Blue Ridge Environmental Defense League
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July 18, 2014

Kevin Godwin
Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641

RE: Piedmont Natural Gas - Wadesboro Compressor Station
Anson County
Application ID: 0400056.13A
Title V Operation Permit No. 10097T01

Dear Mr. Godwin:

On behalf of the Blue Ridge Environmental Defense League and our members in Anson County, I write to provide comments on the above captioned permit for Piedmont Natural Gas. In brief, the draft permit suffers from fatal flaws which would cause excess air pollution levels. We request that a public hearing be held before the issuance of this permit.

Background

The Piedmont Natural Gas compressor station is located at 259 Pleasant Grove Church Road in Wadesboro, North Carolina. Power for the compressor is provided by eight four-stroke lean-burn natural gas-fired reciprocating internal combustion Caterpillar G3616 gas engines, each rated at 4,735 horsepower and equipped with catalytic oxidizers. Also, there is one four-stroke lean-burn natural gas-fired emergency generator rated at 880 horsepower.

Basis for Pollution Level Estimates Incorrect

The DAQôs air permit review grossly underestimates the nitrogen oxide pollution levels emitted by the facility. The permit review lists the following facility-wide emission rates:

Pollutant	Emission rate tons/year
Particulates (2.5, 10 and total)	12.46
SO_2	0.73
NO_x	183.86
VOC	35.05
CO	21.98
CO_2e	203,824.65
HAP total	12.51
HAP formaldehyde	8.78

The DAQ review states that emission rates for NO_x, VOC, CO and formaldehyde were

provided by the engine supplier. (Other emission rates were derived from US EPAôs AP-42 section 3.2.) The DAQ review states that the emission factor for NO_x used as a basis for the permit was 5.00e-01 g/hp-hr, or 0.5 grams/horsepower-hour. Use of this figure yields the NO_x level listed above. However, we reviewed the technical data sheet for the Caterpillar G3616 gas engine[1] which indicates a higher emission rate of 0.7 g/hp-hr. Using this figure, facility-wide emissions of NO_x are 255 tons per year, or 40% higher.

Further, the lean-burn engine employed by Piedmont Natural Gas at the Wadesboro facility would have wide variations in nitrogen oxide (NO_x) and carbon monoxide (CO) emissions depending on the load placed on the engines. US EPA emission factors for this type of engine (presented in pounds/million BTU heat input) indicate the following:

Pollutant	**90-105% Load**	**<90% Load**	**Difference**
NO_x	4.08	0.847	482%
CO	0.317	0.557	76%

The differences indicated above are, of course, in opposite directions; i.e., NO_x levels are higher at about 100% load and CO levels are higher when the load is below 90%. Changes in operating conditions explain the variations in air pollution emissions. The EPA states:

> It should be emphasized that the actual emissions may vary considerably from the published emission factors due to variations in the engine operating conditions. This variation is due to engines operating at different conditions, including air-to-fuel ratio, ignition timing, torque, speed, ambient temperature, humidity, and other factors. It is not unusual to test emissions from two identical engines in the same plant, operated by the same personnel, using the same fuel, and have the test results show significantly different emissions. This variability in the test data is evidenced in the high relative standard deviation reported in the data set.[2]

Pollutant emissions vary with load conditions. Engine efficiency is less when the engine is operating at full throttle (effective compression ratio is lower because the incoming fuel-air mixture cannot fill the combustion chamber as well). Lean-burn technologies are associated with increased carbon monoxide emissions.[3] Catalytic oxidizers may reduce CO from lean-burn internal combustion engines by converting it to carbon dioxide, CO_2; however, they do not reduce nitrogen oxides.

Even the engine manufacturer warns against the reliance on its technical data for regulatory compliance:

[1] Caterpillar, G3616 gas engine, technical data, http://pdf.cat.com/cda/files/2842978/7/LEHE0326FM-00.pdf
[2] US EPA AP-42, Stationary Internal Combustion Sources, Section 3.2.3 Emissions, page 3.2-3
[3] AP-42, Stationary Internal Combustion Sources, Section 3.2.4.2 Control Techniques for Lean-burn Reciprocating Engines, page 3.2-5

> The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.[4]

The DAQ's draft permit does not include adequate monitoring, recordkeeping and reporting requirements to ensure that the Piedmont Natural Gas Wadesboro Compressor Station will comply with NAAQS and the state implementation plan for NO_x, CO formaldehyde and other pollutants.

Opacity Compliance Lacks Sufficient Basis

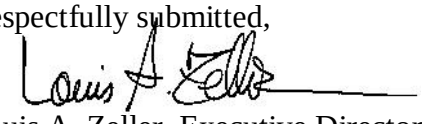
The basis for determining compliance with NAAQS opacity standards is based on a lack of information. The DAQ Air Permit Review states: "As stated in the inspection report, typical opacities for these engine exhausts is zero." The facility inspection cited in the permit review occurred on April 22, 2014; however, at the time of inspection the inspector noted that the facility was not in operation. The DAQ is not reviewing a permit for a typical facility; the matter at hand is a specific facility at a specific location. Therefore, the premise of the draft permit for compliance with the 20% opacity standard has no basis.

Environmental Justice Factors Must be Considered

The compressor station site is located in a county with a majority of African American residents and a high level of people below poverty level. The latest census data reveal Anson County is 48.5% black, 48.2% white. In Anson County 22.2% of the people are below poverty level, compared to the statewide level of 16.8%.[5]

The DAQ must comply with environmental justice obligations under the Administrative Procedure Act. See *Washington County v. U.S. Dep't of the Navy*.[6] Piedmont Natural Gas is a natural gas supply company for more than a million residential and business customers. Their pipeline crosses Anson County. Based upon the presence of a natural gas compressor station and the pipeline, and the imminent occurrence of fracking, we call for further review; North Carolina's permit review procedures require the evaluation of the cumulative or secondary impacts.[7]

Respectfully submitted,



Louis A. Zeller, Executive Director

[4] http://pdf.cat.com/cda/files/2195869/7/3512B%201750%20kVA%20Standby%20HD%20LowEmiss_EU_EMCP4.pdf, Caterpillar technical data sheet for emergency diesel generator set

[5] US Census Bureau Quick Facts, Anson County, http://quickfacts.census.gov/qfd/states/37/37007.html

[6] 317 F.Supp.2d 626 (E.D.N.C. 2004)

[7] North Carolina Environmental Policy Act of 1971, Chapter 113A, §§ 113A-1, *et. seq*