west virginia department of environmental protection

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Austin Caperton, Cabinet Secretary
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# ENGINEERING EVALUATION/FACT SHEET

## B ACKGROUND INFORMATION

| | |
|---|---|
| Application No.: | R13-3397 |
| Plant ID No.: | 039-00047 |
| Applicant: | Columbia Gas Transmission LLC |
| Facility Name: | Lanham Compressor Station |
| Location: | Lanham |
| NAICS Code: | 486210 |
| Application Type: | Construction |
| Received Date: | February 13, 2018 |
| Engineer Assigned: | Edward S. Andrews, P.E. |
| Fee Amount: | $3500.00 |
| Date Received: | February 20, 2018 |
| Complete Date: | March 7, 2018 |
| Due Date: | June 5, 2018 |
| Applicant Ad Date: | February 16, 2018 |
| Newspaper: | *The Charleston Gazette* |
| UTM's: | Easting: 438.0 km Northing: 4,258.8.2 km Zone: 17 |
| Description: | The application is for the replacement of a line heater with a new natural gas fired line heater with a design heat input of 1.0 MMBtu/hr. |

## DESCRIPTION OF PROCESS

Columbia Gas Transmission LLC (Columbia) owns and operates the Lanham Compressor Station. Natural gas is received via pipelines and compressed and pumped into outlet station pipelines for transmission to market or downstream stations. Lanham Compressor station currently operates under a Title V Operating Permit and is considered a major source of NOx emissions due to its potential to emit more than 100 tons per year of NOx and CO emissions.

Columbia proposed to replace the existing natural gas fired pipeline heater at the station. The new pipeline heater will heat the natural gas being transmitted through the pipeline to ensure hydrates do not form. This heater will have a maximum design heat input of 1.0 MMBtu/hr, which will be fueled with natural gas.

## SITE INSPECTION

On December 19, 2017, Mr. Richard Ray, P.E., an engineer assigned to the Compliance and Enforcement Section of the DAQ, conducted a full-on-site inspection of the Lanham Compressor Station. During this inspection, Mr. Ray determined that the station is operating in compliance with the facility's current Title V Operating Permit, which included all applicable rules and regulations into one federal enforceable document.

## ESTIMATE OF EMISSION BY REVIEWING ENGINEER

The applicant used pollutant specific emission factors from Chapter 1.4 of AP-42 and manufacturer's design data to estimate emissions from the new heater, which are presented in the following table:

**Table #1 – Emission from Line Heater HTR2**

| Pollutant | Emission Factor | Hourly Rate (lb/hr) | Annual Rate (TPY) |
|---|---|---|---|
| $PM/PM_{10}/PM_{2.5}$ Filterable | 1.9 lb/MMcf | 0.002 | 0.01 |
| PM Condensable Fraction | 5.7 lb/MMcf | 0.006 | 0.03 |
| Total PM | 7.6 lb/MMcf | 0.007 | 0.03 |
| Sulfur Dioxide ($SO_2$) | 0.6 lb/MMcf | 0.001 | 0.004 |
| Oxides of Nitrogen ($NO_x$) | 100 lb/MMcf | 0.10 | 0.44 |
| Carbon Monoxide (CO) | 84 lb/MMcf | 0.08 | 0.35 |
| Volatile Organic Compounds (VOCs) | 5.5 lb/MMcf | 0.01 | 0.04 |
| Total Hazardous Air Pollutants (HAPs) | -- | 1.85E-3 | 0.01 |
| Carbon Dioxide Equivalent* ($CO_2e$) | 116.98 lb/MMBtu | 116.98 | 512.37 |

* Based on factors and global warming potentials from Tables A-1, C-1, and C-2 of Part 98 published on Federal Register on November 29, 2013.

## REGULATORY APPLICABLILITY

The Lanham Compressor Station is a major source under Title V (45CSR30) and currently possesses a valid Title V Operating Permit. Under this program, new emission units

have 12 months upon start-up to be incorporated in the facility's operating permit. The facility is currently classified as a major source for $NO_x$, CO, and $CO_2e$ under Prevention of Significant Deterioration (PSD) and for HAPs (formaldehyde).

The first step in determining major modification applicability is to determine which pollutants that the project is major for, which is illustrated in the following table.

**Table #2 Step One of PSD Applicability**

| Pollutant | New Potential from the new heater (tpy) | Significance Threshold (tpy) | Significance Trigger (Yes/No) |
|---|---|---|---|
| PM | 0.03 | 25 | No |
| $PM_{10}$ | 0.03 | 15 | No |
| $PM_{2.5}$ Direct | 0.03 | 10 | No |
| $NO_x$ (precursor of Ozone and $PM_{2.5}$) | 0.44 | 40 | No |
| $SO_2$ | 0.004 | 40 | No |
| CO | 0.35 | 100 | No |
| VOCs | 0.01 | 40 | No |

This project does not represent a "significant emission increase" (45CSR§14-2.75) for any New Source Review (NSR) pollutant. Thus, no further review is required.

With regards to the National Ambient Air Quality Standards, Kanawha County is classified as attainment for all pollutants. Thus, no further review of this application with regards to 45 CSR 19, West Virginia Non-Attainment Permitting Rule is required.

The new heater is subject to Rules 2 & 10 (WV State Rules on PM and $SO_2$). The requirements from these rules and regulations are very minimal for natural gas heaters to comply with the applicable emission standards. 45 CSR §2-11.1 exempts the proposed unit from Sections 4, 5, 6, 8, and 9 of 45 CSR 2 based on size of the unit being less than 10 MMBtu/hr, which means the unit is only subject to the visible emission standard of Section 3. It is understood that visible emissions from the combustion of natural gas are unlikely. Further, the interpretive rule for Rule 2 (45 CSR 2A) specifically exempts units that only combust natural gas from implementing the Visible Emission Monitoring Plan Requirements of Rule 2A regardless of size of the unit. 45 CSR §10.1 exempts the proposed unit from Sections 3, 6, 7, and 8 of 45 CSR 10 based on size of the unit being less than 10 MMBtu/hr, which means there are not applicable emission standard in Rule 10 for this proposed unit.

The facility is currently classified as a major source of HAPs, which means the facility has the potential to emit 10 tons per year of a single HAP, which is formaldehyde, or 25 tpy of total HAPs. The Lanham Compressor Station has the potential to emit 24 tons per year of formaldehyde (HAP). Within the application, Columbia has not elected to determine if this project would change the facility's major source status for HAPs. Thus, the heater is subject to 40 CFR 63, Subpart DDDDD – National Emission Standard for Hazardous Air Pollutants

(NESHAP) for Major Sources: Industrial Commercial, and Institutional Boilers and Process Heaters.

This regulation establishes work practices to comply with the emission standards (see Item 2 of Table 3 to Subpart DDDDD of Part 63). This tune-up requirement is applicable to the new heater and must be conducted in accordance with 40 CFR §63.7540 and be conducted once every five years. According to 40 CFR §63.7510(g) and §63.7515(d), the initial tune-up for the new heater will be due 61 months after initial start-up of the unit. Columbia will be required to conduct subsequent tune-ups every 61 months from the previous tune-up.

Columbia prepared and submitted a complete application, paid the filing fee, and published a Class I Legal ad in *The Charleston Gazette* on February 16, 2018, which is required under Rule 13 for a modification permit. The facility currently holds a valid Title V Operating Permit and included Attachment S of the application for a significant modification of this operating permit.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The new heater will not emit any pollutants that aren't already being emitted by another emission source at the facility. Therefore, no information about the toxicity of the hazardous air pollutants (HAPs) is presented in this evaluation.

## AIR QUALITY IMPACT ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed modification does not meet the definition of a major modification of a major source as defined in 45CSR14.

## MONITORING OF OPERATIONS

As noted earlier, the heater is subject to the Boiler MACT which requires biennial tune-ups for each boiler. The permit will require that the tune-up verify that the optimization of CO must be consistent with the manufacturer's specification and that the $NO_x$ concentrations or settings are at or within the manufacturer's specifications. The facility currently is required to prove that the engine for the generator is using pipeline quality natural gas. It is recommended that the same documentation be used to prove that the boiler is using natural gas that meets the standard as situated in 45 CSR 10A as pipeline quality natural gas. No other monitoring is needed since the proposed unit is less than 10 MMBtu/hr and will be consuming only natural gas.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates the proposed modification of the facility will meet all the requirements of the application rules and regulations when operated in accordance with the permit application. Therefore, the writer recommends granting Columbia Gas Transmission, LLC a Rule 13 construction permit for their Lanham Compressor Station located near Charleston, WV.

Edward S. Andrews, P.E.
Engineer

March 7, 2018
Date