

September 19, 2005

Robert E. McGarrah  
Designated Representative  
City of Tallahassee  
2602 Jackson Bluff Road  
Tallahassee, FL 32304

Re: Petition to Use an Alternative Oil Flowmeter Accuracy Test Method for Units HC3 and HC4 at the Avrah B. Hopkins Generating Station (Facility ID (ORISPL) 688)

Dear Mr. McGarrah:

This is in response to your June 23, 2005 letter in which the City of Tallahassee requested to use an alternative procedure to certify two oil flowmeters at the Avrah B. Hopkins Generating Station. EPA approves the petition, for the reasons discussed below.

#### Background

The City of Tallahassee is currently installing two General Electric Model LM6000 simple cycle combustion turbines, Units HC3 and HC4, at the Avrah B. Hopkins Generating Station (Hopkins), located in Leon County, Florida. The units will combust both natural gas and distillate oil and are subject to the Acid Rain Program. Therefore, the City of Tallahassee is required to continuously monitor and report sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon dioxide (CO<sub>2</sub>) emissions and heat input for Units HC3 and HC4, in accordance with 40 CFR Part 75.

In lieu of using continuous SO<sub>2</sub> and stack flow monitors to determine the hourly SO<sub>2</sub> mass emissions and heat input for these units, the City of Tallahassee will use the procedures in Appendix D of Part 75. Section 2.1 of Appendix D requires hourly measurement of the fuel flow rate, using a certified fuel flowmeter. Section 2.1.5.1 of Appendix D lists the acceptable certification methods for various types of fuel flowmeters. However, for the accuracy tests of the two oil flowmeters that will be installed on units HC3 and HC4, the City of Tallahassee used a primary standard liquid calibration system manufactured by Flow Technology Incorporated (FTI), which is not among the methods listed in Section 2.1.5.1.

Appendix D allows the owner or operator to petition EPA under §75.66(c) to use a fuel flowmeter calibration method other than those in Section 2.1.5.1, provided that the alternative calibration procedure uses equipment that is traceable to National Institute of Standards and

Technology (NIST) standards. Therefore, in the June 23, 2005 petition, the City of Tallahassee requested to use the FTI calibration methodology to satisfy the Part 75 certification requirements for the oil flow meters installed on Hopkins Units HC3 and HC4.

#### EPA's Determination

EPA reviewed the protocol that was used by FTI to calibrate the oil flowmeters installed on Hopkins Units HC3 and HC4. The Agency finds the protocol to be well-conceived, commencing with an inspection of the flowmeter and accompanying paperwork to verify that the paperwork matches the meter being calibrated. The protocol also provides detailed procedures for: (1) installing the flowmeter in the test section; (2) verifying that the flowmeter and its electronics are communicating appropriately; (3) performing pre-flow checks of the data acquisition system; (4) performing the actual calibrations; (5) processing the data; and (6) reviewing the test results.

FTI uses a primary standard, positive displacement calibrator to establish the accuracy of an oil flowmeter. The calibrator is a closed-loop laboratory grade device that has direct traceability to NIST standards. The displacement of a piston forces a calibration fluid of known kinematic viscosity (which is controlled to simulate the customer's operating conditions) through a precisely honed, chrome\_plated stainless steel cylinder of known cross-sectional area and into the flowmeter being calibrated.

A precise optical technique is used to measure the piston displacement. As the piston moves downstream through the cylinder, a photoelectric sensor, which is attached to the shaft, passes by an etched glass rule. The photoelectric sensor produces an electrical pulse each time an etched line interrupts the light beam impinging on it. The frequency of the pulses (i.e., pulses per second) is measured, from which the piston velocity and the volumetric flow rate of the calibration fluid are calculated. This "reference" calibration fluid flow rate is then compared against the flow rate measured by the flowmeter being calibrated, and the accuracy of the meter is determined. A mathematical analysis from FTI, showing that the uncertainty of the reference volumetric flow rate measurements made with these calibrators is approximately  $\pm 0.05\%$ , was provided to EPA by the City of Tallahassee.

In view of these considerations, EPA approves the City of Tallahassee's petition to use the FTI calibration procedures for the oil flowmeters that will be installed on Units HC3 and HC4 at the Hopkins Generating Station. Each oil flowmeter that is calibrated according to these procedures and that meets the 2.0% accuracy specification of Appendix D, section 2.1.5 may be used for Part 75 reporting purposes.

Hopkins Units HC3 and HC4 will each use one FT Series turbine-type oil flowmeter that has been calibrated according to the FTI procedures. On June 23, 2005 the City of Tallahassee provided EPA with the serial numbers of these two flowmeters, along with a history of each meter's calibration dates and the unit at which the each meter is to be installed. In addition, on June 27, 2005 FTI provided data demonstrating that the accuracy of each of the flowmeters is within 0.6% of the upper range value (URV) over the entire operating range of the meter. Therefore, these two FT Series flowmeters, with serial numbers 2004074 and 2004084, meet the

2.0% accuracy requirements of Part 75, Appendix D, section 2.1.5, and are approved for use at Hopkins Units HC3 and HC4.

EPA's determination relies on the accuracy and completeness of the information provided in City of Tallahassee's June 23, 2005 petition, and in the supporting data and information provided by the City of Tallahassee and FTI. This determination is appealable under Part 78. If you have any questions regarding this correspondence, please contact Manuel J. Oliva at (202) 343-9009. Thank you for your continued cooperation.

Sincerely,

/s/

Sam Napolitano, Director  
Clean Air Markets Division

cc: David McNeal, Region, EPA Region IV  
Errin Pichard, Emissions Monitoring Section, Florida DEP  
Manuel J. Oliva, EPA CAMD