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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	G70-A142
Plant ID No.:	017-00055
Applicant:	EQT Production Company
Facility Name:	SMI-28
Location:	New Milton, Doddridge County
NAICS Code:	211111
Application Type:	Modification
Received Date:	January 23, 2015
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$500.00
Date Received:	February 10, 2015
Complete Date:	February 24, 2015
Due Date:	April 7, 2015
Applicant Ad Date:	January 27, 2015
Newspaper:	*The Herald Record*
UTM's:	Easting: 522.6 km Northing: 4,346.0 km Zone: 17
Description:	Installation of two natural gas wells, two produced fluids tanks controlled by existing combustor, one sand separator tank, two line heaters and three thermoelectric generators and an increase in condensate throughput.

PROCESS DESCRIPTION

The project involves the construction and operation of two (2) gas wells, two (2) storage vessels (S026, S027), one (1) sand separator tank (S030), two (2) line heaters (S028, S029), and three (3) thermoelectric generators (TEG) (S031-S033).

The SMI-28 wellpad consist of thirteen wells, each with the same basic operation. When in production, raw gas from the wells pass through a separator where the condensate is removed from the gas and sent to one of the storage tanks, and sand, water, and residual solids are displaced and sent to the sand separator tank. Gas passing through the separator will be sent to pipeline for transportation. The line heater shall be used to keep the lines at the facility from freezing and to promote gas/liquids flow.

From the storage tanks, condensate is loaded into trucks for removal from the site. Emissions from the truck loading are uncontrolled but the permit will require mitigation by using pipe racks and submerged fill methods. The thermoelectric generators are used to provide small amounts of electricity for switching/monitoring purposes when the facility is unable to generate sufficient solar power.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

EQT included in Attachment N of the permit application air emissions calculations for the equipment and processes at the SMI-28 natural gas production facility. The following will summarize the calculation methodologies used by EQT to calculate the potential-to-emit (PTE) of the proposed change.

Storage Tanks (S026, S027) and Sand Separator Tank (S030)

Emissions of VOC and HAPs from the condensate/water stored in the tanks at the facility are calculated using E&P Tanks 2.0. A representative condensate sample from the well pad was used to estimate emissions. Maximum throughput used to estimate emissions from the storage tanks is an increased 35,504,692 gallons of per year.

Line Heaters and Thermoelectric Generators (TEG) (S028-S029, S031-S033)

Potential emissions from the line heater and TEGs of all criteria pollutants and HAPs are calculated using U.S. EPA's AP-42 emission factors for natural gas combustion. These calculations are based on a site-specific heat content of natural gas of 1,050 Btu/scf and a maximum design heat input. Greenhouse gas emissions are calculated according to 40 CFR 98 Subpart C, General Stationary Fuel Combustion Sources, Tables C-1 and C-2. Maximum heat input used to calculate emissions was 1.54 MMBtu/hr.

Emissions Summary

Based on the above estimation methodology, which is determined to be appropriate, the PTE of the SMI-28 natural gas production facility is given in the following tables:

Table 1: Annual Potential Increase in Facility-Wide Emissions

Pollutant	Existing Emissions R13-3064A (tpy)	Proposed Facility-Wide Emissions (tpy)	Net Change in Emissions (tpy)
CO	14.14	15.29	1.15
NOx	16.83	18.21	1.38
PM	1.28	1.38	0.10
SO2	0.10	0.11	0.01
VOCs	43.43	89.91	46.48
HAPs	1.68	1.59	-0.09
CO2e	21,771.50	24,594	2,822.50

Table 2: Facility-Wide Aggregate Annual (ton/yr) Criteria Pollutants & GHG PTE Summary.

Pollutant	ton/yr
NOx	18.21
CO	15.29
PM Total	1.38
PM10 Total	1.38
PM2.5 Total	1.38
SO2	0.11
VOCs	89.91
CO2e	24594.00

Table 3: Facility-Wide Aggregate Annual (ton/yr) Speciated HAP PTE Summary.

Pollutant	ton/yr
Benzene	0.07
n-Hexane	0.85
Toluene	0.04
Ethylbenzene	0.00
Trimethylpentane (2,2,4-)	0.58
Xylene	0.03
Total HAPs[1]	1.59

[1]Total HAPs include the sum of all HAPs listed in application.

REGULATORY APPLICABILITY *(Changes Only)*

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

The proposed line heaters (S028, S029) and the thermoelectric generator (S031-S033) have been determined to meet the definition of a "fuel burning unit"s 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 the units are less than 10 mmBtu/hr, they are 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 line heaters (S024, S025) and thermoelectric generator (S021) are subject to an opacity limit of 10%. Proper maintenance and operation of the units (and the use of natural gas as fuel) should keep the opacity of the units well below 10% during normal operations.

45CSR10: To Prevent and Control Air Pollution from the Emission of Sulfur Oxides (non-applicability)

45CSR10 has requirements limiting SO_2 emissions from "fuel burning units," limiting in-stack SO_2 concentrations of "manufacturing processes," and limiting H_2S concentrations in process gas streams. The only potential applicability of 45CSR10 to the SMI-28 natural gas production facility is the limitations on fuel burning units. Pursuant to the exemption given under §45-10-10.1, as the MDHI of the line heaters (S028, S029) and the thermoelectric generators (S031-S033) - which have been determined to meet the

definition of a "fuel burning unit"s under 45CSR10 - is less than 10 mmBtu/hr, the unit is not subject to the limitations on fuel burning units under 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

The proposed changed by EQT is to install (2) line heaters, three (3) thermoelectric generators, two (2) storage vessels and one (1) sand separator tank. EQT also proposes an increase in condensate throughput.

The facility is proposing a change in emissions (from point source emissions) that is greater than the modification thresholds defined in section 45CSR13-2.17 (six (6) pounds per hour and ten (10) tons per year or more, or more than 144 pounds per calendar day of any regulated air pollutant or two (2) pounds per hour or five (5) tons per year of hazardous air pollutants considered on an aggregate basis or results in an increase in emission of any air pollutant listed in Table 45-13A that would in turn result in total emission of the pollutant at the stationary source equal to or greater than the amounts in Table 45-13A).

The facility's proposed change meets the definition of a Modification as defined in section 45CSR4.2.b, which states change in a permit condition as necessary to allow changes in operating parameters, emission points, control equipment or any other aspect of a source which results in an increase in emission of any existing regulated air pollutant.

As required under §45-13-8.3 ("Notice Level A"), EQT placed a Class I legal advertisement in a "newspaper of general circulation in the area where the source is . . . located." The ad ran on January 27, 2015 in the *Herald Record* and the affidavit of publication for this legal advertisement was submitted on February 13, 2015.

CHANGES TO PERMIT R13-3064A

- Added Equipment Source S031-33 - Thermoelectric Generators.
- Added Equipment Sources S026-27, S030 - Condensate Storage and Sand Tanks.
- Added Equipment Sources S028-29 - Line Heaters
- Increased Condensate Throughput from 8,406,720 gal/year to 35,504,692 gal/yr.
- Register under G70-A General Permit

RECOMMENDATION TO DIRECTOR

The information provided in permit registration application G70-A142 indicates that compliance with all applicable regulations will be achieved. Therefore, I recommend to the Director the issuance of General Permit Registration G70-A142 to EQT Production Company for the Modification and operation of the SMI-28 natural gas production facility located near New Milton, Doddridge County, WV.

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

3/17/15
Date