



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 17 2005

OFFICE OF  
AIR AND RADIATION

David A. Heacock  
Vice President  
Fossil & Hydro  
Dominion Generation  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060

Re: Petition to Use an Alternative SO<sub>2</sub> Emission Factor for the Elizabeth River  
Combustion Turbines (Facility ID (ORISPL) 52087)

Dear Mr. Heacock:

This is in response to your December 17, 2004 petition under §75.66, in which Dominion Generation (Dominion) requested to use an alternative sulfur dioxide (SO<sub>2</sub>) emission factor for three combustion turbines at its Elizabeth River facility. EPA approves the petition, with conditions, as discussed below.

Background

Dominion owns and operates three simple-cycle combustion turbines (CTs) at its Elizabeth River Combustion Turbine Station in Chesapeake, Virginia. Dominion purchased this facility (formerly known as Commonwealth Atlantic Limited Partnership) on November 30, 2004. The three CTs at Elizabeth River are subject to the NO<sub>x</sub> Budget Trading Program, under Virginia Department of Environmental Quality Regulation 9 VAC 5, Chapter 140. Chapter 140 requires Dominion to continuously monitor and report the ozone season<sup>1</sup> nitrogen oxides (NO<sub>x</sub>) mass emissions and unit heat input for these units, in accordance with Subpart H of 40 CFR Part 75, beginning May 1, 2003.

Dominion states that, prior to being purchased by Dominion, the Elizabeth River facility was exempt from the Acid Rain Program as an independent power producer (IPP) under §72.6(b)(6). Further, according to Dominion, when the facility was purchased, its Acid Rain-exempt status was lost, as provided in §72.6(a)(3)(vi). Therefore, in accordance with

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<sup>1</sup> The ozone season extends from May 1 through September 30.

§75.4(c)(2), Dominion must ensure that for the Elizabeth River turbines, all of the continuous monitoring systems required by the Acid Rain Program are installed and certified by the earlier of: (1) 90 unit operating days; or (2) 180 calendar days after the units became subject to the Program.

For the past two ozone seasons, the low mass emissions (LME) methodology in §75.19 has been used for the Elizabeth River CTs to meet the emission monitoring and reporting requirements of the NO<sub>x</sub> Budget Trading Program. In the December 17, 2004 petition, Dominion stated its intention to continue using the LME methodology for NO<sub>x</sub> Budget Program compliance and to extend the use of this methodology to Acid Rain Program compliance, as well. However, §75.19(c)(4)(i) requires a default SO<sub>2</sub> emission rate of 0.5 lb/mmBtu to be reported for every hour in which an affected unit combusts diesel fuel. Dominion estimated that using the default SO<sub>2</sub> emission rate of 0.5 lb/mmBtu would overstate the SO<sub>2</sub> emissions from the Elizabeth River turbines by at least 300 percent. Dominion based its estimate on the average sulfur content of the diesel fuel combusted in the units in 2004 (i.e., 0.137% sulfur, by weight). According to Table 3.1-2a in AP-42, EPA's "Compilation of Air Pollutant Emission Factors"<sup>2</sup>, a weight percent sulfur of 0.137 corresponds to an SO<sub>2</sub> emission rate of 0.138 lb/mmBtu.

In view of this, in the December 17, 2004 petition, Dominion requested to use a more representative default SO<sub>2</sub> emission rate when diesel fuel is combusted in the Elizabeth River turbines. Dominion proposed two alternatives: (1) to use a default emission rate of 0.202 lb/mmBtu, based on the maximum allowable sulfur content for diesel fuel in the units' operating permits (i.e., 0.2 percent sulfur, by weight); or (2) to use the procedures in Appendix D of Part 75 to perform periodic sampling of the sulfur content of the diesel fuel combusted in the units, and to calculate and report a default SO<sub>2</sub> emission factor for each calendar quarter, based on the highest-sulfur oil combusted during the quarter.

#### EPA's Determination

EPA conditionally approves Dominion's December 17, 2004 petition to use alternative SO<sub>2</sub> emission factors when diesel fuel is combusted in the Elizabeth River combustion turbines, in lieu of reporting the 0.5 lb/mmBtu default SO<sub>2</sub> emission rate from §75.19(c)(4)(i). Dominion may use the approved alternative SO<sub>2</sub> emission factors for Part 75 reporting purposes beginning on January 1, 2005. The basis for this approval is two-fold. First, there is Federally-enforceable permit condition in place for each turbine, limiting the sulfur content of the diesel oil combusted in the unit to 0.2 percent sulfur, by weight. If this limit is met, the SO<sub>2</sub> emission rate from the turbines will not exceed 0.202 lb/mmBtu. Second, Dominion provided fuel sampling results with the petition, which demonstrated that the actual sulfur content of the oil combusted in the units in 2004 was significantly below the permitted limit.

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<sup>2</sup> According to AP-42, the following equation is used to convert weight percent sulfur in fuel oil to an emission rate (E) in lb/mmBtu:  $E = 1.01 (\% \text{ sulfur})$ .

The conditions of approval are as follows:

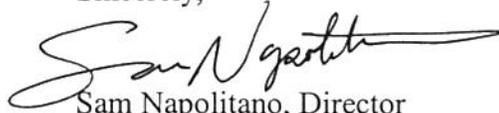
- (1) Dominion shall implement the fuel sampling methodology described in section 2.2.4.3 of Appendix D to Part 75, i.e., “sampling from each delivery”, for the diesel fuel combusted in the Elizabeth River turbines. The sulfur content of the oil shall be determined using one of the analytical methods listed in section 2.2.5 of Appendix D;
- (2) In accordance with section 2.2.4.3(c)(1) of Appendix D, Dominion shall use an “assumed value” of the sulfur content of the diesel fuel in the SO<sub>2</sub> emission calculations. The assumed value shall be the highest weight percent sulfur from the oil samples taken during the previous calendar year. This assumed sulfur content shall be converted to an SO<sub>2</sub> emission rate in lb/mmBtu, using the equation from AP-42 (see footnote 2, above), and for the purposes of Part 75 emissions reporting, the resulting emission rate shall be substituted into Equation LM-9 in §75.19;
- (3) In accordance with section 2.2.4.3(c)(2) of Appendix D, the SO<sub>2</sub> emission rate determined under condition (2), above, shall be used in the emissions calculations throughout the year unless the sulfur content of a required oil sample exceeds the assumed value. If this should occur, a new SO<sub>2</sub> emission rate shall be calculated as described in condition (2), above. In accordance with section 2.3.7(d)(2) of Appendix D, this new emission rate shall be used for reporting purposes, starting with the date on which the oil sample was taken;
- (4) A new default SO<sub>2</sub> emission rate shall be calculated as described in condition (2), above, at the end of each calendar year, and this emission rate shall become the assumed value for the next calendar year;
- (5) In each of the quarterly electronic data reports (EDRs) required under §75.64, Dominion shall represent the assumed SO<sub>2</sub> emission rate currently in use in EDR record type 531 of the electronic monitoring plan. In column 10 of RT 531, a parameter value of “SO2U” shall be reported<sup>3</sup>. In column 41 of RT 531, a “source of value code” of “APP” shall be reported, indicating that the SO<sub>2</sub> emission rate has been approved by petition. When the emission factor is updated, Dominion shall deactivate the previous value in RT 531 and activate the new value.

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<sup>3</sup> The MDC software has recently been modified to accept code “SO2U” for oil in column 10 of RT 531, provided that it is coupled with code “APP” in column 41.

EPA's approval relies on the completeness and accuracy of the information provided by Dominion in the December 17, 2004 petition and is appealable under Part 78. If you have any questions about this determination, please contact Robert Vollaro, at (202) 343-9116. Thank you for your continued cooperation.

Sincerely,

A handwritten signature in black ink, appearing to read "Sam Napolitano", with a long horizontal flourish extending to the right.

Sam Napolitano, Director  
Clean Air Markets Division

cc: Jerry Curtin, EPA Region III  
Frank Adams, Virginia DEQ  
Robert Vollaro, CAMD