Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

April 3, 2006

Bernie Cumbie
Plant Manager
Progress Energy Florida
100 Central Avenue
St. Petersburg, Florida 33701

Re: Title V Air Operation Permit No. 0170004-011-AV
Progress Energy – Crystal River Energy Center
PROPOSED Title V Permit Revision

Dear Mr. Cumbie:

One copy of the "PROPOSED PERMIT DETERMINATION" for the Crystal River Energy Center which is located at 15760 West Power Line St., Crystal River, Citrus County, is enclosed. This letter is only a courtesy to inform you that the DRAFT permit has become a PROPOSED permit.

An electronic version of this determination has been posted on the Division of Air Resources Management's world wide web site for the United States Environmental Protection Agency (USEPA) Region 4 office's review. The document may be reviewed by entering the seven-digit facility ID at the following web site address: *http://www.dep.state.fl.us/air/eproducts/airpermit/AirSearch.asp*

Pursuant to Section 403.0872(6), Florida Statutes, if no objection to the PROPOSED permit is made by the USEPA within 45 days, the PROPOSED permit will become a FINAL permit no later than 55 days after the date on which the PROPOSED permit was mailed (posted) to USEPA. If USEPA has an objection to the PROPOSED permit, the FINAL permit will not be issued until the permitting authority receives written notice that the objection is resolved or withdrawn.

If you should have any questions, please contact Michael P. Halpin, P.E. at 850/488-1344.

Sincerely,

Trina Vielhauer
Chief
Bureau of Air Regulation

TV/JFK/mph

Enclosures

copy furnished to:
Bernie Cumbie*
Dave Meyer, PGN
Scott Osbourn, Golder
Southwest District Office
USEPA, Region 4 (INTERNET E-mail Memorandum)

PROPOSED PERMIT DETERMINATION

PROPOSED Permit No.: 0170004-011-AV

I. Public Notice.

An "INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" to Progress Energy Center for the Crystal River Energy Center located at 15760 West Power Line St., Crystal River, Citrus County was clerked on February 22, 2006. The "PUBLIC NOTICE OF INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" was published in the Citrus County Chronicle on March 2, 2006. The DRAFT Title V Air Operation Permit was available for public inspection at the Southwest District Office in Tampa. Proof of publication of the "PUBLIC NOTICE OF INTENT TO ISSUE TITLE V AIR OPERATION PERMIT" was received by fax.

II. Public Comment(s).

No comments were received during the 30 (thirty) day public comment period, other than two very minor comments from the applicant related to monitoring methods, which were incorporated into the PROPOSED Permit.

III. Conclusion.

Since there were no other changes made to the DRAFT Title V Permit, the permitting authority hereby issues the PROPOSED Permit No. 0170004-011-AV.

Subsection L. This section addresses the following emissions unit.

E.U. ID No.	Brief Description
020	Cooling towers for FFSG Units 1 and 2 used to reduce plant discharge water temperature.

Emissions unit 020 is cooling towers for FFSG Units 1 and 2, used to reduce plant discharge water temperature. (This emission unit may be referred to as "portable cooling towers.") This emissions unit consists of 71 or 72 cells (dependent upon manufacturer), is 12' wide and 11' high, includes drift eliminators, operates at a maximum seawater flow rate of 180,000 gallons per minute for all cells combined, with a design airflow rate of 25,000 acfm from each cell. Seawater is sprayed through the towers where fan induced air flow causes evaporative cooling. Water vapor, saltwater droplets (drift) and salt particles are emitted. Drift emissions are controlled by drift eliminators.

{Permitting note(s): This emissions unit is regulated under Prevention of Significant Deterioration (PSD) (permit 0170004-010-AC) and includes a Best Available Control Technology (BACT) Determination, which allows for a drift emission rate of 0.0015% with limited usage.}

The following specific conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

L.1. Hours of Operation. The operating hours for the portable cooling towers shall not exceed an equivalent of 2920 hours per year of operation (12-month rolling total). This condition shall be complied with by limiting the circulating water flow usage through the portable cooling towers to 31.5E9 gallons per calendar year.
[Rule 62-210.200(PTE), F.A.C.; and 0170004-010-AC)]

Emission Limitations and Standards

L.2. Cooling Tower Design: The portable cooling towers shall be designed, operated and maintained to achieve a drift rate of no more than 0.0015% of the circulating water flow. This equates to an estimated emission rate of particulate matter (PM) from the cooling tower at 35.1 pounds per hour. Within 60 days of commencing operation, the permittee shall certify that the cooling tower was constructed and installed so as to achieve the specified drift rate of no more than 0.0015 percent of the circulating water flow rate.

{Note: The emission limit is based on a BACT Determination setting the maximum drift emissions at 0.0015%. PM_{10} emissions are estimated to be approximately 6% of the particulate matter emission rate.}
[Rule 62-213.440, F.A.C., 0170004-010-AC) and Rule 62-212.400 (BACT)]

L.3. Drift Eliminators. Drift eliminators shall be installed and maintained as per the manufacturer's specifications. Regular maintenance shall be scheduled to ensure proper operation of the drift eliminators.
[Rule 62-213.440, F.A.C.; and 0170004-010-AC)]

{Note: This emissions unit is not subject to a visible emissions limitation. Emissions from this emissions unit include water droplets, so visible emission testing is not possible.}

Test Methods and Procedures

L.4. Emission Test Method. The drift elimination system on the helper cooling towers shall be maintained so as to minimize pluggage and to insure timely repair of broken sections of the drift eliminators. During those calendar days when the portable cooling towers are used, the following work practice shall be implemented, in lieu of EPA Method 5, to demonstrate compliance with the originally designed removal efficiency (no more than 0.0015% drift rate):

(a) Daily "walkdown" inspection of each operational cell visually checking for problems with the drift eliminators such as pluggage, algae build-up, and mechanical components (fans and pumps).
(b) Daily visual inspection of the cells which are in operation to ascertain the presence of higher than expected visible emissions when atmospheric conditions allow, and follow-up inspections and correction of problems when the daily visual inspection of the cells indicates a problem.
(c) Weekly visual inspections of the inlet water screens and prompt correction when broken sections or pluggage is discovered.

[Rule 62-213.440, F.A.C., 0170004-010-AC; and ASP No. 00-E-01 dated June 7, 2000]

Monitoring of Operations

L.5. Inspection Log: Any problems detected during the work practice inspections identified in Specific Condition **L.4.** shall be documented in a log identifying the cell (or water screen), the inspector, the time (when discovered and the hours operated before the problem was corrected), and a description of the problem and the corrective actions taken. This log shall be maintained onsite and shall be made available to DEP upon request. The log shall be maintained so as to provide an indication as to whether routine inspections have been conducted as required even when there are no problems to record.
[Rules 62-213.440 and 62-297.310(7), F.A.C., 0170004-010-AC and ASP No. 00-E-01 dated June 7, 2000]

Record Keeping and Reporting Requirements

L.6. Circulating Water Flow-meters Required. Circulating water flow will be measured by monitoring the hours of each circulating water pump. For each hour of operation, each north pump will flow 15 kgpm (900 kgph) and each south pump will flow 4 kgpm (240 khph). The fans in bank C1 through C15 will be monitored for operation. If any of the fans are operating in those cells, the circulating water flow will be 39 kgpm (2,340 kgph). Partial hours of operation shall be prorated. Records of circulating water flow shall be maintained for each calendar month..
[Rule 62-213.440, F.A.C.; and 0170004-10-AC]

Common Conditions

L.7. This emissions unit is also subject to conditions **I.2, I.4, I.5, I.6, I.14 and I.15** contained in **Subsection I. Common Conditions.**

TECHNICAL EVALUATION

FINAL BACT REVIEW

AND

STATEMENT OF BASIS

Progress Energy Florida – Crystal River Units 1 & 2

Portable Cooling Towers

Citrus County

0170004-010-AC
0170004-011-AV

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
North Permitting Section

March 31, 2006

1. GENERAL INFORMATION

1.1 APPLICANT NAME AND ADDRESS

Progress Energy Florida
100 Central Ave. CN77
St. Petersburg, Florida 33701
Authorized Representative: Bernie Cumbie, Plant Manager

1.2 REVIEWING AND PROCESS SCHEDULE

February 06, 2006	Received Permit Application
February 06, 2006	Application complete

2. FACILITY INFORMATION

2.1 FACILITY LOCATION

The facility is located north of Crystal River, on Power Line Rd., West of U.S. 19, Citrus County. The UTM coordinates are Zone 17; 334.3 km E; 3204.5 km N. This site is located in the same county as the Chassahowitzka National Wildlife Refuge, a Class I PSD Area.

2.2 STANDARD INDUSTRIAL CLASSIFICATION CODES (SIC)

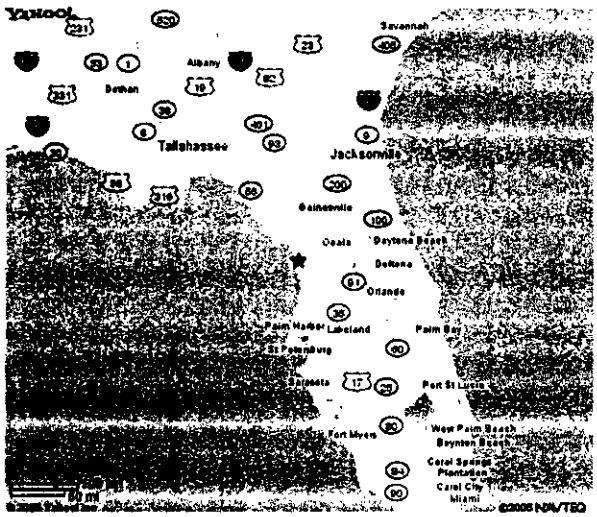
Industry Group No.	49	Electric, Gas and Sanitary Services
Industry No.	4911	Electric Services

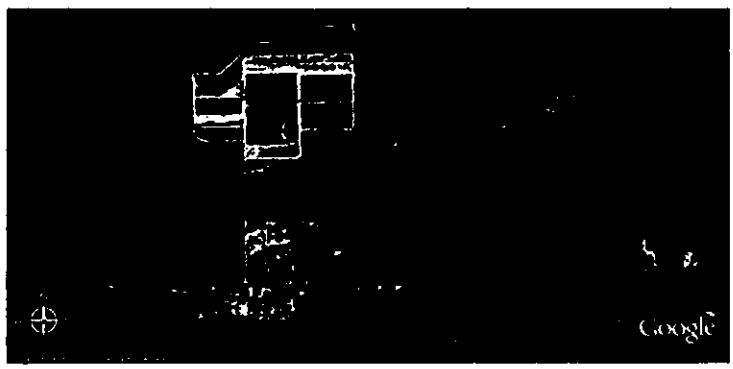
2.3 FACILITY CATEGORY

This facility consists of four coal-fired fossil fuel steam generating units (boilers) with electrostatic precipitators; two natural draft cooling towers for units 4 and 5; helper mechanical cooling towers for units 1, 2 and Nuclear Unit 3; coal, flyash and bottom ash-handling facilities, and relocatable diesel fired generator(s).

This facility is classified as a Major or Title V Source of air pollution because emissions of at least one regulated air pollutant, such as particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), or volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). Based upon the Title V application, the facility is a major source of hazardous air pollutants (HAPs).





3. DESCRIPTION

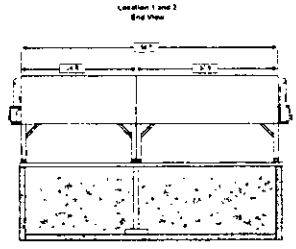
This project addresses the following emissions unit(s):

Emissions Unit No.	Emissions Unit Description
020	Portable, Mechanical Draft Cooling Towers with a maximum circulation rate of 180,000 GPM.

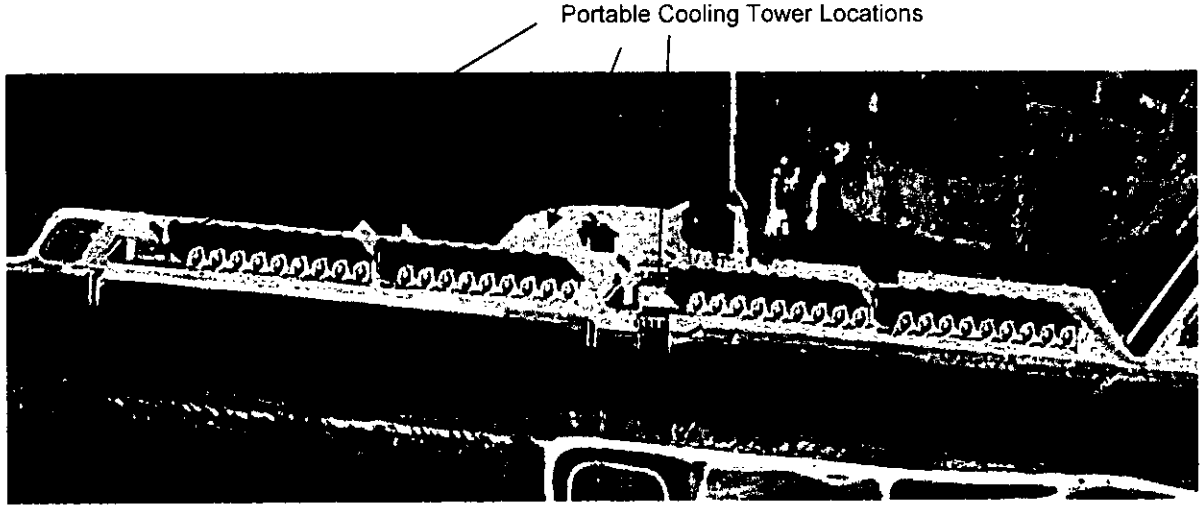
3.1 PROJECT DESCRIPTION

The project involves the installation and subsequent operation of modular (portable) cooling towers. The cooling towers are planned for use with coal-fired units 1 and 2 on a predominantly seasonal basis (late summer and/or early fall). The installation of these cooling towers provides a means of ensuring that the combined cooling water discharge temperature from the facility's steam condensers remains within regulated limits, while minimizing or eliminating the potential for reductions in output on the coal units as a result of the maximum discharge temperature being reached. Brackish water with an average TDS value of 25,307 parts per million (as the cooling medium) and an annual cooling tower usage limitation which is equivalent to 3000 hours per year are proposed.

- Up to 70 rental towers
- Up to 180,000 GPM additional flow
- Up to 2 deg F additional cooling
- Used only a few months per year
- Reduce or eliminate plant derates during summer
- Use existing intake and discharge points



Typical Tower



3.2 DESCRIPTION OF CURRENT STATUS

Fossil fuel steam generators units 1 and 2 are pulverized coal dry bottom, tangentially-fired boilers. Steam generator unit 1 began commercial operation in 1966 and steam generator unit 2 began commercial operation in 1969. These steam generating units are constructed with a discharge of once through cooling water (OTCW) to the site discharge canal and then to the Gulf of Mexico, a Class III marine water, via three outfalls permitted under NPDES Permit FL0000159. Within the subject NPDES Permit, Condition **I.A.4.** limits the above discharge temperature to 96.5° F based upon a 3-hour rolling average. According to information submitted by the applicant, some periods may exist, typically during the late summer, that require limiting the steam generating output on units 1 and 2 in order to comply with the subject NPDES permit condition. The limitation is not predictable, is different from one year to the

next and can even disappear on a day-to-day basis based upon changes in air temperature or rainfall quantities. The sole origin of this potential limitation is NPDES, and it is not related to air emissions.

4. PROJECT EMISSIONS

4.1 EMISSION INCREASES

The following emission increases are indicated by the applicant:

Pollutant	Annual Emissions (TPY)	PSD Threshold (TPY)	PSD Review Required
PM	52.7	25	Yes
PM_{10}	3.2 *	15	No

* Based upon the paper "Calculating Realistic PM_{10} Emissions from Cooling Towers" which is built upon the methodology presented in EPA's AP-42, the portion of PM which is emitted as PM_{10} decreases as the TDS in the circulating water increases. For this project, the high TDS of the brackish water (>25,000 ppm) results in a very small fraction of PM_{10} emissions.

4.2 DE-BOTTLENECKING EVALUATION

The project proposes to add a series of new portable cooling towers that will allow Units 1 and 2 to operate at capacity during periods of peak power demand such as the late summer. Potential emissions increases from the proposed cooling towers will be greater than the PSD significant emission rate for PM (25 tons/year), but less than the PSD significant emission rate for PM_{10} (15 tons/year). The Department did not consider collateral emissions increases from Units 1 and 2 for the following reasons:

- The NPDES permit for Units 1 and 2 restricts the plant's thermal discharge, which may result in reduced operation for one or more of the units. However, Units 1 and 2 currently operate at rated capacity throughout the year, notwithstanding the thermal discharge limitation.
- The thermal discharge restriction only affects plant operation at certain times of the year depending on a combination of factors including load demand, air and water temperatures.
- No physical or operational changes to Units 1 and 2 are being made.
- There are no restrictions in the air permits for Units 1 and 2 that prevent operation at capacity.

Therefore, a determination of Best Available Control Technology (BACT) is required for PM emissions from the cooling towers, but no air quality analysis is imposed because the project is not subject to PSD review for PM_{10}.

5.0 BACT REVIEW

5.1 APPLICANT BACT REVIEW

The applicant proposes drift eliminators as BACT, with a drift rate of 0.0015%, and a total circulating water flow usage limitation of 32.4E9 gallons per year (equivalent to 3000 hours per year of full operation). This yields annual PM emissions of 52.7 TPY and annual PM_{10} emissions of 3.2 TPY.

5.2 DEPARTMENT BACT REVIEW

The Department conducted a BACT review via an inspection of the RACT/BACT/LAER Clearinghouse for mechanical draft cooling towers permitted between January 2003 and January 2006. Based upon this review, the Department concludes that BACT for mechanical draft cooling towers is almost universally based upon drift eliminators. Additionally, BACT emission rates can be established as low as 0.0005% (with 8760 hours per year of operation), or as high as the applicant's recommended BACT rate of 0.0015%. Given that the equipment herein is portable in nature, some deference is granted to the applicant's request for the higher end of the BACT range, as it is reasoned that portable cooling towers may not be able to be constructed to the same tight specifications as permanently installed towers. Lastly, it is noted that the lower end of the BACT range (0.0005%) is 1/3 of the applicant's proposal (0.0015%), and that the applicant does not request authorization to operate 8760 hours per year,

but approximately 1/3 of the year. Accordingly, the Department will establish BACT for this unique project at 0.0015%, but allow operation for only 1/3 of the year, or 2920 hours. In terms of circulating water flow usage, this is equivalent to 31.5E9 gallons per year, which will be established as a permit limit.

5.3 ADDITIONAL IMPACTS

Because PM was the only pollutant that triggered a PSD review, a Class II air quality impact analysis as well as additional analysis of impacts due to the proposed project on soils, vegetation, visibility, growth, and air quality related values (AQRVs) in the nearest PSD Class I areas were not conducted (Rule 62-204.260 (1) and (2), F.A.C.).

In accordance with Rule 62-210.200 (243), F.A.C. PM_{10} emissions are below the PSD significant emission rate. Therefore no air quality analysis is required.

6.0 CONCLUSION

Based on the foregoing technical evaluation of the application, the Department has made a determination that the proposed project is capable of meeting the Department's air emission standards. The Division of Air Resource Management notes that based upon discussions with the Division of Water Resource Management, the implementation of this project is favorably received.

Michael P. Halpin, P.E.
Department of Environmental Protection, Bureau of Air Regulation
North Permitting Section
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

Friday, Barbara

To: 'dave.meyer@pgnmail.com'; Nasca, Mara; sosbourn@golder.com

Cc: Halpin, Mike

Subject: PROPOSED TItle V Permit Revision No.: 0170004-011-AV - Progress Energy Florida - Crystal River Energy Center

Attached for your records is a zip file for the subject PROPOSED Title V Permit Revision.

If I may be of further assistance, please feel free to contact me.

Barbara J. Friday
Planner II
Bureau of Air Regulation
(850)921-9524
Barbara.Friday@dep.state.fl.us

Friday, Barbara

From: System Administrator
To: Nasca, Mara
Sent: Monday, April 03, 2006 2:52 PM
Subject: Delivered:PROPOSED TItle V Permit Revision No.: 0170004-011-AV - Progress Energy Florida - Crystal River Energy Center

Your message

To:	'dave.meyer@pgnmail.com'; Nasca, Mara; 'sosbourn@golder.com'
Cc:	Halpin, Mike
Subject:	PROPOSED TItle V Permit Revision No.: 0170004-011-AV - Progress Energy Florida - Crystal River Energy Center
Sent:	4/3/2006 2:52 PM

was delivered to the following recipient(s):

Nasca, Mara on 4/3/2006 2:52 PM

Friday, Barbara

From: Exchange Administrator
Sent: Monday, April 03, 2006 2:52 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT143114.txt; PROPOSED Title V Permit Revision No.: 0170004-011-AV - Progress Energy Florida - Crystal River Energy Center

ATT143114.txt (285 B) PROPOSED Title V Permit Revisi...

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

sosbourn@golder.com