

Facility ID: 0285030221 Issuance type: Final State Permit To Operate

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In addition to the terms and conditions, hyperlinks have been inserted into the document so you may more readily access the section of the document you wish to review.

Finally, the term language under "Part II" and before "A. Applicable Emissions Limitations..." has been added to aid in document conversion, and was not part of the original issued permit.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0285030221 Emissions Unit ID: B008 Issuance type: Final State Permit To Operate

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Part II - Special Terms and Conditions

This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (a) None.
2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (a) None.

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
E&E Research 2.2 mmBtu/hr, Coal-Fired, Bubbling Fluidized Bed Combustion Unit (B008)	OAC 3745-17-10(C)(2)	The particulate emission limit from this rule is less stringent than the limit specified below.
	OAC 3745-31-05 PTI #02-8623	Sulfur dioxide emissions from this emissions unit shall not exceed 1.12 pounds per million Btu of heat input.
		Particulate emissions from this emissions unit shall not exceed 0.88 pound per hour (.40 lb/mmBtu).

2. Additional Terms and Conditions

- (a) This emissions unit shall comply with OAC Rule 3745-17- 07(A), which limits visible particulate emissions as follows:
 - i. except as provided below, visible particulate emissions from the stack shall not exceed an opacity of twenty (20) percent as a six-minute average; and
 - ii. visible particulate emissions from the stack may exceed twenty (20) percent as a six-minute average for not more than six (6) consecutive minutes in any sixty- minute period, but shall not exceed sixty (60) percent opacity at any time.
The visible particulate emission limitations specified above shall not apply to the following operations, provided the operations are documented in a boiler operations log kept at the facility:
 - i. the start-up of the emissions unit for a period of time required to achieve stable combustion conditions, but no more than three (3) hours from the moment of start- up. "Start-up" means the commencement of firing of fuel from a cold non-fired condition;
 - ii. the shutdown of the emissions unit for a period of not more than three (3) hours;
 - iii. the malfunction of the emissions unit or associated equipment, if the owner of the emissions unit or operator of the equipment complies with the requirements of OAC Rule 3745-15-06;
 - iv. intermittent soot-blowing operations (the cleaning of heat transfer surfaces with pressurized air or steam);
 - v. intermittent ash removal operations (the dumping or pulling of ash); and
 - vi. the commencement of increased coal firing from a banked condition for a period not to exceed thirty (30) minutes. "Banked condition" means the condition where the fuel is burned on the grates at rates which are sufficient to maintain ignition only.

This boiler operations log shall clearly document the date, beginning time, and ending time of the exempted operations listed above.
The total annual emissions of SO2 from all emissions units at this facility shall be limited to 99.50 tons. Since four minor emissions units at this facility (four gas fired boilers, sources B001, B003, B006, and B007 with maximum heat input rates of 6.3, 14.0, 4.19, and 6.25 mmBtu per hour, respectively) have combined maximum annual potential SO2 emissions of 0.08 ton per year, the annual allowable emissions from the three coal-fired emissions units (B002, B005, and B008) shall not exceed 99.42

tons.

The annual facility SO₂ emission limitation shall be achieved by restricting both the sulfur content in the coal supply and the maximum tons of coal which these coal-fired emissions units (B002, B005, and B008) shall be allowed to burn collectively per year in the following manner:

- i. The quality of coal burned in these emissions units shall meet the following specifications on a dry basis:
 - (a) a sulfur content which is sufficient to comply with a maximum allowable SO₂ emission limitation of 5.55 pound of SO₂ per mmBtu actual heat input;
 - (b) less than 8.0 percent ash; and
 - (c) greater than 13,000 Btu per pound of coal.

Compliance with the above-mentioned specifications for sulfur, ash, and heat content shall be determined by using the analytical results provided by the coal supplier for each shipment of coal. The analytical methods for sulfur content, ash content, and heat content in coal shall be: ASTM Method D3177, Total Sulfur in the Analysis Sample of Coal and Coke or ASTM Method D4239, Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods; ASTM Method D3174, Ash in the Analysis Sample of Coal and Coke; ASTM Method D2015, Gross Calorific Value of Solid Fuel by the Adiabatic Bomb Calorimeter, ASTM Method D3286, Gross Calorific Value of Coal and Coke by the Isothermal Bomb Calorimeter, or ASTM Method D1989, Standard Test Method for Gross Calorific Value of Coal and Coke by Microprocessor Controlled Isothermal Bomb Calorimeter, respectively.

- ii. The maximum tonnage of coal which these emissions units may burn during any rolling 12-month period is 1377.

B. Operational Restrictions

- 1. The maximum heat input for this emissions unit shall not exceed 2.2 mmBtu/hr., the maximum heat rate capacity for this fluidized bed combustor.
- 2. The restrictions regarding the use of flyash reinjection and an overfire air system found in OAC Rule 3745-17-10 (C)(7)(a) are not applicable to this bubbling fluidized bed coal combustion process. In lieu of these generic requirements, the following design specific emissions control systems shall be used at all times during the operation (coal firing) of this emissions unit:
 - a. this emissions unit shall maintain a minimum calcium (from injection of limestone or equivalent) to sulfur (contained in coal fuel) weight ratio of 2.5 in the fluid bed of the reactor at all times; and
 - b. this emissions unit shall at all times utilize the designated cartridge filter baghouse to control particulate emissions from this source. The baghouse and filter shall be operated and maintained as recommended by the manufacturer to ensure the anticipated collection efficiency of the control device.

A daily log shall be maintained recording the operational status of this boiler, the baghouse, and the ratio of the weight of calcium to sulfur in the combustor.
- 3. During the first twelve (12) months of operation under this permit, the coal-fired emissions units (B002, B005, and B008) shall not exceed the total number of tons of coal burned as specified for each month in the following table:

CALENDAR MONTH(S) CUMULATIVE ALLOWABLE TONS OF COAL BURNED
[After Permit Issuance]

1	115
2	232
3	348
4	464
5	579
6	693
7	807
8	921
9	1035
10	1149
11	1263
12	1377

After the initial twelve (12) months of operation under this permit, the amount of coal burned in emissions units B002, B005, and B008, collectively, shall not exceed 1377 tons during any rolling 12-month period.

C. Monitoring and/or Record Keeping Requirements

- 1. This facility shall maintain the following records for each of these coal-fired emissions units, in addition to those records referred to in A.2.b and B.2 above:
 - Daily records of the total hours of normal or full firing as well as the hours during which the emissions unit is in a banked condition plus a daily estimate of the tons of coal burned. These records shall be signed daily by the permittee attesting to the accuracy of the data.
 - Monthly records of the total hours of both full and banked firing, the total monthly coal burned (estimated), and the total monthly tonnage of coal received.
 - For each shipment of coal, the quantity of coal received and the results of the coal supplier's analyses on both an as-received and dry basis. Data recorded shall include:
 - i. the total quantity of coal received (tons),
 - ii. the sulfur content (percent) of the coal,

- iii. the ash content (percent) of the coal,
- iv. the heat content (Btu per pound) of the coal, and
- v. the SO₂ emission rate (pounds SO₂ per mmBtu actual heat input) for the coal.

Compliance with the applicable SO₂ emission limit, as well as the ash and Btu limitations, shall be determined based on the weighted arithmetic average of all fuel analyses for each calendar month.

[NOTE: A weighted average fuel quality value is determined by multiplying each fuel analysis value (Btu/pound, percent ash, or SO₂ emission rate) by the weight of the shipment of fuel for which the quality value is representative, adding up all the value-weighted products, and dividing the sum of the value-weighted products by the sum of all the shipment weights.]

Monthly calculations of the weighted average SO₂ emission rate, ash content, and heat content for the coal received each calendar month and the tons of coal burned in the emissions unit.

D. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports that identify all periods during which the terms and conditions listed in sections A.1, A.2, and B above were exceeded. These reports shall be submitted to the Ohio EPA within 30 days of each such exceedance and shall include the following information:
 - a. the date of each exceedance;
 - b. the nature or type of each deviation (i.e., coal quality, cumulative hours of operation, etc.); and
 - c. the corrective action taken to rectify the condition which caused the excursion.
2. The permittee shall submit semi-annual reports to the Ohio EPA, Northeast District Office, which provide the following information for this emissions unit:
 - a. the total quantity of coal received during each calendar month (tons);
 - b. the total estimated tons of coal burned in each of the coal-fired emissions units B002, B005, and B008 during each calendar month;
 - c. the weighted average ash content (percent) of the coal received during each calendar month;
 - d. the weighted average heat content (Btu per pound) of the coal received during each calendar month;
 - e. the weighted average SO₂ emission rate (pounds SO₂ per mmBtu actual heat input) for the coal received during each calendar month;
 - f. the number of hours of both full firing and banked boiler operation for each calendar month;
 - g. the rolling 12-month cumulative total of the tons of coal burned for each month during the reporting period (after the first 12 months of operation under this permit); and
 - h. a copy of the coal supplier's analyses for each coal shipment received during the reporting period.

All fuel analyses data shall be reported on both an as-received and a dry basis.

These reports shall be submitted by February 15 and August 15 of each year and shall cover operations for the previous six calendar months (July through December and January through June, respectively).

3. The permittee shall submit an annual report indicating the combined total SO₂ emissions for emissions units B002, B005, and B008. This information may be included with the semi-annual report (described above) due to be submitted by February 15 of each year, and shall cover the combined operating data for these emissions units for the previous calendar year.

E. Testing Requirements

1. Compliance with the emission limitation(s) in sections A.1. and A.2. of these terms and conditions shall be determined in accordance with the following method(s):
Emissions Limitation: 0.60 pound particulate matter per million Btu of actual heat input.

Applicable Compliance Method: Compliance shall be based upon the use of an emission factor as specified in AP-42, 5th Edition, Compilation of Air Pollution Emission Factors, section 1.1, table 1.1-3, and a compilation of fuel usage data required to be recorded and reported in sections C and D of these terms and conditions. If required pursuant to OAC 3745-15-04, the permittee shall demonstrate compliance with the particulate emissions limits of this permit by means of physical testing of the effluent from this emissions unit in accordance with testing procedures listed in 40 CFR Part 60, "Standards of Performance for New Stationary Sources", Appendix A, Method 5, and in OAC 3745-17-03(B)(7).

Emissions Limitation: Except as specified below, visible particulate emissions from the exhaust stack serving this emissions unit shall not exceed twenty (20) percent opacity, as a six-minute average. Visible particulate emissions from the exhaust stack serving this emissions unit may exceed twenty (20) percent opacity, as a six-minute average, for not more than six (6) consecutive minutes in any sixty-minute period, but shall not exceed sixty (60) percent opacity, as a six-minute average, at any time.

Applicable Compliance Method: Compliance shall be determined through visible emission observations in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

Emissions Limitation: 1.12 pounds of sulfur dioxide per mmBtu of actual heat input.

Applicable Compliance Method: Compliance shall be based upon the fuel quality records required pursuant to section C and the formula referenced in OAC 3745-18-04(F)(1).

Emission Limitation: The annual allowable emissions from the three coal-fired emissions units (B002, B005, and

B008) at this facility shall not exceed 99.42 tons.

Applicable Compliance Method: Compliance shall be based on engineering calculations and a compilation of emissions units operations and fuel quality data recorded and reported pursuant to sections C and D of these terms and conditions.

F. **Miscellaneous Requirements**

1. FEDERAL ENFORCEABILITY:

Sections A - E of these Special Terms and Conditions constitute the federally enforceable portions of this Permit to Operate.