



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

OFFICE OF
AIR AND RADIATION

MAY 09 2019

Mr. James R. Ryan
Designated Representative
Birdsboro Power, LLC
1 Armorcast Road
Birdsboro, PA 19508

Re: Petition to use an alternative fuel flowmeter calibration procedure for unit 01 at the Birdsboro Power Project (facility ID (ORISPL) 61035)

Dear Mr. Ryan:

The United States Environmental Protection Agency (EPA) has reviewed the May 22, 2018 petition and subsequent email dated October 15, 2018 submitted by Birdsboro Power, LLC (Birdsboro Power) under 40 CFR 75.66(c) requesting approval of an alternative calibration procedure for fuel flowmeters that are being or may be used to measure natural gas flow rates at unit 01 at the Birdsboro Power Project. EPA approves the petition, with conditions, as discussed below.

Background

Birdsboro Power owns and operates the Birdsboro Power Project in Birdsboro, Pennsylvania. Birdsboro Power Project unit 01 is a natural gas-fired combined cycle combustion turbine serving an electricity generator with a nameplate capacity of 525 megawatts. According to Birdsboro Power, unit 01 is subject to the Acid Rain Program and the Cross-State Air Pollution Rule. Birdsboro Power is therefore required to continuously monitor and report sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon dioxide (CO₂) emissions and heat input for the units in accordance with 40 CFR part 75.

To meet the SO₂ emissions and heat input monitoring requirements, Birdsboro Power 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.

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 § 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.

Birdsboro Power Project unit 01 is equipped with a Coriolis fuel flowmeter manufactured by Emerson Process Management – Micro Motion, Inc. (Emerson MMI) to measure natural gas fuel flow. The device is a model CMFHC2M811N2BAE fuel flowmeter (serial number 12148685). Birdsboro Power also anticipates the possibility of using additional like-kind fuel flowmeters at unit 01 in the future. 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 Birdsboro Power petition, the flowmeter has already been tested for initial certification using the TSM and will be calibrated for ongoing quality assurance purposes using the same method.

The Coriolis flowmeter is not an orifice, nozzle, or venturi flowmeter and therefore does not qualify for certification based on its 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, Birdsboro Power 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 Birdsboro Power Project. Birdsboro Power requests approval to use the TSM process not only for the flowmeter identified by the serial number above but also for additional like-kind Coriolis fuel flowmeters that Birdsboro Power may use at the facility in the future.

EPA's Determination

EPA has reviewed the information provided by Birdsboro Power in the May 22, 2018 petition and subsequent email. The petition describes the alternative calibration procedure that Birdsboro Power requests approval to use to verify the accuracy of the natural gas fuel flowmeter installed at unit 01 and any other like-kind Coriolis fuel flowmeters to be installed at the Birdsboro Power Project.

EPA approves use of the Emerson MMI TSM calibration procedure for initial certification of the fuel flowmeter (serial number 12148685) installed on Birdsboro Power Project unit 01. The basis for this approval is as follows:

- A1. The alternative calibration methodology used equipment traceable to NIST standards. In Emerson MMI's TSM, the candidate fuel flowmeter to be tested for accuracy is calibrated against a reference meter that was 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 meter used to test Birdsboro Power's flowmeter had fully traceable calibrations through an accredited path back to NIST standards.

A2. The calibration procedure followed for initial certification of Birdsboro Power's flowmeter met the requirements of section 2.1.5.2(a) of appendix D to part 75 for in-line testing of candidate flowmeter by comparison against a reference flowmeter. Specifically:

- a. The reference flowmeter and secondary elements (i.e. temperature transmitters and pressure transducers) used to test Birdsboro Power's flowmeter 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 the candidate flowmeter, three test runs were conducted at each of three flow rate levels with each test run lasting 20 minutes in duration.

A3. At each tested flow rate level, the 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	Flowmeter s/n 12148685 Accuracy (% of URV)
Low – 12.5% of URV	0.029%
Mid – 50% of URV	0.065%
High – 100% of URV	0.096%

EPA also approves the use of the TSM calibration procedure to meet the applicable on-going quality assurance requirements for unit 01 fuel flowmeter under section 2.1.6 of appendix D, subject to the following conditions:

- B1. The application of the TSM for each future accuracy test must meet the requirements of section 2.1.5.2(a) of appendix D as part of the basis for EPA's approval of use of the TSM for the initial certification of the fuel flowmeter; and
- B2. 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 the Birdsboro Power Project subject to the satisfaction, for each such like-kind fuel flowmeter, of all approval conditions set forth in paragraphs (A1), (A2), (A3), (B1) and (B2) of this approval for the fuel flowmeter identified by serial number above.

EPA's determination relies on the accuracy and completeness of the information provided by Birdsboro Power 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,

A handwritten signature in dark ink, appearing to read "Reid P. Harvey", written in a cursive style.

Reid P. Harvey, Director
Clean Air Markets Division

cc: Charles Frushour, CAMD
Paul Arnold, EPA Region 3
Charles Zadakis, Pennsylvania Department of Environmental Protection (PADEP)