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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3270
Plant ID No.: 033-00258
Applicant: XTO Energy, Inc..
Facility Name: Lumberport Compressor Station
Location: Lumberport, Harrison County
NAICS Code: 211111
Application Type: Modification
Received Date: September 8, 2015
Engineer Assigned: Roy F. Kees, P.E.
Fee Amount: \$2,000.00
Date Received: September 9, 2015
Complete Date: October 7, 2015
Due Date: January 7, 2015
Applicant Ad Date: September 3, 2015
Newspaper: *The Exponent Telegram*
UTM's: Easting: 555.003 km Northing: 4,359.987 km Zone: 17
Description: Modification and operation of a natural gas compressor station.

DESCRIPTION OF PROCESS

The Lumberport Station is a natural gas compressor station located in Harrison County near Lumberport, WV, and is currently registered under G30-D165. XTO proposes to move the facility approximately 800 feet due east on to the site of an existing vertical well pad. The new facility will consist of one (1) well head, one (1) two-phase separator, one (1) Caterpillar G3406 NA Compressor, one (1) 210 bbl produced water tank, one (1) 100 bbl compressor engine suction scrubber tank, produced water and lube oil truck loading and other equipment typical to a natural gas production facility. Because the current G30-D General Permit does not have provisions included for truck loading, these changes will fall under a 45CSR13 Modification. Since Mountain Gathering is owned by XTO Energy, and the site where the facility will be located is a XTO Energy well site, then the facility will now be known as XTO Energy, Inc., Lumberport Station.

SITE INSPECTION

A site inspection was conducted by the writer on February 18, 2011. The original site was found to be within 300 feet of two residences. Mountain Gathering obtained the necessary siting waivers and they were received on June 8, 2011. The new location will be approximately 800 feet due east of the existing site, which will locate the facility farther from any residences.

Directions as given in the permit application to the new location are as follows:

From the intersection of Jones Run Road and C/R 6/9, head north on C/R 6/9 for ¼ mile and the entrance will be on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this modification application consist of the combustion emissions from one (1) natural gas fired compressor engine (5S), one (1) 210 bbl tank (produced water) (6S), one (1) product loadout rack (1S), and fugitive emissions. Fugitive emissions for the facility are based on calculation methodologies presented in EPA Protocol for Equipment Leak Emission Estimates. The following table indicates which methodology was used in the emissions determination:

Emission Unit ID#	Process Equipment	Calculation Methodology
1S	Produced Water Truck Loading	AP-42
2S	Lube Oil Truck Loading	Negligible
3S	Fugitive Emissions	AP-42
4S	Equipment Blowdowns	Negligible
5S	Caterpillar G3406 NA Compressor Engines 215 Horsepower	Manufacturer's Data, EPA AP-42 Emission Factors
6S	210 bbl Produced Fluid Tank	EPA Tanks 4.09d and direct measurement GOR, E&P Tnks
7S	Compressor Suction Water Tank	Negligible
8S	Lube Oil Tank	Negligible

The following table indicates the control device efficiencies that are required for this facility:

Emission Unit	Pollutant	Control Device	Control Efficiency
Caterpillar G3406 NA Compressor Engine	Nitrogen Oxides	Oxidation Catalyst	88%
	Carbon Monoxide		76%

The total facility PTE for the Lumberport Compressor Station is shown in the following table:

Pollutant	Proposed Facility Wide PTE (tons/year)	Current Facility Wide PTE (tons/year)	Change (tons/year)
Nitrogen Oxides	4.35	54.50	-50.15
Carbon Monoxide	8.47	54.46	-45.99
Volatile Organic Compounds	4.24	2.51	+1.73
Particulate Matter-10/2.5	0.48	--	--
Sulfur Dioxide	0.01	--	--
Total HAPs	0.85	--	--

REGULATORY APPLICABILITY

The following rules apply to the facility:

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 XTO is subject to a substantive requirement of an emission control rule promulgated by the Secretary (40CFR60 Subparts JJJJ and OOOO). Also, since the current G-30D does not contain provisions for tank truck loading, the facility will not be eligible for a General Permit Modification and will have to be permitted under a 45CSR13 Modification Permit.

XTO paid the appropriate application fee of \$1,000.00, NSPS Fee of \$1,000.00, and published the required legal advertisement in *The Exponent Telegram* on September 3, 2015.

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

45CSR16 applies to this source by reference of 40CFR60, Subparts JJJJ and OOOO. These requirements are discussed under that rule below.

45CSR22 (Air Quality Management Fee Program)

XTO is not subject to 45CSR30. The Lumberport Compressor Station is subject to 40CFR60 Subparts JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

XTO is required to pay the appropriate annual fees and keep their Certificate to Operate current.

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

40CFR60 Subpart JJJJ establishes emission standards for applicable SI ICE.

The 215 hp Caterpillar G3406 NA RICE (5S) was manufactured after the July 1, 2008 date for engines with a maximum rated power capacity greater than 100 hp or less than 500 hp.

The proposed 215 hp Caterpillar G3406 NA RICE (5S) will be subject to the following emission limits: NO_x – 2.0 g/hp-hr; CO – 4.0 g/hp-hr; and VOC – 1.0 g/hp-hr. Based on the manufacturer's specifications for these engines and catalysts, the emission standards will be met.

The proposed 215 hp Caterpillar G3406 NA RICE (5S) are not certified by the manufacturer to meet the emission standards listed in 40CFR60 Subpart JJJJ. Therefore, XTO will be required to conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, to demonstrate compliance.

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

There are no gas wells at this facility drilled after August 23, 2011. Therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOO would not apply.

- a. 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 Lumberport Compressor Station. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- b. 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 reciprocating internal combustion engine located at the Lumberport Compressor Station that were constructed prior to August 23, 2011. Therefore, the requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO will not apply.

c. 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.

All pneumatic controllers at the facility were constructed prior to the applicability date of August 23, 2011. Therefore, there are no applicable pneumatic controllers which commenced construction after August 23, 2011. Therefore, all requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO would not apply.

d. 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 non-earthen 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 vessel located at the Lumberport Compressor Station will not have the potential to emit more than 6.0 tpy of VOC uncontrolled, therefore, XTO will not be required to install a control device.

- e. 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 Lumberport Compressor Station is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- f. 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 Lumberport Compressor Station. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The engine (5S) at the Lumberport Compressor Station is subject to the area source requirements for non-emergency spark ignition engines.

The applicability requirements for new stationary RICEs located at an area source of HAPs, is the requirement to meet the standards of 40CFR60 Subpart JJJJ. These requirements were outlined above. The proposed engine meets these standards.

Because this engine will not be certified by the manufacturer, XTO will be required to perform an initial performance test within 180 days from startup, and subsequent testing every 8,760 hours or 3 years, whichever comes first.

The following rules do not apply to the facility:

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 Lumberport Compressor Station is located in Harrison County, which is an attainment county for all criteria pollutants, therefore the Lumberport Compressor Station is not applicable to 45CSR19.

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

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Lumberport PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	8.47	No
Nitrogen Oxides	250	NA	4.35	No
Sulfur Dioxide	250	NA	0.01	No
Particulate Matter 2.5	250	NA	0.48	No
Ozone (VOC)	250	NA	4.24	No

45CSR30 (Requirements for Operating Permits)

XTO is not subject to 45CSR30. The Lumberport Compressor Station is subject to 40CFR60 Subparts JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

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 XTO has proposed to install are 33.39 cubic meters each. Therefore, XTO 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 Lumberport Compressor Station is not a natural gas processing facility, therefore, XTO is not subject to this rule.

40CFR60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

40CFR60 Subpart KKKK does not apply because there are no stationary combustion turbines at the facility with a heat input at peak load equal to or greater than 10 MMBTU/hr, based on the higher heating value of the fuel (§60.4305).

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 Lumberport Compressor Station is located in Harrison County and will be operated by XTO.

1. The Lumberport Compressor Station will operate under SIC code 1311 (Crude Petroleum and Natural Gas). There are other facilities operated by XTO that share the same two-digit major SIC code of 13 for natural gas transmission. Therefore, the Lumberport Compressor Station does share the same SIC code as other XTO facilities.
2. “Contiguous or Adjacent” determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this and whether or not it meets the common sense notion of a plant. The terms “contiguous” or “adjacent” are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; having a common endpoint or border.

There are three other vertical wells located within 0.25 miles of the Lumberport Station, but not on continuous or adjacent properties.

3. Common control. The natural gas well sites that supply the incoming natural gas streams to the Lumberport Compressor Station are owned and operated by XTO Resources.

Because the area facilities are not considered to be on contiguous or adjacent properties, the emissions from the Lumberport Compressor Station should not be aggregated with any facilities in determining major source or PSD status.

MONITORING OF OPERATIONS

XTO will be required to perform the following monitoring:

- Monitor and record quantity of natural gas consumed for all engines and combustion sources.
- Monitor the amount of produced fluids sent to the storage tank.
- Monitor all applicable requirements of 40CFR60 Subparts JJJJ and OOOO.

XTO will be required to perform the following recordkeeping:

- Maintain records of the amount of natural gas consumed and hours of operation for all engines and combustion sources.
- Maintain records of the amount of produced fluids sent to the storage tank.
- 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
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
- Maintain records of the visible emission opacity tests conducted per the permit.
- 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.
- Maintain records of all applicable requirements of 40CFR60 Subparts JJJJ and OOOO.
- Maintain records of the flare design evaluation.
- The records shall be maintained on site or in a readily available off-site location maintained by XTO for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that XTO should meet all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Lumberport Compressor Station should be granted a 45CSR13 modification permit for their facility.

Roy F. Kees, P.E.
Engineer – NSR Permitting

Date