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

AUG 2 1 2018

OFFICE OF
AIR AND RADIATION

Mr. Jason Carey
Designated Representative
Plant Manager
Lackawanna Energy Center LLC
1000 Sunnyside Road
Jessup, PA 18434

Re: Petition to use an alternative fuel flowmeter calibration procedure for units 1, 2, and 3 at the Lackawanna Energy Center (facility ID (ORISPL) 60357)

Dear Mr. Carey:

The United States Environmental Protection Agency (EPA) has reviewed the February 9, 2018 petition submitted by Lackawanna Energy Center LLC (LEC) under 40 CFR 75.66(c), together with supporting e-mails from LEC,[1] requesting approval of an alternative calibration procedure for fuel flowmeters that are being or will be used to measure natural gas flow rates at the Lackawanna Energy Center (Lackawanna). EPA approves the petition, with conditions, as discussed below.

Background

LEC owns and operates the Lackawanna facility in Jessup, Pennsylvania. The facility includes three identical natural gas-fired, single-shaft, combined-cycle combustion turbines, designated as units 1, 2, and 3. Each combustion turbine serves its own 555-MW electrical generator as well as a heat recovery steam generator that provides steam to a steam turbine serving the same electrical generator. According to LEC, units 1, 2, and 3 are subject to the Acid Rain Program and the Cross-State Air Pollution Rule. LEC is therefore required to continuously monitor and report sulfur dioxide (SO_2), nitrogen oxides (NO_X), and carbon dioxide (CO_2) emissions and heat input for units 1, 2, and 3 in accordance with 40 CFR part 75.

To meet the SO_2 emissions and heat input monitoring requirements, LEC has elected to use the monitoring methodology in appendix D to part 75. Section 2.1 of appendix D requires continuous monitoring of the fuel flow rate to each affected unit using gas and/or oil fuel flowmeters that meet initial certification requirements set forth in section 2.1.5 and ongoing quality assurance requirements set forth in section 2.1.6.

[1] LEC sent additional supporting information in emails dated February 22, March 5, and March 14, 2018.

Section 2.1.5 specifies three acceptable ways to initially certify a fuel flowmeter: (1) by design (this option is available for orifice, nozzle, and venturi flowmeters only), (2) by measurement under laboratory conditions using an approved method, or (3) by in-line comparison against a reference meter that either meets the design criteria in (1) above or that within the previous 365 days has met the accuracy requirements of appendix D by measurement using an approved method under (2) above. Certain approved measurement methods are listed in section 2.1.5.1. However, the section provides that unlisted methods using equipment traceable to National Institute of Standards and Technology (NIST) standards may also be used, subject to EPA approval pursuant to a petition submitted under 40 CFR 75.66(c). Section 2.1.6 generally allows ongoing quality assurance tests to be carried out using the same methods as section 2.1.5.

Units 1, 2, and 3 each have or will have a Coriolis fuel flowmeter manufactured by Emerson Process Management – Micro Motion, Inc. (Emerson MMI) to measure natural gas usage. The flowmeters are model Elite – CMFHC2M fuel flowmeters (serial numbers 12144777, 12135337, and 12137540). Each individual flowmeter must meet the initial certification requirements set forth in section 2.1.5 of appendix D and the ongoing quality assurance requirements set forth in section 2.1.6.

Emerson MMI has developed a calibration procedure it calls the Transfer Standard Method (TSM). According to Emerson MMI, the TSM uses equipment that is traceable to NIST standards. According to the LEC petition, the flowmeters have already been tested for initial certification using the TSM and will be calibrated for ongoing quality assurance purposes using the same method.

The Coriolis flowmeters are not orifice, nozzle, or venturi flowmeters and therefore do not qualify for certification based on their design. Further, the TSM is not listed in section 2.1.5.1 of appendix D as an approved method. However, EPA has previously evaluated and approved the use of the TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at other facilities. In view of these circumstances, LEC submitted a petition to EPA under § 75.66(c) requesting approval of the use of the TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at the Lackawanna facility. LEC requests approval to use the TSM process not only for the flowmeters identified by serial number above but also for additional like-kind Coriolis fuel flowmeters that LEC expects to use at the facility in the future.

EPA's Determination

EPA has reviewed the information provided by LEC in the February 9, 2018 petition and subsequent e-mails describing the alternative calibration procedure that LEC requests approval to use to verify the accuracy of the gas fuel flowmeters installed and to be installed at the Lackawanna facility.

EPA approves use of the Emerson MMI TSM calibration procedure for initial certification of LEC's fuel flowmeters (Serial Numbers 12144777, 12135337, and 12137540) installed or to be installed on Lackawanna units 1, 2, and 3. The basis for this approval is as follows:

1. The alternative calibration methodology used equipment traceable to NIST standards. In Emerson MMI's TSM, the candidate fuel flowmeters to be tested for accuracy are calibrated against reference meters that were calibrated against a "Global Reference Meter" which, in turn, was calibrated using Micro Motion's "Primary Flow Stand." The Primary Flow Stand is an ISO 17025-accredited calibration system that uses equipment traceable to NIST standards. Thus, the reference meters used to test LEC's flowmeters had fully traceable calibrations through an accredited path back to NIST standards.

2. The calibration procedure followed for initial certification of LEC's three flowmeters met the requirements of section 2.1.5.2(a) of appendix D to part 75 for in-line testing of candidate flowmeters by comparison against reference flowmeters. Specifically:

   a. The reference flowmeters and secondary elements (i.e. temperature transmitters and pressure transducers) used to test LEC's flowmeters had been calibrated within 365 days prior to the comparison testing;

   b. The comparison testing was performed in a laboratory over a period of less than seven operating days; and

   c. For each flowmeter, three test runs were conducted at each of three flow rate levels with each test run lasting 20 minutes in duration.

3. At each tested flow rate level, each fuel flowmeter demonstrated accuracy better than the accuracy requirement specified in section 2.1.5 of appendix D – 2.0 percent of the flowmeter's upper range value (URV). The test results are summarized in Table 1 below.

Table 1 – Average three-run fuel flowmeter accuracy results

Flow rate level	Accuracy (% of URV)		
	Serial No. 12144777	Serial No. 12135337	Serial No. 12137540
Low (12.5% of URV)	0.087%	0.012%[a]	0.063%
Mid (50% of URV)	0.065%	0.027%	0.035%
High (100% of URV)	0.024%	0.030%	0.013%

[a] Note that this accuracy is based on 10% of the URV and not 12.5% of the URV.

EPA also approves the use of the TSM calibration procedure to meet the applicable on-going quality assurance requirements for the Lackawanna unit 1, 2, and 3 fuel flowmeters under section 2.1.6 of appendix D, subject to the following conditions:

1. The application of the TSM for each future accuracy test must meet the requirements of section 2.1.5.2(a) listed above as part of the basis for EPA's approval of use of the TSM for the initial certification of the fuel flowmeters; and

2. The three flow rate levels tested in each future accuracy test must correspond to: (1) normal full unit operating load, (2) normal minimum unit operating load, and (3) a load point approximately equally spaced between the full and minimum unit operating loads.

EPA further approves the use of the TSM calibration procedure to meet the applicable initial certification and on-going quality assurance requirements for like-kind Coriolis fuel flowmeters used in the future at LEC's Lackawanna facility subject to the satisfaction, for each such like-kind fuel flowmeter, of all approval conditions set forth in paragraphs (1) and (2) of this approval for the fuel flowmeters identified by serial number above.

EPA's determination relies on the accuracy and completeness of the information provided by LEC and is appealable under 40 CFR part 78. If you have any questions regarding this determination, please contact Charles Frushour at (202) 343-9847 or by e-mail at frushour.charles@epa.gov. Thank you for your continued cooperation.

Sincerely,

Reid P. Harvey, Director
Clean Air Markets Division

cc: Charles Frushour, CAMD
Paul Arnold, EPA Region III
Chuck Zadakis, Pennsylvania Department of Environmental Protection (PA DEP)