UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

FEB 13 2018

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Stephen Schell
President
Air Analysis, LLC
189 Hausman Road
Lenhartsville, Pennsylvania 19534

Dear Mr. Schell:

This letter is in response to your alternative test method request to Mr. Daniel VanLenten of the Pensylvania Department of Environmental Protection dated January 23, 2017, and revised via email on February 27, 2017, and September 6, 2017, in which you seek approval to use an alternative test method for determining diluent, oxygen (O_2) and carbon dioxide (CO_2), concentrations while conducting quarterly performance tests for particulate matter (PM) emissions in accordance with §63.10021(d) of 40 CFR part 63, Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (Subpart UUUUU). The Office of Air Quality Planning and Standards, as the delegated authority, must make the determination on any major alternatives to test methods and testing procedures required under 40 CFR parts 59, 60, 61, 63, and 65.

According to Table 5 of Subpart UUUUU, when conducting a performance test for PM, 40 CFR 60, Appendix A, Method 3A or 3B (Method 3A or 3B) or ANSI/ASME PTC 19.10-1981 must be used to determine the O_2 and/or CO_2 concentrations of the stack gas. According to the information contained in your request, you are proposing an alternative test method that combines the sampling methodology contained in Method 3B with the analysis procedure found in Method 3A. A detailed description of this methology is contained in the Appendix to this letter.

After reviewing your proposed alternative test method, we approve the alternative methodology described in the Appendix to this letter for use when determining O_2 and CO_2 concentrations while conducting quarterly performance tests for particulate matter (PM) emissions in accordance with Subpart UUUUU. However, please note that this test method must be performed as described and must not deviate for the methodology described herein.

Since this alternative method could be applicable to similar facilities subject to the quarterly PM testing requirement found in §63.10021(d) of Subpart UUUUU, we will be posting this letter on our website as ALT-123 at *http://www.epa.gov/ttn/emc/approalt.html* so that after the date of this letter, other interested parties may make use of this alternative method. A copy of this approval letter must be included in the reports for quarterly PM testing under Subpart UUUUU where it is used.

If you should have any questions or require further information regarding this approval, please contact Kim Garnett of my staff at 919-541-1158 or email at *garnett.kim@epa.gov*.

Sincerely,

Steffan M. Johnson, Leader
Measurement Technology Group

cc: Sara Ayres, EPA/OECA (Ayres.Sara@epa.gov)
Jim Eddinger, EPA/OAQPS/SPPD (Eddinger.Jim@epa.gov)
Kim Garnett, EPA/OAQPS/AQAD (garnett.kim@epa.gov)
Daniel VanLenten, Pennsylvania DEP (dvanlenten@pa.gov)
Charles Zadakis, Pennsylvania DEP (czadakis@pa.gov)
State and Regional Testing Contacts

Appendix

ALT-123: Alternative Test Method for Diluent Measurement to Support Particulate Matter Testing Under 40 CFR 63, Subpart UUUUU

1.0 Summary

An integrated sample will be extracted from the exhaust stack, at a constant rate, during each test run. The sample is collected utilizing the integrated procedures of Method 3B (40 CFR 60, Appendix A) in a flexible bag, which can be sealed and transported to another location for analysis. Concentrations of O_2 and CO_2 is determined utilizing the procedures of Test Method 3A (40 CFR 60, Appendix A) through the use of calibrated instrumental analyzers.

Note: Since this methodology is used in conjunction with Method 5 (40 CFR 60, Appendix A) sampling programs, a portion of the sampling system makes use of the standard Method 5 sampling system being utilized simultaneously. The sample probe is the orsat line or tubing that is installed on standard Method 5 probes. It consists of ¼" stainless steel tubing and is attached to the exterior of the probe sheath along with the pitot lines. The Method 5 impinger bucket attached to the filter case, is also utilized to hold the Teflon impinger condenser of this proposed method.

2.0 Sampling Procedure

2.1 Sampling Equipment. The sampling equipment used must meet the requirements of Section 6.2 of Method 3.

2.2 Sampling Site and Sampling Points. The sampling site shall be the same as that for Method 5. The number of sampling points is either a minimum of 12, as determined for the Test Method 5 Sampling Program, or a lesser number determined in accordance with Section 8.1 of Method 3A

2.3 Sample Collection. If performing multi-point integrated sampling, follow the sample collection and leak check procedures found in Section 8.3 of Method 3B. If you are using this method to determine stack gas molecular weight and for no other purpose, and single-point integrated sampling is allowed, then you must follow the sample collection and leak check procedures found in Section 8.2 of Method 3B.

Analytical Procedure

3.1 Analytical Equipment. The analytical system includes a sample pump, instrumental diluent analyzer(s), flowmeter and Data Acquisition System (DAS). This equipment must meet the requirements of Section 6.0 of Method 3A. This equipment must be located in a climate controlled environment to ensure proper operation of the instrumentation.

The calibration gas standards must meet the requirements found in Section 7.0 of Method 3A. (Calibration gas standards may not be prepared in accordance with Method 205). A computer-based DAS must be used to collect and download all reference method results. The DAS must be capable of recording averages of one minute or less.

3.2 Initial Measurement System Performance Tests. A calibration error test must be performed on the diluent instrumental analyzer in accordance with Section 8.2.3 of Method 7E (40 CFR 60, Appendix A). The low-, mid-, and high-level calibration gases must be introduced sequentially while the system is in direct calibration mode. The analyzer's response to each calibration gas must be recorded and a calibration error calculated in accordance with Section 12.2 of Method 7E. The calibration error of each calibration gas level must meet the requirements of Section 13.1 of Method 7E to be acceptable. No further adjustments to sampling system can be made following the performance of the calibration error test, except for maintaining the proper flow rate.

Following the calibration error test and prior to field sample analysis, an initial system bias check must be performed by collecting the appropriate calibration gas standard in a leak-free Teflon or Mylar flexible bag and injecting it into the analyzer. The injection of the low- and either mid- or high-calibration gas standards (as selected in accordance with Section 8.2.5 of Method 7E) must be performed in the same manner as will be used for the field samples (see Section 3.4 Analysis Procedure, of this method). The analyzer's response to each calibration gas will be recorded and the system bias will be calculated in accordance with Section 12.3 of Method 7E. The system bias responses must meet the requirements of Section 13.2 of Method 7E to be acceptable.

3.3 Interference Check. Prior to its use in the field, an interference test on the instrumental analyzer will be performed in accordance with Section 8.3 of Method 3A.

3.4 *Analysis Procedure.* Each field sample must be analyzed according to the following procedure within four hours of collection.

Following collection, the flexible bag containing the sample must be attached directly to the inlet port of the sample pump. The pump draws the sample from the flexible bag, transports it through tubing to a flowmeter, and then into the calibrated analyzer at a constant rate. The sample flow rate selected must be identical to the rate at which the analyzer was calibrated, and in accordance with manufacturer specifications. During analysis, an analog or digital signal must be sent from the analyzer to the DAS for collection and conversion, before downloading the data for averaging. Analysis must continue until a minimum of five (5) consecutive, one-minute averages recorded by the DAS have met the following criteria:

%CO_2

- Differ by no more than 0.3% when CO_2 is greater than 4.0%, or
- Differ by no more than 0.2% when CO_2 is less than 4.0%.

%O_2

- Differ by no more than 0.3% when O_2 is less than 15.0%, or
- Differ by no more than 0.2% when O_2 is greater than 15.0%.

If these criteria are met, the five (5) one-minute averages will then be averaged, resulting in a single diluent average for the test run.

3.5 *Post-Run System Bias Check and Drift Assessment.* Following the analysis of the field samples and demonstration of acceptable criteria for determination of the diluent concentrations in the field samples, another calibration error test must be performed in accordance with Section 3.2 of this method. If the analyzer meets the ± 2.0% of the calibration span criteria for each response, the diluent measurements will be acceptable.