September 8, 2014

Mr. Douglas J. Fulle
Alternate Designated Representative
Oglethorpe Power Corporation
2100 East Exchange Place
Tucker, GA 30084-5336

Re: Petition for Acceptance of Reported Fuel Flow Rate Data for Units MAG1 and MAG2 at the Hartwell Energy Facility (Facility ID (ORISPL) 70454).

Dear Mr. Fulle:

The United States Environmental Protection Agency (EPA) has reviewed the October 25, 2013 petition submitted under 40 CFR 75.66 by the Oglethorpe Power Corporation (Oglethorpe) and the additional information provided by Oglethorpe on November 12 and 26, 2013. In the petition, Oglethorpe requests EPA acceptance without adjustment of certain fuel flow rate data reported for Units MAG1 and MAG2 at the Hartwell Energy Facility for the period from October 2009 to September 2013. EPA approves the petition, for the reasons presented below.

Background

Oglethorpe owns and operates the Hartwell Energy Facility (Hartwell), which is located in Hart County, Georgia. Hartwell Units MAG1 and MAG2 are 183-megawatt simple-cycle combustion turbines that are permitted to combust pipeline natural gas (PNG) and diesel oil. According to Oglethorpe, Units MAG1 and MAG2 are subject to the Acid Rain Program and the Clean Air Interstate Rule annual emission trading programs for nitrogen oxides (NO_X) and sulfur dioxide (SO_2). Oglethorpe is therefore required to continuously monitor and report SO_2, NO_X, and carbon dioxide (CO_2) mass emissions, NO_X emission rate, and heat input rate for these units, all in accordance with 40 CFR Part 75.

To meet the Part 75 monitoring requirements for Units MAG1 and MAG2, Oglethorpe relies in part on the optional methodology in Appendix D for gas-fired and oil-fired units. Under this methodology, Oglethorpe determines the units' heat input rate data based in part on measurements of PNG and oil volumetric consumption rates obtained from certified PNG and oil fuel flow meters.[1] Fuel volumetric consumption rate data from the fuel flow meters are also used, indirectly in conjunction with other measurements or default values, to compute the units' reported SO_2, NO_X, and CO_2 mass emissions.

[1] See, e.g., Equation F-20, Appendix F to Part 75 (computation of hourly heat input rate from gaseous fuel, based in part on the metered flow rate of gaseous fuel).

The hourly flow rate of PNG to each Hartwell unit is measured with an orifice meter that conforms to the applicable specifications of American Gas Association Report No. 3. The required ongoing quality-assurance requirements for this type of meter are specified in section 2.1.6 of Part 75, Appendix D. These requirements include annual calibrations of the differential pressure, static pressure, and temperature transmitters, as described in section 2.1.6.1, and visual inspections of the orifice plates once every three years, as described in section 2.1.6.4.

According to Oglethorpe, during a recent CEMS program review it was discovered that although the required pressure transmitter calibrations and visual inspections of the PNG flow meters have been performed on schedule, the required temperature transmitter calibrations were not performed over the time period from October 2009 (when Oglethorpe purchased the Hartwell facility) to September 2013 (when temperature transmitter calibrations were initiated following discovery of the omission). Notwithstanding the missed temperature transmitter calibrations, Oglethorpe believes for a variety of reasons that the reported PNG flow data were accurate. In view of this, Oglethorpe submitted a petition to EPA on October 25, 2013, requesting that the PNG flow rate data reported for MAG1 and MAG2 for the period from October 2009 to September 2013 be accepted without adjustment despite the missed temperature transmitter calibrations. In the petition, Oglethorpe presented the following reasons for believing that the reported PNG flow rates for the period in question are accurate and should be accepted without adjustment:

- PNG is delivered to each fuel flow meter via underground piping. Oglethorpe asserts that because the underground piping is naturally insulated, the PNG is less susceptible to ambient temperature swings than would be the case for gas delivered from above-ground pipelines or storage tanks. Thus, while ambient temperatures at the facility typically vary from 32 °F to 100 °F, the PNG temperature at the orifice meters will vary only from about 60 °F to 90 °F. According to Oglethorpe, even if the PNG temperature readings were off by as much as 5 °F, which Oglethorpe considers unlikely, the error introduced in the flow rate measurements would be only about 0.5%.

- According to Oglethorpe, each orifice meter has a unique temperature quality assurance / quality control (QA/QC) check inherent to the meter. Each fuel flow meter has three temperature sensors (thermocouples) whose readings are averaged together to provide one temperature reading for the meter. In the event that a thermocouple is suspect, a diagnostic alarm will alert the operator. If one of the sensors fails, a failure alarm for that thermocouple is activated and the data from the remaining two properly functioning sensors are averaged until the failed sensor is replaced. The facility's records indicate that none of the temperature sensors has ever failed. Therefore Oglethorpe believes that the sensors have been functioning properly and have produced accurate temperature data for the fuel flow rate calculations.

- Oglethorpe created graphs showing the relationship of metered PNG fuel flow rate to unit load for Units MAG1 and MAG2 over the period from 2003 to 2012. Data from the most recent three years (2010-2012) were compared to data from two earlier multi-year periods (2003-2006 and 2007-2009) to show that the relationship between the metered PNG fuel flow rate and unit load has been stable throughout the entire ten-year period.

- Because the annual SO_2 and NO_X mass emissions from Units MAG1 and MAG2 are low (i.e., 20 to 30 tons per year of NO_X and 0.3 tons per year of SO_2, on average), Oglethorpe believes that minor corrections to the fuel flow rates to compensate for possible errors in temperature measurement would likely have little effect on the emissions totals (i.e., less than one ton per year).

- On September 17 and 18, 2013, Hartwell personnel performed calibrations of the temperature transmitters on the orifice meters for Units MAG1 and MAG2 using an available calibrator that had an expired certification traceable to the National Institute of Standards and Technology (NIST). The results of the calibration checks showed percentage differences from the calibrator ranging from 0.1% to 0.3% at the low, mid and high calibration points. Following these tests, the calibrator was sent out to be recalibrated and the "as found" results indicated that its NIST-traceable calibration was still intact for the temperature range from 492 °R to 672 °R. When the calibrator was returned to the facility, the temperature transmitter calibrations were repeated. The results of these calibrations were nearly identical to the previous ones, with percentage differences ranging from 0.1% to 0.4%.

On November 12 and 26, 2013, at EPA's request, Oglethorpe provided monthly records of the PNG quantities supplied to Units MAG1 and MAG2 according to the PNG supplier's billing meters for the period from October 2009 to September 2013. Oglethorpe compared these data to the monthly PNG consumption quantities measured by the orifice meters installed on Units MAG1 and MAG2. According to Oglethorpe, the two sets of fuel usage data agree to within 0.13%, on average, supporting its claim that the orifice meters reported accurate data across the period.

In the October 25, 2013 petition, Oglethorpe also described efforts to revise its internal procedures to prevent any similar QA/QC failures in the future.

EPA's Determination

EPA approves Oglethorpe's petition for the Agency to accept without adjustment the PNG flow rate data reported for Hartwell Units MAG1 and MAG2 for the time period from October 2009 to September 2013. The basis for this approval is two-fold:

1) The calibrations of the temperature transmitters performed in 2013 using NIST-traceable equipment showed that the transmitters met the 1.0% accuracy requirement of Part 75, Appendix D; and

2) EPA compared monthly gas billing records from the PNG supplier to data from the Hartwell orifice meters for the 36 months between October 2009 and September 2013 in which the units combusted PNG. The results of this comparison showed that for 34 of the 36 months, the PNG consumption quantity measured by the orifice meters was equal to or higher than the quantity measured by the billing meters, by

an average of 5.36% (see the attachment to this petition response).[2] For the two months in which the PNG consumption quantity measured by the orifice meters was less than the quantity measured by the billing meters, the average percentage difference was 5.05%. EPA therefore concludes that the reported PNG flow rates for the time period in question are, overall, conservatively high and did not result in mass emissions being under-reported.

EPA's determination relies on the accuracy and completeness of Oglethorpe's October 25, 2013 petition and the supplementary information provided on November 12 and 26, 2013, and is appealable under 40 CFR Part 78. If you have any questions regarding this determination, please contact Carlos R. Martínez at (202) 343-9747 or by e-mail at martinez.carlos@epa.gov. Thank you for your continued cooperation.

Sincerely,

/s/
Reid P. Harvey, Director
Clean Air Markets Division

Enclosure

cc: David McNeal, EPA Region IV
DeAnna Oser, Georgia EPD
Carlos R. Martínez, CAMD

[2] Note that in calculating the average percentage difference, one clear outlier (April 2011) was not included. For that month, the PNG usage was minimal. When two small numbers are compared, a small absolute difference can appear as a large percentage difference.