.006	TPY
CO	0.0012	lbs/hr	0.005	TPY
CO2	1.7	lbs/hr	7.4	TPY
CO2e	2	lbs/hr	7	TPY
VOC	0.0001	lbs/hr	0.000	TPY
SO2	0.0000	lbs/hr	0.000	TPY
H2S	0.0000	lbs/hr	0.000	TPY
PM10	0.0001	lbs/hr	0.000	TPY
CHOH	0.0000	lbs/hr	0.000	TPY
Benzene	0.0000	lbs/hr	0.000	TPY
N-Hezane	0.0000	lbs/hr	0.000	TPY
Toluene	0.0000	lbs/hr	0.000	TPY
Total HAPs	0.0000	lbs/hr	0.000	TPY

AP-42 Factors Used (Tables 1.4.1-1.4.3)

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 = 25**
N_2O	**2.2 Lbs/MMCF**	**Global Warming Potential =310**
HCOH	**0.075 Lbs/MMCF**	
Benzene	**0.0021 Lbs/MMCF**	
n-Hexane	**1.8 Lbs/MMCF**	
Toluene	**0.0034 Lbs/MMCF**	

Pad 6 Production Facility
Tyler County, WV

Potential Emission Rates

Source VCU-1

Enclosed Vapor Combustor - Control of Condensate Tank Emissions

Destruction Efficiency	98.0 %		
Gas Heat Content (HHV)	2355.0 Btu/scf		
Max Flow to T-E	0.183 MMSCFD	66.795 MMCF/Yr	
Max BTUs to Flare	18.0 MMBTU/Hr	157,302 MMBTU/Yr	

NOx	1.22	lbs/hr	5.35	tpy
CO	6.64	lbs/hr	29.10	tpy
CO2	2,098.98	lbs/hr	9,193.5	tpy
CO2e	2,102.21	lb/hr	9,203.3	tpy
VOC	12.06	lb/hr	52.81	tpy
CH4	0.04	lbs/hr	0.1730	tpy
N2O	0.0040	lbs/hr	0.0173	tpy
PM	0.0580	lb/hr	0.2538	tpy
Benzene	0.0070	lb/hr	0.0301	tpy
CHOH	0.0006	lb/hr	0.0025	tpy
n-Hexane	0.4597	lb/hr	2.0201	tpy
Toluene	0.0000	lb/hr	0.0001	tpy

Notes: From ProMax, Condensate Tank vapors to VCU are 72.64% VOC.
Condensate Tank Vapors are 0.1869 MMSCFD [830 lb/hr] and 2355 BTU/SCF
Hourly VOC emissions are determined as follows: Condensate Tank Vapors to Flare (830 lb/Hr) times 1 minus control efficiency (1-.98 or 0.02) times percent VOCs (72.64%) = 12.06 lb/Hr.

Annual combustor VOC emissions from control of tank emissions are determined as follows:
Condensate tank emission = 830lb/hr x 8760 hours/yr x0.02 x 0.7264 = 105630 lb/yr = 52.81 tpy.

HAPs are combination of that generated during combusion with AP-42 factors plus HAP components in un-combusted gas (See Attached Calculations)

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
AP-42 Table 1.4-3	Benzene	0.0021 lb/MMSCF
AP-42 Table 1.4-3	Toluene	0.0034 lb/MMSCF
AP-42 Table 1.4-3	Hexane	1.8 lb/MMSCF
AP-42 Table 1.4-3	CHOH	0.075 lb/MMSCF

Pad 6 Production Facility
Tyler County, WV

Potential Emission Rates

Source VCU-1

Enclosed Vapor Combustor - Control of Water Tank Emissions

Destruction Efficiency	98.0 %		
Gas Heat Content (HHV)	1168.0 Btu/scf		
Max Flow to T-E	0.004 MMSCFD	1.460	MMCF/Yr
Max BTUs to Flare	0.2 MMBTU/Hr	1,705	MMBTU/Yr

NOx	0.01	lbs/hr	0.06	tpy
CO	0.07	lbs/hr	0.32	tpy
CO2	22.75	lbs/hr	99.7	tpy
CO2e	23.56	lb/hr	99.8	tpy
VOC	0.02	lb/hr	0.10	tpy
CH4	0.00	lbs/hr	0.0019	tpy
N2O	0.0000	lbs/hr	0.0002	tpy
PM	0.0013	lb/hr	0.0055	tpy
Benzene	0.0000	lb/hr	0.0000	tpy
CHOH	0.0000	lb/hr	0.0001	tpy
n-Hexane	0.0003	lb/hr	0.0013	tpy
Toluene	0.0000	lb/hr	0.0000	tpy

Notes: From ProMax, Water Tank vapors to VCU are 14.88% VOC.
Water Tank Vapors are 0.0036 MMSCFD [7.9 lb/hr] and 1168 BTU/SCF
Hourly VOC emissions are determined as follows: WaterTank Vapors to Flare (7.9 lb/Hr) times 1 minus control efficiency (1-.98 or 0.02) times percent VOCs (14.88%) = 0.02 lb/Hr.

Annual combustor VOC emissions from control of tank emissions are determined as follows:
Condensate tank emission = 7.9lb/hr x 8760 hours/yr x0.02 x 0.1488 = 206 lb/yr = 0.10 tpy.

HAPs are combination of that generated during combusion with AP-42 factors plus HAP components in un-combusted gas (See Attached Calculations)

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
AP-42 Table 1.4-3	Benzene	0.0021 lb/MMSCF
AP-42 Table 1.4-3	Toluene	0.0034 lb/MMSCF
AP-42 Table 1.4-3	Hexane	1.8 lb/MMSCF
AP-42 Table 1.4-3	CHOH	0.075 lb/MMSCF

Pad 6 Production Facility
Tyler County, WV

Potential Emission Rates

Source VCU-1

Enclosed Vapor Combustor - Control of Condensate Truck Loading

Destruction Efficiency	98.0	%	
Gas Heat Content (HHV)	2430.0	Btu/scf	
Max Flow to T-E	0.000223	MMSCFD	0.081 MMCF/Yr
Max BTUs to Flare	0.0452	MMBTU/Hr	197 MMBTU/Yr

NOx	0.00	lbs/hr	0.01	tpy
CO	0.02	lbs/hr	0.04	tpy
CO2	5.28	lbs/hr	11.5	tpy
CO2e	6.06	lb/hr	11.6	tpy
VOC	0.04	lb/hr	0.09	tpy
CH4	0.00	lbs/hr	0.0002	tpy
N2O	0.0000	lbs/hr	0.0000	tpy
PM	0.0001	lb/hr	0.0003	tpy
Benzene	0.0000	lb/hr	0.0000	tpy
CHOH	0.0000	lb/hr	0.0000	tpy
n-Hexane	0.0006	lb/hr	0.0011	tpy
Toluene	0.0000	lb/hr	0.0000	tpy

Notes: For VOC Emissions, see Truck Loading Calculation Sheet
HAPs are combination of that generated during combusion with AP-42 factors plus HAP components in un-combusted gas (See Truck Loading Calculations)

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
AP-42 Table 1.4-3	Benzene	0.0021 lb/MMSCF
AP-42 Table 1.4-3	Toluene	0.0034 lb/MMSCF
AP-42 Table 1.4-3	Hexane	1.8 lb/MMSCF
AP-42 Table 1.4-3	CHOH	0.075 lb/MMSCF

Pad 6 Production Facility
Tyler County, WV

Fugitive VOC Emissions

Volatile Organic Compounds, NMNEHC from gas analysis:	38.51	weight percent
Methane from gas analysis:	36.78	weight percent
Carbon Dioxide from gas analysis:	0.49	weight percent
Gas Density	0.0580	lb/scf

Emission Source:	Number	Oil & Gas Production*		VOC %	VOC, lb/hr	VOC TPY	CO2 lb/Hr	CO2 TPY	CH4 lb/hr	CH4 TPY	CO2e
Valves:											
Gas/Vapor:	38	0.02700	scf/hr	38.5	0.023	0.100	0.000	0.001	0.02	0.0959	2.398
Light Liquid:	4	0.05000	scf/hr	100.0	0.012	0.051					0.000
Heavy Liquid (Oil):	-	0.00050	scf/hr	100.0	0.000	0.000					
Low Bleed Pneumatic	-	1.39000	scf/hr	38.5	0.000	0.000	0.000	0.000	0.00	0.0000	0.000
Relief Valves-Gas:	25	0.04000	scf/hr	38.5	0.022	0.098	0.000	0.001	0.02	0.0934	2.337
Open-ended Lines, gas:	-	0.06100	sfc/hr	38.5	0.000	0.000					0.000
Open-ended Lines, liquid	-	0.05000	lb/hr	100.0	0.000	0.000					0.000
Pump Seals:											
Gas:	3	0.00529	lb/hr	38.5	0.006	0.027	0.000	0.000	0.00	0.0000	0.000
Light Liquid:	-	0.02866	lb/hr	100.0	0.000	0.000					
Heavy Liquid (Oil):	-	0.00133	lb/hr	100.0	0.000	0.000					
Compressor Seals, Gas:	-	0.01940	lb/hr	38.5	0.000	0.000	0.000	0.000	0.00	0.0000	0.000
Connectors:											
Gas:	215	0.00300	scf/hr	38.5	0.014	0.063	0.000	0.001	0.01	0.0603	1.508
Light Liquid:	122	0.00700	scf/hr	100.0	0.854	3.741					0.000
Heavy Liquid (Oil):	-	0.00030	scf/hr	100.0	0.000	0.000					
Flanges:											
Gas:	272	0.00086	lb/hr	38.5	0.090	0.395	0.001	0.005	0.09	0.3768	9.426
Light Liquid:	34	0.00300	scf/hr	100.0	0.006	0.026					0.000
Heavy Liquid:		0.0009	scf/hr	100.0	0.000	0.000					

Fugitive Calculations:

	lb/hr	t/y
VOC	**1.027**	**4.500**
CH4	**0.056**	**0.243**
CO2	**0.002**	**0.008**
CO2e	**3.577**	**15.67**

Notes: *Factors are from 40 CFR 98, Table W-1A (scf/hr), where available. Remaining are API (lb/hr

Triad Hunter, LLC
GAS ANALYSIS INFORMATION

Pad 6 Production Facility
Tyler County, WV

Inlet/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	0.502	0.141	0.005	0.537			-		0.0050	
Carbon Dioxide, CO2	0.294	0.129	0.004	0.494			-		0.0029	
Hydrogen Sulfide, H2S	-	-	-	-			-		-	
Helium, He	-	-	-	-			-		-	
Oxygen, O2	-	-	-	-			-		-	
Methane, CH4	60.037	9.632	0.333	36.781	546.0	606.4	5.722		0.5992	
Ethane, C2H6	20.621	6.201	0.214	23.679	333.8	364.9	3.440		0.2045	5.485
Propane	9.534	4.204	0.145	16.055	220.7	239.9	2.271	16.055	0.0937	2.613
Iso-Butane	1.675	0.974	0.034	3.718	50.3	54.5	0.519	3.718	0.0163	0.545
Normal Butane	3.139	1.825	0.063	6.967	94.5	102.4	0.972	6.967	0.0303	0.984
Iso Pentane	1.074	0.775	0.027	2.959	39.7	43.0	0.409	2.959	0.0107	0.391
Normal Pentane	1.009	0.728	0.025	2.780	37.4	40.4	0.385	2.780	0.0101	0.363
Hexane	0.889	0.766	0.026	2.926	39.1	42.3	0.402	2.926	0.0088	0.364
Heptane	0.811	0.813	0.028	3.103	41.4	44.6	0.425	3.103	0.0081	0.372
	99.585	26.186	0.904		1,402.9	1,538.4	14.544	38.508	0.9896	11.118

Ideal Gross (HHV)	1,538.4
Ideal Gross (sat'd)	1,512.3
GPM	-
Real Gross (HHV)	1,554.5
Real Net (LHV)	1,417.6

Condensate Truck Loading Lost Emissions Per AP-42

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor L_L can be estimated as follows:

$$L_L = 12.46[SPM/T]$$

Where:

L_L = uncontrolled loading loss in pounds per 1000 gallons of liquid loaded
S= saturation factor (0.6)
P=true vapor pressure of liquid loaded 7.5 psia (condensate)
M= Molecular weight of vapor in lb/lb-mole (calculated at 42.65 – From ProMax)
T= temperature of bulk liquid loaded in deg R or 460+deg F (60 Deg F)

Thus, $L_L = 12.46[0.6 \times 7.5 \times 42.65]/[460+60]$
$L_L = 4.60$ lb/1000 gallons loaded

VOC Emissions
Per ProMax 74.4% of these emissions are VOCs. Thus, given a maximum loading of 243 BBL (10,200 gallons) a day of condensate, uncontrolled emissions are estimated at 34.9 lb of VOC per day [4.60 x 10.2 x .744]. The overall control system is by 69%. This is based upon a capture efficiency of 70% per AP-42, Chapter 5.2.2.1.1 and a 98% control of captured vapors. This will be accomplished through a combination of a vapor combustor system and use of uncertified tanker trucks. Thus, uncaptured VOC emissions are estimated at 10.47 lb/day [34.9 x 30%]. With all daily loading taking place within 12 hours, the uncaptured hourly emission rate is conservatively estimated at 0.87 lb/hr [10.47/12].

Maximum annual truck loading is 88,700 BBL (3,725,000 gallons per year). Thus, un-captured VOC emissions are conservatively estimated at 3,825 pounds per year [4.60 x 3,725 x 30% x 74.4%] or 1.91 tons per year. In reality, actual loading is anticipated to be a small fraction of this potential amount as truck loading/transportation of condensate is only a backup to the pipeline transfer of condensate.

The captured total emissions are routed to the vapor combustion unit: 34.9 lb/day x 70% = 24.4 lb/day or 2.04 lb/hr for a 12-hour loading day. Annually, captured total emissions are estimated at (34.9 x 365 x 70%) or 8,917 pounds per year or 4.46 tons per year. With a minimum combustion efficiency of 98% and a 74.4 % VOC content, hourly and annual VOC emissions from the vapor combustor unit are 0.03 lb/hr and 0.07 tpy.

Combining the un-captured emissions and the un-burned portion of the captured emissions, total VOC emissions from truck loading are estimated at 0.90 lb/hr (0.87 + 0.03) and 1.97 tpy (1.91 + 0.06).

HAPs Emissions

Per ProMax, 1.37% of the overall emissions are hexane. This is conservatively assumed to be all n-hexane. All other HAPs are present at concentrations at least one order of magnitude below that of n-hexane. Thus, given a maximum loading of 243 BBL (10,200 gallons) a day of condensate, uncontrolled emissions are estimated at 0.64 lb of n-hexane per day [4.60 x 10.2 x .0137]. Again, the overall control system is by 69%. Thus, uncaptured n-hexane emissions are estimated at 0.19 lb/day [0.64 x 30%]. With all daily loading taking place within 12 hours, the uncaptured hourly n-hexane emission rate is conservatively estimated at 0.02 lb/hr [0.19/12].

Maximum annual truck loading is 88,700 BBL (3,725,000 gallons per year). Thus, un-captured n-hexane emissions are conservatively estimated at 235 pounds per year [4.60 x 3,725 x 30% x 1.37%] or 0.12 tons per year. Again, in reality, actual loading is anticipated to be a small fraction of this potential amount as truck loading/transportation of condensate is only a backup to the pipeline transfer of condensate.

The captured emissions are routed to the vapor combustion unit: 34.9 lb/day x 70% = 24.4 lb/day or 2.04 lb/hr for a 12-hour loading day. Annually, captured emissions are estimated at (34.9 x 365 x 70%) or 8,917 pounds per year or 4.46 tons per year. With a minimum combustion efficiency of 98% and n-hexane being 1.37%, hourly and annual un-controlled n-hexane emissions from the vapor combustor unit are 0.0006 lb/hr and 0.001 tpy.

Combining the un-captured emissions and the un-burned portion of the captured emissions, total n-hexane emissions from truck loading are estimated at 0.02 lb/hr (0.02 + 0.0006) and 0.12 tpy (0.12 + 0.001).

All other HAPs are present at much lower concentrations than n-hexane. Thus, based on the amount of n-hexane emitted, it can be assumed that the other HAPs will be emitted at insignificant rates.

Condensate Truck Loading Emissions to Flare

Given: Vapor Heat Content: 2430 btu/scf (HHV per ProMax)
Vapor Density: 0.11 lb/scf (per ProMax model)
Max to Flare: 2.04 lb/hr
Max to Flare (per Yr) 8,917 lb/yr [4.46 tons per year]

Max Hourly BTUs to Flare
(2.04 lb/hr)/(0.11 lb/scf) = 18.55 scf/hr [Also, 18.55 scfh x 12 hrs/day max loading = 223 scfd]
18.55 scf/hr x 2430 btu/scf = 0.045 MMBTU/hr

Max Annual BTUs to Flare
(8,917 lb/yr) / (0.11 lb/scf) = 81,064 scf/yr
81,064 scf/yr x 2430 btu/scf = 196.99 MMBTU/yr

Water Truck Loading Lost Emissions Per AP-42

Per AP-42, Chapter 5.2.2.1.1, the uncontrolled loading loss emission factor L_L can be estimated as follows:

$$L_L = 12.46[SPM/T]$$

Where:

L_L = uncontrolled loading loss in pounds per 1000 gallons of liquid loaded
S= saturation factor (0.6)
P=true vapor pressure of liquid loaded (0.5 psia)
M= Molecular weight of vapor in lb/lb-mole (estimated at 20.5)
T= temperature of bulk liquid loaded in deg R or 460+deg F (60 Deg F)

Thus, $L_L = 12.46[0.6 \times 0.5 \times 20.5]/[460+60]$
$L_L = 0.15$ lb/1000 gallons loaded

It is conservatively assumed that these emissions are 80% VOCs

Given a maximum loading of 794 BBL (33,300 gallons) a day, uncontrolled emissions are estimated at 4.00 lb of VOC per day [33.3 x 0.15 x .80]. There is no control on vapors from the water truck loading. Thus, with all daily water loading taking place within a 12 hour period, the uncaptured/uncontrolled hourly emission rate is estimated at 0.33 lb/hr [4.00 lb/12].

Maximum annual throughput is 12,155,000 gallons per year. Thus, uncaptured/uncontrolled emissions are estimated at 1,459 pounds per year [12,155 x 0.15 x 0.8] or 0.73 tons per year.

COMBUSTOR HAP EMISSIONS
(From Condensate Tank Emissions)
WVDNR Pad No. 6

I. Gas To Combustor

Condensate Tank Vapors (From ProMax) is 0.183 MMSCFD or 7625 SCFH or 66.79 MMSCF of condensate vapors to combustor per year under worst case conditions

II. HAPs Emissions

Given:

- From ProMax, 830 lb/hr Gas to Combustors from the condensate tanks
- 830 lb/hr x 8760 hr/yr = 3635 tpy Tank Vapor to Combustor
- The destruction efficiency is 98%

HAP	Weight %	Un-Destructed lb/hr	Un-Destructed TPY
n-Hexane	2.689	**0.446**	**1.96**
Benzene	0.043	**0.007**	**0.03**
e-Benzene	0.026	**0.004**	**0.02**
Toluene	0.000	**0.000**	**0.00**
Xylenes	0.062	**0.010**	**0.04**

These values have been added to the amounts generated during combustion via AP-42 Factors and are reflected in the Condensate Tank Combustor Emissions calculation detail sheet.

COMBUSTOR HAP EMISSIONS
(From Water Tank Emissions)
WVDNR Pad No. 6

I. Gas To Combustor

Water Tank Vapors (From ProMax) is 0.004 MMSCFD or 7625 SCFH or 66.79 MMSCF of condensate vapors to combustor per year under worst case conditions

II. HAPs Emissions

Given:

- From ProMax, Gas to Combustors from the water tanks is 7.9 lb/Hr
- 7.9 lb/hr x 8760 hr/yr = 34.6 tpy Tank Vapor to Combustor
- The destruction efficiency is 98%

HAP	Weight %	Un-Destructed lb/hr	Un-Destructed TPY
n-Hexane	0.044	**<0.0001**	**<0.001**
Benzene	0.056	**<0.0001**	**<0.001**
e-Benzene	0.030	**<0.0001**	**<0.001**
Toluene	0.000	**0.000**	**0.00**
Xylenes	0.077	**0.0001**	**<0.001**

These values have been added to the amounts generated during combustion via AP-42 Factors and are reflected in the Water Tank Combustor Emissions calculation detail sheet.

Attachment I
FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

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

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
p =	Number of days per year with precipitation >0.01 in.	157	157

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	Produced Water Tanker Truck	18	27	10	3.85	1	400	None	0
2	Condensate Tanker Truck	18	27	10	3.85	1	200	None	0
3									
4									
5									
6									
7									
8									

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

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

Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	3
S =	Mean vehicle speed (mph)	10	10
W =	Mean vehicle weight (tons)	27	27
w =	Mean number of wheels per vehicle	18	18
p =	Number of days per year with precipitation >0.01 in.	157	157

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

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

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	27.9	5.58	27.9	5.58	3.77	0.75	3.77	0.75
2	27.9	2.79	27.9	2.79	3.77	0.38	3.77	0.38
3								
4								
5								
6								
7								
8								
TOTALS	55.8	8.37	55.8	8.37	7.54	1.08	7.54	1.08

FUGITIVE EMISSIONS FROM PAVED HAULROADS

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

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	None						
2							
3							
4							
5							
6							
7							
8							

Source: *AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads*

$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7} =$ lb/Vehicle Mile Traveled (VMT)

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface meterial silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

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

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

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T01
City:	Huntington
State:	West Virginia
Company:	Triad Hunter, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	400 BBL Condensate Tank WVDNR Pad No. 6

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	12.00
Liquid Height (ft) :	19.80
Avg. Liquid Height (ft):	8.00
Volume (gallons):	16,751.39
Turnovers:	110.00
Net Throughput(gal/yr):	1,842,652.52
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.25
Slope (ft/ft) (Cone Roof)	0.04

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Huntington, West Virginia (Avg Atmospheric Pressure = 14.33 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T01 - Vertical Fixed Roof Tank
Huntington, West Virginia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 10)	All	63.27	53.72	72.81	57.93	5.5225	4.5845	6.6083	66.0000			92.00	Option 4: RVP=10, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T01 - Vertical Fixed Roof Tank
Huntington, West Virginia

Annual Emission Calcaulations	
Standing Losses (lb):	2,114.2478
Vapor Space Volume (cu ft):	1,366.5928
Vapor Density (lb/cu ft):	0.0650
Vapor Space Expansion Factor:	0.2961
Vented Vapor Saturation Factor:	0.2204
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,366.5928
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	12.0833
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	8.0000
Roof Outage (ft):	0.0833
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0833
Roof Height (ft):	0.2500
Roof Slope (ft/ft):	0.0400
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0650
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5225
Daily Avg. Liquid Surface Temp. (deg. R):	522.9353
Daily Average Ambient Temp. (deg. F):	54.8458
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	517.5958
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,246.2101
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2961
Daily Vapor Temperature Range (deg. R):	38.1698
Daily Vapor Pressure Range (psia):	2.0237
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5225
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	4.5845
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.6083
Daily Avg. Liquid Surface Temp. (deg R):	522.9353
Daily Min. Liquid Surface Temp. (deg R):	513.3928
Daily Max. Liquid Surface Temp. (deg R):	532.4777
Daily Ambient Temp. Range (deg. R):	20.0583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.2204
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	5.5225
Vapor Space Outage (ft):	12.0833

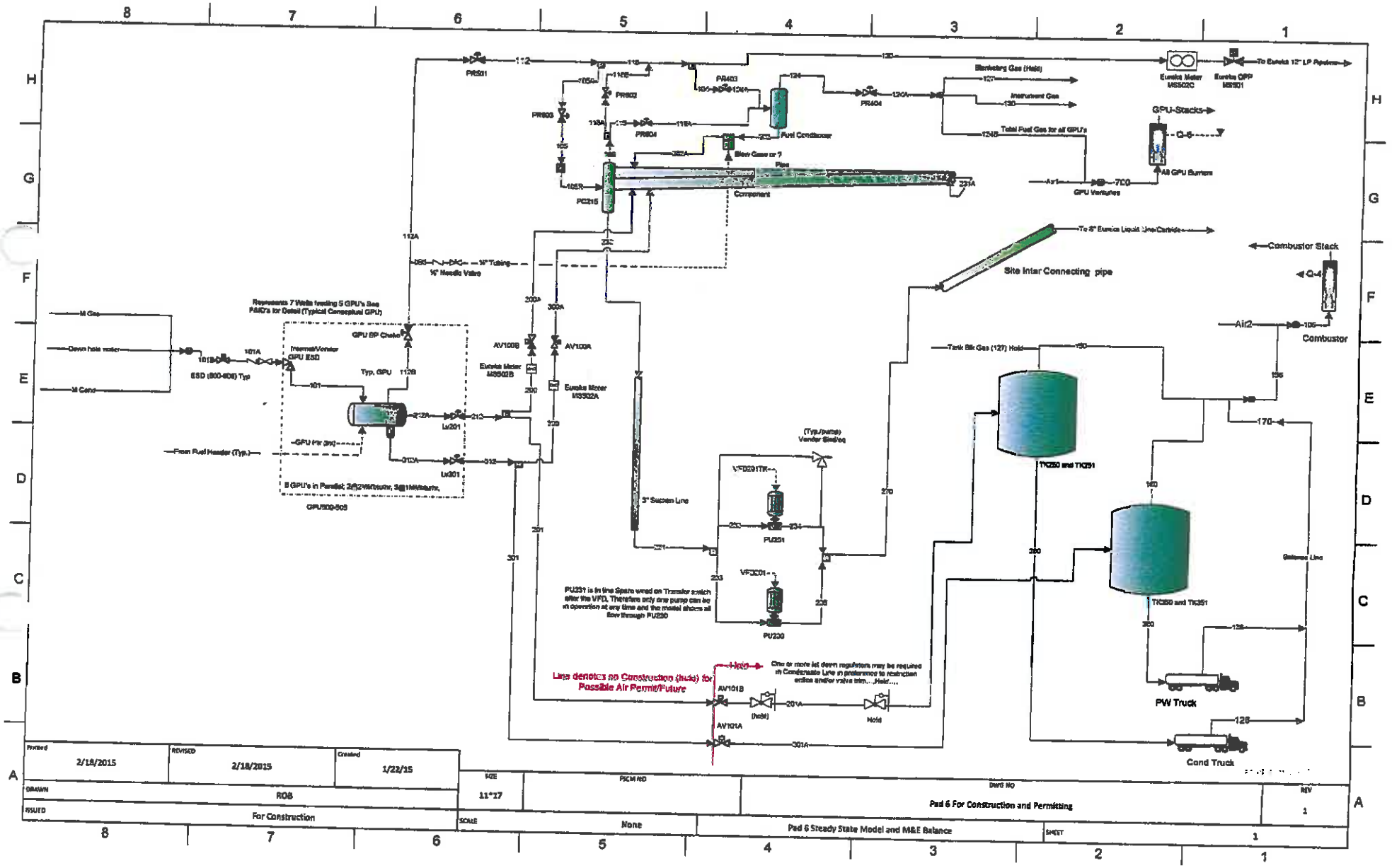
Working Losses (lb):	7,026.3792
Vapor Molecular Weight (lb/lb-mole):	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.5225
Annual Net Throughput (gal/yr.):	1,842,652.5189
Annual Turnovers:	110.0000
Turnover Factor:	0.4394
Maximum Liquid Volume (gal):	16,751.3865
Maximum Liquid Height (ft):	19.6000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	9,140.6271

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T01 - Vertical Fixed Roof Tank
Huntington, West Virginia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 10)	7,026.38	2,114.25	9,140.63


PR501
PR402
PR403
PR404
PR802
PR803
PR804
Fuel Conditioner
Blanketing Gas (Hold)
Instrument Gas
Total Fuel Gas for all GPU's
Eureka Meter MS502C
Eureka OPP MS501
To Eureka 12" LP Pipeline
GPU-Stacks
All GPU Burners
GPU Venturies
Compressor
PC215
Site Inter Connecting pipe
To 2" Eureka Liquid Line/Carlisle
Combustor Stack
Combustor
Air2
Tank Blk Gas (127) Hold
TK250 and TK251
TK350 and TK351
PW Truck
Cond Truck
Represents 7 Wells feeding 5 GPU's See P&ID's for Detail (Typical Conceptual GPU)
GPU BP Choke
Internal/Vendor GPU ESD
ESD (600-606) Typ
Typ. GPU
Eureka Meter MS502B
Eureka Meter MS502A
AV100B
AV100A
From Fuel Header (Typ.)
GPU Fir (Inc)
5 GPU's in Parallel; 2@24MMbtu/hr, 3@1MMbtu/hr,
GPU500-503
Lv201
Lv301
3" Suction Line
(Typ./purge) Vendor Blinding
VFD231TK
VFD201
PU251
PU230
PU231 is in line Spare wired on Transfer switch after the VFD. Therefore only one pump can be in operation at any time and the model shows all flow through PU230
Line denotes no Construction (hold) for Possible Air Permit/Future
Hold
One or more let down regulators may be required in Condensate Line in preference to restriction orifice and/or valve trim. ...Hold....
AV101B
AV101A
(hold)
Hold
16" Needle Valve
16" Tubing
Printed 2/18/2015
REVISED 2/18/2015
Created 1/22/15
DRAWN RO8
ISSUED For Construction
SIZE 11*17
SCALE None
PSCM NO
Dwg NO Pad 6 For Construction and Permitting
REV 1
Pad 6 Steady State Model and M&E Balance
SHEET 1

Process Streams		124	127	128	130	138	150	156	160	170
Properties	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total		GPU Fuel		Cond. Truck Vap.		Water Truck Vap.	Cond. Tank Vapor		Water Tank Vapor	
Property	Units									
Temperature	°F	38.31	37.52	69.82	37.52	70.00	70.00	69.82	70.00	69.82
Pressure	psig	108.00	100.00	0.00	100.00	0.00	1.00	0.00	1.00	0.00
Mass Flow	lb/h	455.18	6.74	1.45	0.55	0.00	830.23	839.58	7.90	1.45
Mass Fraction Vapor	%	100.00	100.00	100.00	100.00		100.00	100.00	100.00	100.00
Molar Flow	lbmol/h	21.96	0.33	0.03	0.03	0.00	20.13	20.55	0.39	0.03
Mole Fraction Vapor	%	100.00	100.00	100.00	100.00		100.00	100.00	100.00	100.00
Molecular Weight	lb/lbmol	20.73	20.73	42.65	20.73		41.25	40.85	20.15	42.65
Mass Density	lb/ft^3	0.50	0.46	0.11	0.46		0.12	0.11	0.06	0.11
Specific Gravity		0.72	0.72	1.47	0.72		1.42	1.41	0.70	1.47
Enthalpy	MMBtu/h	-0.76	-0.01	0.00	0.00	0.00	-0.91	-0.93	-0.01	0.00
Gross Ideal Gas Heating Value	Btu/ft^3	1251.46	1251.46	2430.45	1251.46		2354.94	2332.42	1167.73	2430.45
Compressibility		0.96	0.96	0.98	0.96		0.98	0.99	1.00	0.98
Std Vapor Volumetric Flow	MMSCFD	0.20	0.00	0.00	0.00	0	0.1833	0.1872	0.0036	0.00
Std Liquid Volumetric Flow	Mbbl/d	0	0	0	0	0	0	0	0	0

Process Streams		124	127	128	130	138	150	156	160	170
Composition	Status:	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: Total										
Mass Fraction		%	%	%	%	%	%	%	%	%
Nitrogen		0.502	0.502	0.017	0.502		0.030	0.032	0.278	0.017
CO2		0.294	0.294	0.115	0.294		0.121	0.149	3.085	0.115
Methane		60.368	60.368	8.357	60.368		10.057	10.536	61.325	8.357
Ethane		20.621	20.621	17.076	20.621		17.155	17.185	20.433	17.076
Propane		9.534	9.534	21.196	9.534		20.786	20.677	9.055	21.196
i-Butane		1.675	1.675	7.083	1.675		6.905	6.845	0.508	7.083
n-Butane		3.139	3.139	16.133	3.139		15.714	15.585	2.003	16.133
I-Pentane		1.074	1.074	7.554	1.074		7.351	7.286	0.415	7.554
n-Pentane		1.009	1.009	7.606	1.009		7.403	7.337	0.388	7.606
Neohexane		0.364	0.364	3.007	0.364		2.926	2.899	0.047	3.007
2-Methylpentane		0.119	0.119	1.011	0.119		0.984	0.975	0.021	1.011
3-Methylpentane		0.076	0.076	0.653	0.076		0.636	0.630	0.035	0.653
Hexane		0.319	0.319	2.762	0.319		2.689	2.665	0.044	2.762
Heptane		0.811	0.811	7.256	0.811		7.071	7.006	0.125	7.256
Water		0.084	0.084	0.040	0.084		0.041	0.061	2.077	0.040
Oxygen		0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
TEG		0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
Benzene		0.005	0.005	0.044	0.005		0.043	0.043	0.056	0.044
o-Xylene		0.004	0.004	0.064	0.004		0.062	0.062	0.077	0.064
Ethylbenzene		0.002	0.002	0.027	0.002		0.026	0.026	0.030	0.027
Mole Fraction		%	%	%	%	%	%	%	%	%
Nitrogen		0.371	0.371	0.026	0.371		0.044	0.047	0.200	0.026
CO2		0.138	0.138	0.111	0.138		0.113	0.138	1.413	0.111
Methane		78.001	78.001	22.218	78.001		25.856	26.827	77.041	22.218
Ethane		14.215	14.215	24.222	14.215		23.531	23.345	13.695	24.222
Propane		4.482	4.482	20.502	4.482		19.443	19.153	4.138	20.502
I-Butane		0.597	0.597	5.198	0.597		4.900	4.811	0.176	5.198
n-Butane		1.120	1.120	11.839	1.120		11.151	10.953	0.695	11.839
i-Pentane		0.309	0.309	4.465	0.309		4.203	4.125	0.116	4.465
n-Pentane		0.290	0.290	4.497	0.290		4.232	4.154	0.108	4.497
Neohexane		0.088	0.088	1.488	0.088		1.401	1.374	0.011	1.488
2-Methylpentane		0.029	0.029	0.500	0.029		0.471	0.462	0.005	0.500
3-Methylpentane		0.018	0.018	0.323	0.018		0.304	0.299	0.008	0.323
Hexane		0.077	0.077	1.367	0.077		1.287	1.263	0.010	1.367
Heptane		0.168	0.168	3.088	0.168		2.911	2.856	0.025	3.088
Water		0.097	0.097	0.094	0.097		0.095	0.137	2.323	0.094
Oxygen		0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
TEG		0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
Benzene		0.001	0.001	0.024	0.001		0.023	0.022	0.014	0.024
o-Xylene		0.001	0.001	0.026	0.001		0.024	0.024	0.015	0.026
Ethylbenzene		0.000	0.000	0.011	0.000		0.010	0.010	0.006	0.011

ATTACHMENT J

Class I Legal Advertisement

Affidavit Notice Will Be Submitted Upon Receipt

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 G70-A General Permit registration for its WVDNR Pad No. 6 Production Facility off of County Route 8/2 (Buffalo Run Road) near Jacksonburg in Wetzel County, West Virginia. (Lat. 39.505258, Long. -80.657496)

The applicant estimates the following potential emissions of Regulated Air Pollutants will be:

9.80 tons of Nitrogen Oxides per year
33.14 tons of Carbon Monoxide per year
8.96 tons of Particulate Matter per year
0.03 tons of Sulfur Dioxide per year
60.44 tons of Volatile Organics per year
0.03 tons of Benzene per year
2.22 tons of n-Hexane per year
14,628 tons of Greenhouse Gases per year

Startup of operation is planned to begin on or about the 15th day of May 2015. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

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

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

By: Mr. Rocky Roberts, Senior Vice President
Triad Hunter, LLC
PO Box 430
Reno, Ohio 45773

ATTACHMENT N

Material Safety Data Sheets

EQT

Where energy meets innovation.

MATERIAL SAFETY DATA SHEET
NATURAL GAS PIPELINE CONDENSATE

FILE NO.:
MSDS DATE: 02/13/2012

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Natural Gas Pipeline Condensate.

SYNONYMS: Produced Water, Pipeline Drip, Formation Water, Salt Water, Oily Water.

PRODUCT DESCRIPTION: Water extracted from natural gas well production with residual mineral contents and residual hydrocarbons.

PRODUCT CODES: Mixture. See CAS Numbers of Individual Components.

MANUFACTURER: EQT
DIVISION: Waynesburg Operations
ADDRESS: 175 Industry Road
Waynesburg, PA 15370

EMERGENCY PHONE: (800) 926-1759 After hours: (800) 926-1759
CHEMTREC PHONE: (800) 424-9300

CHEMICAL NAME: Water
CHEMICAL FAMILY: Brine Waters
CHEMICAL FORMULA: Mixture
CAS Reg. No.: Mixture

PRODUCT USE: Waste Brine, brine stock for chemical industry, salt brine for ice and snow removal.

PREPARED BY: MSES Consultants, Inc.
609 West Main Street
Clarksburg, WV 26301

SECTION 1 NOTES:

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS No.	% Wt	OSHA PEL	ACGIH TLV
Produced Water	Mixture	> 68	None	N/A
Mineral Variety	N/A	< 32	None	N/A
Gas Condensate	8002-05-9	< 1	500 ppm	N/A
Benzene	71-43-2	< 1	1 ppm	0.5 ppm
Hydrogen Sulfide	7783-06-4	< 1	20 ppm	1 ppm

SECTION 2 NOTES:

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

ROUTES OF ENTRY: Inhalation, ingestion, skin contact

POTENTIAL HEALTH EFFECTS

EYES: Eye contact with vapors may cause eye irritation. Eye contact with liquid may cause irritation and pain. Eye contact with H2S may cause painful irritation and may be indicative of exposure above applicable H2S standards.

SKIN: Skin contact may cause skin irritation and redness. Repeated or prolonged skin contact may cause dermatitis.

INGESTION: Ingestion may cause irritation of the digestive tract that may result in nausea, vomiting and diarrhea. In addition, signs and symptoms of H2S toxicity may be present.

INHALATION: Breathing the mist and vapors may be irritating to the respiratory tract. H2S is irritating and highly toxic if inhaled.

ACUTE HEALTH HAZARDS: Inhalation of high vapor concentrations may have results ranging from dizziness, drowsiness, headache, nausea, to possibly unconsciousness, and death, depending on concentrations and length of exposure. Inhalation of H2S will cause symptoms similar to carbon monoxide poisoning.

CHRONIC HEALTH HAZARDS: Skin, eye and respiratory tract irritation. Gastrointestinal and vascular effects and death may occur at high concentrations. May cause nervous system effects, such as headache, nausea and drowsiness. May contain high concentration of hydrogen sulfide, from which respiratory paralysis and death may occur.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Any condition causing impaired function of the respiratory systems.

CARCINOGENICITY

OSHA: Not Regulated **NTP:** Not Applicable **IARC:** Not Applicable

SECTION 3 NOTES:

SECTION 4: FIRST AID MEASURES

EYES: Flush eyes immediately with clean, low-pressure water for at least 15 minutes, occasionally lifting the eyelids. If pain or redness persists after flushing, seek medical attention. If eye is exposed to hot liquid, cover eyes with cloth and seek medical attention immediately.

SKIN: In case of hot liquid exposure, do not remove clothing or treat, wash only unburned area and seek medical attention immediately.

INGESTION: Do not induce vomiting. If spontaneous vomiting occurs, hold the victim's head lower than hips to prevent aspiration of liquid into the lungs. Have exposed individual rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Obtain medical assistance immediately.

INHALATION: Immediately remove person to area of fresh air. Call 911, emergency medical service, or Emergency Phone Numbers(s) provided in Section 1. Give artificial respiration if victim is not breathing. Do not use mouth-to mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.

SECTION 4 NOTES:

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: > 200° F; > 93° C

AUTOIGNITION TEMPERATURE: N/A

NFPA HAZARD CLASSIFICATION
HEALTH: 1 **FLAMMABILITY: 1** **REACTIVITY: 0**

EXTINGUISHING MEDIA: Water stream, water mist.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area downwind of source. Stop liquids flow and extinguish fire. If gas source cannot be shut off immediately, equipment and surfaces exposed to the fire should be cooled with water to prevent overheating and explosions. Control fire until the natural gas condensate has burned off.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If large amounts of natural gas condensate are present, they are extremely flammable and they can form flammable mixtures with air. Condensate will burn in the open or be explosive in confined spaces. Its vapors are lighter than air and will disperse.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and toxic vapors as a result of incomplete combustion.

SECTION 5 NOTES: Generally non-flammable, depending on the amount of natural gas condensate present. If large quantities of natural gas condensate are present, then water may be ineffective on flames and should be used only to keep fire-exposed containers cool. Use water mists to keep the surrounding areas cool.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Small: Evacuate area. Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks. Ventilate area.

Large: Evacuate area. Eliminate all sources of ignition such as flares, flames (including pilot lights), and electrical sparks. Non-essential employees should be evacuated from the exposure area. Persons involved in the control and repair of the leak should be provided with all necessary protective equipment and be properly trained for emergency situations involving this material. Stop leaks only when safe to do so. Stay upwind, and out of low areas. Ventilate closed spaces before entering. Use water spray to cool equipment surfaces, and containers exposed to fire and excessive heat.

SECTION 6 NOTES:

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE:

Handling: Use only with adequate ventilation. Wear appropriate personal protective equipment and use exposure controls as indicated in Section 8. Vent slowly to the atmosphere when opening. Avoid all contact with skin and eyes. Avoid breathing product vapors. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Remove contaminated clothing immediately. Wash with soap and water after working with this product.

Storage: Store in a segregated and approved area. Store in vented containers in a well-ventilated area, away from heat and ignition sources. Use appropriate containment to avoid environmental contamination.

OTHER PRECAUTIONS: Bond and ground containers.

SECTION 7 NOTES:

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

VENTILATION : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below the flammability limits, particularly in confined spaces. Use explosion-proof equipment and lighting in classified / controlled areas.

RESPIRATORY PROTECTION: Respiratory protection is not required for normal use. In non-emergency

	situations, use NIOSH approved respiratory protective equipment in situations where airborne concentrations may meet or exceed occupational exposure levels. At excessive concentrations, wear a NIOSH approved full-face self-contained breathing apparatus (SCBA) with supplied air.
EYE PROTECTION:	Wear splash-proof goggles and/or face shield for protection from spray.
SKIN PROTECTION:	Consider wearing long-sleeve, FRC, otherwise normal working clothes should be worn. Wash contaminated clothing prior to reuse. If gloves are required for job operations involving this product, wear nitrile rubber or polyvinylalcohol (PVAL) gloves
SECTION 8 NOTES:	

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Brine water. Colorless to lightly colored. Clear to turbid.
ODOR:	Slight hydrocarbon / rotten egg odor if hydrogen sulfide is present.
PHYSICAL STATE:	Liquid
BOILING POINT:	212° F (100° C)
MELTING POINT:	Not determined
FREEZING POINT:	< 32° C. < 0° C
VAPOR PRESSURE (mmHg):	Not determined
VAPOR DENSITY (AIR = 1):	1.2
SPECIFIC GRAVITY (H2O = 1):	> 1
EVAPORATION RATE:	N/A
SOLUBILITY IN WATER:	This material is aqeous.
PERCENT SOLIDS BY WEIGHT:	< 32%
PERCENT VOLATILE:	< 1% by weight and by volume
VOLATILE ORGANIC COMPOUNDS (VOC):	Not determined
MOLECULAR WEIGHT:	Not determined
VISCOSITY:	Not determined

SECTION 9 NOTES:

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY): Generally non-flammable. Can be flammable, depending on the quantity of natural gas liquids present.

INCOMPATIBILITY (MATERIAL TO AVOID): Oxygen and strong oxidizing material – if natural gas liquids present.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon dioxide, carbon monoxide, and various hydrocarbons formed during incomplete combustion.

HAZARDOUS POLYMERIZATION: Polymerization will not occur.

SECTION 10 NOTES:

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

BENZENE: This product contains benzene, which can cause degeneration in blood forming bone marrow leading to anemia which may further degrade to leukemia, a type of cancer. Acute benzene poisoning causes central nervous system depression. Chronic exposure affects the hematopoietic system causing blood disorders including anemia and pancytopenia. Mutagenic and clastogenic in mammalian and non-mammalian test systems. Reproductive or developmental toxicant only at doses that are maternally toxic, based on tests with animals.

HYDROGEN SULFIDE: This product contains hydrogen sulfide, which may be fatal if inhaled. Inhalation of a single breath at a concentration of 1000 ppm (0.1%) may cause coma. Hydrogen sulfide is corrosive when moist. Skin contact may cause burns. There is a rapid loss of sense of smell on exposure to gas concentrations above 150 ppm, and this means that the extent of exposure may be underestimated. Perception threshold ranges from 0.5 ppt to 0.1 ppm. It is an irritant and asphyxiant.

SECTION 11 NOTES:

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: Do not discharge into or allow runoff to flow into sewers and natural waterways. Contain spill material and dike for proper disposal. May be hazardous to waterways/wildlife.

SECTION 12 NOTES:

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: This product is not a "listed" hazardous waste. But when disposed of in containers may meet the criteria of being an "ignitable" waste. It is the responsibility of the user to determine if the material disposed of meets federal, state, or local criteria to be defined as a hazardous waste and dispose of accordingly.

SECTION 13 NOTES:

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: NOT REGULATED as a Hazardous Material for Transportation.

SECTION 14 NOTES:

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

US OSHA Hazard Communication Class: This product is hazardous under 29CFR 1910.1200 (Hazard Communication). HCS Class: Irritating Substance.

USA Right-to-Know – Federal: None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

SECTION 15 NOTES:

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

PREPARATION INFORMATION:

MSES Consultants, Inc.
609 West Main Street
Clarksburg, WV 26301

DISCLAIMER: This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our Company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

ATTACHMENT O

Emissions Summary Sheets

G70-A EMISSIONS SUMMARY SHEET

Emission Point ID No.	Emission Point Type[1]	Emission Unit Vented Through This Point		Air Pollution Control Device		All Regulated Pollutants - Chemical Name/CAS[2]	Maximum Potential Uncontrolled Emissions[3]		Maximum Potential Controlled Emissions[4]		Emission Form or Phase	Est. Method Used[5]
		ID No.	Source	ID No.	Device Type	*(Speciate VOCs & HAPS)*	lb/hr	ton/yr	lb/hr	ton/yr	*(At exit conditions, Solid, Liquid or Gas/Vapor)*	
1E	Upward Vertical Stack	GPU-1	GPU	None		NOx	0.20	0.88	0.20	0.88	Gas	EE
						CO	0.17	0.74	0.17	0.74	Gas	EE
						VOC	0.01	0.05	0.01	0.05	Gas	EE
						PM	0.02	0.07	0.02	0.07	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.02	<0.01	0.02	Gas	EE
						CO2e	241.6	1058	241.6	1058	Gas	EE
2E	Upward Vertical Stack	GPU-2	GPU	None		NOx	0.20	0.88	0.20	0.88	Gas	EE
						CO	0.17	0.74	0.17	0.74	Gas	EE
						VOC	0.01	0.05	0.01	0.05	Gas	EE
						PM	0.02	0.07	0.02	0.07	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.02	<0.01	0.02	Gas	EE
						CO2e	241.6	1058	241.6	1058	Gas	EE
3E	Upward Vertical Stack	GPU-3	GPU	None		NOx	0.20	0.88	0.20	0.88	Gas	EE
						CO	0.17	0.74	0.17	0.74	Gas	EE
						VOC	0.01	0.05	0.01	0.05	Gas	EE
						PM	0.02	0.07	0.02	0.07	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.02	<0.01	0.02	Gas	EE
						CO2e	241.6	1058	241.6	1058	Gas	EE
4E	Upward Vertical Stack	GPU-4	GPU	None		NOx	0.10	0.44	0.10	0.44	Gas	EE
						CO	0.08	0.37	0.08	0.37	Gas	EE
						VOC	<0.01	0.02	<0.01	0.02	Gas	EE
						PM	0.01	0.03	0.01	0.03	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	121	529	121	529	Gas	EE

5E	Upward Vertical Stack	GPU-5	GPU	None		NOx	0.10	0.44	0.10	0.44	Gas	EE
						CO	0.08	0.37	0.08	0.37	Gas	EE
						VOC	<0.01	0.02	<0.01	0.02	Gas	EE
						PM	0.01	0.03	0.01	0.03	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	121	529	121	529	Gas	EE
6E	Upward Vertical Stack	GPU-6	GPU	None		NOx	0.10	0.44	0.10	0.44	Gas	EE
						CO	0.08	0.37	0.08	0.37	Gas	EE
						VOC	<0.01	0.02	<0.01	0.02	Gas	EE
						PM	0.01	0.03	0.01	0.03	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	121	529	121	529	Gas	EE
7E	Upward Vertical Stack	GPU-7	GPU	None		NOx	0.10	0.44	0.10	0.44	Gas	EE
						CO	0.08	0.37	0.08	0.37	Gas	EE
						VOC	<0.01	0.02	<0.01	0.02	Gas	EE
						PM	0.01	0.03	0.01	0.03	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	0.01	<0.01	0.01	Gas	EE
						CO2e	121	529	121	529	Gas	EE
8E	Upward Vertical Stack	T01-T04+ TL-1	Controlled Tank Emissions + Condensate Truck Loading	C-1	VCU	NOx			1.23	5.42	Gas	EE
						CO			6.73	29.46	Gas	EE
						VOC	608	2650	12.12	53.00	Gas	EE
						PM			0.06	0.26	Solid	EE
						HCOH			<0.01	<0.01	Gas	EE
						Total HAPs	26.5	103	0.53	2.06	Gas	EE
						CO2e			2,132	9315	Gas	EE
---	Fugitive	TL-2	Water Truck Loading	None		NOx					Gas	EE
						CO					Gas	EE
						VOC	0.33	1.97	0.33	1.97	Gas	EE
						PM					Solid	EE
						HCOH					Gas	EE
						Total HAPs	<0.01	<0.01	<0.01	<0.01	Gas	EE
						CO2e					Gas	EE

9E	Upward Vertical Stack	CP-1	Combustor Pilot		None	NOx	<0.01	0.01	<0.01	0.01	Gas	EE
						CO	<0.01	0.01	<0.01	0.01	Gas	EE
						VOC	<0.01	<0.01	<0.01	<0.01	Gas	EE
						PM	<0.01	<0.01	<0.01	<0.01	Solid	EE
						HCOH	<0.01	<0.01	<0.01	<0.01	Gas	EE
						Total HAPs	<0.01	<0.01	<0.01	<0.01	Gas	EE
						CO2e	1.7	7	1.7	7	Gas	EE
---	Fugitive		Component Leaks	None		NOx					Gas	EE
						CO					Gas	EE
						VOC	1.03	4.50	1.03	4.50	Gas	EE
						PM					Solid	EE
						HCOH					Gas	EE
						Total HAPs					Gas	EE
						CO2e	3.58	16	3.58	16	Gas	EE
---	Fugitive		Haul Road Dust	None		NOx					Gas	EE
						CO					Gas	EE
						VOC					Gas	EE
						PM	55.8	8.37	55.8	8.37	Solid	EE
						HCOH					Gas	EE
						Total HAPs					Gas	EE
						CO2e					Gas	EE

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

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

[2] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases

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

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

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

ATTACHMENT P

Other Supporting Documentation

WVDNR Pad No. 6 Production Facility
Attachment P
Regulatory Analysis

Both State and Federal environmental regulations governing air emissions apply to Pad No. 6 Production Facility. 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 modification are discussed herein.

1.1 PSD and NSR

The facility will be 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 with the voluntary restrictions (e.g., enclosed combustor on tank and condensate loading emissions).

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. Consequently, NSR requirements are not 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. Additionally, facilities regulated under certain New Source Performance Standards (NSPS) require facilities to have Title V permits.

The expanded facility will remain a minor source. Additionally, the NSPS regulating this facility does not trigger a Title V permit. Hence, a Title V permit is not required for the Pad No. 6 Production Facility.

1.3 Aggregation

Source aggregation determinations are typically made based on the following criteria:

- Whether the facilities are under common control,
- Whether the facilities belong to the same Major Group (i.e. the first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement;
- Whether the facilities are located on one or more contiguous or adjacent properties; and the distance between all pollutant emitting activities,

- Whether the facilities can operate independently

Only if all criteria are met does a permitting authority aggregate the facilities into a single source.

This Triad Hunter facility produces and manages raw natural gas and associated produced fluids. After separation, the liquids and gas are injected into separate gathering lines for transportation to Eureka Hunter's Carbide Compressor Station. Here the gas is compressed, dehydrated and injection into a pipeline system for transportation to a regional natural gas processing plant owned and operated by others. The liquids are separate and the condensate is transported via truck to a regional processing plant. The produced water is distributed to upstream customers for fracking, with excess shipped to an approved disposal facility.

The Pad No. 6 Production Facility and the receiving Carbide Compressor Station are under the same general SIC Code, but under separate ownership. Additionally, Carbide Compressor station is approximately 2.8 miles from the Pad No. 6, with no clear line of sight and properties owned by others in between. Lastly, the Carbide Compressor Station also receives gas from other well pads from both Triad Hunter and other production companies. Thus, not all of the criteria for aggregation are met. Hence, emissions from the Pad No. 6 Production Facility should not be aggregated with those of the receiving Carbide Compressor Station.

The closest other Triad Hunter facilities to the Pad No. 6 Production Facility are two other well pads within the WVDNR Parcel. As with the compressor station discussed above, these facilities are under common ownership, under the same SIC code and may, from time to time, have a sharing of staff. However, these two well pads are approximately 4200 feet (0.80 miles) and 6300 feet (1.2 miles) from Pad No. 6 and they are not on contiguous or adjacent parcels. Lastly, there is no interconnection or interdependency between these three facilities. Gas from one well pad does not flow to the other. Accordingly, the operation of one well pad is not dependent upon the operation of the other. Thus, given the lack of dependency and the distance of separation, emissions from these three well pads should not be aggregated.

1.4 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 Pad No. 6 Production Facility are as follows:

- 40 CFR 60, Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
- 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_2 Emissions
- 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

1.4.1 Subpart Dc

This subpart limits SO2 and PM emissions from boilers and heaters fired by various fuels. While the primary thrust of this set of regulations it to control SOx and PM emissions from coal and oil-fired boilers and heaters, natural gas fired units are also covered under this rule. The planned Gas Processing Units have heat inputs that are well below the threshold of coverage for this rule (10 MMBTU/Hr). Thus, this rule does not apply.

1.4.2 Subpart KKK

This subpart limits VOC emissions from equipment at a natural gas processing station. The planned Pad No. 6 Production Facility does not meet the definition of a processing station under this rule. Hence, this rule does not apply.

1.4.3 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 field gas produced by Pad No. 6 Production Facility does not contain sufficient sulfur compounds to warrant a sweetening unit. Accordingly, no such equipment is present and this rule does not apply.

1.4.4 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 facility. Hence, this rule does not apply.

1.4.5 Subpart JJJJ

This subpart governs emissions from new stationary spark ignition internal combustion engines (SI ICE) manufactured after July 1, 2007. There are no SI ICE at this facility. Hence, this rule does not apply.

1.4.6 Subpart OOOO

This subpart governs emissions from a broad spectrum of operations in the oil and natural gas industries, including operations at natural gas well pads. The potentially applicable sections of this rule sets restrictions, recordkeeping and reporting requirements on emissions from storage vessels with potential VOC emissions greater than 6 tons per year, fugitive emissions, and pneumatic controllers. This rule applies to the Pad No. 6 Production Facility.

head and a processing plant must have a bleed rate of less than 6 scfh. All pneumatic controllers to be installed at Pad No. 6 Production Facility will meet these criteria.

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 at Pad No. 6 will have an estimated *uncontrolled* VOC emission rate well in excess of this threshold. However, as described in 40 CFR 60.5365(e), *the determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a Federal, State, local or tribal authority.* The control systems proposed in this application will not reduce potential VOC emissions from the condensate tank to rates below the 6 tpy limit per tank. Thus, the condensate tank at this facility will be regulated under 40 CFR 60, Subpart OOOO.

1.5 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 standards are potentially applicable to the planned Pad No. 6 Production Facility:

- 40 CFR 63, Subpart ZZZZ – NESHAP from Stationary Reciprocating Internal Combustion Engines
- 40 CFR 63, Subpart DDDDD – NESHAP for Industrial, Commercial and Institutional Boilers and Process Heaters

1.5.1 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 potentially applicable to the facility. However, as there are no RICE engines at this location, this rule does not apply.

1.5.2 Subpart DDDDD

This Subpart applies to industrial boilers and process heaters of various sizes and fuel types located at facilities that are classified as a major source of HAPs. As the planned facility is not a major source of HAPs, this rule does not apply.

1.6 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 Pad No. 6 Production Facility will potentially store more than 10,000 lbs of a flammable mixture containing several of the substances listed in Table 3 in 40 CFR 68.130. However, an RMP is not required as this facility qualifies for the exclusion provided for remote oil and gas production facilities (40 CFR 68.115).

1.7 West Virginia State Requirements

1.7.1 45 CSR 2

The purpose of 45CSR2 is to control smoke and particulate matter emissions from fuel burning units. The facility is subject to the opacity requirement of 45 CSR 2. Emissions from the facility cannot exceed 10% over any six minute period.

1.7.2 45 CSR 4

This regulation prohibits the emission of objectionable odors. Triad Hunter Oil & Gas is obligated to run the station in a manner that does not produce objectionable odors.

1.7.3 45 CSR 6

This rule establishes emission standards for particulate matter and other requirements for incineration of refuse not subject to or specifically exempted from federal regulation. The Enclosed Combustor falls under this rule. PM emissions from the combustor must remain below the allowable limits of this rule.

1.7.4 45 CSR 10

This regulation limits emissions of sulfur oxides. As the sulfur content of the Inlet Gas contains no measurable sulfur, emissions of sulfur oxides is negligible. Thus, while parts of this rule are applicable to the planned facility, no actions are required on the part of Triad Hunter to attain compliance. The various non-engine combustion units have a design heat input less than 10 MMBTU/Hr and are therefore exempt from the requirements of this rule.

1.7.5 45 CSR 13

The state regulations applicable to the permitting of minor source construction are in Title 45 Series 13 of the Code of State Regulations. The Pad No. 6 Production Facility has the potential to emit regulated pollutants in excess of the thresholds that define a Stationary Source.

When taking into consideration the voluntary limit to operate the back-up condensate and produced water management system equipped with an enclosed combustor, the facility's potential to emit is less than the thresholds that would classify the facility as a Major Source under 45 CSR 14.

1.7.6 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 Pad No. 6 Production Facility is subject to the emission limitations, monitoring, testing and recordkeeping of Subpart OOOO.

1.7.7 45 CSR 30

The state regulations applicable to Title V operating permits are in Title 45 Series 30. Pad No. 6 Production Facility, as noted above, does not have the potential to emit any regulated pollutant about the threshold that would define it as a major facility. Additionally, there are no NSPS applicable to this facility which trigger the need to submit a Title V application and obtain a Title V permit. Hence this rule is not applicable.

1.7.8 Other Applicable Requirements

Through Series 34, WVDEP has adopted the National Emission Standards for Hazardous Air Pollutants for Source Categories. Both of these topics have been addressed above.