

April 10, 2017

David A. Craymer
Vice President, Power Generation Systems Operations
Dominion
5000 Dominion Boulevard
Glen Allen, VA 23060

Re: Petition to Use Alternative Sampling Procedures to Determine Fuel-and-Unit-Specific NO_x Emission Rates for Eight Units at the Gravel Neck (ORIS ID 7032) and Darbytown (ORIS ID 7212) Power Stations

Dear Mr. Craymer:

The United States Environmental Protection Agency (EPA) has reviewed the October 10, 2016 petition submitted by Dominion under 40 CFR 75.66 requesting permission to use an alternative to the otherwise applicable part 75 testing procedures for selecting traverse points to determine fuel-and-unit-specific NO_x emission rates under the low mass emissions (LME) methodology for Units 3, 4, 5, and 6 at Gravel Neck Power Station (Gravel Neck) and Units 1, 2, 3, and 4 at Darbytown Power Station (Darbytown). EPA approves the petition, with conditions, as discussed below.

Background

Dominion owns and operates Gravel Neck Units 3 through 6 in Surry County, Virginia and Darbytown Units 1 through 4 in Henrico County, Virginia. These eight units are identical combustion turbines that can combust either pipeline natural gas or distillate oil and have nameplate capacity ratings of approximately 95 megawatts (MWs) each. According to Dominion, the units are subject to the Cross-State Air Pollution Rule trading programs for sulfur dioxide (SO₂) and annual and ozone-season nitrogen oxides (NO_x). Dominion is therefore required to continuously monitor and report SO₂ and NO_x mass emissions and heat input for the units in accordance with 40 CFR part 75. To satisfy these requirements, instead of installing and operating continuous emission monitoring systems (CEMS) on the units, Dominion has elected to use the optional LME methodology available under § 75.19 for gas- and oil-fired units whose SO₂ and/or NO_x mass emissions are demonstrated to fall below certain qualification limits.

As permitted under § 75.19(c)(1)(iv), for the purpose of calculating the NO_x mass emissions reported for the Gravel Neck and Darbytown units under the LME methodology, Dominion has elected to use fuel-and-unit-specific NO_x emission rates determined through periodic testing conducted according to the procedures in section 2.1 of appendix E to part 75.

Under the appendix E testing methodology as applied for purposes of LME fuel-and-unit-specific NO_x emission rate testing, the owner or operator performs simultaneous three-run tests of NO_x and oxygen (O₂) concentration at each of one or more load levels.¹ Under section 2.1.2.2 of appendix E, for each test run at a combustion turbine, flue gas samples are taken from 12 points that traverse the flue in order to ensure that the NO_x emission rates computed from the flue gas samples reflect the unit's entire flue gas stream rather than an unrepresentative, stratified portion of the stream. A NO_x emission rate in lb/mmBtu is computed from each pair of NO_x and O₂ concentration data, and the NO_x emission rate for the tested load level is computed as the average of the NO_x emission rates from all sampling points for all three test runs for the load level.

In the October 10, 2016 petition, Dominion requests permission to use an alternative to the appendix E procedures described above. Specifically, Dominion requests permission to sample at a minimum of 12 points for the first run in each three-run set of runs and to then sample at a reduced number of points for the subsequent runs in that set of test runs, provided that the results of the first run show stratification below levels that would qualify for a reduced number of sampling points according to acceptance criteria set forth in section 6.5.6.3 of appendix A to part 75. Dominion states that sample data would be collected for a minimum of 21 minutes during each test run. In support of this request, Dominion notes that the proposed alternative procedure would be consistent with the procedures currently allowed for relative accuracy test audit (RATA) testing under appendix A to part 75. Dominion also states that this alternative procedure would promote safety, because high exhaust temperatures and difficulty of accessing probe locations make probe handling a critical activity during emissions testing at the units, and would minimize the operational time required to conduct the testing.

EPA's Determination

EPA has reviewed the information provided by Dominion in the October 10, 2016 petition and agrees that the results of a stratification test performed at each load level and for each fuel (as described in section 6.5.6.1 of appendix A to part 75) could verify that the concentration profile of the flue gases is not stratified, based on the acceptance criteria found in section 6.5.6.3 of appendix A to part 75. The results of an initial 12-point test run could therefore be used to reduce the number of traverse points necessary in subsequent test runs to determine the fuel-and-unit-specific NO_x emission rate used for computing reported NO_x mass emissions under the LME methodology in § 75.19. For this reason, EPA approves Dominion's request to use a reduced number of sampling points per run to determine the fuel-and-unit-specific NO_x emission rate in accordance with § 75.19 when a stratification test conducted for a given load level and fuel at a particular CT confirms that less than a minimum 12-point traverse is appropriate based on the acceptance criteria in section 6.5.6.3 of appendix A to part 75. If the stratification test results meet the acceptance criteria in paragraph (b) of section 6.5.6.3 of appendix A, sampling for the subsequent test runs may be conducted at a single point meeting the requirements of that paragraph (b). If the stratification test results do not meet the acceptance criteria in paragraph (b) but do meet the acceptance criteria in paragraph (a) of section 6.5.6.3, sampling for the subsequent test runs may be conducted at three points meeting the requirements of that paragraph (a). Separate stratification testing must be conducted for each fuel tested and at

¹ The number of load levels at which testing is required is determined under § 75.19(c)(1)(iv)(I) and (J).

each tested load level, and all other requirements for fuel-and-unit-specific NO_x emission rate testing under § 75.19 continue to apply.

Conditions of Approval

1. For the purpose of fuel-and-unit-specific NO_x emission rate testing under § 75.19, in order to qualify to sample at a fewer than 12 traverse points at a CT that is required to be tested while operating at a required load level and burning either natural gas or distillate oil:
 - a. Dominion must demonstrate prior to or concurrently with the testing that both the NO_x and O₂ concentrations, determined in accordance with section 6.5.6.1 of appendix A to part 75, meet the acceptance criteria in section 6.5.6.3 of appendix A to part 75 to qualify to use a reduced number of sampling points.
 - b. The stratification testing must be conducted for each load level and each fuel tested.
2. Dominion may use the 12-point run conducted for the stratification testing as the first of the minimum required test runs for each tested load level and fuel.
3. For each test run for which sampling is conducted a fewer than 12 points, Dominion must collect data for a minimum of 21 minutes per run for all sampling points in total (dividing the time equally among the sampling points), consistent with the minimum sampling times required under section 6.5.7 of appendix A to part 75. These minimum sampling times do not include the time required to ensure that the system has obtained stable stack gas readings (i.e., two measurement response times whenever the test probe is inserted at a new sampling port and one measurement response time whenever the test probe is moved to a new sampling point using the same sampling port).
4. Dominion must record, in a form suitable for inspection, the results of all performance testing including any stratification testing that was conducted, and must maintain those records for a minimum of three years from the date of the test in accordance with § 75.57(a).

EPA's determination relies on the accuracy and completeness of the information provided by Dominion in the October 10, 2016 petition and is appealable under 40 CFR part 78.

If you have any questions regarding this determination, please contact Charles Frushour at 202-343-9847. Thank you for your continued cooperation.

Sincerely,

/s/

Richard A. Haeuber, Acting Director
Clean Air Markets Division

cc: Dave Arnold, U.S. EPA, Region 3
Lisa Ehrhart, Virginia DEQ