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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3237B
Plant ID No.:	017-00148
Applicant:	CNX Gas Company, LLC
Facility Name:	Oxford 11
Location:	Doddridge County
NAICS Code:	212111
Application Type:	Class II Administrative Update
Received Date:	November 4, 2015
Engineer Assigned:	Caraline Griffith
Fee Amount:	$300
Date Received:	November 5, 2015
Complete Date:	December 7, 2015
Due Date:	February 5, 2016
Applicant Ad Date:	November 3, 2015
Newspaper:	*The Herald Record*
UTM's:	520.430 km Easting • 4,335.746 km Northing • Zone 17
Latitude/Longitude:	39.17100/-80.76355
Description:	Addition of a 30kw micro turbine generator and a rain water slop storage tank (100 bbl).

SUMMARY/DESCRIPTION OF PROCESS

The proposed micro turbine is a 30 kw natural gas fired Capstone generator unit, which will be used to power gas measurement and monitoring equipment at the facility's existing sales pipeline. The turbine unit is very clean burning and small with respect to other onsite fuel burning units. The Capstone spec sheet defines an electrical efficiency of 26% and a maximum design heat input of 0.433 mmBTU/hr.

Additionally, within this update the site would like to reflect the installation of a de minimis 100 bbl storage vessel that was installed to receive rain water and any oil slop originating from the drip pans on the outdoor VRU and flash gas compressors. Therefore, the liquid sent to this tank is expected to be mostly rain water with no potential for VOC emissions.

The facility's overall increase in emissions is as follows:

Table 1: Increase in Emissions

Pollutant	TPY
NOx	0.09
CO	0.24
VOC	0.03

SITE INSPECTION

On April 2, 2015, Joe Kessler conducted an inspection of the Oxford 11 natural gas production facility. The Oxford 11 site is located in a remote and rural area of Doddridge County approximately 6.0 miles southwest of New Milton, WV along a new access road created off of CR 19/11 (Freedom Road). The wells were in the process of being hydraulically fractured at the time of the inspection. No occupied residences were visible from the site and the nearest was estimated to be approximately 0.75 miles north along CR 19/11 (at the location of the residence the road is called South Fork of the Hughes Road). The following is a picture of the Oxford 11 well-pad taken on the day of the inspection:

Directions: [Latitude: 39.17100, Longitude: -80.76355] From the United States Route (USR) 50, travel south on WV State Route (SR) 18 for approximately 9.3 miles and turn right onto County Route (CR) 54 (Porto Rico Road). Proceed on CR 54 for 1.4 miles until it transitions into CR 54/1. Remain on CR 54/1 for approximately 2.5 miles and then turn right onto CR 40. After about 0.3 miles, turn left onto CR 19/11 (Freedom Road). Proceed on CR 19/11 for approximately 1.0 mile until Oxford 11 access road will be on the left.

AIR EMISSIONS AND CALCULATION METHODOLOGIES

CNX included in Attachment N of the permit application air emissions calculations for the equipment and processes at the Oxford 11 natural gas production facility. The following will summarize the calculation methodologies used by CNX to calculate the potential-to-emit (PTE) of the proposed facility.

Micro Turbine Generator

Criteria Pollutant emissions from the natural gas-fired micro turbine generator were based on the emission factors provided for natural gas combustion as given in AP-42 (AP-42 is a database of emission factors maintained by USEPA) Section 1.4. Hourly emissions were based on the maximum design heat input (MDHI) of the unit and annual emissions were based on an annual operation of 8,760 hours. A heat content of the gas of 1,020 Btu/scf was used in the calculations.

Table 2: PTE Estimates for the Capstone C30 Micro Turbine Generator

Unit ID	Unit Description	Pollutant	lb/hr	TPY
MT-1	Capstone C30 30kw Micro Turbine Generator	NOx	0.02	0.09
		CO	0.05	0.24
		VOC	0.01	0.03

Table 3: Change in Emissions

Pollutant	R13-3237A TPY	R13-3237B TPY	Difference TPY
NOx	21.19	21.27	+0.09
CO	80.73	80.97	+0.24
VOC	97.38	97.41	+0.03

REGULATORY APPLICABILITY

The following rules apply to this update:

45 CFR 13: Minor New Source Review Permitting Requirements

The emission changes associated with the requested turbine combustion unit and de minimis water tank increases the facility's emissions of Nox by 0.09 TPY CO by 0.24 TPY, and VOC by 0.03 TPY.

Additionally, the new units do not trigger any substantive requirements under the State or Federal Rules and Regulations. Even though emissions are below permit modification thresholds and no new substantive requirements are applicable the new equipment is proposed via a Class II Update to reflect the new change in PTE in an effort to preserve it's synthetic minor status and eliminate and conflicts with existing permit terms or conditions.

Also, the $300 Class II application fee was supplied and the Class I legal advertisement was ran on November 3, 2015 in *The Herald Record.*

40 CFR 60 Subpart KKKK: New Stationary Combustion Turbines

This Federal regulation was evaluated for turbines that commence construction after February 18, 2005. These standards apply to units with a design heat input of greater than 10 mmBTU/hr. The C30 30kw generator has a design heat input rating of 0.433 mmBTU/hr. Therefore, it is exempt form this rule.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

The following toxicity analysis was taken from the previous permit evaluation for permit R13-3237A. It is still relevant to the new permit and was therefore included below for reference.

This section provides an analysis for those regulated pollutants that may be emitted from the Oxford 11 natural gas production facility and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) standards promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

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. CNX included the following HAPs as emitted in substantive amounts in their emissions estimate: Formaldehyde, n-Hexane, Benzene, Toluene, Ethylbenzene, and Xylenes. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 3: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
n-Hexane	VOC	No	Inadequate Data
Formaldehyde	VOC	Yes	B1 - Probable Human Carcinogen
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Toluene	VOC	No	Inadequate Data
Ethyl-benzene	VOC	No	Category D - Not Classifiable
Xylenes	VOC	No	Inadequate Data

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.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions from the proposed Oxford 11 natural gas production facility are less than applicability thresholds that would define the proposed facility as a "major stationary source" under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature of the proposed construction, modeling was not required under 45CSR13, Section 7.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

The following monitoring, compliance demonstrations, reporting, and recording requirements were taken from the pervious evaluation because they are still relevant and applicable to the new permit. They are listed for reference:

The permit primarily incorporates the monitoring, compliance demonstration, reporting, and record-keeping requirements (MRR) as given in the G70-A General Permit. However, specific non-general MRR requirements are included in the permit. Thess requirements are given in the following:

- For the purposes of demonstrating compliance with the maximum hours the Low Pressure Separator may vent gas to the Flare set forth in 4.1.4(a) of the permit, CNX shall be required to monitor and record the monthly and rolling twelve month amount of time (in hours) that the flash gas is sent to the Flare.

- For the purposes of demonstrating compliance with the maximum Low Pressure Separator throughput limit set forth in 4.1.4(c) of the permit, CNX shall be required to monitor and record the daily, monthly and rolling twelve month amount of the gas throughput of the Low Pressure Separator.

- For the purposes of demonstrating compliance with the maximum truck loadout limits set forth in 4.1.6(b) of the permit, CNX shall be required to monitor and record the monthly and rolling twelve month amount of produced water and condensate loaded into trucks.

- For the purposes of demonstrating compliance with the maximum combustion limits set forth in 4.1.7(b) of the permit, CNX shall be required to monitor and record the monthly and rolling twelve month amount of the waste gases heat content (not including pilot gas) that is sent to the Flare for destruction. The heat content of the waste gases shall be calculated based on site specific analysis of the gas performed at least once per quarter or, after approval by the Director, a less frequent rate if it is determined that the heat content of the waste gases is stable and a reasonable conservative value used in lieu of frequent testing.

As stated above, extensive MRR from the G70-A is incorporated in the permit; specifically the MRR relevant to control devices not subject to Subpart OOOO, visibility monitoring/testing, and closed vent requirements.

PERFORMANCE TESTING OF OPERATIONS

The following performance and testing requirements were taken from the pervious evaluation because they are still relevant and applicable to the new permit. They are listed for reference:

As with MRR above, the permit primarily incorporates the performance testing requirements as given in the G70-A General Permit. However, specific non-general performance testing requirements are included in the permit. These requirements are given in the following:

- At such reasonable time(s) as the Secretary may designate, in accordance with the provisions of 3.3 of the permit, CNX shall be required to conduct or have conducted test(s) to determine compliance with the emission limitations or minimum control device efficiencies established in this permit and/or applicable regulations.

- Within one hundred eighty (180) days of the issuance date of this permit, CNX shall be required to use a site specific sample to determine the potential emissions of the storage tanks. The type and location of the sample shall be appropriate for the calculation methodology or model being used to calculate the emissions. The sample location shall be equipped with appropriate sampling access and temperature and pressure instrumentation. CNX shall be required to re-evaluate the VOC and HAP potential emissions based on the site specific sample within 90 days of receiving the analysis of the site specific sample pursuant to 40 CFR 60, Section 5365(e). If the VOC potential emissions (as controlled) are higher than the potential emissions given in permit application R13-3237, the DAQ shall be notified. The notification shall include whether or not this change in emissions affects applicability determination to 40 CFR 60, Subpart OOOO for any storage tank. The notification to the Director shall be provided no later than 30 days from the date of discovery of the increased emissions.

RECOMMENDATION TO DIRECTOR

The information provided in permit application R13-3237B indicates that compliance with all applicable federal and state air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-3237B to CNX Gas Company, LLC for the construction and operation of the Oxford 11 natural gas production facility located near New Milton, Doddridge County, WV.

Caraline Griffith
Permit Engineer

12/7/15
Date