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

OFFICE OF AIR AND RADIATION

JULY 16, 2020

Mr. Martin Hayes
Plant Manager
PSEG Fossil, LLC
751 Cliff Road
Sewaren, New Jersey 07077

Re: Petition to use an alternative fuel flowmeter calibration procedure for unit 7 at the Sewaren Generating Station (facility ID (ORISPL) 2411)

Dear Mr. Martin Hayes,

The United States Environmental Protection Agency (EPA) has reviewed the May 11, 2018 and June 18, 2019 petitions submitted by PSEG Fossil, LLC (PSEG) under 40 CFR 75.66(c) requesting approval of an alternative calibration procedure for initial certification, ongoing quality assurance, and recertification of fuel flowmeters that are being or may be used to measure fuel flow rates at unit 7 at the Sewaren Generating Station. EPA approves this petition, with conditions, as discussed below.

Background

PSEG owns and operates the Sewaren Generating Station (Sewaren) in Middlesex County, New Jersey. Sewaren unit 7 is a combined cycle combustion turbine serving an electricity generator with a reported nameplate capacity of 430 MW as well as a heat recovery steam generator and a steam turbine serving an electricity generator with a reported nameplate capacity of 287 MW. The unit combusts pipeline natural gas as a primary fuel and ultra-low sulfur diesel oil as a secondary fuel. According to PSEG, unit 7 is subject to the Acid Rain Program and the Cross-State Air Pollution Rule. PSEG is therefore required to continuously monitor and report sulfur dioxide (SO_2), nitrogen oxides (NO_X), and carbon dioxide (CO_2) mass emissions, NO_X emission rate, and heat input for the unit in accordance with 40 CFR part 75.

To meet the SO_2 mass emissions and heat input monitoring requirements, PSEG 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 methods to 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.

Sewaren unit 7 is equipped with Coriolis fuel flowmeters manufactured by Emerson Micro Motion, Inc. (Emerson MMI) to measure the flow of natural gas (model CMFHC2M811N2BAEZZX, serial number 12135067) and diesel oil (model F300H999CCAAEZZZX, serial number 14525198). PSEG also anticipates the possibility of using additional like-kind fuel flowmeters at unit 7 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 PSEG petition, each flowmeter identified above has been tested for initial certification using the Emerson MMI TSM and will be calibrated for ongoing quality assurance purposes using the same method.

Coriolis flowmeters are not orifice, nozzle, or venturi flowmeters and therefore do not qualify for certification based on their design. Further, the Emerson MMI 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 Emerson MMI TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at other facilities. In view of these circumstances, PSEG submitted a petition to EPA under § 75.66(c) requesting approval of the use of the Emerson MMI TSM as an alternative certification and quality assurance testing method for Coriolis flowmeters at Sewaren. PSEG requests approval to use the Emerson MMI TSM process not only for the flowmeters identified by the serial numbers above but also for additional like-kind Coriolis fuel flowmeters that PSEG may use at the facility in the future.

EPA's Determination

EPA reviewed the information provided by PSEG in the May 11, 2018 and June 18, 2019 petitions. The petitions describe the alternative calibration procedure that PSEG requests approval to use to verify the accuracy of the natural gas and diesel oil fuel flowmeters installed at unit 7 and any other like-kind Coriolis fuel flowmeters to be installed at Sewaren.

EPA approves use of the Emerson MMI TSM calibration procedure for initial certification of the fuel flowmeters (serial numbers 12135067 and 14525198) installed on Sewaren unit 7. 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 meters used to test Sewaren's flowmeters had fully traceable calibrations through an accredited path back to NIST standards.[1]

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

a. The reference flowmeters and secondary elements (i.e., temperature transmitters and pressure transducers) used to test Sewaren'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 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 flowmeters 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 and Table 2 below.

Table 1 – Average three-run natural gas fuel flowmeter accuracy results

Flow rate level	**Flowmeter s/n 12135067 Accuracy (% of URV)**
Low – Normal minimum unit operating load flow rate	0.03%
Mid – Flow rate equally spaced between minimum and full operating load	0.03%
High – Normal full unit operating load flow rate	0.00%

Table 2 – Average three-run diesel oil fuel flowmeter accuracy results

Flow rate level	**Flowmeter s/n 14525198 Accuracy (% of URV)**
Low – Normal minimum unit operating load flow rate	0.002%
Mid – Flow rate equally spaced between minimum and full operating load	0.000%
High – Normal full unit operating load flow rate	0.008%

[1] The Primary Flow Stand calibration system is equipment that has been accredited by NVLAP according to ISO/IEC 17025.

EPA also approves the use of the Emerson MMI TSM calibration procedure to meet the applicable ongoing quality assurance requirements for the fuel flowmeters installed on Sewaren unit 7 under section 2.1.6 of appendix D, subject to the following conditions:

B1. The application of the Emerson MMI 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 flowmeters; 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 Emerson MMI TSM calibration procedure to meet the applicable initial certification and ongoing quality assurance requirements for like-kind Coriolis fuel flowmeters used in the future at Sewaren 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 flowmeters identified by serial numbers above.

EPA's determination relies on the accuracy and completeness of the information provided by PSEG and is appealable under 40 CFR part 78. If you have any questions regarding this determination, please contact Ron Sobocinski at (202) 343-9722 or by e-mail at sobocinski.ron@epa.gov. Thank you for your continued cooperation.

Sincerely,

Reid P. Harvey

Reid P. Harvey
Director
Clean Air Markets Division

cc: Ron Sobocinski, CAMD
Jenny Jachim, CAMD
Richard Ruvo, EPA Region 2
Michael A. Klein, New Jersey DEP