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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3068
Plant ID No.: 103-00063
Applicant: Triad Hunter, LLC (Triad)
Facility Name: Buffalo Run Production Facility
Location: Jacksonburg, Wetzel County
NAICS Code: 211111
Application Type: Construction
Received Date: April 11, 2013
Engineer Assigned: Jerry Williams, P.E.
Fee Amount: \$2,000.00
Date Received: April 11, 2013
Complete Date: May 8, 2013
Due Date: August 6, 2013
Applicant Ad Date: April 17, 2013
Newspaper: *Wetzel Chronicle*
UTM's: Easting: 531.33 km Northing: 4,372.70 km Zone: 17
Description: The Buffalo Run Production Facility is a natural gas production facility with one (1) reciprocating internal combustion engine (RICE), one (1) vapor combustor unit, three (3) heated separators, six (6) produced fluid tanks, one (1) line heater, truck loading, and associated fugitive emissions.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3068:

Natural gas and produced fluids (condensate and water) are received from the wells located on this pad at approximately 800-1,000 psi. These materials then pass through a separator where gas and produced fluids (a mixture of condensate and water) are separated. The gas from high pressure wells is routed directly to the metering device and sent to the gathering line, which is owned by Triad and ties into the Eureka Pipeline. The gas for low pressure wells use the compressor unit to transport the gas to the metering device and then is sent to the gathering line, which is owned by Triad and ties into the Eureka Pipeline.

The produced fluids are routed to a series of six (6) 400 barrel (bbl) atmospheric tanks prior to transportation via truck to others for further processing. As the tanks will contain a significant percentage of condensate, capture and control of the vapors is warranted. Thus, emissions from these tanks will be collected and compressed by vapor combustor unit (VCU). In addition, truck loading will take place with a vapor balance system in place, whereby vapors generated during the loading operation are routed back to the tanks and ultimately captured by the VCU. A variety of other tanks with negligible emissions will be located at this facility.

All natural gas fired equipment at the site will use natural gas received at the station as fuel.

SITE INSPECTION

A site inspection was conducted by Douglas Hammell of the DAQ Enforcement Section on May 1, 2013. Mr. Hammell stated that the site was an acceptable location and was approximately 570 feet to the closest residence.

Directions to the facility (Latitude: 39.503353, Longitude: -80.635592) as given in the permit application are as follows:

From New Martinsville: Go east on US Highway 7 for approximately 2.5 miles and turn right (south) on US Highway 20. Travel approximately 17 miles to Jacksonburg and make a right on Main Street. Follow Main Street approximately 0.2 miles and make a left turn on to Buffalo Run Road and drive approximately 2.4 miles and the site will be on the right side of the road.



ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this construction application consist of the emissions from one (1) 225 horsepower (hp) RICE (1E), six (6) 400 bbl produced fluids tanks (2E), one (1) 2.39 million British Thermal Units per hour (MMBTU/hr) vapor combustor unit (2C), three (3) 1.0 MMBTU/hr heated separators (3E), two (2) 210 bbl produced water tanks (4E), and one (1) 0.15 MMBTU/hr line heater. The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	Process Equipment	Calculation Methodology
1E	225 hp Caterpillar 342 NA HCR Compressor Engine equipped with Miratech Non Selective Catalytic Reduction (NSCR)	Manufacturer's Data / EPA AP-42 Emission Factors
2E	Six (6) 400 bbl Produced Fluids Tanks equipped with HY-BON Vapor Combustor Unit	HY-BON Direct Measurement
3E	Three (3) 1.0 MMBTU/hr Heated Separators	EPA AP-42 Emission Factors
4E	Two (2) 210 bbl Produced Water Tanks	None (Water only, no organic phase)
5E	0.15 MMBTU/hr Line Heater	EPA AP-42 Emission Factors
Truck Loading	Condensate Truck Loading routed to the Vapor Combustor Unit	EPA AP-42 Emission Factors
2C	2.39 MMBTU/hr Vapor Combustor Unit	EPA AP-42 Emission Factors

Fugitive emissions for the facility are based on calculation methodologies presented in the Texas Natural Resource Conservation Commission for use in the oil and gas production industry.

The total facility PTE for the Buffalo Run Production Facility is shown in the following table:

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	4.52
Carbon Monoxide	4.42
Volatile Organic Compounds	1.54
Particulate Matter	0.31
Sulfur Dioxide	0.02
Total HAPs	0.30
Carbon Dioxide Equivalent	3,906

Maximum detailed controlled point source emissions were calculated by Triad and checked for accuracy by the writer and are summarized in the table on the next page.

Triad Hunter, LLC – Buffalo Run Production Facility (R13-3068)

Emission Point ID#	Source	NO _x		CO		VOC		PM		SO ₂		Total HAPs		CO ₂ e	
		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year
1E	Compressor Engine	0.64	2.80	0.68	2.98	0.01	0.04	0.02	0.10	<0.01	<0.01	0.07	0.30	253	1,107
2E	Six (6) Produced Fluids Tanks	0.00	0.00	0.00	0.00	0.53	0.12	0.00	0.00	0.00	0.00	0.01	<0.01	0	0
3E	Three (3) Heated Separators	0.29	1.29	0.25	1.08	0.02	0.07	0.03	0.10	<0.01	<0.01	<0.01	<0.01	343	1,503
4E	Produced Fluids Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5E	Line Heater	0.02	0.07	0.02	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	17	75
TL	Truck Loading	0.00	0.00	0.00	0.00	1.19	0.37	0.00	0.00	0.00	0.00	<0.01	<0.01	0	0
2C	Vapor Combustor Unit	0.08	0.37	0.07	0.31	<0.01	0.02	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	279	1,221
BD	Station Blowdowns	0.00	0.00	0.00	0.00	NA	0.15	0.00	0.00	0.00	0.00	<0.01	<0.01	0	0
FUG	Fugitive Emissions	0.00	0.00	0.00	0.00	0.17	0.76	0.00	0.00	0.00	0.00	<0.01	<0.01	0	0
Total	Total Facility PTE	1.03	4.53	1.02	4.43	1.92	1.54	0.05	0.23	<0.01	0.02	0.08	0.30	892	3906

REGULATORY APPLICABILITY

Unless otherwise stated WVDEP DAQ did not determine whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart ZZZZ.

The following rules apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat inputs of the proposed fuel burning units are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Triad would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

Emission Unit ID#	Emission Unit	Design Capacity
3E	Three (3) Heated Separators	1.0 MMBTU/hr (each)
5E	Line Heater	0.15 MMBTU/hr

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

The purpose of this rule is to prevent and control air pollution from combustion of refuse.

Triad has one (1) vapor combustor at the Buffalo Run Production Facility. The vapor combustor is subject to section 4, emission standards for incinerators. The facility will demonstrate compliance by maintaining the amount of natural gas consumed by the vapor combustor and the hours of operation. The facility will also monitor the flame of the vapor combustor and record any malfunctions that may cause no flame to be present during operation. In addition, the facility will also monitor visible emissions from the vapor combustor on a monthly basis.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat inputs of the proposed fuel burning units are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10. Furthermore, 45CSR10A exempts fuel burning units that combust natural gas from testing and monitoring requirements.

Emission Unit ID#	Emission Unit	Design Capacity
3E	Three (3) Heated Separators	1.0 MMBTU/hr (each)
5E	Line Heater	0.15 MMBTU/hr

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that Triad is defined as a “stationary source” under 45CSR13 Section 2.24.b, which states that an owner or operator discharges or has the potential to discharge more than six (6) pounds per hour and ten (10) tons per year, or has the potential to discharge more than 144 pounds per calendar day of any regulated air pollutant. Triad has published the required Class I legal advertisement notifying the public of their permit application, and paid the appropriate application fee (construction).

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60, Subparts A and OOOO. Triad is subject to the recordkeeping, monitoring, and testing required by 40CFR60 Subparts A and OOOO.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source and not subject to 45CSR30. Triad is required to keep their Certificate to Operate current.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The

following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart:

- a. Each gas well affected facility, which is a single natural gas well.

The gas wells that currently exist at the Buffalo Run Production Facility were drilled principally for the production of natural gas and were done so after August 23, 2011. Therefore, these wells would be considered affected facilities under this subpart. The compliance date for these hydraulically fractured wells is October 15, 2012. Triad is required under §60.5410 to submit an initial notification, initial annual report, maintain a log of records for each well completion, and maintain records of location and method of compliance. §60.5420 requires Triad demonstrate continuous compliance by submitting reports and maintaining records for each completion operation.

- b. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the Buffalo Run Production Facility. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- c. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There is one (1) reciprocating internal combustion engine located at the Buffalo Run Production Facility. This engine was delivered after the effective date of this rule. However, §60.5365(c) states that a reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart. Therefore, all requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would not apply.

- d. Pneumatic Controllers

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction after August

23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

There are no continuous bleed natural gas driven pneumatic controllers at the Buffalo Run Production Facility. The pneumatic controllers that will be installed are intermittent bleed design. Therefore, all requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO would not apply.

- e. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.
- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the Buffalo Run Production Facility are controlled by a vapor combustor and emit less than 6 tpy of VOC. Therefore, Triad is not required by this section to reduce VOC emissions by 95%.

- f. The group of all equipment, except compressors, within a process unit is an affected facility.
- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
 - Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.
 - The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The Buffalo Run Production Facility is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.
- Each sweetening unit that processes natural gas is an affected facility; and
 - Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.
 - Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.
 - Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the Buffalo Run Production Facility. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

40CFR63 Subpart ZZZZ (National Emission Standards for Reciprocating Ignition Internal Combustion Engines)

WVDEP DAQ did not determine whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart ZZZZ.

These promulgated national emission standards for hazardous air pollutants (NESHAP) limit emissions of hazardous air pollutants (HAP) from oil and natural gas production and natural gas transmission and storage facilities. These final rules implement section 112 of the Clean Air Act (Act) and are based on the Administrator's determination that oil and natural gas production and natural gas transmission and storage facilities emit HAP identified on the EPA's list of 188 HAPs.

The following rules do not apply to the facility:

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60.4230 states that a source that commenced construction after June 12, 2006 whose SI ICE was less than 500 hp and was manufactured on or after July 1, 2008 is subject to this rule. The proposed 225 hp compressor engine (1E) was manufactured on prior to June 12, 2006. Therefore, there are no applicable requirements under this subpart.

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The largest tanks that Triad has proposed to install are 63.60 cubic meters each. Therefore, Triad would not be subject to this rule.

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or Before August 23, 2011. The Buffalo Run Production Facility is not a natural gas processing plant, therefore, Triad would not be subject to this rule.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Buffalo Run Production Facility is located in Wetzel County, which is an attainment county for all pollutants, therefore this facility is not applicable to 45CSR19.

As shown in the table below, Triad is not subject to 45CSR14 or 45CSR19 review.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Triad PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	4.43	No
Nitrogen Oxides	250	NA	4.53	No
Sulfur Dioxide	250	NA	0.02	No
Particulate Matter 2.5	250	NA	0.23	No
Ozone (VOC)	250	NA	1.54	No
Greenhouse Gas (CO ₂ e)	100,000	NA	3,906	No

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. However, due to the concentrations emitted, detailed toxicological information is not included in this evaluation.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as seen in the table listed in the Regulatory Discussion Section.

SOURCE AGGREGATION

“Building, structure, facility, or installation” is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

The Buffalo Run Production Facility receives and compresses raw natural gas from ten (10) area Triad wells, situated on seven (7) well pads. The distance between these well pads and the Buffalo Run Production Facility range from less than 0.1 mile to approximately 0.8 miles. The gas received is compressed and discharges into gathering lines owned by others for

transportation to a remote booster compressor station and then on to a regional natural gas processing plant.

1. The Buffalo Run Production Facility and the seven (7) well pads both will operate under SIC code 13 (Natural Gas Liquid Extraction). Therefore, the two (2) facilities do belong to the same industrial grouping.
2. Both the Buffalo Run Production Facility and the seven (7) well pads are owned and operated by Triad. Therefore, they are under common control.
3. The Buffalo Run Production Facility is contiguous or adjacent with only the PR-23 well pad which contains a single vertical well.

Because the Buffalo Run Production Facility meets all three (3) criteria with the PR-23 well pad, the emissions from both of these facilities must be aggregated in determining major source or PSD status. The emission units associated with the PR-23 well pad (line heater) have been included with this permit application.

MONITORING OF OPERATIONS

Triad will be required to perform the following monitoring and recordkeeping associated with this permit application:

1. Monitor and record quantity of natural gas consumed for the engine, and combustion sources.
2. Monitor opacity from all fuel burning units.
3. Monitor the tanks to ensure that all vapors from the produced fluids tanks and the truck loading operation are sent to vapor combustor.
4. Monitor the condensate truck loading to ensure that vapor return/combustion is used.
5. Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
6. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
7. Maintain records of the visible emission opacity tests conducted per the permit.
8. Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
9. The records shall be maintained on site or in a readily available off-site location maintained by Triad for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Triad's Buffalo Run Production Facility meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that this facility should be granted a 45CSR13 construction permit for their facility.

Jerry Williams, P.E.
Engineer

Date