

Subject: Review of Application
Title V Operating Permit
Cambria Cogeneration Facility
Cambria Twp.
Cambria County

June 29, 2006

To: Air Quality Permit File #11-00332

Through: Barbara Hatch
Facilities Permitting Chief
Southwest Region
Air Quality

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Background

On January 17, 2006 the Department received a Title V operating permit renewal application for the renewal of permit number 11-00332. The application was determined to be clerically complete on January 20, 2006.

Cambria Cogen consists of two Pyropower circulating fluidized bed boilers (CFB), each rated at 560 mmbtu/hr, and various supporting equipment. The boilers normally burn coal refuse, but can also burn a mixture of mine run coal and coal refuse when additional heating value is necessary. The steam generated by the primary combustion sources is used to generate electricity, with low-pressure steam being sold to a near by customer. Ground limestone, which is calcined in the boiler to lime, is injected into each boiler to control sulfur dioxide. Particulate emissions are controlled by two identical shake and deflate baghouses. Aqueous ammonia is injected into the hot side cyclone for nitrogen oxides control. Two sources that could burn significant amounts of natural gas are the auxiliary boiler rated at 98.3 million BTU/hr. and a backup BMR air heater rated at 40 million BTU/hr. They are used only when the CFBs are down and then to just meet the heat requirements of the plant's heat customer and fuel drying operation respectively.

Coal refuse is brought on to the site and either put under cover and reclaimed later or directly processed through the plant fuel processing building, which is controlled by a baghouse. After crushing and screening the fuel is transferred into the day bins and then fed into the boiler along with the limestone. Fuel samples for determining compliance with the plant's requirements to reduce sulfur dioxide emissions by 92 per cent are taken by a cross belt sampler as the fuel leaves the fuel processing building. Both fly ash and bottom ash are mixed with water in separate operations. They are then mixed together and taken by truck to a certified landfill on site.

Cambria Cogen has an excellent record of on line availability and general plant cleanliness. All roads are black topped except for the waste haulage road and there is a minimum of traffic between the blacktopped areas and off road areas. The plant continues to help reclaim sites by accepting gob from small privately own piles and disposing of the processed gob in their dump.

Previous Plan Approvals/Operating Permits

Plan Approval PA-11-306-002 was issued to allow the construction of this facility. The boilers were installed in 1991. Plan Approval PA-11-332A was issued to allow the addition of the selective non-catalytic reduction systems on the two boilers. Cambria Cogen received its' initial Title V Operating Permit on August 2, 2001 with an expiration date of August 2, 2006. No significant modifications to the plant have been made since the first Title V Operating Permit was issued.

Regulatory Analysis

The OP generally contains the same regulatory requirements as a conventional coal fired power plant, with some exceptions. Although these units were installed after September 18, 1978, the requirements of 40 CFR 60, Subpart Da are not applicable because coal refuse does not meet the definition of fossil fuel found at 40 CFR 60.41a. Nevertheless, the limits imposed by the Plan Approval are significantly lower than those allowed by the PA SIP, and are more closely parallel those suggested by 40 CFR 60 Subpart Da. For example, particulate emission limits are 0.03 lb PM/mmbtu vs. the 0.1 lb PM/mmbtu allowed for older boilers. Besides having a strict standard for the emission of sulfur dioxide, the plant must demonstrate a percent reduction in sulfur dioxide. Under Federal Law, however, the acid rain provisions for SO₂ do not cover Cambria Cogen after 2009. Significant uncertainty surrounds this situation. It will not be economical for Cambria Cogen to buy SO₂ allowances on the open market. They are negotiating with EPA to resolve this issue.

The levels of particulate emissions from each boiler subject these units to the Compliance Assurance Monitoring (CAM) provisions of 40 CFR 64. Cambria Cogen has used test data to develop a correlation between opacity and mass particulate emission rates. As a result, they are proposing to use the data provided by their continuous opacity monitors as a surrogate for particulate emissions. They will accept a voluntary opacity limit of 3.8 percent in this regard, based on a 30-day rolling average. See the attachment for additional details regarding the proposed CAM Plan.

Emission/Testing Information

Truck traffic into and out of the plant has the greatest potential for problems with the public. Fortunately the plant has been diligent about plant cleanliness and does not have any close neighbors. The advanced CFBs, combined with high efficiency baghouses, limestone and ammonia injection have made the emissions out of the stack very low compared with a traditional pulverized coal boiler. Opacity has historically

been less than 5 percent. EPA reference method testing of particulate matter and ammonia emissions from the CFBs is required once during the term of the Operating Permit.

Sources of Minor Significance

The liquid fuel storage tanks, which were included in the first Title V permit as sources of VOC, have been dropped from the permit renewal after reviewing data on them.

Conclusions and recommendations

I have completed my review of Cambria Cogen's Title V renewal for their Ebensburg facility. Cambria Cogen has met the regulatory requirements associated with this application's submittal. The attached draft permit reflects terms and conditions as described in Cambria Cogen's permit application. It is my recommendation to renew the Title V operating permit for this facility. Since this is a Title V facility, the usual public comment procedures will be required.

JUSTIFICATION

I. Background

The monitoring approach outlined here applies to the two circulating fluidized bed boilers (Title V sources 031 and 032) firing waste bituminous coal. Each of these waste bituminous coal fired boilers is rated at 560 MMBtu/hr and individually equipped with its own baghouse to remove fly ash from flue gas. The baghouses are by Flakt (shake and deflate cleaning) with 10 compartments apiece; each compartment contains 240 bags. Air flow through each baghouse is maintained by one induced-draft fan downstream of each baghouse. There is no ability to bypass either baghouse.

II. Rationale for Selection of Performance Indicators

The performance indicators selected are the signal from the COMS and baghouse and related equipment inspections.

Opacity (OP) is theoretically related to particulate concentration (C) by the equation:

$$\ln\left(1 - \frac{OP}{100}\right) = -(K \cdot C + C_0)$$

where: K is a constant accounting for light path length and particulate characteristics including particle size distribution.

C₀ is a constant accounting for background dust and instrument bias.

For a given installation with steady operation and relatively consistent fly ash, opacity can reasonably be related to particulate concentration from a control device like a baghouse that has limited adjustable operating parameters.

Preventive maintenance is performed on the baghouse to ensure it continues to operate properly and that the bags are in good condition.

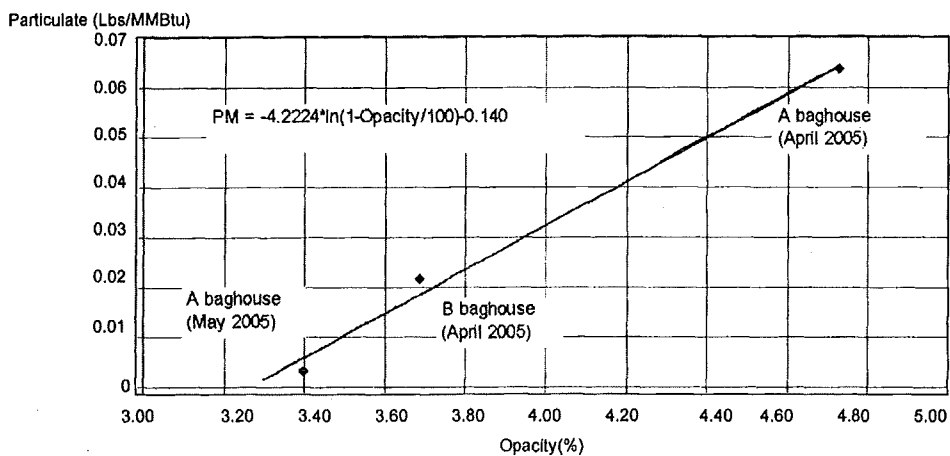
III. Rationale for Selection of Indicator Ranges

Each boiler's most stringent particulate emission limitation is 16.8 lb./hr (0.03 lb/MMBtu) averaged over 24-hours (Title V condition D.1.#008). Three separate emission tests (3 runs each test) using reference method 5 were conducted while operating each boiler at full loads. Two of the tests were conducted on unit 031 (A boiler) and one test was conducted on unit 032 (B boiler) in April and May of 2005. The results are summarized in the table below (reports of test results were submitted to the DEP previously).

Test	Nominal Heat Input MMBtu/hr	Reference Method 5 PM Average (lb/MMBtu)	Average Monitored Opacity During PM Test
A boiler (031), 4/6/05	586	0.064	4.73
A boiler (031), 5/25/05	572	0.0033	3.40
B boiler (032), 4/5/05	586	0.022	3.68

The correlation of the particulate test results with the average opacity over each test period is given in the figure below.

Particulate-Opacity Correlation



From the fit to the data, opacity of 3.95% yields an expected particulate concentration of 0.03 lb/MMBtu. To allow for some margin for compliance, the 24-hour average opacity as the indicator of a potential excursion is taken as 3.80%. This corresponds to a potential PM concentration of 0.024 lb/MMBtu.

IV. Revision to Indicator Ranges

When additional representative particulate test data become available, Cambria CoGen will incorporate the data into the CAM plan and calculate a new opacity correlation and "trigger level". If the additional data indicates that a change in the indicator range is required, the monitoring plan will be revised and submitted to the Department. Based on EPA guidance in its 10/04 "Frequently Asked Questions Concerning the Compliance Assurance Monitoring (CAM) Rule" revisions in indicator range can occur without using the Part 70 permits revisions process provided the Department approves the range setting process. Cambria CoGen requests that the Department accept this process for setting the indicator range.