west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A162
Plant ID No.:	061-00218
Applicant:	Northeast Natural Energy LLC (Northeast)
Facility Name:	Yost Wellpad
Location:	Fairview, Monongalia County
NAICS Code:	211111
Application Type:	Construction
Received Date:	May 12, 2015
Engineer Assigned:	David Keatley
Fee Amount:	$1,500
Date Fee Received:	May 18, 2015
Complete Date:	June 11, 2015
Due Date:	July 26, 2015
Applicant Ad Date:	May 7, 2015
Newspaper:	*The Dominion Post*
UTM's:	Easting: 567.377 km Northing: 4,386.946 km Zone: 17
Description:	Installation and operation of: three (3) 1.0 mmBtu/hr gas produce unit (GPU), one (1) 1,380-bhp compressor engine, two (2) 400-bbl produced liquid tanks, and one (1) 210-bbl produced water tank.

DESCRIPTION OF PROCESS

Raw natural gas from three (3) wells will be sent to three (3) 1.0 mmBtu/hr GPUs to be heated to encourage phase separation and avoid ice formation. The produced liquids from the GPUs will flow to two (2) 400-bbl produced liquid tanks & one (1) 210-bbl tank. The produced liquids from the facility will be trucked off site. The vapors from the GPUs will be sent to a compressor to increase the pressure of the natural gas stream. The compressor is powered by one (1) 1,380-bhp four-stroke lean-burn Caterpillar 3516B natural gas fired compressor engine with a DCL NSCR catalyst.

SITE INSPECTION

Travel on I 79 north take exit 236. Turn left onto WV 273 and travel until you reach US 19. Turn right onto US 19 north. Turn right onto US 250 north for approximately 7.2 miles. Turn right onto SR 218 north. Travel for approximately 9.5 miles the site will be on the right on the hill.

The permit writer performed a site visit on July 2, 2015. The site seemed to meet the G70-A siting criteria.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from the GPUs (1E through 3E) were estimated with AP-42 emission factors. Emission from the compressor engine (4E) were estimated with catalyst emission factors for NOx, CO, VOC, CH_2O, and CO_2e; other pollutants were estimated with AP-42 emission factors. The emission reductions from the DCL catalyst are as follows: CO, 93%; VOC, 50%; and CH_2O, 90%. Emissions from the produced liquid tanks were estimated using direct measurement using a gas analysis from this site. Emissions from truck loading were estimated and are negligible.

Table 1: Estimated Maximum Controlled PTE

Emission Point ID	Emission Unit ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
1E through 3E	HTR-1 through HTR-3	GPU (Air Emissions from Each)	Nitrogen Oxides	0.10	0.44
			Carbon Monoxide	0.08	0.37
			Volatile Organic Compounds	<0.01	0.02
			PM	<0.01	0.03
			PM_{10}	<0.01	0.03
			CO_2e	121	529

4E	CE-1	Compressor Engine Caterpillar G3516B 1,380 bhp	Nitrogen Oxides	1.52	6.66
			Carbon Monoxide	0.52	2.27
			Volatile Organic Compounds	0.73	3.20
			PM	<0.01	0.03
			PM_{10}	<0.01	0.03
			Formaldehyde	0.14	0.57
			CO_2e	1,744	7,639
5E-7E	T01-T03	Produced Liquid Tanks	Volatile Organic Compounds	0.03	0.13
			CO_2e	149	650

REGULATORY APPLICABILITY

The following rules and regulations apply to the proposed to this facility:

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

The GPUs (HTR-1 through HTR-3) have been determined to meet the definition of a "fuel burning unit" under 45CSR2 and are, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of each unit is less than 10 mmBtu/hr, it is not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

Pursuant to 45CSR2, Section 3.1, the units are subject to an opacity limit of 10%. Proper maintenance and operation of the unit (and the use of natural gas as fuel) should keep the opacity of the unit well below 10% during normal operations.

45CSR4: To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides

Pursuant to the exemption given under §45-10-10.1, as the MDHI of the Gas Production Units (1S, 2S & 3S) are less than 10 mmBtu/hr, the units are not subject to the substantive sections of 45CSR10.

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

Since these changes include a substantive requirement (40CFR60 subpart JJJJ) this facility was required to obtain a Construction permit.

45CSR16: ***Standards of Performance for New Stationary Sources Pursuant to 40CFR60***

45CSR16 incorporates by reference the standards of performance for new stationary sources (40CFR60). This facility is subject to 40CFR60 subpart JJJJ and therefore this facility is subject to 45CSR16.

45CSR22: Air Quality Management Fee Program

This facility is not subject to 45CSR30. This facility does not exceed 45CSR30 emission thresholds as can be seen in Table 1. The facility is subject to NSPS, 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, therefore, the facility is not subject and will pay its annual fees through the Rule 22 program. This facility has a maximum horsepower capacity greater than 1,000 hp and is a 8D source and is required to pay a $500 annual fee. Northeast Natural Energy LLC is required to keep their Certificate to Operated current.

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

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the date of construction, date of manufacture, and horsepower (hp) of the spark ignition internal combustion engine. All proposed engines will commence construction after June 12, 2006.

40CFR60.4248 Table 1 provides the allowable emission standards for stationary spark ignition internal combustion engines. The engine is a non-emergency lean-burn hp≥1,350 bhp manufacturer date after July 1, 2010 the allowable emission standards in g/hp-hr are: NO_x, 1.0; CO, 2.0; and VOC, 0.7. The estimated emissions were estimated in g/hp-hr with: NO_x, 0.5; CO, 0.17; and VOC, 0.24 which are below the allowable standards. The engines

will also have operating limits, performance tests, notification requirements, and recordkeeping requirements.

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

Subpart OOOO applies to facilities that commence construction, reconstruction, or modification after August 23, 2011 (October 15, 2012 for well completions). Since the Yost Wellpad began operation after August 23, 2011 it is subject to the requirements of Subpart OOOO. The tanks at this facility will remain below 6 tons per year without controls. Therefore the tanks will not be subject to this regulation. The site will also include pneumatic controllers that were ordered and installed after August 23, 2011 with a bleed rate equal to or less that 6 scfd, therefore the controllers will not be subject to the applicable provisions of Subpart OOOO. The gas wells at this facility will also be affected facilities subject to Subpart OOOO.

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. This facility is subject to the area source requirements for non-emergency spark ignition engines.

Engine ENG-2 is a "New Stationary RICE" sources at an area source of HAPs and is an affected source because construction commenced after June 12, 2006 [63.6590(a)(2)(iii)] due to the installation dates of the engines being after June 12, 2006. Engine ENG-2 must meet the requirements of 40CFR60 subpart JJJJ and has no additional requirements due to this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. This facility has the the following HAPs as emitted in substantive amounts (at least 20 pounds (0.01 tons) per year) in their emissions estimate: Formaldehyde. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 4: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at *www.epa.gov/iris*.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates compliance with all state and federal air quality requirements will be satisfied and this facility is expected to meet the requirements of General Permit G70-A. Therefore Northeast's request to construct and operate their natural gas production facility Yost Wellpad is recommended to the Director of Air Quality.

David Keatley
Permit Writer - NSR Permitting

July 9, 2015

Date