



west virginia department of environmental protection

Division of Air Quality
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**GENERAL PERMIT REGISTRATION APPLICATION
ENGINEERING EVALUATION / FACT SHEET**

BACKGROUND INFORMATION

Registration No.: G35-A072A
Plant ID No.: 035-00052
Applicant: Caraline Energy Company, Inc.
Facility Name: Main Line Station
Location: Statts Mills, Jackson County
SIC Code: 1311
Application Type: Class II Administrative Update
Received Date: September 9, 2015
Engineer Assigned: Roy F. Kees, P.E.
Fee Amount: \$2,800.00 (\$300 App + \$2500 NESHAP)
Date Received: October 21, 2015
Complete Date: October 21, 2015
Due Date: December 5, 2015
Applicant Ad Date: September 8, 2015
Newspaper: *The Jackson Herald*
UTM's: Easting: 446.973 km Northing: 4288.928 km Zone: 17
Description: Administrative Update to replace one existing Caterpillar G3512C LE with on AJAX DPC-360 LE compressor engine.

TYPE OF PROCESS

Taken from registration application G35-A072A:

Pipeline quality natural gas is filtered and then compressed via one 346-brake horsepower (BHP) compressor (CE-2, Ajax DPC-360 LE). The compressor is natural gas-fired and associated emissions are released from the engine as a result of the combustion (CE-2).

Following compression, triethylene glycol is used to absorb water from the "wet" gas exiting the compressor. The glycol dehydration system consists of a glycol contactor and glycol regeneration or reconcentration components (RBV-1/RSV-1, Exterran 486824025 and 488712511). Lean glycol is brought into contact with the "wet" gas in the glycol contactor (tower) to remove moisture. The "dry" natural gas exits the glycol contactor at the top and the rich glycol exits the bottom and is routed to the glycol reconcentration system.

The rich glycol is fed to the glycol regenerator (RSV-1), consisting of an overhead condenser and reboiler (RBV-1), where the glycol is thermally regenerated to remove absorbed water. The reboiler is natural gas-fired and associated emissions resulting from the combustion are therefore generated (RBV-1). Emissions are also generated as a result of heating the glycol during reconcentration (RSV-1). All associated emissions have been estimated and are detailed on the attached Affected Source Sheets (see Attachment G) and in the Emission Calculations (see Attachment I).

SITE INSPECTION

A site inspection was conducted by Jamie Jarrett of the enforcement section on February 23, 2012. The permittee met the siting requirements set forth in G35-A.

Directions as given in the permit application are as follows:

From Interstate 77, take the Ripley/Fairplain Exit toward Church Street/County Road 21/Old US Route 21. Slight right onto Church Street/County Road 21/Old US Route 21, then take the first right onto Cedar Lakes Drive/Parchment Creek Road. Continue on Cedar Lakes Drive/Parchment Creek Road for approximately 0.5 mile, then turn left onto County Road 25. Take first right onto Cedar Valley Road. Continue on Cedar Valley Road for approximately 0.7 mile, then turn right onto County Road 36/Staat's Mill Road. Continue on County Road 36/Staat's Mill Road for approximately 4.2 miles. County Road 36 turns into County Road 34/5/Grasslick-Staats Mill, then back to County Road 36/Haw Run. Make a slight right to stay on County Road 36/Haw Run for approximately 0.5 mile. Turn left onto County Road 40/1/Rocky Knob. Continue on County Road 40/1/Rocky Knob for approximately 0.8 mile. Arrive at Main Line Compressor Station.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions provided by Caraline and checked for accuracy by the writer, for the Main Line Compressor Station are summarized in the table below. Emissions from the Ajax DPC-360 LE compressor engine were calculated using manufacturer data as well as AP-42. Emissions from the dehydration unit were calculated by GlyCalc 4.0. Emissions from the reboiler were calculated using AP-42. Working and Breathing Losses for the condensate tank were calculated using Tanks 4.0 and were found to be negligible. Since the tank collects vapors from the dehy still vent, there are no flash emissions from this transfer since they are both at atmospheric pressure.

| Source ID | Emission Source | Pollutant | Maximum Hourly Emissions (lb/hr) | Maximum Annual Emissions (tpy) |
|-----------|-----------------------------------|----------------------------|----------------------------------|--------------------------------|
| CE-2 | Ajax DPC-360 LE Compressor Engine | Nitrogen Oxides | 1.53 | 6.70 |
| | | Carbon Monoxide | 0.84 | 3.67 |
| | | Volatile Organic Compounds | 0.38 | 1.67 |
| | | Sulfur Dioxide | <0.01 | <0.01 |
| | | Formaldehyde | 0.46 | 2.01 |

| | | | | |
|-------|------------------------------|----------------------------|-------|-------|
| RBV-1 | Glycol Dehydrator Reboiler | Nitrogen Oxides | 0.04 | 0.17 |
| | | Carbon Monoxide | 0.01 | 0.05 |
| RSV-1 | Glycol Dehydrator Still Vent | Volatile Organic Compounds | 1.28 | 5.61 |
| | | Benzene | <0.01 | 0.01 |
| | | Ethylbenzene | <0.01 | <0.01 |
| | | Toluene | <0.01 | 0.01 |
| | | Xylenes | <0.01 | 0.01 |
| | | n-Hexane | 0.02 | 0.09 |

Proposed Facility Totals Are:

| Pollutant | Hourly Emissions (lb/hr) | Annual Emissions (tons/year) |
|----------------------------|--------------------------|------------------------------|
| Nitrogen Oxides | 1.57 | 6.87 |
| Carbon Monoxide | 0.85 | 3.73 |
| Volatile Organic Compounds | 1.66 | 7.30 |
| Sulfur Dioxide | <0.01 | 0.01 |
| Formaldehyde | 0.46 | 2.01 |
| Toluene | <0.01 | 0.01 |
| Xylenes | <0.01 | 0.01 |
| n-Hexane | 0.02 | 1.09 |

REGULATORY APPLICABILITY

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

Caraline is subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR4 (To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors)

45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable. No odors have been deemed objectionable.

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 changes at the Main Line Station will result in a change in emissions less than 6 lb/hr and 10 tons/year, therefore the facility qualifies for a Class II Administrative Update. Caraline paid the \$300 Administrative Update fee and the \$2500 NESHAP fee for the new compressor engine that was manufactured in 1985. Caraline also placed the required legal ad in *Jackson Newspapers* on March 29, 2012.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

As shown in the table below, Caraline is not subject to 45CSR14 review.

| Pollutant | PSD (45CSR14) Threshold (tpy) | Mainline PTE (tpy) | 45CSR14 Review Required? |
|---------------------------------------|--------------------------------------|---------------------------|---------------------------------|
| Carbon Monoxide | 250 | 3.72 | No |
| Nitrogen Oxides | 250 | 6.88 | No |
| Sulfur Dioxide | 250 | 0.01 | No |
| Ozone (VOC) | 250 | 6.88 | No |
| Particulate Matter (TSP, PM10, PM2.5) | 250 | Neg. | No |

45CSR22 (Air Quality Management Fee Program)

This rule establishes a program to collect fees for certificates to operate and for permits to construct, modify or relocate sources of air pollution. Funds collected from these fees will be used to supplement the Director's budget for the purpose of maintaining an effective air quality management program. The facility will demonstrate compliance with this rule by obtaining a Certificate to Operate (CTO) and paying annual fees in order to maintain a current CTO.

GENERAL PERMIT ELIGIBILITY

The proposed modification and operation of this facility meets the eligibility, siting, limitations, and emissions controls as specified in General Permit G35-A. Caraline is not subject to 40CFR60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, but is subject to 40CFR63 Subpart ZZZZ.

RECOMMENDATION TO DIRECTOR

Caraline's request to construct a natural gas compressor station at the Statts Mill, Jackson County, WV site meets the requirements of General Permit G35-A and all applicable rules and regulations and therefore should be granted a General Permit Registration to construct and operate the said facility.



Roy E. Kees, P.E.
Engineer – NSR Permitting



Date