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Evaluation Memo

Application Number: PD15-057
Facility ID Number: 051-00157
Name of Applicant: Williams Ohio Valley Midstream LLC
Name of Facility: Oak Grove Gas Plant (Independence Compressor Station)
Location of Facility: Near Moundsville, Marshall County
Latitude/Longitude: 39.8769°/-80.6990°
Application Type: Permit Determination
Submission Date: July 23, 2015
Complete Date: July 23, 2015
Due Date: **September 3, 2015**
Engineer: Joe Kessler

Background Information

On July 23, 2015 Williams Ohio Valley Midstream LLC (OVM), submitted a Permit Determination Form (PDF) PD15-057 for the addition of three (3) electric compressors (in the aggregate called the Independence Compressor Station) co-located at the Oak Grove Gas Plant facility located near Moundsville, Marshall County, WV.

Description of Modification/Process

OVM has proposed to add three (3) electric-powered gas compressors (in the aggregate labeled the Independence Compressor Station) co-located at the Oak Grove Gas Plant. As these compressors are powered by electric motors, there will be no air emissions associated with any combustion activities from these units. However, OVM did provide an emission estimate of fugitive emissions from natural gas leaks associated with equipment and activities at the proposed co-located

station. These fugitive emission sources of natural gas are defined as leaks from compressor rod packing, compressor blowdowns, pigging losses, and component leaks.

Air Emissions and Calculation Methodologies

OVM included in the PDF a detailed emission estimate from fugitive losses of natural gas associated with equipment and process at the proposed Independence Compressor Station. All emissions of fugitive leaks were based on the electric compressors operating 8,760 hours/year and no control efficiencies were applied.

Rod Packing Leaks

Fugitive emissions from the rod packing leaks - defined here as continuous equipment leaks of natural gas from sealed surfaces such as packing and gaskets resulting from the wear of mechanical joints, seals, and rotating surfaces in the compressor over time - were based on a loss of 15 scf/hour/cylinder (each compressor has 6 cylinders). Therefore, the total natural gas loss from these sources was estimated at 2.72 mmscf/yr. VOC and Hazardous Air Pollutant (HAP) emission rates from this loss were based on a conservative estimate (higher than the representative gas sample) of the constituent make-up of the natural gas (primarily methane which is not a VOC).

Compressor Blowdowns/Pigging Events

OVM also included in their fugitive emission estimate two scenarios where natural gas is released for emergency or maintenance purposes. Those included were compressor blowdowns during shutdown events (208 events/year) and “pigging” events (6 events/year). OVM estimated a loss of 93,228 scf/SSM-event and 3,000 scf/pigging-event for a total natural gas loss of 19.43 mmscf/yr. Hourly emissions were based on the annual emissions as average over 8,760 hours/year. Again, VOC and HAP emission rates from this loss were based on a conservative estimate (higher than the representative gas sample) of the constituent make-up of the natural gas (primarily methane which is not a VOC).

Component Leaks

OVM based their continuous VOC/HAP fugitive natural gas equipment leak calculations on emission factors taken from the document EPA-453/R-95-017 - “Protocol for Equipment Leak Emission Estimates” Table 2-4 (VOCs). No control efficiencies, as based on a Leak Detection and Repair (LDAR) protocol, were applied. Component counts were based on conservative estimate of the maximum amount and type of components to be located at the co-located station. Again, VOC and HAP emission rates from this loss were based on a conservative estimate (higher than the representative gas sample) of the constituent make-up of the natural gas (primarily methane which is not a VOC).

Emissions Summary

The following table summarizes the reasonably worst-case uncontrolled emissions associated with the proposed co-located station.

Table 1: Emissions Summary

Source	VOCs			HAPs	
	lb/hour	lb/day	ton/yr	lb/hr	ton/year
Rod Packing	0.03	0.72	0.12	0.01	0.04
SSM Events ⁽¹⁾	0.20 (6.53)	4.80 (32.65)	0.87	0.07 (0.71)	0.29
Component Leaks	0.01	0.24	0.06	0.005	0.02
Totals	0.24 (6.57)	5.76 (33.61)	1.05	0.08 (0.73)	0.35

(1) When the worst-case hourly emission rates are calculated based on one facility-wide blowdown and one pigging event/hour (and 5 blowdowns and 1 pigging event per day) at the representative gas sample, the VOC and HAP emission rates are: VOCs - 6.53 lb/hr, 32.65 lb/day; HAPs - 0.71 lb/hr.

Determination of Permit Applicability

Pursuant to §45-13-5.1, “[n]o person shall cause, suffer, allow or permit the . . . modification . . . and operation of any stationary source to be commenced without . . . obtaining a permit to . . . modify.” The definition of “modify” is given under Section 2.17 of 45CSR13 and primarily defines various emission levels that would define any proposed changes as a modification and require OVM to get a permit prior to construction. Based on the emission estimate submitted by OVM as discussed above, the proposed changes do not exceed any of the modification thresholds under §45-13-2.17.

Additionally, the definition of “stationary source” under Section 2.24 of 45CSR13 includes in the definition any facility that “is subject to any substantive requirement of an emission control rule promulgated by the Secretary.” Based on long-standing DAQ policy and the “dual-definition” of a source, this test is also applied to proposed changes to determine if they meet the definition of modification. The only state or federal rule potentially applicable to the compressors, is the rod packing replacement requirements as given under 40 CFR 60, Subpart OOOO, Section §60.5385. However, this replacement requirement is not considered substantive and would not, in of itself, trigger the requirement to get a permit for the changes discussed herein.

Summary and Recommendation

Based on the information provided in the PDF, I recommend the issuance of a “no permit needed” letter to Williams Ohio Valley Midstream LLC for the addition of three (3) electric compressors (in the aggregate called the Independence Compressor Station) co-located at the Oak Grove Gas Plant facility located near Moundsville, Marshall County, WV based on the following:

- The proposed equipment is not subject to a substantive requirement of an emission control rule promulgated by the Secretary; and

- The uncontrolled emissions associated with the proposed new equipment, as based on reasonably maximum parameters, are less, on a pollutant-by pollutant basis, of the amounts that would define the changes as a “modification” under §45-13-2.17.



Joe Kessler, PE
Engineer



Date