Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard, Jr.
Secretary

February 1, 2011

Electronic Mail – Received Receipt Requested

Mr. Robby Odom, Plant Manager
Progress Energy Florida
299 First Avenue North, CN77
St. Petersburg, FL 33701

Re: **Request for Additional Information**
Project No. 0170004-026-AC (PSD-FL-383D)
Progress Energy Florida, Inc., Crystal River Power Plant
Request for Alternative Acid Mist Mitigation Trials

Dear Mr. Odom:

On January 3, 2011, we received your application and sufficient fee for an air construction permit to implement the changes described below in existing Permit No. 0170004-023-AC (PSD-FL-383C) for Units 4 and 5 at the Crystal River Energy Complex, which is located in Citrus County, north of Crystal River and west of U.S. Highway 19. The original permit authorized the installation of the following new equipment and air pollution controls for existing Units 4 and 5: new selective catalytic reduction (SCR) systems to reduce nitrogen oxides (NO_x); new low-NO_x burners (LNB); new wet flue gas desulfurization (FGD) systems to reduce sulfur dioxide (SO_2) and other acid gas emissions; a new alkali injection system to reduce sulfuric acid mist (SAM) emissions; upgraded electrostatic precipitators (ESP) to reduce particulate matter emissions; and new stack configurations for Units 4 and 5. The application indicates that the project is subject to general preconstruction review pursuant to rule 62-212.300 of the Florida Administrative Code (F.A.C.).

The application is incomplete. In order to continue processing your application, please provide the additional information requested below. At Mr. Hunter's request, we have been trying to schedule a meeting to discuss and resolve these items. This has been difficult since the plant is busy responding to issues related to the transformer failure for Unit 1. Currently, both Unit 1 and 2 are off line. We would still appreciate a meeting. Please contact us when your schedule allows. Should your response to any of the requested items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. Issue: Condition 8e in Permit No. 0170004-023-AC (PSD-FL-383C) specifies the following emissions standards for particulate matter (PM) based on the Best Available Control Technology (BACT):

   - As determined by EPA Method 5 or 5b, PM emissions shall not exceed 0.03 lb/MMBtu and 216.0 lb/hour based on a 3-run test average conducted at permitted capacity; and
   - As determined by EPA Method 9, the stack opacity shall not exceed 10% based on a 6-minute block average, except for one 6-minute period per hour of not more than 20%.

   Request: The application requests an increase of the opacity standard to 15% based on a 6-minute block average, except for one 6-minute period per hour of not more than 20%.

Questions: The application indicates actual PM emissions of 0.0066 and 0.0074lb/MMBtu for units 4 and 5 based on compliance stack testing. Corresponding opacity levels were indicated as 7.7% and 6.9%, respectively. The tests demonstrate compliance with the both the PM and opacity BACT standards.

a) Were these tests conducted after successful completion of the ESP modifications?

b) Was opacity determined by EPA Method 9? Are there continuous opacity monitoring systems (COMS) installed on either Unit 4 or 5?

c) Please provide any additional information that indicates technical reasons for difficulty in complying with the current opacity standard.

2. Issue: Condition 8c in Permit No. 0170004-023-AC (PSD-FL-383C) specifies the following emissions standards for sulfuric acid mist (SAM) based on the Best Available Control Technology (BACT), "As determined by EPA Method 8 or 8A, SAM emissions shall not exceed 0.009 lb/MMBtu and 64.8 lb/hour based on a 3-run test average conducted at permitted capacity. This standard applies at all times except during periods of maintenance and repair as authorized by this permit." The technology selected and implemented by Progress Energy Florida, Inc. was an alkali injection system, which injects ammonia after the SCR system and before the ESP and wet scrubber. Although the system successfully mitigates SAM emissions, it has greatly increased the ammonia concentration of fly ash collected by the ESP. Fly ash has beneficial re-use in the production of Portland cement; however, cement plants have begun rejecting fly ash with high concentrations of ammonia due to worker issues.

Request: To investigate further reductions of SAM emissions, the application requests:

- Authorization to apply the following fuel additives directly to coal prior to combustion to reduce the sulfur trioxide (SO_3) from the boiler furnace: Coaltreat 500, Coaltreat 700, magnesium oxide and magnesium hydroxide. The proposed fuel additives are predicted to reduce SO_3 emissions directly as SO_3 sorbents and indirectly by reducing furnace slag, which can increase SO_3 formation.
- As an initial demonstration project, authorization to install temporary equipment to inject the following alternative materials: sodium bicarbonate, calcium hydroxide (hydrated lime), Trona, dry magnesium oxide, sodium bisulfate (SBS), calcium carbonate, micronized limestone and ammonia. The purpose of the trial period is to evaluate successful SAM reduction methods that will improve the fly ash quality for beneficial re-use. During the trial period, the plant requests flexibility from the requirement to comply with the SAM emissions standards. In addition, the application requests authorization to operate the final selected option with the temporary equipment until permanent equipment is installed under a subsequent permit authorizing the new option and equipment.

Questions:

a) Please provide a brief summary of the SAM emissions test results for each test run conducted to date on Units 4 and 5 including: date of test, test run number, unit capacity (MMBtu/hour), coal blend sulfur content, actual SO_2 emissions rate, ammonia injection rate and actual SAM emissions.

b) Will fuel additive trials be conducted separately from trials of ammonia alternative injection materials?

c) Describe how SAM emission reductions will be measured and evaluated with regard to the following trials: fuel additives; ammonia alternative injection materials; and combinations of fuel additives in conjunction with ammonia alternative injection materials.

d) Define the period of time requested for each defined trial during which the unit may not be able to comply with the SAM BACT emissions limit.

e) Estimate the predicted increase in SAM emissions from this proposed project.

f) Other than the EPA Method 8 or 8A stack test, identify other available techniques for continuously measuring and evaluating SAM emission reductions during the trials.

g) You are proposing to run multiple trials during a six to eight month period of time. If the demonstration project is successful and Progress Energy of Florida (PEF) chooses to convert some of the successful components to a permanent system, the Department will require a modification to the permit prior to the permanent system being installed. Please comment.

h) Previous conversations with Jamie Hunter indicated that the plant would be revising this application to include a revised carbon monoxide (CO) BACT emissions standard pursuant to Condition 9 in Permit No. 0170004-023-AC. In addition, this request should address the spike in CO emissions from Unit 5, which appeared to peak in July of 2010.

The above information is requested pursuant to the following F.A.C. regulations: Rule 62-4.050 (Procedures to Obtain Permits and Other Authorizations; Applications); 62-4.055 (Permit Processing); 62-4.070 (Standards for Issuing or Denying Permits; Issuance; Denial); 62-4.120 (Construction Permits); 62-204.800 (Federal Regulations Adopted by Reference); 62-212.300 (Permits Required); 62-210.370 (Emissions Computations and Reporting); 62-210.900 (Forms and Instructions); 62-212.300 (General Preconstruction Review); and 62-212.400 (Prevention of Significant Deterioration). All applications for a Department permit must be certified by a professional engineer registered in the State of Florida pursuant to Rule 62-4.050(3), F.A.C. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official.

We will resume processing your application after receipt of the requested information. You are reminded that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days or to provide a written request for an additional period of time to submit the information. If you have any questions regarding this matter, please contact the project engineer, Tammy McWade, at 850/717-9086 or me at 850/717-9083.

Sincerely,

Jeffery F. Koerner, Administrator
New Source Review Section

JFK/ttm

This letter was sent to the following people by electronic mail with received receipt requested.

Mr. Robby Odom, Progress Energy Florida (robby.odom@pgnmail.com)
Mr. John Hunter, Progress Energy Florida (john.hunter@pgnmail.com)
Mr. Scott H. Osbourn, P.E., Golder Associates, Inc. (sosbourn@golder.com)
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