

September 15, 2016

Mr. Monte Gottier
Designated Representative
Lower Colorado River Authority
Manager Power Plant-Gas
Thomas C. Ferguson Power Plant
2001 Ferguson Rd.
Horseshoe Bay, TX 78657-7041

Re: Petition to use an alternative fuel flowmeter calibration procedure for additional fuel flowmeters at Units CT-1 and CT-2 at the T.C. Ferguson Power Plant (Facility ID (ORISPL) 4937)

Dear Mr. Gottier:

The United States Environmental Protection Agency (EPA) has reviewed the November 12, 2014 petition and subsequent updated petition dated February 5, 2016 submitted by the Lower Colorado River Authority (LCRA) under 40 CFR 75.66(c) requesting approval of an alternative calibration procedure for additional fuel flowmeters that will be used to measure natural gas flow rates at the T.C. Ferguson Power Plant (Ferguson). EPA previously approved the use of the same alternative calibration procedure for the initial two fuel flowmeters used at Ferguson in a letter dated March 27, 2014. EPA approves the petition to use the alternative calibration procedure for additional fuel flowmeters used at Ferguson, with conditions, as discussed below.

Background

LCRA owns and operates two natural gas-fired combustion turbines (Units CT-1 and CT-2) at Ferguson, which is located in Llano County, Texas. Units CT-1 and CT-2 each serve generators with total capacity of 270 MW in combined cycle configuration (including the units' respective shares of the capacity of the steam turbine generator). The units are subject to the Acid Rain Program and Cross-State Air Pollution Rule annual trading program for sulfur dioxide (SO₂) and annual and ozone-season trading programs for nitrogen oxides (NO_x). LCRA therefore is required to continuously monitor and report SO₂, NO_x, and carbon dioxide (CO₂) emissions and heat input for Units CT-1 and CT-2 in accordance with 40 CFR part 75.

To meet the SO₂ emissions and heat input monitoring requirements, LCRA has elected to use the monitoring methodology in appendix D to part 75. Appendix D, § 2.1 requires continuous monitoring of the fuel flow rate to each affected unit using a gas flowmeter that

meets initial certification requirements set forth in § 2.1.5 and ongoing quality assurance requirements set forth in § 2.1.6.

Appendix D, § 2.1.5 specifies three acceptable methods to initially certify a fuel flowmeter: (1) by design (this option is available for orifice, nozzle, and venturi-type 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 appendix D, § 2.1.5.1. However, the section provides that unlisted methods using equipment traceable to National Institutes 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). Appendix D, § 2.1.6 generally allows ongoing quality assurance tests to be carried out using the same methods as § 2.1.5.

Like the two Coriolis flowmeters at Ferguson addressed in EPA's response to Ferguson's earlier petition, the spare Coriolis flowmeter that will be used to measure natural gas flow rates at Ferguson Units CT-1 and CT-2 was manufactured by Emerson Process Management-Micro Motion, Inc. (Emerson MMI). 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 LCRA petition, the spare 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 spare Coriolis flowmeter is not an orifice, nozzle, or venturi-type flowmeter and therefore does not qualify to be certified based on its design. Further, the TSM is not listed in appendix D, § 2.1.5.1 as an approved method. In view of these circumstances, LCRA submitted a petition to EPA under § 75.66(c) requesting approval of the TSM as an alternative certification and quality assurance testing method.

EPA's Determination

EPA has reviewed the information provided by LCRA in the November 12, 2014 petition and subsequent updated petition dated February 5, 2016 describing the alternative calibration procedure that LCRA requests approval to use to verify the accuracy of the spare gas flowmeter to be used at Ferguson Units CT-1 and CT-2.

1. The Agency approves use of the Emerson MMI TSM calibration procedure for initial certification of the spare fuel flowmeter (Serial Number 12106648). The basis for this approval is as follows:
 - a. The alternative calibration methodology uses equipment traceable to NIST standards. In Emerson MMI's TSM,¹ the candidate fuel flowmeter to be tested for accuracy is calibrated against a reference meter that has been calibrated against a

¹ See Emerson MMI Control Procedure 79 (CP 79).

“Global Reference Meter” which, in turn, has been 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 LCRA’s spare flowmeter has fully-traceable calibrations through an accredited path back to NIST standards as per the requirements of part 75, appendix D, § 2.1.5.1.

- b. The calibration procedure followed for initial certification of LCRA’s spare flowmeter met the requirements of part 75, appendix D, § 2.1.5.2(a) for in-line testing of a candidate flowmeter by comparison against a reference flowmeter. Specifically:
- The reference flowmeter used to test LCRA’s spare flowmeter had been calibrated within 365 days prior to the comparison testing;
 - The comparison testing was performed in a laboratory over a period of less than seven operating days;
 - For the spare flowmeter, three test runs were conducted at each of five flow rate levels – more than the required minimum of three flow rate levels – with each test run lasting more than 20 minutes in duration; and
 - The pressure and temperature transmitters were calibrated prior to the comparison. The pressure transmitters were calibrated on-site using an ISO 17025 accredited calibration service. The temperature calibrations were performed by the ISO 17025-accredited original supplier using a secondary reference provided by LCRA.
- c. At each tested flow rate level, the spare fuel flowmeter demonstrated accuracy better than the accuracy requirement specified in § 2.1.5 of appendix D, which is 2.0 percent of the flowmeter’s Upper Range Value (URV). The test results are summarized in Table 1 below.

Table 1 – Average Fuel Flowmeter Accuracy Results

Flow Rate Level	Accuracy (% of Upper Range Value)
	Serial No. 12106648
Low (21% of Unit Load)	0.000%
Mid (42% of Unit Load)	0.001%
Mid (63% of Unit Load)	0.001%
High (83% of Unit Load)	0.002%
High (125% of Unit Load)	0.004%

2. EPA also approves the use of the TSM calibration procedure to meet the applicable on-going quality assurance requirements for the Ferguson spare fuel flowmeter under § 2.1.6 of appendix D, subject to the following conditions:
 - The application of the TSM for each future accuracy test must meet the requirements of part 75, appendix D, § 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 spare fuel flowmeter; and
 - Each future accuracy test must include at least three tested flow rate levels, and three of the tested levels 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.

3. EPA further approves the use of the TSM calibration procedure to meet the applicable initial certification and on-going quality assurance requirements for any Coriolis mass fuel flowmeter (or any other fuel flowmeter that measures on a mass basis) used in the future at the Ferguson facility subject to the satisfaction, for each such Coriolis or like-kind fuel flowmeter, of all approval conditions set forth in paragraphs (1) and (2), respectively, of this approval for the spare fuel flowmeter identified by serial number above.

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

/s/

Reid P. Harvey, Director
Clean Air Markets Division

cc: Ron Sobocinski, CAMD
Travis Johnson, CAMD
Raymond Magyar, EPA Region VI
Sandy Simko, Texas TCEQ