

December 3, 2009

Ms. Patricia West
Designated Representative
Progress Energy Florida, Inc.
P.O. Box 14042
St. Petersburg, FL 33733-14042

Re: Petition for Approval of Alternative Calculation of Liquid Fuel Heat Content for Units 1 and 2 at the Anclote Generating Station, (Facility ID (ORISPL) 8048)

Dear Ms. West:

The United States Environmental Protection Agency (EPA) has reviewed the September 3, 2009, petition submitted under §75.66(a) by Progress Energy Florida, Inc (PEF), in which PEF requested approval to use an alternative method for sampling liquid fuel at the Anclote Generating Station (Anclote). EPA approves the petition, in part, with conditions, as discussed below.

Background

PEF owns and operates two tangentially fired boilers, Units 1 and 2, at its Anclote Generating Station. Units 1 and 2 combust pipeline natural gas and number 6 (No. 6) residual oil and serve a generator having a nameplate capacity of 556.2 MW. According to PEF, the units are subject to the Acid Rain Program and to the Clean Air Interstate Rule (CAIR). Therefore, PEF is required to continuously monitor and report sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon dioxide (CO₂) emissions and heat input for these units in accordance with 40 CFR Part 75.

To meet the SO₂ and heat input monitoring and reporting requirements of Part 75, PEF uses the excepted methodology in Appendix D. Section 2.2 of Appendix D requires periodic sampling of fuel oil, to determine its sulfur content, gross calorific value (GCV) and, if necessary, density. Four oil sampling options are described in Appendix D. PEF has elected to use the option in Section 2.2.4.3, which requires sampling of each delivery. This option further requires that emissions be calculated using either: (a) the highest value of sulfur content, GCV or density from the previous year's samples; or (b) the maximum value of the parameter specified in a fuel contract.

However, the fuel oil combusted in Anclote Units 1 and 2 is not delivered to Anclote. Rather, oil deliveries are made to the nearby Bartow facility (Bartow). The storage tanks that

feed Anclote Units 1 and 2 receive fuel oil via pipeline from two 10 million gallon tanks at Bartow. Therefore, according to Section 2.2.4.3(a) of Appendix D, in order to apply the “as-delivered” fuel sampling option to the fuel oil combusted in Anclote Units 1 and 2, PEF must analyze oil samples from either: (a) the shipment containers delivered to Bartow (Section 2.2.4.3(a)(1)); or (b) Bartow’s storage containers (Section 2.2.4.3(a)(2)). For option (b), additional sampling is required when fuel is added to a storage container.

In the past, only No. 6 oil was piped from the Bartow tanks to the Anclote facility. However, PEF has recently contracted to receive on-specification used oil for use in the Anclote units. This used oil is mixed with No. 6 oil in Tank No. 1 at Bartow prior to being transported to Anclote. The No. 6 oil is delivered to Bartow via barges and the used oil is delivered via trucks. PEF plans to purchase 300,000 gallons of used oil per month and expects to accept deliveries of 7,500 to 15,000 gallons of the oil 20 times per month. Anclote’s Title V operating permit limits the amount of on-specification used oil that may be consumed in Units 1 and 2 to 10 percent of the total monthly heat input to the units, and no more than 30 million gallons per year.

The on-specification used oil has a lower sulfur content and a lower density than the No. 6 fuel oil, but has a significantly (about 15 percent) higher heat content. The results of fuel sampling and analysis have shown that the GCV of the No. 6 fuel oil averages 17,500 British Thermal Units (Btu) per pound (lb), while the GCV of the on-specification used oil averages 19,500 Btu/lb. The sampling method described in Section 2.2.4.3(a)(1) of Appendix D, i.e., sampling from each shipment container or fuel lot, would require PEF to use the higher GCV value of the used oil in the calculations. This method would artificially inflate the reported SO₂ and NO_x emissions for Units 1 and 2. The sampling method in Section 2.2.4.3(a)(2) of Appendix D would require that Tank No. 1 be sampled whenever any oil is added, whether No. 6 oil or used oil; therefore, at least 20 samples per month would be required.

In view of the effect of the shipments of used oil on the reporting of CGV using the “as delivered” sampling method, PEF requested in its September 3, 2009, petition to use a variation of the “as-delivered” oil sampling option in Section 2.2.4.3 of Appendix D to determine the GCV of the fuel oil burned in the Anclote units. PEF proposed to take periodic samples from both the Bartow mixed oil tank and from the barges. An initial sample of the mixed oil would be taken immediately after adding used oil to the tank and just before refilling the tank with No. 6 oil. A second sample would be taken after refilling the tank. Thereafter, periodic samples would be taken from the mixed oil tank after each off-loading of a barge, i.e., just after refilling the tank with No. 6 fuel oil. PEF proposed to enter the GCV values from the mixed oil tank samples and the results of the No. 6 oil samples from the barges into Anclote’s Data Acquisition and Handling System (DAHS), in order to determine the highest GCV value for reporting purposes.

In the September 3, 2009, petition, PEF provided a calculation of the “worst-case” (i.e., highest expected) GCV of the mixed oil, using: (a) an average GCV value for the delivered No. 6 fuel oil; (b) the expected GCV of the on-specification used oil; (c) the maximum expected volume of used oil to be added to the tank; and (d) the minimum expected volume of No. 6 oil in the tank. The results of the calculation indicated that the worst-case GCV of the mixed fuel (i.e.,

17,880 Btu/lb) would be only about 1 percent higher than the average GCV of the No. 6 oil.

EPA's Determination

EPA approves PEF's petition to use an alternative method to determine the GCV of the mixed fuel oil combusted in Anclote Units 1 and 2. However, the approved method differs from the method proposed by PEF. PEF proposed a one-time determination of the GCV of the mixed fuel, immediately after adding used oil to the tank and just before refilling it with No. 6 oil, in order to maximize the ratio of used oil to No. 6 oil (and hence to maximize the GCV). Thereafter, PEF proposed to sample the mixed fuel in the tank only after it is refilled with No. 6 oil from a barge, which is when the ratio of used oil to No. 6 oil, and thus the GCV, would be minimized.

EPA disapproves PEF's proposed sampling strategy for determining the GCV of the mixed fuel combusted in Anclote Units 1 and 2, but approves the following alternative approach instead. The oil in the Bartow mixed oil tank shall be sampled for GCV just before the tank is refilled with No. 6 oil, rather than just after refilling the tank (as proposed by PEF).

The approved method for determining the GCV provides more conservative values than the method proposed by PEF, and better ensures that emissions will not be underreported. Because the truck deliveries of the on-specification used oil will be more frequent than the barge deliveries of the No. 6 oil and because the Anclote tanks typically draw fuel from the Bartow tanks on a continuous basis, sampling the mixed oil tank just before off-loading a barge represents the time when the concentration of the used oil is greatest and GCV is the highest.

This approval applies only to the determination of the GCV of the mixed fuel oil combusted in Anclote Units 1 and 2. PEF shall determine the "as-delivered" sulfur content, GCV, and density of the No. 6 oil and the on-specification used oil separately, according to Section 2.2.4.3(a)(1) of Appendix D. That is, a sample of each type of oil shall be taken from the shipment container for each lot of fuel oil. A "lot" of fuel is defined as a barge load for the No. 6 oil and a group of trucks for the used oil, in accordance with Section 2.2.4.3(b) of Appendix D. For the purposes of this approval, a "group of trucks" consists of all trucks that deliver used oil to Bartow in a particular calendar month.

For the purposes of Part 75 reporting in 2010 and beyond, PEF shall use the following values of fuel oil GCV, sulfur content, and density in the emissions calculations for Anclote Units 1 and 2, in accordance with Sections 2.2.4.3(c)(1) and (d) of Appendix D:

- (1) The highest sulfur content value and density from the previous year's samples of the fuel lots delivered to Bartow (i.e., barge loads for No. 6 oil and groups of trucks for the used oil);
- (2) The highest GCV from the previous year's samples of the No. 6 oil, for hours in which only No. 6 oil is being combusted in Units 1 and 2; and

- (3) The highest GCV from the previous year's samples of the mixed fuel oil (where the oil sampling is performed just prior to each barge off-loading, in accordance with this petition approval), for hours in which mixed oil is being combusted in Units 1 and 2.

For emissions reporting in 2009, since there are no sample results from 2008, either for the used oil or for the mixed fuel¹, PEF shall use the following values of fuel oil GCV, sulfur content, and density in the emissions calculations:

- (1) For hours in 2009 when only No. 6 oil is combusted in the units, use the highest values of sulfur content, GCV, and density, from the samples of No. 6 oil that were taken in 2008; and
- (2) For hours in 2009 when mixed fuel is combusted in the units, use the highest values of sulfur content, and density, from the samples of No. 6 oil that were taken in 2008, and use the calculated value of the "worst case" GCV (i.e., 17,880 Btu/lb) for the mixed oil, as presented in the September 3, 2009, petition.

EPA's determination relies on the accuracy and completeness of PEF's September 3, 2009, petition and is appealable under Part 78. If you have any questions regarding this determination, please contact Art Diem at (202) 343-9340. Thank you for your continued cooperation.

Sincerely,

/s/
Sam Napolitano, Director
Clean Air Markets Division

cc: David McNeal, EPA Region IV
Erin Pichard, Florida DEP
Art Diem, CAMD

¹ According to PEF, the used oil was first added to the Bartow tanks in August 2009.