Progress Energy

**Robby A. Odom**
Plant Manager
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BUREAU OF
AIR REGULATION

May 31, 2011

Mr. Jeff Koerner, P.E.
Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

Ms. Danielle Henry
Florida Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926

RE: Progress Energy Florida – Crystal River Energy Complex
Air Construction Permit (Project No. 0170004-26-AV / PSD-FL-383D)
Hydrated Lime Demonstration Project

Dear Mr. Koerner and Ms. Henry:

Per the requirements of Section 3, Condition G.18 of Air Permit No. PSD-FL-383D (FDEP Project No. 017004-026-AC), please find below information related to the temporary demonstration project for hydrated lime injection to control sulfuric acid mist (SAM) at Crystal River Unit 4. During the hydrated lime demonstration period, no other alternative sorbents or fuel additives will be in use. Should other alternative sorbent and/or fuel additive demonstration projects be planned for the future, additional information will be provided to the Department in advance.

The following provides the detailed information for the proposed evaluation of hydrated lime injection for sulfuric acid mist (SAM) mitigation at Crystal River Units 4 and 5.

The hydrated lime evaluation will be conducted on Crystal River Unit 4, which is representative of both units. Crystal River Units 4 and 5 each have a cold-side ESP, are equipped with SCRs for $NO_x$ control and wet limestone scrubbers for sulfur dioxide ($SO_2$) control. Both units are subject to a SAM limit of 0.009 lb per million Btu (lb/MMBtu). In order to control SAM emissions an acid mist mitigation (AMM) system was implemented in Fall 2009 (Unit 5) and Spring 2010 (Unit 4). The AMM system incorporates injection of ammonia at the air heater outlet (upstream of the ESP) to convert the SAM to ammonium bisulfate (ABS) and/or ammonium sulfate (AS) which is subsequently captured in the ESP.

Fly ash that is captured in the ESP is either disposed of in the landfill on-site or marketed. In either case, fly ash needs to be handled by operators. ABS and AS present in the fly ash presents a risk in the form of ammonia releases during ash handling. Further, as the sulfur levels in the coal has increased; higher ammonia injection rates are required for SAM mitigation, causing the ammonia levels in the fly ash to increase.

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The main objective of this evaluation is to ascertain whether injection of hydrated lime in the unit instead of ammonia will result in a sufficient level of reduction in the SAM emissions, such that the SAM limit of 0.009 lb/MMBtu can be achieved consistently, while eliminating the effects of the ammonia in the fly ash.

A secondary objective is to ensure that the ESP performance is not adversely affected by the lime injection and evaluate the split of hydrated lime injection between air heater outlet and ESP outlet in order to obtain the optimal degree of SAM reduction and unit operation.

The initial installation of the hydrated lime system will take place in late May, as equipment and material arrives. The shakedown and operational testing of the equipment is expected to take place from late May through June 5, 2011. During the shakedown period, lime will be gradually injected at the ESP outlet to ensure that all components are working as desired. Because lime will be injected at the ESP outlet only during this period, it will not interfere with the current AMM system ammonia injection, which will continue to be in operation.

Upon completion of the shakedown, the evaluation will begin on June 6th. The proposed initial round of SAM stack testing is as follows:

June 8th – Low (or Mid) Load Test Run(s)

June 9th – Mid (or Low) Load Test Run(s)

June 10th – High Load Test Run(s)

It is anticipated that a second round of testing will be performed in order to develop the operational protocol injection rate curve; however, the schedule for this round of testing is not currently set.

If you have any questions regarding this information please contact Jamie Hunter at (727) 820-5764 or at John.Hunter@PGNmail.com.

Sincerely,

Robby A. Odom
Plant Manager, Crystal River Fossil Plant and Fuel Operations