west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A047
Plant ID No.:	051-00201
Applicant:	Noble Energy Inc. (Noble)
Facility Name:	Sand Hill 13
Location:	near Dallas, Marshall County
NAICS Code:	211111
Application Type:	Construction
Received Date:	May 8, 2014
Engineer Assigned:	David Keatley
Fee Amount:	$1,500
Date Fee Received:	May 14, 2014
Complete Date:	February 27, 2015
Due Date:	April 13, 2015
Applicant Ad Date:	May 5, 2014
Newspaper:	*Moundsville Daily Echo*
UTM's:	Easting: 539.636 km Northing: 4,428.324 km Zone: 17
Description:	Installation and operation of seven (7) 1.0-MMBtu/hr gas production unit (GPU) burners, four (4) 400-bbl condensate tanks, four (4) 400-bbl produced water tanks, and one (1) 7-mmBtu/hr vapor combustor.

DESCRIPTION OF PROCESS

Raw natural gas (natural gas, condensate, and produced water) will flow from seven (7) Marcellus natural gas wells to wellheads where the flow will be sent to seven (7) 1.0 mmBtu/hr GPU units. The GPUs will be heated by burners to encourage separation. The natural gas from the GPUs will exit the facility via pipeline. The produced water from the GPUs will flow to four (4) 400-bbl produced water tanks (2S-TK5-8). The condensate from the GPUs will flow to four (4) 400-bbl condensate tanks (1S-TK1-4). Working, breathing, and flash emissions from the condensate tanks will be controlled by at least 98% by a 7 mmBtu/hr vapor combustor (8S-COMB) with a maximum waste gas of 7,650 scf/hr. To ensure a constant flame the vapor combustor will have a 40 scf/hr pilot (9S-Pilot).

Condensate and produced water will exit the facility by truck.

SITE INSPECTION

From I 70 turn onto CR43 (Dallas Pike). Travel south east toward Dallas. Just before Dallas turn onto CR 7 (Dallas/Stone Church Road) west. Travel for approximately 0.9 miles to the road to the facility wh on the left. The facility is at the end of the road approximately 0.7 miles from CR7.

Douglas Hammell of WV DAQ's Compliance and Enforcement section performed a site visit on August 14, 2014. The site was suitable for the G70-A permit. Nearest residence is approximately 690 feet away.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Flashing emissions from 1S-TK1-4 were estimated using a representative liquid sample from Majorsville and a gas analysis from this facility in HYSYS Version 8.3 for flashing losses. Flashing emissions for 2S-TK5-8 were estimated by GOR method. Working and breathing emissions were estimated using RVP 15.0 in TANKS 4.0.9d.

Table 1: Estimated Maximum Controlled Point Source Air Emissions

Emissions Point ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
8E-COMB	Vapor Combustor (Controlling Condensate and Produced Water tanks, Condensate Truck Loading and includes Pilot)	Volatile Organic Compounds	2.82	12.35
		Nitrogen Oxides	0.68	2.98
		Carbon Monoxide	3.7	16.21
		CO_2e	1182	5174
4E-GPU1	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
4E-GPU2	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
4E-GPU3	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02

		PM_{10}	0.01	0.03
4E-GPU4	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
4E-GPU5	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
4E-GPU6	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
4E-GPU7	GPU Burner 1.0 MMBtu/hr	Nitrogen Oxides	0.08	0.36
		Carbon Monoxide	0.07	0.30
		Volatile Organic Compounds	<0.01	0.02
		PM_{10}	0.01	0.03
7E-TL2	Produced Water Truck Loading	Volatile Organic Compounds	0.08	0.35
FUG	Fugitives Emissions	Volatile Organic Compounds		18.84
		Total HAP		2.19
FUG-TL	Produced Water Truck Loading Fugitive Emissions	Volatile Organic Compounds		6.40
		Total HAP		1.29

Table 2: Proposed Estimated Maximum Controlled Facility Wide Emissions

Pollutant	Maximum Annual Facility Wide Emissions (tons/year)
Nitrogen Oxides	5.50
Carbon Monoxide	18.32
Volatile Organic Compounds	38.08
Total Particulate Matter	0.19
PM_{10}	0.19
Sulfur Dioxide	0.02
Total HAPs	3.62
CO_2e	8,194

REGULATORY APPLICABILITY

The following rules and regulations 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 input of all of the proposed fuel burning units (4E-GPU1 through 4E-GPU7) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Stone is subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

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.

Noble will have one (1) vapor combustor (LEED) at this facility. The vapor combustor is subject to section 4, emission standards for incinerators. The vapor combustor has a capacity of of 141 lb/hr which yields an allowable emission rate of 0.39 pounds of particulate matter per hour. The vapor combustor has an hourly particulate matter emissions rate which is less than 0.01 lb/hr. Therefore, the facility's vapor combustors should demonstrate compliance with this section.

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 input of all of the proposed fuel burning units (4E-GPU1 through 4E-GPU7) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned 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)

As can be seen from Table 2 this facility has an air pollutant which are above the 6lb/hr and 10 tons/year thresholds (volatile organic compounds) and therefore require a permit due to this rule.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source as can be seen in Table 2 and not subject to 45CSR30 since they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71. This facility has maximum horsepower capacity less than 1,000 hp (facility wide 0 hp) and is a 9M source and is required to pay the $200 annual fee. Noble 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 (SO_2) 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 seven (7) natural gas wells that currently exist at this 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. Stone 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 CHK demonstrate continuous compliance by submitting reports and maintaining records for each completion operation.

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 are no proposed reciprocating compressors located which will be located at this facility. Therefore, all requirements regarding reciprocating compressors under 40 CFR 60 Subpart OOOO would not apply.

c. 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 four condensate tanks located at this facility emit less than 6 tpy of VOC (149.05 tpy) each. Noble has proposed installing a vapor combustor to control 98% of the VOC emissions from the condensate tanks, which makes this facility not subject to this section of this regulation.

The following regulations do not apply to the facility:

40CFR60 Subpart 60.18 (General Control Device and Work Practice Requirements)

40CFR60 Subpart 60.18 contains requirements for control devices when they are used to comply with applicable subparts of 40CFR60 and 40CFR61. The vapor combustor that Noble has proposed is not used to comply with one of these rules. The purpose of the vapor combustor is to control emissions from the tanks that are routed to it. In addition 40CFR60.18 refers to flares but makes no mention of vapor combustors, which are essentially enclosed combustion devices. Therefore this facility is not subject to this regulation.

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 tanks that Noble has proposed to install are 63.60 cubic meters each. Therefore this facility is not subject to this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various regulated hazardous air pollutants emitted from the operation of this facility as seen in Table 1. The facility is a minor source of HAPs as can be seen in Table 2. If you want to obtain additional information about certain hazardous air pollutants feel free to visit [http://www.epa.gov/ttn/atw/hlthef/hapindex.html].

RECOMMENDATION TO DIRECTOR

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements will be achieved . It is recommended that Noble should be granted a G70-A047.

David Keatley
Permit Writer - NSR Permitting

March 3, 2015

Date