

## **ATTACHMENT E**

VDEQ Proposed "Stationary Source Permit to Operate (2 Stack Version), Mirant PRGS

- Statement of Legal and Factual Basis
- Public Notice for Comment



## INTRODUCTION

This permit approval is based on the results of air dispersion modeling conducted using a protocol approved by the Department of Environmental Quality (DEQ) to ensure that the Mirant - Potomac River Generating Station (PRGS) does not contribute to a modeled exceedance of the National Ambient Air Quality Standards (NAAQS) and emission factors developed from onsite stack testing. When either an on-site testing specific emission factor or modeling factor was available, appropriate emission factors were developed for this facility. Any changes to an existing facility which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action. In addition, this facility may be subject to additional applicable regulatory requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-80-20 and 9 VAC 5-80-810 of the State Air Pollution Control Board's (Board) Regulations for Control and Abatement of Air Pollution (Regulations). The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: production and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 16.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-80-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

This permit becomes effective upon completion of the merged stack project as described in Condition 2.

## PROCESS REQUIREMENTS

1. **Equipment** - Equipment at this facility consists of the following:

Reference No.	Equipment Description	Maximum Rated Capacity	Manufactured Date
C1 Cycling Unit	Combustion Engineering, natural circulation, tangentially coal-fired boiler with superheater and economizer with low-NOx burners.	1053 MM Btu/hr	1949

Reference No.	Equipment Description	Maximum Rated Capacity	Manufactured Date
C2 Cycling Unit	Combustion Engineering, natural circulation, tangentially coal-fired boiler with superheater and economizer with low-NOx burners.	1029 MM Btu/hr	1950
C3 Base Unit	Combustion Engineering, controlled circulation, tangentially coal-fired boiler with superheater, single reheater and economizer with low-NOx burners and over fired air.	1018 MM Btu/hr	1954
C4 Base Unit	Combustion Engineering controlled circulation, tangentially coal-fired boiler with superheater, single reheater and economizer with low-NOx burners and over fired air.	1067 MM Btu/hr	1956
C5 Base Unit	Combustion Engineering, controlled circulation, tangentially coal-fired boiler with superheater, single reheater and economizer with low-NOx burners and over fired air.	1107 MM Btu/hr	1957
Ash Silos	Two (2) fly ash silos and one (1) bottom ash silo	Fly Ash: 82,650 ft <sup>3</sup> (ea) Bottom Ash: 34,619 ft <sup>3</sup>	n/a
Ash Loader	Fly ash and bottom ash truck loading from silos and ash truck road dust	20 tons/hr per loader	n/a
Coal Handling	Coal pile wind erosion, conveyor system, coal railcar dumper	1.2 million tons per year	n/a
Dry sorbent Milling and Handling system	Pneumatic upload system, full enclosure	n/a	n/a

Specifications included in the permit under this Condition are for informational purposes only and do not form enforceable terms or conditions of the permit.

(9 VAC 80-830)

2. **Stack Configuration** – The exhaust effluent from boilers C1 and C2 shall be combined to pass through the existing boiler C1 stack as a common exhaust stack which shall be identified as Merged Stack 1 (MS1). The exhaust effluent from boilers C3, C4, and C5 shall be combined to pass through boiler C4's reconfigured stack as common exhaust stack which shall be identified as Merged Stack 4 (MS4).

Additionally, the exhaust flow from boilers C1 and/or C2 shall be configured to allow the exhaust to be redirected from MS1 to MS4 to maintain common stack dispersion benefits under a wider range of operating scenarios. The exhaust flow from boilers C3, C4, and C5 shall be configured to prohibit their exhaust flow to MS1.

The existing stacks from boilers C2, C3, and C5 shall be retired in place. Any resumption of operation of the retired stacks from boilers C2, C3, and C5 shall be evaluated for permitting purposes as though they never existed.

(9 VAC 5-80-850)

3. **Nitrogen Oxides (NO<sub>x</sub>) Emission Controls** - NO<sub>x</sub> emissions from boilers C1 and C2 shall be controlled by the use of low-NO<sub>x</sub> burners. The low-NO<sub>x</sub> burners shall be provided with adequate access for inspection and shall be in operation when the boilers are operating on coal.  
(9 VAC 5-80-850)
4. **Nitrogen Oxides (NO<sub>x</sub>) Emission Controls** - NO<sub>x</sub> emissions from boilers C3, C4, and C5 shall be controlled by the use of low-NO<sub>x</sub> burners and separate over-fire air (SOFA). The low-NO<sub>x</sub> burners and SOFA systems shall be provided with adequate access for inspection and shall be in operation when the boilers are operating on coal.  
(9 VAC 5-80-850)
5. **Sulfur Dioxide (SO<sub>2</sub>) and Acid Gas Emission Controls** - SO<sub>2</sub> emissions from boilers C1, C2, C3, C4, and C5 shall be controlled by the use of low sulfur coal and dry sorbent injection (sodium sesquicarbonate or DEQ-approved equivalent). An alternate dry sorbent may be used for SO<sub>2</sub> emission control only after it has been demonstrated that the alternate dry sorbent will achieve SO<sub>2</sub> and acid gas (HCl and HF) emission reductions equivalent to or greater than those produced by sodium sesquicarbonate and that meets the emissions limits listed in Conditions 27 and 28. The dry sorbent injection system shall be provided with adequate access for inspection. The dry sorbent (sodium sesquicarbonate or DEQ-approved equivalent) shall be injected any time a boiler is operating on coal.  
(9 VAC 5-80-850)
6. **Alternate Dry Sorbent** - The DEQ shall be notified no less than 30 days prior to evaluating an alternate dry sorbent for SO<sub>2</sub> emissions reductions. The notification shall include at a minimum a stack test protocol that will be used to evaluate the alternate dry sorbent; an in-depth description of the chemical properties of the proposed alternate dry sorbent; any information available in the public sector that will support the proposal of the effectiveness of the alternate dry sorbent in reducing SO<sub>2</sub> emissions. The stack test protocol shall include testing for SO<sub>2</sub>, NO<sub>x</sub>, PM, PM-10, HCl and HF to ensure that the reduction levels achieved by sodium sesquicarbonate are maintained.  
(9 VAC 5-80-850)
7. **Particulate Matter (PM) Emission Controls** - Particulate emissions from boilers C1, C2, C3, C4, and C5 shall each be controlled by a hot side electrostatic precipitator followed in series by cold side electrostatic precipitator designated as HSESP1 and CSESP1, HSESP2 and CSESP2, HSESP3 and CSESP3, HSESP4 and CSESP4, and HSESP5 and CSESP5 respectively. Each electrostatic precipitator shall be provided with adequate access for inspection and shall be in operation when the connected boiler is operating.  
(9 VAC 5-80-850)
8. **Particulate Matter (PM) Emission Controls** - Particulate emissions from each of the two (2) fly ash silos shall be controlled by fabric filter baghouses and by routing the fabric filter baghouses exhausts to the boiler C1 hot side electrostatic precipitator. The fabric

filter baghouses shall be provided with adequate access for inspection and shall be in operation when the fly ash silos are being utilized (filling and unloading).

(9 VAC 5-80-850)

9. **Particulate Matter (PM) Emission Controls** - Particulate emissions from the bottom ash silo shall be controlled by a fabric filter baghouse and by routing the baghouse fabric filter exhaust to the boiler C1 hot side electrostatic precipitator. The fabric filter baghouse shall be provided with adequate access for inspection and shall be in operation when the bottom ash silo is being utilized (during filling and unloading).

(9 VAC 5-80-850)

10. **Particulate Matter (PM) Emission Controls** - Particulate emissions from fly ash and bottom ash transfer from the ash silos to trucks or trains shall be controlled by partial enclosure, wet suppression within the loading chute, and water fogging within the enclosure. The partial enclosure system shall be provided with adequate access for inspection and shall be utilized whenever fly ash and bottom ash transfer from the silos to trucks or trains is occurring.

(9 VAC 5-80-850)

11. **Particulate Matter (PM) Emission Controls** - Particulate emissions from the coal pile (via wind erosion) shall be controlled by maintaining a wind screen and use of a surfactant during loading of the coal pile. Particulate emissions from the stack-out conveyor system shall be controlled by the use of an enclosed conveyor and the installation of a telescopic chute or a DEQ-approved equivalent.

(9 VAC 5-80-850)

12. **Particulate Matter (PM) Emission Controls** - Particulate emissions from coal railcar dumping shall be controlled by partial enclosure with heavy duty curtains and the use of water fogging spray headers within the contained railcar dumper. All controls shall be functional and in operation when coal railcar dumping activities are in operation.

(9 VAC 5-80-850)

13. **Particulate Matter (PM) Emission Controls** - Particulate emissions from dry sorbent (sodium sesquicarbonate or a DEQ-approved equivalent) handling shall be controlled by use of a pneumatic unloading system and total enclosure.

(9 VAC 5-80-850)

14. **Electrostatic Precipitator (ESP) Control Efficiency** - The electrostatic precipitators (HSESP1 + CSESP1, HSESP2 + CSESP2, HSESP3 + CSESP3, HSESP4 + CSESP4, and HSESP5 + CSESP5) shall achieve an overall control efficiency for all PM that demonstrates compliance with the emission limitations in this permit and shall be demonstrated as required in Conditions 31, 33, and 34 for visible emissions. Continued control effectiveness shall be determined using daily readings of secondary voltage and current. These readings shall be compared to those readings taken during the compliance demonstration stack test to demonstrate continued control efficiency.

(9 VAC 5-80-850)

15. **Fugitive Dust and Fugitive Emission Controls** - Fugitive emission controls shall include the following, or equivalent, as approved by DEQ:

- a. Use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, grading of roads, or clearing of land.
- b. Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust; the paving of roadways and the maintaining of the roadways in a clean condition.
- c. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall be covered, or treated in an equivalent effective manner at all times when in motion.
- d. Prompt removal of spilled or tracked dirt and other materials from paved streets and of dried sediments resulting from soil erosion.
- e. Reasonable precautions shall be taken to prevent deposition of dirt on public roads and subsequent dust emissions. Trucks leaving the site shall have clean wheels achieved by use of a wheel washer or equivalent.

(9 VAC 5-40-90 and 9 VAC 5-80-850.)

16. **Monitoring - Continuous Opacity Monitoring System (COMS)** - Continuous Opacity Monitoring Systems meeting the design specifications of 40 CFR Part 60, Appendix B shall be installed and maintained to measure and record the opacity of emissions from MS1 and MS4. Except where otherwise indicated in this permit, the COMS shall be installed, calibrated, maintained and operated in accordance with the requirements of 40 CFR Part 60 and Appendix B or DEQ approved procedures which are equivalent to the requirements of 40 CFR Part 60 and Appendix B. Data shall be reduced to six-minute averages. The COMS may be used to satisfy the visible emission evaluation requirement in lieu of 40 CFR Part 60, Appendix A, Method 9. In the event that the COMS are used in lieu of a 40 CFR Part 60, Appendix A, Method 9 evaluation, the reported data shall include averages of all six-minute continuous periods within the reported period and within the duration of any mass emission performance tests being conducted. It is the responsibility of the permittee to demonstrate that the monitoring system has met the requirements of the applicable performance specification defined in 40 CFR Part 60 Appendix B, that the monitoring system has been properly maintained and operated, and that the resulting data have not been altered in any way. In the event that the COMS data indicate compliance for a period during which Method 9 data indicates non-compliance, the Method 9 data may be used to determine compliance with the visible emission limit. (9 VAC 5-80-890, 9 VAC 5-40-40, and 9 VAC 5-40-20 A.3.)

17. **Monitoring - Continuous Emission Monitoring Systems (CEMS)** - CEMS meeting the design specifications of 40 CFR Part 60, Appendix B and 40 CFR Part 75 shall be

installed to measure and record SO<sub>2</sub> and NO<sub>x</sub> (as ppmv corrected to 7% O<sub>2</sub> or 12% CO<sub>2</sub>), and volumetric flow rate on MS1 and MS4. The permittee shall inform the Air Compliance Manager, Northern Regional Office (NRO), as to which diluent will be used to normalize the SO<sub>2</sub> and NO<sub>x</sub>. Before changing the diluent to be used for normalization, the permittee shall justify in writing to the Air Compliance Manager, NRO, the reasons for the change in diluent. Except where otherwise indicated in this permit, the CEMS shall be installed, calibrated, maintained, audited and operated in accordance with the requirements of 40 CFR 60.13 and Appendices B and/or F or DEQ-approved procedures which are equivalent to the requirements of 40 CFR 60.13 and Appendix B and/or F. CEMS data shall be sent to a data acquisition and handling systems (DAHS), be reduced to pounds per million Btu, one hour averages, 3-hour block averages, 24-hour rolling averages, 30-day rolling averages, and 12-month rolling averages. The span values for SO<sub>2</sub> and NO<sub>x</sub> shall comply with the requirements of 40 CFR Part 60 and/or 75. The permittee shall utilize monthly recorded CEMS data to calculate annual SO<sub>2</sub> and NO<sub>x</sub> emissions (in tons per year) monthly as the sum of each consecutive 12-month period. Records shall be maintained on-site or in an electronic data base accessible from PRGS during normal business hours as defined in Condition 42 for the next 5-year period and shall demonstrate compliance with the emission limits set forth in Conditions 27 and 28.  
(9 VAC 5-80-890 and 9 VAC 5-80-850)

18. **Monitoring – CEMS – PM** - Within two months of the effective date of this permit, the permittee shall submit a plan for the installation, certification, operation, and quality assurance of PM CEMS for MS1 and MS4.  
(9 VAC 5-80-890 and 9 VAC 5-80-850)

19. **Monitoring – CEMS – Carbon Monoxide (CO)** – As part of each merged stack project, PRSG shall install CO CEMS meeting the design specifications of 40 CFR Part 60, Appendix B to measure and record CO from MS1 and MS4. Verification of the operational status shall be a minimum. The permittee shall include completion of the manufacturer's written recommendations for installation, operation and calibration of the device. Performance evaluation of the CO continuous monitoring system shall be conducted in accordance with 40 CFR Part 60, Appendix B. Two copies of the performance evaluation report shall be submitted to the Air Compliance Manager, NRO, within 45 days of the evaluation. A 30-day notification, prior to the demonstration of the continuous monitoring system performance, and subsequent notifications shall be submitted to the Air Compliance Manager, NRO. The permittee shall accumulate CO data for at least six months and submit that data to the DEQ for the establishment of a permitted CO emission limitation. Until such time as the CO monitors are certified and a new limit is developed, the permittee shall comply with the emission limits in this permit by using DEQ-approved site specific emission factors.  
(9 VAC 5-40-40)

20. **Monitoring** – The permittee shall calculate monthly the emissions of PM, PM-10, VOC, HCl, and HF from MS1 and MS4. The permittee shall calculate monthly emissions utilizing monthly boiler heat input data or monthly fuel throughput, control equipment

efficiency as appropriate, and an appropriate F-factor or AP-42 emission factor in order to demonstrate compliance with the emission limits set forth in Conditions 27 and 28.

Calculated emissions shall take into account any emissions associated with the startup and shutdown of the boilers. Startup and shutdown emissions shall be identified as such in any emissions calculations.

(9 VAC 5-80-890 and 9 VAC 5-80-850)

21. **Monitoring Devices** - Each ash silo fabric filter baghouse shall be equipped with a device to continuously measure and record the pressure drop across the filter. The device shall be installed in an accessible location and shall be maintained by the permittee such that it is in proper working order at all times. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the silos are operating. This data shall be maintained on-site or in an electronic data base accessible from PRGS during normal business hours, as defined in Condition 42.

(9 VAC 5-80-890 and 9 VAC 5-80-850)

22. **Monitoring Devices - ESP** - A condition assessment shall be conducted on the electrostatic precipitators daily by the permittee in order to determine whether the equipment is in proper operating condition. The details of the condition assessment shall be arranged with the Air Compliance Manager. The permittee shall maintain a record of each assessment on-site or in an electronic data base accessible from PRGS during normal business hours, as defined in Condition 42, for the most recent 5-year period. Records shall include the date and time of the assessment, and any findings or corrective actions taken. (9 VAC 5-80-890 and 9 VAC 5-80-850)

23. **Monitoring Device Observation** - To ensure proper operation of each monitoring device for measuring pressure drop across the filter, the permittee shall conduct the following:

- a. At least once per daylight shift, an observation of the presence of visible emissions from each fabric filter baghouse shall be made.
- b. The permittee shall maintain an observation log on-site or in an electronic data base accessible from PRGS during normal business hours as defined in Condition 42 for the most recent 5-year period to demonstrate compliance. The log shall include the date and the time of the observations, whether or not there were any visible emissions, any VEE recordings, and any necessary corrective action.
- c. The continuously recorded measurements of the pressure drop shall be maintained on-site or in an electronic data base accessible from PRGS during normal business hours as defined in Condition 42 for the most recent 5-year period and shall be made available for inspection.

(9 VAC 5-80-890 and 9 VAC 5-80-850)

**OPERATING LIMITATIONS**

24. **Fuel** - The approved fuels for boilers C1, C2, C3, C4 and C5 are bituminous coal and distillate oil. A change in the fuel may require a permit to modify and operate.  
(9 VAC 5-80-850)

25. **Fuel** - The coal and distillate oil shall meet the specifications below:

**COAL:**

Minimum heat content: 11,700 dry Btu HHV  
as determined by ASTM D2015, D3286 or a DEQ-approved equivalent method.

The sulfur content on a per shipment basis shall not exceed 1.2 wt % and the annual average sulfur content shall not exceed 1.0 wt % as determined by ASTM D3177, D4239 or a DEQ-approved equivalent method.

Maximum ash content per shipment: 10%  
as determined by ASTM D3174 or a DEQ-approved equivalent method.

**DISTILLATE OIL** which meets the ASTM D396 specification for numbers 1 or 2 fuel oil:  
Maximum sulfur content per shipment: 0.5%

(9 VAC 5-80-850)

26. **Fuel Certification** - The permittee shall obtain a certification from the fuel supplier with each shipment of coal and distillate oil. Each fuel supplier certification shall include the following:

- a. The name of the fuel supplier or independent third-party laboratory;
- b. The date on which the coal was shipped or distillate oil was received;
- c. The quantity of coal or distillate oil delivered in the shipment;
- d. A statement that the distillate oil complies with the American Society for Testing and Materials specifications (ASTM D396) for numbers 1 and 2 fuel oil;
- e. The sulfur content of the coal or distillate oil;
- f. Documentation of sampling of the coal or distillate oil indicating the location of the fuel when the sample was taken; and
- g. The methods used to determine the sulfur and ash contents of the coal;

Fuel sampling and analysis using applicable ASTM standards, independent of that used for certification, as may be periodically required or conducted by DEQ may be used to

determine compliance with the fuel specifications stipulated in Condition 25. The permittee may propose an alternate method of demonstrating compliance with the fuel sulfur requirements of this section. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.  
(9 VAC 5-80-890)

**DRAFT**

**EMISSION LIMITS** – The following emissions limits become effective upon completion of the stack merge project

27. **Process Emission Limits** - Emissions from MS1 and MS4 shall not exceed the limits specified below:

Pollutant	Emission rate	
	Merged Stack 1 (MS1)	Merged Stack 4 (MS4)
Particulate Matter (PM) including condensable PM (3-hour average)	0.045 lb/MMBtu 93.69 lbs/hr	0.045 lb/MMBtu 146.12 lbs/hr
PM-10 including condensable PM-10 (3-hour average)	0.03 lb/MMBtu 62.46 lbs/hr	0.03 lb/MMBtu 97.41 lbs/hr
Sulfur Dioxides (SO <sub>2</sub> ) (3-hour average)	0.39 lb/MMBtu 812.8 lbs/hr	0.39 lb/MMBtu 1,266.33 lbs/hr
Sulfur Dioxides (SO <sub>2</sub> ) (24-hour) Through December 31, 2008	0.35 lb/MMBtu 738.70 lbs/hr	0.35 lb/MMBtu 1,136.45 lbs/hr
Sulfur Dioxides (SO <sub>2</sub> ) (24-hour) Beginning January 1, 2009	0.30 lb/MMBtu 624.27 lbs/hr	0.30 lb/MMBtu 974.10 lbs/hr
Oxides of Nitrogen (as NO <sub>2</sub> ) (30-day rolling average)	0.32 lb/MMBtu 666.27 lbs/hr	0.32 lb/MMBtu 1,039.04 lbs/hr
Carbon Monoxide (CO) (3-hour average)	0.030 lb/MMBtu 62.46 lbs/hr	0.030 lb/MMBtu 97.41 lbs/hr
Volatile Organic Compounds (VOC)	0.0025 lb/MMBtu 5.21 lbs/hr	0.0025 lb/MMBtu 8.12 lbs/hr
Hydrogen Chloride (3-hour average)	0.0072 lb/MMBtu 14.99 lbs/hr	0.0072 lb/MMBtu 23.38 lbs/hr
Hydrogen Sulfide (3-hour average)	0.0026 lb/MMBtu 5.41 lbs/hr	0.0026 lb/MMBtu 8.44 lbs/hr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of an exceedance of the emission limits. Compliance with these emission limits may be determined as stated in Conditions 29, 30, and 32. (9 VAC 5-8-250)

28. **Facility wide Emission Limits** – Total emissions from boilers C1, C2, C3, C4, and C5 combined shall not exceed the limits specified below:

Pollutant	Tons/Year
Particulate Matter (PM) including condensable PM	562
PM-10 including condensable PM-10	77
Sulfur Dioxides (SO <sub>2</sub> )	3,700
Oxides of Nitrogen (as NO <sub>2</sub> )	1,600
Oxides of Nitrogen (as NO <sub>2</sub> ) during the Ozone season	215
Carbon Monoxide (CO)	26
Volatile Organic Compounds (VOC)	100
Hydrogen Chloride (HCl)	36.22
Hydrogen Fluoride (HF)	

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 29 and 30. (9 VAC 5-80-850)

29. **Emission Calculations** – The permittee shall calculate total emissions from MS1 and MS4 combined for PM, PM-10, HCl, HF, and VOC in tons per year. The permittee shall calculate annual emissions monthly as the sum of each consecutive 12-month period utilizing monthly boiler heat input or monthly fuel throughput, control equipment efficiency, and appropriate EF-factors or EPA-42 emission factors in order to demonstrate compliance with the emission limits set forth in Condition 28. Calculated emissions shall take into account the emissions associated with the startup and shutdown of the boilers. Startup and shutdown emissions shall be identified as such in any emissions calculations. (9 VAC 5-80-890 and 9 VAC 5-80-850)

30. **Emission Calculation** – Prior to the installation, certification, and operation of the CO CEM, the permittee shall calculate total emissions of CO in tons per year from MS1 and MS4 using DE approved site specific emission factors. Following the installation, certification, and operation of the CO CEM, the permittee shall calculate emissions of CO in tons per year one month following the start of certified operation and for the first twelve months will be the sum for each of the completed months. After the initial twelve months of operation, the permittee shall calculate annual emissions by adding the most recent monthly emissions to the previous eleven consecutive months. (9 VAC 5-80-890 and 9 VAC 5-80-850)

- 31. Visible Emission Limit** - Visible emissions from MS1 and MS4 shall not exceed 20% opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 60% opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). The COMS may be used to satisfy the visible emission evaluation requirement in lieu of 40 CFR Part 60, Appendix A, Method 9. In the event that the COMS are used in lieu of a 40 CFR Part 60 Appendix A Method 9 evaluation, the reported data shall include averages of all six-minute continuous periods within the reported period and within the duration of any mass emission performance tests being conducted. It is the responsibility of the permittee to demonstrate that the monitoring system has met the requirements of the applicable performance specification defined in 40 CFR Part 60, Appendix B, that the monitoring system has been properly maintained and operated, and that the resulting data have not been altered in any way. In the event that the COMS data indicate compliance for a period during which Method 9 data indicates non-compliance, the Method 9 data may be used to determine compliance with the visible emission limit. This condition applies at all times except during startup, shutdown, and malfunction.
- (9 VAC 5-80-850 and 9 VAC 5-40-80)

#### INITIAL COMPLIANCE DETERMINATION

- 32. Stack Test** - Initial performance tests shall be conducted for H<sub>2</sub>S, SO<sub>2</sub>, PM, PM-10, PM-2.5, CO, HCl, and HF from MS1 and MS4 using appropriate and approved EPA reference methods to determine compliance with the emission standards contained in Conditions 27. Additionally, the hot and cold side ESP effectiveness shall be determined during this performance testing and secondary voltage and current shall be recorded as the base line for monitoring the ESP operation. If the permittee determines that it is in the best interest of good air pollution control practices to utilize a lower sulfur coal than that required in Condition 25, a test may be conducted to demonstrate the rate of dry sorbent injection necessary to provide the appropriate level of HCl and HF reduction to ensure compliance with the Sulfur Ambient Air Concentration values. The tests shall be performed, and reported and demonstrate compliance within 180 days after completion of the merged stack project. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and 9 VAC 5-60-30. The details of the tests are to be arranged with the Air Compliance Manager, NRO. The permittee shall submit one hard copy of the test protocol and one copy of the test protocol on electronic media at least 30 days prior to testing to both the Air Compliance Manager, NRO, and the Air Permit Manager, NRO. One hard copy of the test results and one copy of the test results on electronic media shall be submitted to both the Air Compliance Manager, NRO, and the Air Permit Manager, NRO, within 60 days after test completion and shall conform to the test report format enclosed with this permit.
- (9 VAC 5-40-890)

- 33. Visible Emissions Evaluation** - Concurrent with the initial performance tests and during the Method 5 compliance demonstration test, a Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on MS1 and MS4. Each test shall consist of 30 sets of 24 consecutive

observations (at 15 second intervals) to yield a six-minute average. The details of the tests are to be arranged with the Air Compliance Manager, NRO. The permittee shall submit one hard copy of the test protocol and one copy of the test protocol on electronic media at least 30 days prior to testing to both the Air Compliance Manager, NRO, and the Air Permit Manager, NRO. The evaluation shall be performed during compliance demonstration testing required in Condition 32. Should conditions prevent concurrent opacity observations, the Air Compliance Manager, NRO, shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. The continuous opacity monitoring system may be used to satisfy the visible emission evaluation requirement in lieu of 40 CFR Part 60, Appendix A, Method 9. In the event that the COMS is used in lieu of a 40 CFR Part 60, Appendix A, Method 9 evaluation, the reported data shall include averages of all six-minute continuous periods within the reported period and within the duration of any mass emission performance tests being conducted. One hard copy of the test results and one copy of the test results on electronic media shall be submitted to both the Air Compliance Manager, NRO, and the Air Permit Manager, NRO, within 60 days after test completion and shall conform to the test report format enclosed with this permit.  
(9 VAC 5-40-30)

34. **CEMS/COMS Performance Evaluation** - Performance evaluations of the continuous monitoring systems (SO<sub>2</sub>, NO<sub>x</sub>, O<sub>2</sub> or CO<sub>2</sub>, CO, and opacity) shall be conducted in accordance with 40 CFR Part 60, Appendix B, and shall take place during the performance test required in Condition 32. The permittee shall submit one hard copy of the performance evaluation report and one copy of the performance evaluations report on electronic media to both the Air Compliance Manager, NRO, and the Air Permit Manager, NRO, within 45 days of the evaluation. The continuous monitoring systems for these pollutants shall be installed and operational prior to conducting initial performance tests required in Condition 32. Verification of the operational status shall, as a minimum, include comparison of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device. A 30-day notification, prior to the demonstration of continuous monitoring system's performance, and subsequent notifications shall be submitted to the Air Compliance Manager, NRO.  
(9 VAC 5-40-40)

35. **CEMS/COMS Quality Control Program** - A CEMS/COMS quality control program which meets the requirements of 40 CFR 60.13 and Appendix B and/or F and 40 CFR Part 75 shall be implemented for all continuous monitoring systems except that Relative Accuracy Test Audits (RATA) may be required less frequently if approved by DEQ.  
(9 VAC 5-40-40)

### CONTINUING COMPLIANCE DETERMINATION

36. **Annual Compliance Testing** – To ensure continuing compliance, the permittee shall perform the following:

- a. The permittee shall demonstrate compliance on an annual basis utilizing appropriate 40 CFR Part 60, Appendix A reference test methods in the testing of PM-10, PM-2.5, HCl, and HF.
- b. The hot and cold side ESP particulate removal effectiveness shall be determined during this performance testing by recording the secondary volts, secondary current and spark rate as the base line for continued monitoring of the ESP operation.
- c. These tests shall be performed annually on two base load units and one cycling unit. Testing performed the next year shall include the previous year's tested base load unit(s) and if necessary one unit tested the previous year (total of two base load units) and the one untested cycling unit from the previous year (totaling three units to be tested).
- d. These tests shall be arranged with the Air Compliance Manager, NRO.
- e. Tests shall be conducted and reported and data recorded as set forth in 9 VAC 5-40-30 and 9 VAC 5-60-30.
- f. The permittee shall submit a test protocol at least thirty days prior to testing.
- g. One paper copy of the test results and two electronic files, on removable media, of the test results shall be submitted to the Air Compliance Manager, NRO, within 60 days after test completion and shall conform to the test report format enclosed with this permit.

(9 VAC 5-40-30 and 9 VAC 5-60-30)

37. **PM-2.5 Air Quality Analysis** - Based on a schedule and protocol to be established by DEQ after US EPA promulgates final rules for PM-2.5 analysis, or US EPA promulgates revised implementation guidance or policy for PM-2.5 analysis, or DEQ establishes a new appropriate implementation methodology for PM-2.5, PRGS shall conduct an ambient air quality analysis for the emissions of PM-2.5 from the facility.

(9 VAC 5-80-850)

## RECORDS

38. **On Site Records** - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content, format and accessibility of such records shall be arranged with the Air Compliance Manager, NRO. These records shall include, but are not limited to:

- a. All fuel supplier certifications.

- b. Annual emissions calculations for PM, PM-10, VOC, HCl, and HF from the boilers using calculation methods approved by the Air Compliance Manager, NRO, to verify compliance with the tons per year emission limits in Condition 28.
- c. CEMS and COMS maintenance and calibration records including, but not limited to, continuous monitoring system calibrations and calibration checks, percent operating time, and excess emissions.
- d. All recorded CEMS and COMS data necessary to demonstrate compliance with the requirements of Conditions 34 and 35 and with the emission limits in Conditions 27 and 28.
- e. Any required visible emissions evaluations (VEEs) and visible emissions evaluation logbook data.
- f. Operation and control device monitoring records for the electrostatic precipitators and fabric filters as required in Conditions 23 and 30.
- g. All records of compliance demonstration, CEM certifications and CEM Relative Accuracy Test Audits.
- h. Scheduled and unscheduled maintenance and operator training.
- i. The permittee shall maintain a record of the operating scenario selected for daily operation.
- j. The annual average sulfur content of the coal shall be calculated monthly as the average of each of the 12 month period.

These records shall be available for inspection by the DEQ during normal business hours as defined in Condition 42 and shall be current for the most recent five years.

(VAC 5-40-890)

- 39. Quarterly Reports for Continuous Monitoring Systems -** The permittee shall furnish written reports to the Air Compliance Manager, NRO, of excess emissions from any process monitored by a continuous monitoring system (COMS/CEMS) on a quarterly basis, postmarked no later than the 30<sup>th</sup> day following the end of the calendar quarter. These reports shall include, but are not limited to the following information:
- a. The magnitude of excess emissions, any conversion factors used in the calculation of excess emissions, and the date and time of commencement and completion of each period of excess emissions;
  - b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the process, the nature and cause of the malfunction

(if known), the corrective action taken or preventative measures adopted;

- c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments; and
- d. When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired or adjusted, such information shall be stated in that report.

(9 VAC 5-40-50)

40. **Semi-Annual Report** - The permittee shall submit reports to the Northern Regional Office, within 30 days after the end of each semi-annual period. The semi-annual periods are defined as January 1<sup>st</sup> through June 30<sup>th</sup> and July 1<sup>st</sup> through December 31<sup>st</sup> of each year. The permittee may submit the reports in electronic format as approved by the Air Compliance Manager, NRO, within 30 days after the end of each semi-annual period. Each semi-annual report shall include the dates included in the semi-annual period and the following:

- a. With regard to CO (when installed and certified), SO<sub>2</sub>, and NO<sub>x</sub> emissions and continuous emissions monitoring:
  - i. Each 30-day average emission rate (lbs/MMBtu);
  - ii. Identification of days for which CO, SO<sub>2</sub>, NO<sub>x</sub>, and O<sub>2</sub> or CO<sub>2</sub> data have not been obtained by an approved method for at least 75 percent of operating hours, reasons for not obtaining such data and corrective actions taken;
  - iii. Identification of any intervals when emissions data have been excluded from the calculation of average emission rates, justification for excluding data and a description of corrective action taken if data have been excluded for periods other than when oil was not combusted in the unit;
  - iv. Identification of the F-factor used in calculations, method of determination for each type of fuel combusted, and type of fuel combusted;
  - v. Identification of any times when the pollutant concentration exceeded the full span of the continuous emissions monitor;
  - vi. Description of any modifications to the continuous emissions monitor that could affect its ability to comply with the performance specifications under 40 CFR 60, Appendices B and/or F; and
  - vii. Summary of the results of daily continuous emissions monitor drift tests and semi-

annual accuracy assessments as required by 40 CFR 60, Appendix F, Procedure 1.

- b. With regard to visible emissions and opacity monitoring, the permittee shall report all excess opacity and the percentage of operating hours for which opacity monitoring data have not been obtained. If no excess opacity occurred or opacity monitoring data were obtained for all operating hours during the reporting period, the semi-annual report shall contain a statement as such. All semi-annual opacity monitoring reports shall conform to the Opacity Monitoring Report Format enclosed with this permit.

(9 VAC 5-170-160 and 9 VAC 5-40-50)

#### NOTIFICATIONS

41. **Notifications** - The permittee shall furnish written notification to the Air Compliance Manager, NRO, of:
  - a. The actual date on which the merged stack project is completed within 30 days after such date.
  - b. The anticipated date of continuous monitoring system performance evaluations postmarked not less than 30 days prior to such date.
  - c. The intention to use continuous opacity monitoring system data results to demonstrate compliance with applicable visible emission limit during a performance test in lieu of Reference Method (Reference 40 CFR Part 60, Appendix A), postmarked not less than 30 days prior to the date of the performance test.
  - d. The anticipated date of performance tests of the electric generating facility postmarked at least 30 days prior to such date.

(9 VAC 5-40-50)

#### GENERAL CONDITIONS

42. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:
  - a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
  - b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

- c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
- d. To sample or test at reasonable times.

For the purpose of this permit, normal business hours shall be considered to be from 8:00 AM to 5:00 PM Monday through Friday. Nothing contained here shall make an inspection time unreasonable during an emergency.  
(9 VAC 5-170-130)

43. **Maintenance/Operating Procedures** – At all times, including periods of start-up, shutdown, soot blowing, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected source, including associated air pollution control equipment, in a manner consistent with good pollution control practices for minimizing emissions.

The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to boilers C1, C2, C3, C4 and C5 and electrostatic precipitators HSESP1, HSESP2, HSESP3, HSESP4, and HSESP5 and CSESP1, CSESP2, CSESP3, CSESP4, and CSESP5 and dry sorbent (Sodium sesquicarbonate or equivalent) injection systems:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.

Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures, prior to their first operation of such equipment. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.  
(9 VAC 5-40-20 E)

44. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant

affected, cause), corrective action, preventive measures taken and name of person generating the record.

(9VAC 5-20-180 J)

**45. Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the Air Compliance Manager, NRO, of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by email, facsimile transmission, telephone or telegraph. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing a failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Air Compliance Manager, NRO.

(9 VAC 5-20-180 C)

**46. Exceedance of Ambient Air Quality Standard** - In excess of any other provision of this section, the owner of any facility subject to the Regulations for the Control and Abatement of Air Pollution shall, upon request of the board, reduce the level of operation at the facility if the board determines this is necessary to prevent a violation of any primary ambient air quality standard. Under worst case conditions, the board may order that the owner shut down the facility, if there is no other method of operation to avoid a violation of the primary ambient air quality standard. The board reserves the right to prescribe the method of determining if a facility will cause such a violation. In such cases, the facility shall not be returned to operation until it and the associated air pollution control equipment are able to operate without violation of any primary ambient air quality standard.

(9 VAC 5-20-180 I)

**47. Permit Suspension/Revocation** - This permit may be revoked if the permittee:

Knowingly makes material misstatements in the permit application or any amendments to it;

- b. Fails to comply with the terms or conditions of this permit;
- c. Fails to comply with any emission standards applicable to a permitted emissions unit;
- d. Causes emissions from this facility which result in violations of, or interferes with the attainment and maintenance of, any ambient air quality standard;
- e. Fails to operate this facility in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time that an application for this permit is submitted;

- f. Fails to comply with the applicable provisions of Articles 6, 8 and 9 of 9 VAC 5 Chapter 80.

(9 VAC 5-80-1010)

- 48. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Northern Regional Office of the change of ownership within 30 days of the transfer.

(9 VAC 5-80-940)

- 49. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.

(9 VAC 5-80-860 D)

**DRAFT**

## SOURCE TESTING REPORT FORMAT

### Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

### Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. \*Signed by reviewer

### Copy of approved test protocol

### Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. \*For each emission unit, a table showing:
  - a. Operating rate
  - b. Test Methods
  - c. Pollutants tested
  - d. Test results for each run and the run average
  - e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

### Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensions cross section. Attached protocol includes: sketch of stack (location and height) showing sampling port locations, upstream and downstream flow distances, and distances from ports; and a sketch of stack showing sampling ports, ducts entering the stack and stack diameter or dimensions

### Test Results

1. Detailed test results for each run
2. Sample calculation
3. \*Description of collected samples, to include audits when applicable

### Appendix

1. \*Raw production data
2. \*Raw field data
3. \*Laboratory reports
4. \*Chain of custody records for lab samples
5. \*Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

\* Not applicable to visible emission evaluations

COMMONWEALTH OF VIRGINIA  
Department of Environmental Quality  
Northern Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Mirant Potomac River Generating Station  
Alexandria, Virginia  
Permit No. 70228

State Operating Permit

DRAFT

**I. Purpose**

The Virginia Department of Environmental Quality (VDEQ) – Division of Air Quality has been requested by the State Air Pollution Control Board (Board) to develop a comprehensive State Operating Permit which establishes emission limitations for sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), total particulate matter (PM), particulate matter equal to or less than ten microns (PM10), volatile organic compounds (VOC), carbon monoxide (CO), and the acid gases hydrochloric acid (HCl), and hydrogen fluoride (HF) on both a short-term and an annual basis that are protective of the National Ambient Air Quality Standards (NAAQS) for the operation of five coal-fired boilers at the Mirant Potomac River, LLC's Potomac River Generating Station (PRGS) facility. This document sets forth the background information used to create a record of the engineering evaluation for the proposed permit. The permit also requires the use of Continuous Emission Monitor Systems (CEMS) for SO<sub>2</sub>, NO<sub>x</sub>, (CO), carbon dioxide (CO<sub>2</sub>) and/or oxygen (O<sub>2</sub>), to demonstrate compliance with all emission limitations of this State Operating Permit.

**II. Facility Background**

The PRGS is a 482-MW electricity generating facility located on the Potomac River in Alexandria, Virginia. Mirant Potomac River, LLC (formerly Southern Energy Potomac River, LLC) purchased the PRGS from the Potomac Electric Power Company (PEPCO) in December 2000. Electricity generated at the facility is transmitted to the Pennsylvania/New Jersey/Maryland (PJM) distribution grid and services Washington D.C. for use by a variety of customers including federal agencies, businesses, residences, and the D.C. Water and Sewer Authority's Blue Plains Wastewater Treatment Plant.

The facility consists of five tangentially-fired boilers (designated as boilers C1, C2, C3, C4, and C5), each supplying steam to a boiler specific steam turbine connected to a dedicated electrical generator for that boiler. Each boiler utilizes coal as the primary which is delivered by rail car to the facility. Boilers C1 and C2 are cycling boilers that offer more flexibility in how they are dispatched. Cycling boilers can be brought online quickly to respond to increases in demand. Boilers C3, C4 and C5 are considered base load boilers

and are called into service more often than boilers C1 and C2. The base load boilers typically run 24 hours a day. In addition to the primary fuel, No. 2 fuel oil is stored in two aboveground storage tanks and is used to provide ignition, warm-up, and flame stabilization for the boilers.

Each boiler's gas stream is discharged into the atmosphere through a dedicated stack for that boiler. The five stacks are identical and are each 161 feet above ground level.

Summary of PRGS Combustion Boilers

Boiler ID	Manufacturer	Description	Maximum Rated Input Heat Capacity (MMBtu/hr)	Generation Capability (MW)	Began Service
C1	Combustion Engineering, Inc.	Natural circulation, tangentially coal-fired with superheater and economizer	1053	93	1949
C2	Combustion Engineering, Inc.	Natural circulation, tangentially coal-fired with superheater and economizer	1029	93	1950
C3	Combustion Engineering, Inc.	Controlled circulation, tangentially coal-fired with superheater, single reheater and economizer	1018	108	1954
C4	Combustion Engineering, Inc.	Controlled circulation, tangentially coal-fired with superheater, single reheater and economizer	1087	108	1956
C5	Combustion Engineering, Inc.	Controlled circulation, tangentially coal-fired with superheater, single reheater and economizer	1107	108	1957

The facility is a Title V major source of sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), particulate matter equal to or less than ten microns in diameter (PM<sub>10</sub>), and carbon monoxide (CO). This facility is also located in a nonattainment area for the 8-hour ozone standard ("moderate" classification) and a nonattainment area for particulate matter equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>) (no classification assigned by EPA at this time). The area is in attainment of the standards for all other pollutants. The VDEQ

Northern Regional Office is currently drafting the Title V permit and Statement of Basis for the facility.

Because the boilers were constructed between 1949 and 1957 and the requirements of 40 CFR 60, Subparts, D, Da, and Db were not effective for units earlier than August 17, 1971, these units are “grandfathered”, therefore there are no NSR permits applicable to this source. The facility entered into a consent order with VDEQ on July 10, 1998, to establish Reasonable Available Control Technology (RACT) for NO<sub>x</sub> as required by the Virginia State Implementation Plan. A state operating permit dated June 5, 2000, was issued to the facility to establish RACT for VOC. The facility is also regulated under a Phase II Acid Rain Permit dated February 28, 2003, and a State Operating Permit dated September 29, 2000, for control of NO<sub>x</sub> during the ozone control season, May 1<sup>st</sup> through September 30<sup>th</sup>. In 2005 the facility submitted modeling results from the “downwash study” which indicated an exceedances of the SO<sub>2</sub> NAAQS. As a result of this modeling result the facility was issued a administrative consent order by EPA which required that modeling be conducted each day and the operational scenarios developed for the following day’s operation which would insure that the NAAQS would not be exceeded. This operational requirement expired on May 31, 2007 and VDEQ issued a State Operating Permit dated June 1, 2007, that sets hourly limits on SO<sub>2</sub> and an annual SO<sub>2</sub> limit of 3813 tpy.

## II. Pollution Controls

Each boiler (C1, C2, C3, C4, and C5) has a hot-side and a cold-side electrostatic precipitator (ESP) on its boiler exhaust gas stream to control particulate emissions.

Mirant installed Low-NO<sub>x</sub> Burners (LNB) on all boilers (C1, C2, C3, C4, and C5) and Separated Over-Fire Air (SOFA) technology on boilers C3, C4, and C5 as a result of a 2004 judicial consent decree. This consent decree became enforceable on April 20, 2007.

The use of LNB’s limit the formation of NO<sub>x</sub> by controlling the stoichiometric and temperature profiles of the combustion process in each burner zone. Emissions are controlled by the design of the LNB which may reduce oxygen levels in the combustion zone (limits fuel NO<sub>x</sub> formation), reduce flame temperature (limits thermal NO<sub>x</sub> formation), and/or reduce residence time at peak temperature (limits thermal NO<sub>x</sub> formation).

SOFA is a technique that involves removing a percentage of combustion air and adding excess air above the burners. This limits thermal NO<sub>x</sub> by partially delaying and extending the combustion process resulting in less intense combustion and lower flame temperatures. It also suppresses the fuel NO<sub>x</sub> formation by reducing the concentration of air in the combustion zone where volatile fuel nitrogen is evolved. SOFA can reduce NO<sub>x</sub> by 20 to 30 percent from uncontrolled levels and can be turned off.

Beginning in 2005 Mirant employed the use of Trona to reduce SO<sub>2</sub> emissions from the facility, which dispersion modeling had shown to be a contributor to a predicted

exceedance of the NAAQS. Trona is a naturally occurring mineral (sodium sesquicarbonate), which is non-flammable and similar to baking soda. It has been used in dry sorbent injection systems where it reacts with acid gases to form a non-corrosive product that will not damage the equipment. When injected into the combustion exhaust gas stream, the dry powder also forms a bond with SO<sub>2</sub>. The compounded particulate material is then removed from the exhaust gas by existing emissions control equipment and collected with the ash. Test results at PRGS indicate that Trona injection could consistently remove a significant portion of the SO<sub>2</sub> from exhaust gas, increase the efficiency of the control device in reducing particulate emissions, and provide a reduction in the acid gases HCl and HF. Particulate matter can also form in the atmosphere with the emitted gases, such as sulfur dioxide which will condense to create sulfate particles; so when the amount of sulfur dioxide decreases, the amount of condensable particulate matter is reduced accordingly.

### III. Permit Description

<u>Permit Condition</u>	<u>Purpose and Basis of the Condition</u>
1.	Specifies the emitting boilers and potential pollution sources to which the permit conditions apply. In this case, the boilers are all of the boilers supplying steam for electric power generation.
2.	Specifies the stack configuration and how the various boilers will be connected to the merged stacks.
3.	The type of NO <sub>x</sub> emissions control (low-NO <sub>x</sub> burners) required for boilers C1 and C2 are specified in this condition.
4.	The type of NO <sub>x</sub> emissions control (low-NO <sub>x</sub> burners and separated over-fire air; SOFA), required by the Consent Decree, that has been installed on C3, C4, and C5 are specified in this condition.
5.	Describes the emission control for SO <sub>2</sub> and acid gases.
6.	Describes the procedures to be followed should an alternate dry sorbent be requested by the permittee.
7.	Describes the emission controls for PM from the boilers C1 through C5.
8.	Describes the emission controls for PM from the two fly ash silos.
9.	Describes the emission controls for PM from the bottom ash silo.
10.	Describes the emission controls for PM from fly ash and bottom ash truck or train transfer operation.
11.	Describes the emission controls for PM from the coal handling operations.
12.	Describes the emission controls for PM from the railcar dumping facility.

13. Describes the emission controls for PM from the dry sorbent handling systems.
14. Describes the electrostatic precipitator's designations and operational requirements.
15. Describes the fugitive dust control requirements for the facility.
16. Requires for the installation, certification, operation, and maintenance of the opacity monitoring systems on the two merged stacks. States compliance with opacity limits in the State Operating Permit may be determined by continuous opacity monitoring. Mirant already has continuous opacity monitors and with the recent incorporation in the Virginia regulations the opacity monitors may now be used as a direct compliance tool.
17. Requires the installation continuous emissions monitoring systems (CEMS) for SO<sub>2</sub>, NO<sub>x</sub>, O<sub>2</sub> or CO<sub>2</sub>, and flow on each of the two merged stacks. States that compliance will be determined by and specifies the requirements for installation, operation, maintenance, and quality assurance of the CEMS.
18. Requires the permittee to submit a plan to DEQ within 12-months of the effective date of the permit for the installation, operation, maintenance, and quality assurance for PM CEMS. Also, within this condition there is a requirement to collect six months of CO data to be used in establishing a permitted CO emission limit.
19. Requires the permittee install CO CEMS on each of the merged stack as part of the stack merge project to meet the requirements of 40 CFR Part 60 Appendix B. Certification and reporting requirements are also included in this condition. A six month data gathering requirement is included after which the emission factor of the determination of compliance will be reevaluated.
20. Requires monthly determinations of emissions of PM, PM<sub>10</sub>, VOC, HCL, and HF.
21. Sets the requirement to operate, maintain, and record the pressure drop across the fabric filters installed on the fly ash and bottom ash silos.
22. Requires that the permittee conduct a condition assessment of the hot and cold side ESP's on a daily basis. This assessment is required to insure that the ESP's are in proper operating condition.
23. Requires the permittee to make daily evaluations of the monitoring devices installed to insure the proper operation and that all emission sources are within the limits set forth in this State Operating Permit. This condition also specifies corrective action to be taken by the permittee should malfunctions or exceedance be discovered.
24. Specifies the approved fuel.
25. Sets the specification of all fuels and the analysis method accepted by DEQ.
26. Requires the permittee to obtain and maintain fuel certifications from the fuel suppliers. The information required in this certification is also delineated.

27. Establishes the short term emission limits for Merged Stack 1 and Merged Stack 4. Emissions are prescribed specific to the pollutant and the averaging period for that pollutant. These limits are derived from the estimated overall emission contribution from the operating limits. Emission limitations have been established based on the most up to date atmospheric dispersion modeling utilizing AERMOD (Model Version 07026) and uses (Equivalent Building Dimensions) as input to the model. The EBD were derived from a wind tunnel study which was specific to the building.
28. Establishes annual emission limits for the facility. These limits are derived from the estimated overall emission contribution from the operating limits. Annual emissions are capped at 3,813 tons of SO<sub>2</sub> from the facility as established in the June 1, 2007 State Operating Permit and set out in Condition 30 of this State Operating Permit. Additionally, annual emissions of NO<sub>x</sub> are capped at 3,700 tons per year from the facility and are set out in Condition 30 of this State Operating Permit. Furthermore, the facility is limited to 1,600 tons of NO<sub>x</sub> during the ozone seasons (effective until December 31, 2008). These conditions are set in Condition 30 of this State Operating Permit.
29. Requires the permittee to calculate the total annual emissions from two merged stacks monthly as the sum of each 12-month period.
30. Establishes the method for calculating the annual emissions of CO until twelve months of CEM data has been accumulated. Once twelve months of data has been accumulated the permittee shall follow the same procedures and the collected data from the other CEMS
31. Establishes visible emission limits for Merged Stack 1 and Merged Stack 4 and the methods to be used in this determination. With the adoption of the Virginia law effective July 2007, the use of COMS as a direct compliance tool is specified in this condition.
32. Defines performance testing, notification, and reporting requirements for Merged Stack 1 and Merged Stack 4 for SO<sub>2</sub>, NO<sub>x</sub>, PM, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, HCL, and HF. Additionally, there are specific requirements for data collection during the performance test which will be used as future surrogate to determine control device operation. Also, should the permittee elect to use a lower fuel sulfur content in the coal, there are specific requirements defined for the approval of this fuel switch.
33. Defines initial visible emission evaluation procedures for Merged Stack 1 and Merged Stack 4. The optional methods, as stated earlier, are allowed in this condition and the notification and reporting requirements are established.
34. Establishes the requirements for initial performance evaluations of the CEMS and COMS.
35. Establishes the requirements quality control program of the CEMS and COMS to include the need for annual relative accuracy test audits (RATA).

36. Establishes the requirement to conduct annual compliance testing on PM, PM<sub>10</sub>, PM<sub>2.5</sub>, HCL, and HF
37. Requires that the permittee conduct air quality analysis of PM 2.5 once guidelines have been by the US EPA or DEQ.
38. Defines and establishes the requirement for record keeping. A proposed listing of records to be maintained by the facility and the authority to use off-site electronically stored data is included, as long as the data is accessible from the facility.
39. Establishes requirements for submitting quarterly CEM reports.
40. Establishes requirements for the permittee to submit semi-annual emission reports.
41. Establishes requirements for the permittee to notify the DEQ under specific conditions
42. Authorizes local, state, and federal representatives the right to enter the facility to assess the status of compliance.
43. Requires the facility to operate and maintain the boilers and emission control equipment in a manner consistent with good air pollution control practices for minimizing emissions as defined in this permit. Within this condition the permittee is required to maintain records and parts to meet the intent of the condition.
44. Requires maintenance of records of occurrences and duration of specific conditions which would result in an emission exceedance of a specific duration and any action resulting from this activity.
45. Requires the permittee to notify DEQ of any equipment or control equipment malfunctions and sets the time requirements and information to be included for these notifications.
46. Requires the permittee to reduce the level of operation or shut down the boilers if the Board determines this is necessary to prevent the violation of any NAAQS.
47. Defines conditions in which the permit may be revoked.
48. Requires that the permittee notify any new owner of the facility about this permit and sends a copy of the notice to DEQ. The DEQ would then make the necessary administrative amendments to the permit to show that it is transferred to the new owner.
49. States that a copy of the permit must remain on the premises. Besides being a regulatory requirement, it serves as a reminder to the facility staff of other obligations as well as assuring the availability of inspection of the permit by DEQ personnel and others.

**IV. Best Available Control Technology Review (BACT) Applicability (9 VAC 5-50-260)**

A BACT applicability evaluation is not required for State Operating Permits.

**V. New Source Performance Standards (NSPS)-9 VAC 5 Chapter 50, Part II, Article 5**

The PRGS is not subject to 40 CFR 60 Subpart D – Fossil Fuel Steam Generators or to Subpart Da – Electric Utility Steam Generating Units. Both NSPS apply to fossil fuel-fired steam generators that are greater than 250 MMBtu/hr and that commenced construction or modification after August 17, 1971, for Subpart D and September 18, 1978, for Subpart Da. Additionally, the PRGS is not subject to 40 CFR Subpart Db because all of the boilers began construction prior to June 19, 1984. All five boilers at the PRGS were constructed between 1949 and 1957 and have not previously been subject to either NSPS. Modification is defined in the NSPS regulations as physical or operational changes that result in an increase in hourly rates of emissions.

**VI. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - 9 VAC 5 Chapter 60, Part II, Article 1 –**

There is no applicable NESHAP for steam generating units.

**VII. Maximum Achievable Control Technology (MACT) - 9 VAC 5 Chapter 60, Part II, Article 2**

There are no applicable MACT requirements for steam generating units.

**VIII. Future Applicable Requirements**

The PRGS will be subject to the NO<sub>x</sub> requirements of the Clean Air Interstate Rule (CAIR) on January 1, 2009. The Clean Air Mercury Rule (CAMR) and the SO<sub>2</sub> requirements of CAIR are effective on January 1, 2010. Under Phase I of CAIR, the facility will be allocated 711 tons of NO<sub>x</sub> emissions during the ozone season, 1,734 tons of NO<sub>x</sub> annually, and 6,025 tons of SO<sub>2</sub> annually. The facility will be allocated 72.37 lbs of mercury under Phase I of CAMR.

The facility will not be subject to the requirements of Best Available Retrofit Technology (BART) in EPA's Regional Haze Rule because all boilers were constructed between 1949 and 1957 and the BART applies to units constructed after August 7, 1962 but prior to August 7, 1977.

**IX. Toxic Pollutants**

The facility is not subject to the state toxics rule. Regulation 9 VAC 5-60-300 C.5 exempts stationary sources that EPA has made a formal determination will not be regulated under

§112 of the Clean Air Act. The facility will be subject to CAMR which is established under §129.

**X. Title V Review - 9 VAC 5 Chapter 80, Article 1**

The facility is a Title V major source of sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub>), and carbon monoxide (CO). The DEQ-Northern Regional Office is currently drafting the Title V permit and Statement of Basis for the facility. All applicable requirements resulting from this State Operating Permit will be incorporated into the Title V permit.

**XI. Public Participation**

Following a comment period, a public hearing will be held on January 25, 2008. The public comment period will begin on December 21, 2007, and conclude on January 29, 2008.

**XII. Other Considerations – Air Quality Modeling**

Due to the size of the air quality modeling files and documentation, specific requests for these data may be directed to Monica Harvey at (804) 698-4300 or maharvey@deq.virginia.gov.

**PUBLIC NOTICE**  
**FOR COMMENT ON A DRAFT STATE OPERATING PERMIT FOR THE MIRANT**  
**POTOMAC RIVER LLC's POTOMAC RIVER GENERATING STATION**  
**RECOMMENDED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY**

**Public Notice Date: December 21, 2007**

The State Air Pollution Control Board (SAPCB) requests public comment on a draft State Operating Permit for the Mirant Potomac River LLC's, Potomac River Generating Station.

Source Name:	Potomac River Generating Station
Registration No.:	70228
Mailing Address and Location:	1400 N. Royal Street Alexandria, Virginia

The draft State Operating permit imposes restrictions, limitations and requirements on the facility following the merger of the boiler exhaust from the five units into two merged stacks ('Merged Stack 1' and 'Merged Stack 4'). Included in the operating requirements are:

1. this permit places SO<sub>2</sub> emission rates on the facility that will eliminate the multiple operating scenario requirements. The permit limits the three hour emission rate to 0.39 lb/MMBtu and the twenty-four hour emission rate to 0.35 lb/MMBtu. Beginning January 1, 2009 the twenty-four hour emission rate will be limited to 0.30 lb/MMBtu.
2. the use of low NO<sub>x</sub> burners on units C1, C2, C3, C4 and C5 and Separated Over Fire Air (SOFA) on units C3, C4 and C5 for the control of Oxides of Nitrogen;
3. the use of sodium sesquicarbonate or a Department of Environmental Quality approved alternative and low sulfur coal to control emission of sulfur dioxide, hydrogen chloride (HCl) and hydrogen fluoride (HF);
4. the use of fabric filter baghouses on the outlets of the two fly ash silos and the one bottom ash silo. Additionally, the fabric filter baghouses for the three ash silos are to be vented to the inlet side of unit C1's hot side electrostatic precipitator.
5. particulate emissions from units C1, C2, C3, C4 and C5 are each to be controlled by the use of both hot side and cold side electrostatic precipitators.

The facility will be required to install and operate Continuous Emission Monitors (CEM) for NO<sub>x</sub>, SO<sub>2</sub>, and Carbon Monoxide in accordance with the Environmental Protection Agency's requirements contained in 40 Code of Federal Regulations', Part 60, Appendix B. There is also a requirement that the facility submit a plan for the installation, certification, operation, and quality assurance of PM CEMS for 'Merged Stack 1' and 'Merged Stack 4'. In addition to the requirements for CEM's, the facility will be required to test the stack effluent for NO<sub>x</sub>, SO<sub>2</sub>, CO, PM, PM<sub>10</sub>, PM<sub>2.5</sub>, HCl and HF. The proposed permit places the following annual limits on the facility:

Pollutant	Tons/Year
Particulate Matter (PM) including condensable PM	562

PM-10 including condensable PM-10	377
Sulfur Dioxides (SO <sub>2</sub> )	3813
Oxides of Nitrogen (as NO <sub>2</sub> )	3700
Oxides of Nitrogen (as NO <sub>2</sub> ) (Ozone Season until 12/31/08)	1600
Carbon Monoxide (CO)	215
Volatile Organic Compounds (VOC)	26
Hydrogen Chloride (HCl)	100
Hydrogen Fluoride (HF)	36

Included in the permit are requirements for the facility to perform annual testing for SO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, HCl and HF and quarterly reports for the continuous monitoring systems and semi-annual reporting of emissions and monitoring systems utilization and availability.

The current draft 5-stack permit contains annual limitations on VOC of 27 tpy and CO of 215 TPY. These emission levels are based on the constrained hours-of-operation limits imposed under the current permit to protect the National Ambient Air Quality Standard (NAAQS) for SO<sub>2</sub>. If the final permit is issued and the stacks are merged, those hours-of-operation limits will no longer be necessary to protect the SO<sub>2</sub> NAAQS. Under the proposed 2 stack draft permit, Mirant will be held to lower short-term emission rates than in the five stack permit except for NO<sub>x</sub>, which remains unchanged. The SAPCB is requesting comments on allowing small increases in the annual CO and VOC limitations that correlate to the removal of the hours-of-operation constraints in the current 5-stack permit. (Proposed CO increases are from 215 to 256 tpy and VOC from 27 to 35). Also, the Board is seeking comments on the SO<sub>2</sub> emission rates for both the 24-hour (0.035 and 0.030), and the 3-hour (0.039) averaging time

Both the draft State Operating Permit and the Statement of Basis may be accessed under the "What's New" section of the DEQ web page <https://www.deq.virginia.gov>

The SAPCB will accept written comments on the state operating permit for 39 days following the appearance of this notice in the newspaper. The written comment period for the State Operating Permit will end at the close of business on January 29, 2008. Only those comments received within the time period will be considered.

The SAPCB will hold a public hearing on January 25, 2008 beginning at 3:30 PM on the contents of the proposed State Operating Permit and answer questions. The public hearing will be at the Holiday Inn – Eisenhower, located 2460 Eisenhower Ave, Alexandria, VA. Please direct all inquires concerning the draft State Operating Permit recommended by the Northern Regional Office of the Department of Environmental Quality to Mr. Terry Darton at (703) 583-3845. All comments and requests for information on the draft State Operating Permit and the above issue should be sent to Mr. Terry Darton, Air Permit Manager, 13901 Crown Court, Woodbridge VA, 22193 or they may be emailed to [thdarton@deq.virginia.gov](mailto:thdarton@deq.virginia.gov) on any business day between the hours of 8:30 a.m. and 5:00 PM.