



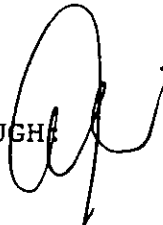
State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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Interoffice Memorandum

CENTRAL DISTRICT

TO: Preston Lewis, P.E. III OCD-AP-93-78
 Permitting & Standards Section
 Division of Air Resources Management

THROUGH:  A. Alexander, District Director

FROM: Charles M. Collins, P.E. Administrator *cmc*

DATE: April 12, 1993

SUBJECT: FLORIDA POWER CORPORATION TURBINE TEST
 DEVIATION FROM DIVISION ISSUED PERMIT SPECIFIC CONDITION

As we discussed Friday, we are keeping the lines of communication open when we observe a stack test deviation on an AC permit issued by Tallahassee.

The District's position is that FPC has not followed specific condition #13 in permit AC64-191015, which covers the testing of four turbines covered under NSPS.

It is the District's position that FPC together with GE, should have received the EPA Administrator's approval if they did not want to use this equation (see attached 40 CFR Subpart GG 60.335(f)(1)).

Should you feel different about the permit you issued, please let me know Thursday, April 15 at 2:00 p.m., as it is important that we are in complete agreement.

We have gone on record as not accepting the turbine stack tests where this formula is not used.

CMC/j

cc: John Brown

Attachment

FACT SHEET

**Florida Power Corporation
Debary Facility
Debary, Volusia County, Florida**

Six 92.9 MW Simple Cycle Combustion Turbines for Peaking Service

Permit Number: AC64 - 191015 PSD-FL-167

Specific Condition #13 of the above permit states the following: During performance tests to determine compliance with the proposed NO_x standard, measured NO_x emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$\text{NO}_x = (\text{NO}_x \text{ obs}) (P_{\text{ref}} / P_{\text{obs}})^{0.5} e^{19} (H_{\text{obs}} - 0.00633) (288^\circ \text{K} / T_{\text{AMB}})^{1.53}$$

where:

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

NO_{x obs} = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = Temperature of ambient air at test.

The following comment was submitted by the General Electric representative on site as justification for not adhering to the requirements of Specific Condition #13 above:

Calculation of NO_x measurements in terms of ISO conditions is not applicable. GE's Mark IV control system contains an algorithm which determines how much diluent (water/steam) is required to meet allowable NO_x emission concentrations under all operating conditions. In calculating the required diluent/fuel ratio, the algorithm makes adjustments for ambient temperature and relative humidity. The rate of injection is continuously corrected during actual operating conditions. An additional ISO correction could unfavorably bias the NO_x result in ppmvd at 15% O₂ by almost 30%.

The decision which the Department must make is whether or not use of the Mark IV control system justifies disregarding Specific condition #13 of the permit.

reports shall be postmarked by the 30th day following the end of each calendar quarter.

(4) *Emergency fuel.* Each period during which an exemption provided in § 60.332(k) is in effect shall be included in the report required in § 60.7(c). For each period, the type, reasons, and duration of the firing of the emergency fuel shall be reported.

[44 FR 52798, Sept. 10, 1979, as amended at 47 FR 3770, Jan. 27, 1982]

§ 60.335 Test methods and procedures.

(a) To compute the nitrogen oxides emissions, the owner or operator shall use analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator to determine the nitrogen content of the fuel being fired.

(b) In conducting the performance tests required in § 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided for in § 60.8(b). Acceptable alternative methods and procedures are given in paragraph (f) of this section.

(c) The owner or operator shall determine compliance with the nitrogen oxides and sulfur dioxide standards in §§ 60.332 and 60.333(a) as follows:

(1) The nitrogen oxides emission rate (NO_x) shall be computed for each run using the following equation:

$$NO_x = (NO_m) (P_r/P_a)^{0.5} e^{(1.25 - 0.0003) (288^\circ K / T_a)^{1.5}}$$

where:

NO_x = emission rate of NO_x at 15 percent O₂ and ISO standard ambient conditions, volume percent.

NO_m = observed NO_x concentration, ppm by volume.

P_r = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg.

P_a = observed combustor inlet absolute pressure at test, mm Hg.

H_a = observed humidity of ambient air, g H₂O/g air.

e = transcendental constant, 2.718.

T_a = ambient temperature, °K.

(2) The monitoring device of § 60.334(a) shall be used to determine the fuel consumption and the water-to-fuel ratio necessary to comply with

§ 60.332 at 30, 50, 75, and 100 percent of peak load or at four points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. All loads shall be corrected to ISO conditions using the appropriate equations supplied by the manufacturer.

(3) Method 20 shall be used to determine the nitrogen oxides, sulfur dioxide, and oxygen concentrations. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NO_x emissions shall be determined at each of the load conditions specified in paragraph (c)(2) of this section.

(d) The owner or operator shall determine compliance with the sulfur content standard in § 60.333(b) as follows: ASTM D 2880-71 shall be used to determine the sulfur content of liquid fuels and ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 shall be used for the sulfur content of gaseous fuels (incorporated by reference—see § 60.17). The applicable ranges of some ASTM methods mentioned above are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator.

(e) To meet the requirements of § 60.334(b), the owner or operator shall use the methods specified in paragraphs (a) and (d) of this section to determine the nitrogen and sulfur contents of the fuel being burned. The analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency.

(f) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) Instead of using the equation in paragraph (b)(1) of this section, manufacturers may develop ambient condition correction factors to adjust the nitrogen oxides emission level measured by the performance test as provided in § 60.8 to ISO standard day conditions. These factors are developed for each gas turbine model they manufacture in terms of combustion inlet pressure, ambient air pressure,

ambient air humidity, and ambient air temperature. They shall be substantiated with data and must be approved for use by the Administrator before the initial performance test required by § 60.8. Notices of approval of custom ambient condition correction factors will be published in the FEDERAL REGISTER.

[54 FR 6675, Feb. 14, 1989, as amended at 54 FR 27016, June 27, 1989]

Subpart HH—Standards of Performance for Lime Manufacturing Plants

SOURCE: 49 FR 18080, Apr. 26, 1984, unless otherwise noted.

§ 60.340 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to each rotary lime kiln used in the manufacture of lime.

(b) The provisions of this subpart are not applicable to facilities used in the manufacture of lime at kraft pulp mills.

(c) Any facility under paragraph (a) of this section that commences construction or modification after May 3, 1977, is subject to the requirements of this subpart.

§ 60.341 Definitions.

As used in this subpart, all terms not defined herein shall have the same meaning given them in the Act and in the General Provisions.

(a) *Lime manufacturing plant* means any plant which uses a rotary lime kiln to produce lime product from limestone by calcination.

(b) *Lime product* means the product of the calcination process including, but not limited to, calcitic lime, dolomitic lime, and dead-burned dolomite.

(c) *Positive-pressure fabric filter* means a fabric filter with the fans on the upstream side of the filter bags.

(d) *Rotary lime kiln* means a unit with an inclined rotating drum that is used to produce a lime product from limestone by calcination.

(e) *Stone feed* means limestone feedstock and millscale or other iron oxide additives that become part of the product.

§ 60.342 Standard for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any rotary lime kiln any gases which:

(1) Contain particulate matter in excess of 0.30 kilogram per megagram (0.60 lb/ton) of stone feed.

(2) Exhibit greater than 15 percent opacity when exiting from a dry emission control device.

§ 60.343 Monitoring of emissions and operations.

(a) The owner or operator of a facility that is subject to the provisions of this subpart shall install, calibrate, maintain, and operate a continuous monitoring system, except as provided in paragraphs (b) and (c) of this section, to monitor and record the opacity of a representative portion of the gases discharged into the atmosphere from any rotary lime kiln. The span of this system shall be set at 40 percent opacity.

(b) The owner or operator of any rotary lime kiln having a control device with a multiple stack exhaust or a roof monitor may, in lieu of the continuous opacity monitoring requirement of § 60.343(a), monitor visible emissions at least once per day of operation by using a certified visible emissions observer who, for each site where visible emissions are observed, will perform three Method 9 tests and record the results. Visible emission observations shall occur during normal operation of the rotary lime kiln at least once per day. For at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed, and the corresponding feed rate of the kiln shall also be recorded. Records shall be maintained of any 6-minute average that is in excess of the emissions specified in § 60.342(a) of this subpart.

(c) The owner or operator of any rotary lime kiln using a wet scrubbing emission control device subject to the provisions of this subpart shall not be required to monitor the opacity of the gases discharged as required in para-