NOTICE OF FINAL PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Permit by:

Florida Power Corporation dba Progress Energy Florida, Inc.
1729 Baillies Bluff Road
Holiday, Florida 34691

Air Permit No. 1010017-007-AC
PSD Project No. (PSD-FL-379)
Anclote Power Plant
Helper Cooling Towers

Authorized Representative:
Mr. Jeff Swartz, Plant Manager

Enclosed is Final Air Permit No. 1010017-007-AC, which authorizes the construction of two new mechanical draft helper cooling towers to replace the existing helper cooling towers. The new equipment will be installed at Anclote Power Plant, which is located at 1729 Baillies Bluff Road in Holiday, Pasco County, Florida. As noted in the attached Final Determination, only minor changes and clarifications were made. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty (30) days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Trina L Vielhauer

Trina Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Permit package (including the Notice of Final Permit, the Final Determination, and the Final Permit) was sent by electronic mail with receipt requested before the close of business on 10/20/06 to the persons listed:

Mr. Jeff Swartz, Florida Power Corporation dba Progress Energy Florida, Inc.
Ms. Ann Quillian, Progress Energy Florida, Inc.
Ms. Mara Nasca, SWD Office
Mr. Gregg Worley, EPA Region 4

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Mary L. Stamey (Clerk) 10/20/06 (Date)

PERMITTEE

Florida Power Corporation dba Progress Energy Florida, Inc.
1729 Baillies Bluff Road
Holiday, Florida 34691

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation, Air Permitting North Program
2600 Blair Stone Road, MS #5505
Tallahassee, Florida, 32399-2400

PROJECT

Final Permit No. 1010017-007-AC (PSD-FL-379)
Florida Power Corporation dba Progress Energy Florida, Inc.
Anclote Power Plant – Installation of Helper Cooling Towers

The air permit authorizes the installation of two new mechanical draft helper cooling towers to replace the existing equipment at the Anclote Power Plant, which is located at 1729 Baillies Bluff Road in Holiday, Pasco County, Florida. The project is subject to PSD preconstruction review for PM emissions.

NOTICE AND PUBLICATION

The Department issued a Draft Permit package on August 29, 2006. A Public Notice was published in the St. Petersburg Times (North Pinellas and Pasco County editions) on September 9, 2006. No petitions for administrative hearings or extensions of time to petition for an administrative hearing were filed.

COMMENTS

No comments on the Draft Permit were received from the public, the Department's Southwest District Office, or EPA Region 4. As described below, the applicant provided minor comments and clarifications.

1. *Comment*: Please note that the name of the permittee is Florida Power Corporation dba Progress Energy Florida, Inc. and update in the documents as needed.

   Response: The permittee's name is corrected throughout the documents related to this permit.

2. *Comment*: In Specific Condition 1 under Section 3 (Emission Unit Specific Conditions) of Page 4, the units for the flow rate per tower are missing and should read as follows:

   "Cooling Tower: The permittee is authorized to construct and operate two new mechanical draft cooling towers, 12 cells each, with the following nominal design characteristics: a circulating flow rate of 660,000 gallons per minute (330,000 gpm per tower); a design air flow of 36,000,000 acfm for both towers (18,000,000 acfm per tower and 1,500,000 acfm per cell); drift eliminators and a drift rate of no more than 0.0005% of the circulating water flow for each tower. [Application No. 1010017-007-AC, Design]"

   Response: The condition is corrected as requested.

CONCLUSION

The final action of the Department is to issue the Final Permit with the minor changes as described above.

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

PERMITTEE:

Florida Power Corporation dba Progress Energy Florida, Inc.
1729 Baillies Bluff Road
Holiday, Florida 34691

Authorized Representative:
Jeff Swartz, Plant Manager

Air Permit No. 1010017-007-AC
PSD Project No. (PSD-FL-379)
Anclote Power Plant
Helper Cooling Towers
SIC No. 4911
Permit Expires: November 1, 2009

PROJECT AND LOCATION

This permit authorizes the construction of two new mechanical draft helper cooling towers to replace the existing helper cooling towers. The new equipment will be installed at Anclote Power Plant, which is located at 1729 Baillies Bluff Road in Holiday, Pasco County, Florida. The UTM coordinates are Zone 17, 324.4 km East, and 3118.7 km North.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department.

CONTENTS

Joseph Kahn, Director
Division of Air Resource Management

10/17/06
(Date)

FACILITY AND PROJECT DESCRIPTION

This facility consists of two fuel oil fired steam electric generating stations, E.U. ID No. -001 (Unit No. 1) and -002 (Unit No. 2). Unit No. 1 consists of a Combustion Engineering, Inc., Controlled Circulation, Radiant Reheat (CCRR) Type boiler/steam generator and steam turbine which drives a generator with a nameplate rating of 535 (summer)/540 (winter) Megawatts. Unit No. 2 consists of a Combustion Engineering, Inc., CCRR Type boiler/steam generator and steam turbine which drives a generator with a nameplate rating of 525 (summer)/530 (winter) Megawatts. Units No. 1 and No. 2 share a common stack. Also included in this permit are miscellaneous unregulated and insignificant emissions units and/or activities. Relocatable diesel fired generator(s) with a maximum heat input of 25.74 MMBtu/hour and a maximum rating of 2460 Kilowatts are permitted to be located at this facility and may be relocated to other PEF facilities.

The project consists of the construction and operation of two helping cooling towers, Emission Unit 007, to replace the existing helper cooling towers. Each tower will consist of 12 cooling tower cells for a total of 24 cells total. Each cooling tower cell is expected to be approximately 50 to 59 feet in height and a stack height of approximately 10 to 14 feet on top of the cooling towers. Both towers will be designed from salt water corrosion resistant materials. Brackish water used for cooling has an estimated total dissolved solids (TDS) of approximately 29,000 parts per million. The existing circulating water pumps will be reused with no increase in throughput. These towers are used to reduce the discharge water temperature to meet the facility's current water permit requirements, and will be no more than 4500 hours. The cooling towers provide direct contact between the cooling water and air passing through the tower. Drift is created when small amounts of cooling water become entrained in the air stream and carried out of the tower. Drift eliminators are the control technology used to control PM/PM_{10} emissions caused by the cooling tower drift.

ID	Emission Unit Description
007	Mechanical Draft Helper Cooling Towers with maximum circulation rate of 660,000 gpm

REGULATORY CLASSIFICATION

Title III: The existing facility is identified as a major source of hazardous air pollutants (HAP).

Title IV: The existing facility has units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a PSD-major facility in accordance with Rule 62-212.400, F.A.C.

RELEVANT DOCUMENTS

The following relevant documents are not a part of this permit, but helped form the basis for this permitting action: the permit application and additional information received to make it complete; the draft permit package including the Department's Technical Evaluation and Preliminary Determination; publication and comments; and the Department's Final Determination.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: All documents related to applications for permits to operate, construct, or modify emissions units regulated by this permit shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Southwest District office, 13051 Telecom Parkway, Temple Terrace, FL, 33637-0926 (Phone Number: 813/632-7600).

3. Appendices: The following Appendices are attached as part of this permit: Appendix CF (Citation Format); Appendix GC (General Conditions); and Appendix SC (Standard Conditions).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

8. Annual Operation Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

SECTION 3. EMISSIONS UNIT SPECIFIC CONDITIONS

A. EU-007 – Helper Cooling Towers

EMISSIONS UNITS

This section of the permit addresses the following emissions unit.

ID	Emission Unit Description
007	Mechanical Draft Helper Cooling Towers with maximum circulation rate of 660,000 GPM.

EQUIPMENT

1. Cooling Tower: The permittee is authorized to construct and operate two new mechanical draft cooling towers, 12 cells each, with the following nominal design characteristics: a circulating flow rate of 660,000 gallons per minute (330,000 gpm per tower); a design air flow of 36,000,000 acfm for both towers (18,000,000 acfm per tower and 1,500,000 acfm per cell); drift eliminators and a drift rate of no more than 0.0005% of the circulating water flow for each tower. [Application No. 1010017-007-AC, Design]

PERFORMANCE RESTRICTIONS

2. Hours of Operation: Each new cooling tower shall not operate more than 4500 hours per calendar year. [Application No. 1010017-007-AC, Design]

EMISSIONS AND PERFORMANCE REQUIREMENTS

3. Cooling Tower Design: The cooling tower shall be designed and maintained to achieve a drift rate of no more than 0.0005% of the circulating water flow. [Application No. 1010017-007-AC, Design]
4. Drift Rate: Within 60 days of commencing operation, the permittee shall certify that the cooling towers were constructed and installed to achieve the specific drift rate of no more than 0.0005% of the circulating flow rate. [Application No. 1010017-007-AC, Design]
5. Circulating Water Flow Rate: Upon request, the applicant shall provide a means for determining the circulating water flow rate through the new cooling tower. [Rule 62-4.070, F.A.C.]

SECTION 4. APPENDICES

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SECTION 4. APPENDIX A

Citation Formats

The following examples illustrate the format used in the permit to identify applicable permitting actions and regulations.

REFERENCES TO PREVIOUS PERMITTING ACTIONS

Old Permit Numbers

Example: Permit No. AC50-123456 or Air Permit No. AO50-123456

Where: "AC" identifies the permit as an Air Construction Permit
"AO" identifies the permit as an Air Operation Permit
"123456" identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AF, 099-2222-001-AO, or 099-2222-001-AV

Where: "099" represents the specific county ID number in which the project is located
"2222" represents the specific facility ID number
"001"identifies the specific permit project
"AC" identifies the permit as an air construction permit
"AF" identifies the permit as a minor federally enforceable state operation permit
"AO" identifies the permit as a minor source air operation permit
"AV" identifies the permit as a Title V Major Source Air Operation Permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: "PSD" means issued pursuant to the Prevention of Significant Deterioration of Air Quality
"FL" means that the permit was issued by the State of Florida
"317" identifies the specific permit project

RULE CITATION FORMATS

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CRF 60.7]

Means: Title 40, Part 60, Section 7

SECTION 4. APPENDIX B

General Conditions

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

   a. Have access to and copy and records that must be kept under the conditions of the permit;
   b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
   c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

   a. A description of and cause of non-compliance; and

   b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida

Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology (Applicable);
    b. Determination of Prevention of Significant Deterioration (Applicable); and
    c. Compliance with New Source Performance Standards (Not Applicable).

14. The permittee shall comply with the following:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

    b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

        1) The date, exact place, and time of sampling or measurements;
        2) The person responsible for performing the sampling or measurements;
        3) The dates analyses were performed;
        4) The person responsible for performing the analyses;
        5) The analytical techniques or methods used; and
        6) The results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

{Permitting Note: Unless otherwise specified in the permit, the following conditions apply to all emissions units and activities at the facility.}

EMISSIONS AND CONTROLS

1. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. Excess Emissions Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]
4. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
5. Excess Emissions - Notification: In case of excess emissions resulting from malfunctions, the permitee shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
6. VOC or OS Emissions: No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
7. Objectionable Odor Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) and62-210.200(203), F.A.C.]
8. General Visible Emissions: No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20 percent opacity. This regulation does not impose a specific testing requirement. [Rule 62-296.320(4)(b)1, F.A.C.]
9. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

TESTING REQUIREMENTS

10. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

11. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity.. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]

12. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]

13. Test Procedures: Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.

    a. *Required Sampling Time.* Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.

    b. *Minimum Sample Volume.* Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.

    c. *Calibration of Sampling Equipment.* Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.

    [Rule 62-297.310(4), F.A.C.]

14. Determination of Process Variables

    a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

    b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

    [Rule 62-297.310(5), F.A.C.]

15. Sampling Facilities: The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C.

16. Test Notification: The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9, F.A.C.]

17. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

18. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the

test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

1. The type, location, and designation of the emissions unit tested.
2. The facility at which the emissions unit is located.
3. The owner or operator of the emissions unit.
4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
5. The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
6. The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
7. A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
8. The date, starting time and duration of each sampling run.
9. The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
10. The number of points sampled and configuration and location of the sampling plane.
11. For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
12. The type, manufacturer and configuration of the sampling equipment used.
13. Data related to the required calibration of the test equipment.
14. Data on the identification, processing and weights of all filters used.
15. Data on the types and amounts of any chemical solutions used.
16. Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
17. The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
18. All measured and calculated data required to be determined by each applicable test procedure for each run.
19. The detailed calculations for one run that relate the collected data to the calculated emission rate.
20. The applicable emission standard and the resulting maximum allowable emission rate for the emissions unit plus the test result in the same form and unit of measure.
21. A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

RECORDS AND REPORTS

19. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
20. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

Progress Energy

Via Electronic Mail
September 13, 2006

Mr. Robert Bull
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 5500
Tallahassee, Florida 32399-2400
Email: robert.bull@dep.state.fl.us

RE: Comments on Draft PSD Permit No. 101007-007-AC (PSD-FL-379) and Draft Title V Permit Revision No. 1010017-008-AV
Florida Power Corporation dba Progress Energy Florida, Inc.
Anclote Power Plant
Facility ID 1010017
Emissions Unit No. -007, Helper Cooling Towers

Dear Mr. Bull:

Please find below Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") comments on the draft PSD construction permit and Title V air operation permit for the two new mechanical cooling towers for the Anclote Power Plant.

Draft PSD Construction Permit No. 101007-007-AC (PSD-FL-379):

1. Please note that the name of the permittee is Florida Power Corporation dba Progress Energy Florida, Inc. and update in the documents as needed.

2. Under Section 3. Emissions Unit Specific Conditions, Page 4, Specific Condition 1., the units for the flow per tower are missing and should read as follows:

> 1. Cooling Tower: The permittee is authorized to construct and operate two new mechanical draft cooling towers, 12 cells each, with the following nominal design characteristics: a circulating flow rate of 660,000 gallons per minute (330,000 gpm per tower); a design air flow of 36,000,000 acfm for both towers (18,000,000 acfm per tower and 1,500,000 acfm per cell); drift eliminators and a drift rate of no more than 0.0005% of the circulating water flow for each tower. [Application No. 1010017-007-AC, Design]

Draft Title V Permit Revision No. 101007-008-AC:

1. Please note that the name of the permittee is Florida Power Corporation dba Progress Energy Florida, Inc. and update in the documents as needed.

Progress Energy Service Company, LLC
P.O. Box 14042
St. Petersburg, FL 33733

2. Under Section I. Facility Information, Subsection A. Facility Description, Page 2, please consider the following change to clarify the description:

   E.U. ID No. ~~Unit~~ -007 consists of two mechanical draft helper cooling towers designed with a circulating water flow rate of 660,000 gallons per minute and drift rate of 0.0005% to control PM/PM10 emissions.

3. Under Section III. Emissions Unit and Conditions, Subsection C. Page 25, the units for the flow per tower are missing and should read as follows:

   Two Mechanical Draft Helper Cooling Towers have a combined maximum circulation rate of 660,000 GPM. The design air flow is 36,000,000 acfm for both towers (18,000,000 acfm per tower and 1,500,000 acfm per cell). The drift eliminators are designed for a drift rate of no more than 0.0005% of the circulating water flow for each tower.

4. Under Section III. Emissions Unit and Conditions, Subsection C. Page 25, there is a typographical error with regard to the regulatory citation for the General Preconstruction Review Requirements:

   {Permitting note: These emissions units are regulated under ~~62-3213.200~~Rule 62.212.300, F.A.C., General Preconstruction Review Requirements; Rule 62-212.400, F.A.C., Prevention of Significant Deterioration; Rule 62-296.320, F.A.C.}

5. First paragraph, Compliance Plan CP-1, the units related to the flow per tower are missing. See item 3 above.

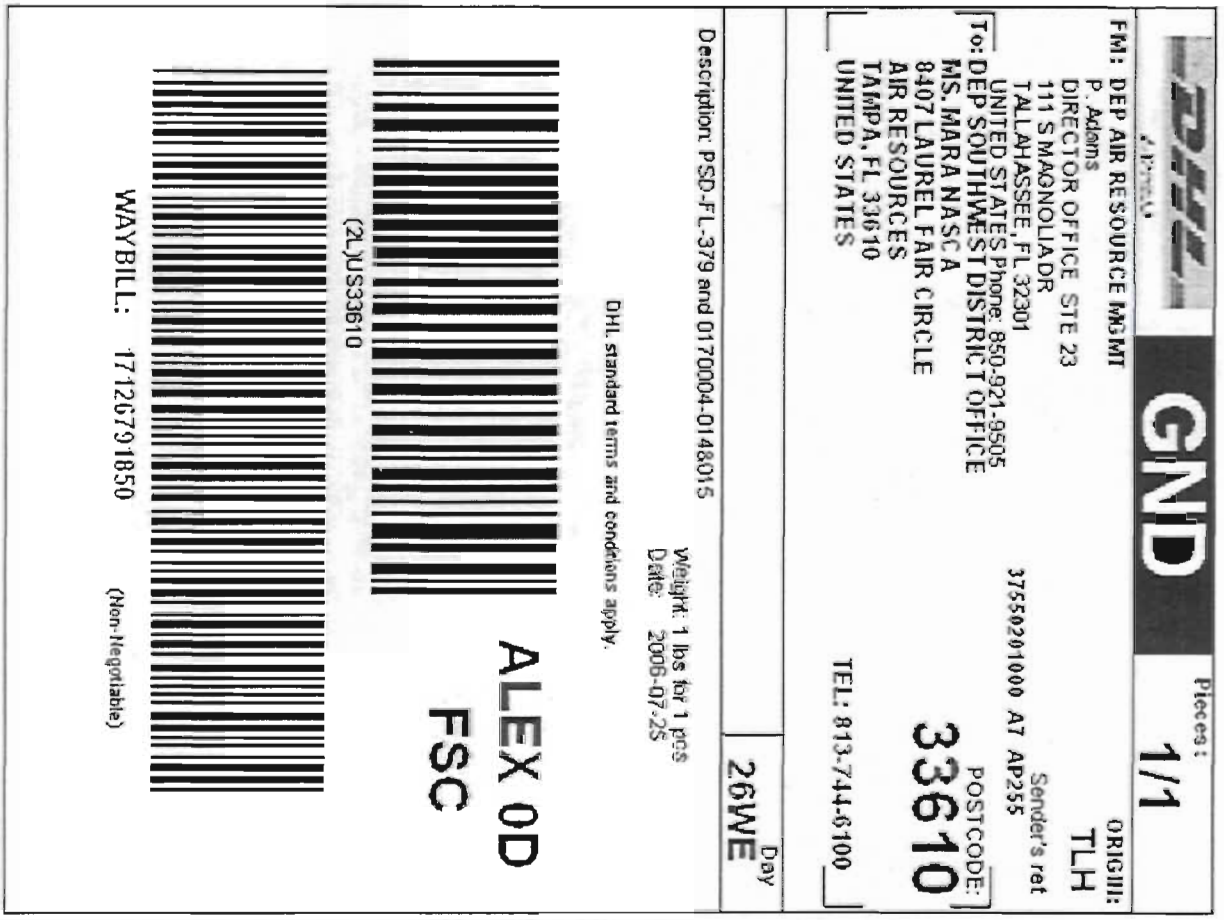
Thank you for your assistance. Please let me know at (727) 820-5962, if you have any questions.

Sincerely,

Ann Quillian

Ann Quillian, PE
Ann.Quillian@pgnmail.com
Senior Environmental Specialist
Environmental Services Section

cc: Mr. Jeff Koerner, FDEP - Tallahassee
Ms. Cindy Zhang-Torres, FDEP Southwest District



PEEL HERE PEEL HERE

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SENDER'S RECEIPT
Waybill #: 17126791850

To(Company):
DEP Southwest District Office
Air Resources
8407 Laurel Fair Circle

Tampa, FL 33610
UNITED STATES

Attention To: Ms. Mara Nasca
Phone#: 813-744-6100

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 3.1
Protection: Not Required
Description: PSD-FL-379 and 0170004-0148015

Weight (lbs.): 1
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Ground (Est. delivery in 1 business day(s))

Special Svc:

Date Printed: 7/25/2006
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) _____ Route _____ Date _____ Time _____

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

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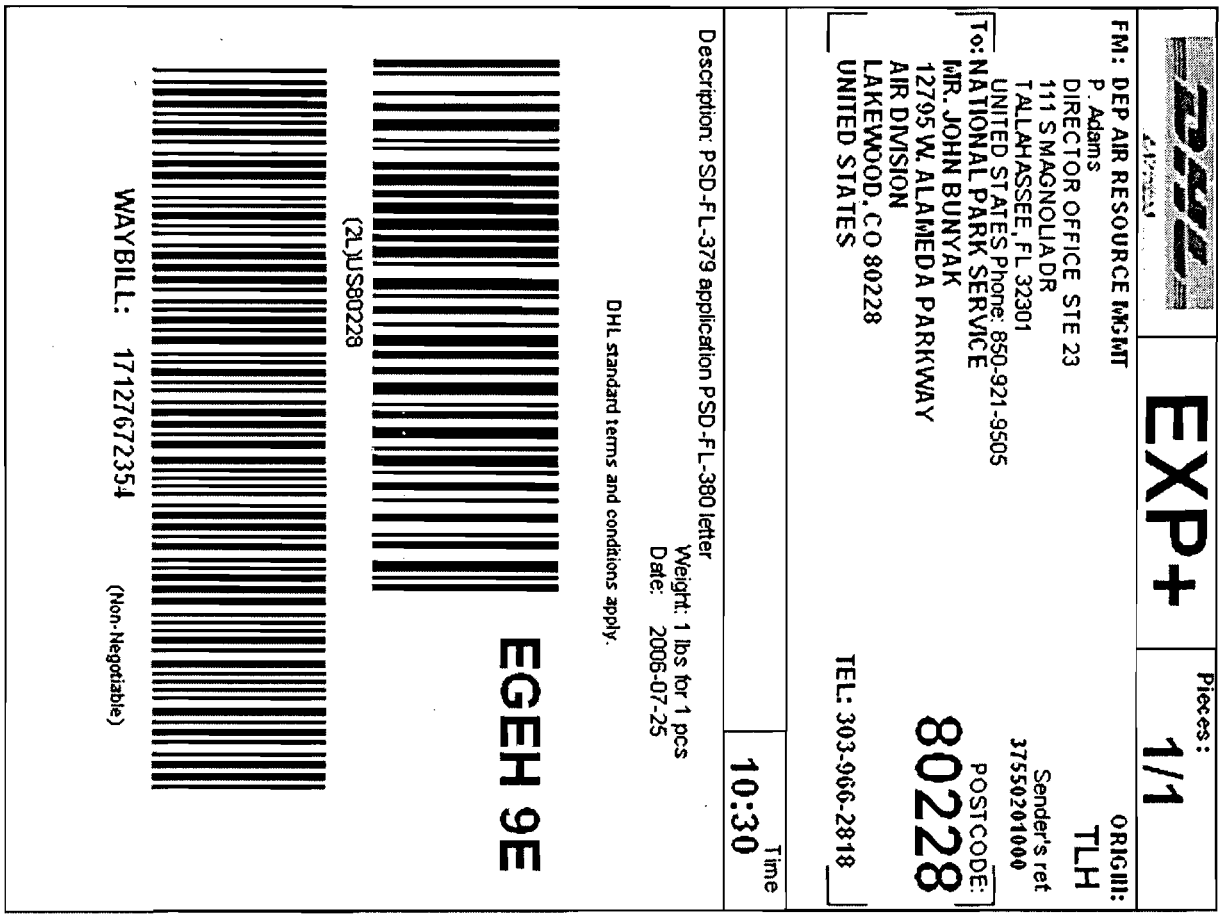
DHL EXPRESS



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SENDER'S RECEIPT
Waybill #: 17127672354

To(Company):
National Park Service
Air Division
12795 W. Alameda Parkway

Lakewood, CO 80228
UNITED STATES

Attention To: Mr. John Bunyak
Phone#: 303-966-2818

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 13.73
Protection: Not Required
Description: PSD-FL-379 application
PSD-FL-380 letter

Weight (lbs.): 1
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000
Service Level: Next Day 10:30 (Next business day by 10:30 A.M.)

Special Svc:

Date Printed: 7/25/2006
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) _____ Route _____ Date _____ Time _____

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Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

July 25, 2006

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
P. O. Box 25287
Denver, Colorado 80225

RE: Progress Energy Florida, Inc.
Anclote Power Plant Helper Cooling Towers
1010017-007-AC, PSD-FL-379

Dear Mr. Bunyak:

Enclosed for your review and comment is a PSD permit application from Progress Energy Florida, Inc. to replace two helper cooling towers at their Anclote Power Plant in Holiday, Pasco County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Bobby Bull, review engineer, at 850/921-9585.

Sincerely,

Patty Adams for

Jeffry F. Koerner, P.E., Administrator
North Permitting Section

JFK/pa

Enclosure

cc: B. Bull

▲ PEEL HERE PEEL HERE ▲

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SENDER'S RECEIPT
Waybill #: 17050352454

To(Company):
U.S. EPA Region 4
Air Permits Section
61 Forsyth Street

Atlanta, GA 30303
UNITED STATES

Attention To: Mr. Gregg M. Worley
Phone#: 404-562-9141

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 3.3
Protection: Not Required
Description: PSD-FL-380 app;PSD-FL-379 app; PSD-FL-377 response

Weight (lbs.): 13
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Ground (Est. delivery in 1 business day(s))

Special Svc:

Date Printed: 7/19/2006
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) _____ Route _____ Date _____ Time _____

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

Thank you for shipping with DHL

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Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

July 19, 2006

Mr. Gregg M. Worley, Chief
Air Permits Section
U.S. EPA, Region 4
61 Forsyth Street
Atlanta, Georgia 30303-8960

RE: Progress Energy Florida, Inc.
Anclote Power Plant Helper Cooling Towers
1010017-007-AC, PSD-FL-379

Dear Mr. Worley:

Enclosed for your review and comment is a PSD permit application from Progress Energy Florida, Inc. to replace two helper cooling towers at their Anclote Power Plant in Holiday, Pasco County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact Bobby Bull, review engineer, at 850/921-9585.

Sincerely,

Patty Adams

for Jeffry F. Koerner, P.E., Administrator
North Permitting Section

JFK/pa

Enclosure

cc: B. Bull

Progress Energy

Via Overnight Delivery
July 11, 2006

Mr. Jeff Koerner, PE
Professional Engineer Administrator
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 5500
Tallahassee, Florida 32399-2400

RE: June 6, 2006 Request for Additional Information - Application for Air Construction Permit
Florida Power Corporation dba Progress Energy Florida, Inc.
Anclote Power Plant
Facility ID 1010017
Emissions Unit No. -007, Helper Cooling Towers

Dear Mr. Koerner:

Please find enclosed four (4) copies of an updated application for an air construction permit and Title V permit revision as well as a PSD report for the Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") Anclote Power Plant. As discussed with FDEP's Patty Adams today, the required $7500 fee, which was sent under separate cover, was received by the FDEP.

As described in PEF's May 4, 2006 application, PEF is replacing two old helper cooling towers, unregulated emissions unit -007, with two new cooling towers. The enclosed documents address the needed information requested in the June 6, 2006 Florida Department of Environmental Protection letter to PEF regarding this project. Therefore, please replace the previously submitted application package with the enclosed.

Thank you for your assistance. Please let me know at (727) 820-5962, if you have any questions.

Sincerely,

Ann Quillian, PE
Senior Environmental Specialist
Environmental Services Section

Enclosures

cc: Ms. Mara G. Nasca, FDEP Southwest District

Progress Energy Florida, Inc.
100 Central Avenue
Saint Petersburg, FL 33701

Department of Environmental Protection

Division of Air Resource Management

RECEIVED
JUL 12 2006
BUREAU OF AIR REGULATION

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for any air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Florida Power Corporation dba Progress Energy Florida, Inc.	
2. Site Name: Anclote Power Plant	
3. Facility Identification Number: 1010017	
4. Facility Location... Street Address or Other Locator: 1729 Baillies Bluff Road City: Holiday County: Pasco Zip Code: 34691-9753	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: Ann Quillian
2. Application Contact Mailing Address... Organization/Firm: Progress Energy Florida, Inc. Street Address: 100 Central Avenue – CX1B City: Saint Petersburg State: FL Zip Code: 33701
3. Application Contact Telephone Numbers... Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229
4. Application Contact Email Address: Ann.Quillian@pgnmail.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 7-18-06	3. PSD Number (if applicable): PSD-FL-379
2. Project Number(s): 1010017-007-AC	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☐ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☒ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Air construction permit application for the replacement of the unregulated emissions unit -007, helper cooling towers. The existing circulating water pumps will be reused, therefore no increase in throughput capacity.

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
-007	Helper Cooling Towers	AC1A	$7500

Application Processing Fee

Check one: [X] Attached - Amount: $ 7500 [ ] Not Applicable

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: ext. Fax:

4. Owner/Authorized Representative Email Address:

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.

   Signature Date

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name: Jeffrey Swartz

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

- [X] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
- [ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- [ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
- [ ] The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...

Organization/Firm: Florida Power Corporation dba Progress Energy Florida, Inc.

Street Address: 1729 Baillies Bluff Road

City: Holiday State: FL Zip Code: 34691

4. Application Responsible Official Telephone Numbers...

Telephone: (727) 943 - 3006 ext. Fax: (727) 943 - 3050

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature 7/5/06 Date

Professional Engineer Certification

1. Professional Engineer Name: Ann M. Quillian
   Registration Number: 047610
2. Professional Engineer Mailing Address...
   Organization/Firm: Progress Energy Florida, Inc.
   Street Address: 100 Central Avenue – CX1B
   City: Saint Petersburg State: FL Zip Code: 33701
3. Professional Engineer Telephone Numbers...
   Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229
4. Professional Engineer Email Address:
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☒, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Ann M Quillian — Signature

6-29-06 — Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 324.4 North (km) 3118.7		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 28/48/17 Longitude (DD/MM/SS) 82/47/08	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4911
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: Ann Quillian
2. Facility Contact Mailing Address... Organization/Firm: Progress Energy Florida, Inc. Street Address: 100 Central Avenue – CX1B City: Saint Petersburg State: FL Zip Code: 33701
3. Facility Contact Telephone Numbers: Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229
4. Facility Contact Email Address: Ann.Quillian@pgnmail.com

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☐ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	A	N
NOx	A	N
PB	A	N
PM	A	N
PM10	A	N
SO2	A	N
VOC	A	N
SAM	A	N
FL	A	N
HAPS	A	N
H106	A	N
H107	A	N
H133	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   ☐ Attached, Document ID:_____ ☒ Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   ☒ Attached, Document ID: AR1
3. Rule Applicability Analysis:
   ☒ Attached, Document ID: AR1 & AR2
4. List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification:
   ☐ Attached, Document ID:_____ ☒ Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    ☐ Attached, Document ID:_____ ☒ Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:_____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   [X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   [ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   [ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   [X] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Helper cooling towers.

3. Emissions Unit Identification Number: -007

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C			49	[ ] Yes [X] No

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
This project is to replace the existing helper cooling towers with new towers built from salt water corrosion resistant materials. The existing circulating water pumps will be reused, therefore no increase in throughput capacity will result.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   Drift Eliminators

2. Control Device or Method Code(s): 151

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: 178 E9 Gallons per Year (Sum of 2 Towers)	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	8760 hours/year

6. Operating Capacity/Schedule Comment:

The cooling towers only operate as needed during 6 to 7 months out of the year, therefore an estimated annual hours of operation of 4500 hours per year was used to calculate the throughput rate, as follows:

Max. Throughput Rate = Circulation Water Flow Rate = 660,000 GPM x 60 min/hr x 4500 hrs/yr = 178 E9 GPY
This is the total for both towers, with the maximum for each tower of 89.1 E9 GPY.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EU 007	2. Emission Point Type Code: 3	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Cooling tower cells (Rectangular or circular)		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 10 - 14 feet	7. Exit Diameter: 32 feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: 36 E 6 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Same number of cooling tower cells as in the old towers: 12 cells per unit or 24 cells total. The cooling tower cell height is expected to be 50 - 59 feet, with the stack height estimated to be 10 - 14 feet.		

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Circulation Water		
2. Source Classification Code (SCC): 3-85-001-01	3. SCC Units: Million Gallons Cooling Water	
4. Maximum Hourly Rate: 39.6	5. Maximum Annual Rate: 178,000	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: Max Hourly Rate is sum of two cooling towers. Max Annual Rate is sum of two cooling towers at 4500 hrs per year. The same circulating water pumps will be used with the new towers, therefore resulting in no increase in throughput capacity.		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	151		WP
PM10	151		WP

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 48 lb/hour 108 tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.0005% Drift Rate Reference: Project Specification	7. Emissions Method Code: 5
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years

10. Calculation of Emissions:
Emissions are the total for both cooling towers.

PTE:
Water from both the Gulf of Mexico and the Anclote River mix in the inlet before the water intake. No salinity data was available, therefore assumed the same as for Crystal River of 29,000 ppm.

660,000 gpm (60min/hr) (8.34 lb/gal) (29,000 ppm) (10 E-6) (0.0005 Drift Rate/100) = 48 lb PM/hr
48 lb PM/hr (4500 hr/year) (tons/2000 lbs) = 108 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Field 4 is in reference to 4500 hours per year of operation.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Design Drift Rate of 0.0005%	4. Equivalent Allowable Emissions: 48 lb/hour 108 tons/year
5. Method of Compliance: Work practice.	
6. Allowable Emissions Comment (Description of Operating Method): Equivalent Allowable Emissions based on project design drift rate, 4500 hrs per year limitation and an assumed TDS of 29000 ppm.	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.4 lb/hour 0.9 tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.82% of PM Reference: See Attachment EC1	7. Emissions Method Code: 5
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

Estimated that 0.82% of Total PM is PM 10 emissions per "Calculating Realistic PM10 Emissions from Cooling Towers" J.Reisman and G. Frisbie (See Attachment EC1)

PTE:
Sum for both cooling towers:
48 lbs PM/hr * 0.82% = 0.4 lb/hr PM10
108 PM TPY * 0.82% = 0.9 TPY PM 10

11. Potential, Fugitive, and Actual Emissions Comment:

Field 4 is in reference to 4500 hours per year of operation.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Design Drift Rate of 0.0005%	4. Equivalent Allowable Emissions: 0.4 lb/hour 0.9 tons/year
5. Method of Compliance: Work practice.	
6. Allowable Emissions Comment (Description of Operating Method): Equivalent Allowable Emissions based on project design drift rate, assumed TDS of 29000 ppm and 0.82% of Total PM.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: N/A	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation ___ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: AR1 [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: AR1 [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [X] Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   [ ] Attached, Document ID: _____ [X] Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   [X] Attached, Document ID: AR1 ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ [X] Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Additional Requirements Comment

Attachment AR1

PSD Report
Anclote Power Plant
EU -007, HELPER COOLING TOWERS

1. INTRODUCTION

Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") is proposing a project at the Anclote Power Plant (Facility ID 1010017) for the replacement of two (2) existing circular cooling towers (Emissions Unit ID -007, Helper Cooling Towers) with two (2) new fiberglass circular or rectangular once-through, counterflow, mechanical draft cooling towers. The existing towers are used to cool the water discharged from the plant in order to meet the temperature limitations of its NPDES permit. The replacement towers will be used for the same purpose.

This permit application contains the information developed to meet the Florida Department of Environmental Protection's ("FDEP") Prevention of Significant Deterioration ("PSD") requirements, including evaluation of the PSD pollutants as well as the Best Available Control Technology ("BACT") analysis. PEF is requesting an air construction permit and PSD approval as well as Title V Permit revision for this cooling tower replacement project.

1.1 Prevention of Significant Deterioration (PSD) Requirements

Though the helper cooling towers, Emissions Unit ID -007, are currently an unregulated emissions unit, this project to replace them requires an air construction permit as well as approval under PSD requirements. If PSD pollutant emissions from a new emissions source or an existing source that is to be modified increases more than a specific threshold, the US Environmental Protection Agency ("EPA") requirements, 40 CFR 52, as well as the FDEP regulations, Chapter 62-212, F.A.C., require the project to go through PSD review.

This cooling tower replacement project's PSD applicability analysis is summarized in Table 1.1 below. PSD review was triggered for particulate matter ("PM") only.

Table 1.1 PSD Applicability Analysis.

PSD Pollutant	Past Actual Emissions (TPY)[a]	Future Potential Emissions (TPY)	Change in Emissions (TPY)	Significant Emissions Rate Threshold (TPY)	PSD Review Required?
Particulate Matter (PM)	37	108	71	25	Yes
Particulate Matter – less than 10 μm (PM_{10})[b]	37	0.9	-36	15	No

[a] Past actual emissions based on AOR emissions reported for years 2004 and 2005;

[b] Per the Reisman – Frisbie method, the past actual for PM_{10} is 0.3 TPY, with a change in emissions of 0.6 TPY increase. This is still below the significant emissions rate threshold. Therefore, the project only triggers PSD for PM.

1.2 Best Achievable Control Technology (BACT) Analysis

A Best Achievable Control Technology ("BACT") analysis was performed for particulate matter ("PM") as it was the only PSD pollutant to exceed the significant emissions rate threshold. The resulting proposed BACT limitation is a design drift rate of 0.0005% based on an annual water throughput rate of 178 E9 gallons per year (total for both towers) and 4500 hours per year operation.

1.3 Air Quality Analysis

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 (AQRV) in the nearest Class I areas were not performed because PM was the only pollutant to trigger PSD review.

2. PROPOSED PROJECT DESCRIPTION

2.1 Site Description

The Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") Anclote Power Plant (Facility ID 1010017) consists of two oil/natural gas fired fossil fuel steam generating ("FFSG") units with two mechanical draft helper cooling towers.

2.2 Proposed Project

The proposed project involves the replacement of the two (2) existing circular cooling towers, which had been installed in the early 1980's, with new fiberglass circular or rectangular once-through, counterflow, mechanical draft cooling towers. These towers are primarily operated in the summer months (April through September), in order to reduce the discharge water canal temperature to meet current water permit requirements. This will enable PEF to reduce the number and extent of de-rates and thereby reduce replacement fuel and purchase power costs.

The reason for this replacement is the degraded structural condition of the existing reinforced concrete towers and the potential safety hazards to employees that it causes. The new towers will use the existing circulating water pumps, thus maintaining the same flow characteristics of the existing cooling tower system. There are two (2) potential cooling tower vendors, SPX Marley and GEA, being considered at the date of this air construction permit application.

Cooling towers provide direct contact between cooling water and air passing through the tower (see Figure 2.2). Cooling tower drift is created when a small amount of the cooling water becomes entrained in the air stream and carried out of the tower.

The PM and PM_{10} emissions from cooling towers are related to the total dissolved solids ("TDS") in the water and amount of drift through the cooling tower. Drift eliminators are the control technology used to reduce the amount of drift, therefore reduce the amount of PM emissions.

2.3 Site Layout and Structures

An aerial photo showing proposed cooling tower locations follows (see Figure 2.3). If new rectangular towers are selected in lieu of replacement circular towers, they will be located near the existing towers and will utilize the existing intake and discharge points.

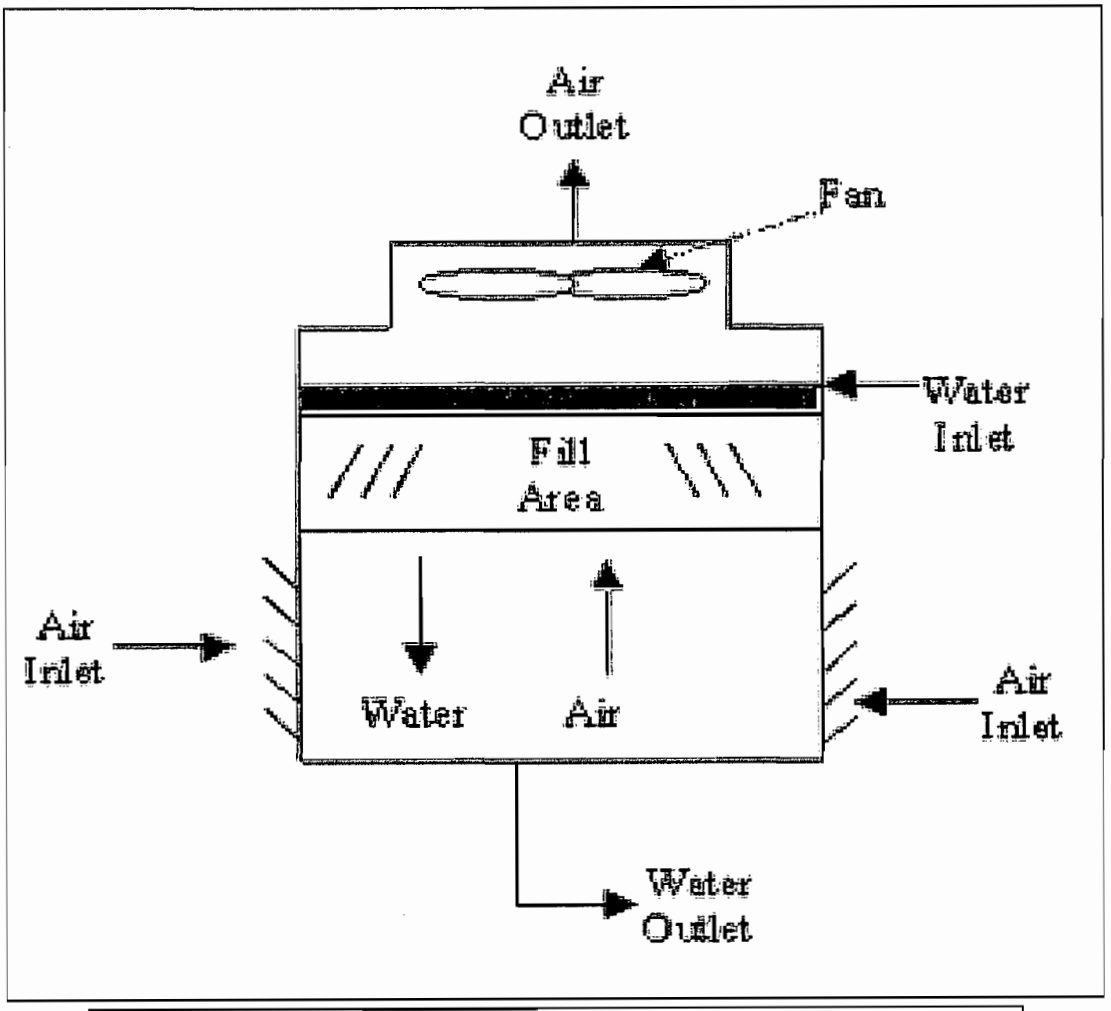


Figure 2.2
Diagram of Typical Counterflow Mechanical Draft Cooling Tower
(See http://www.cheresources.com/ctowerszz.shtml)

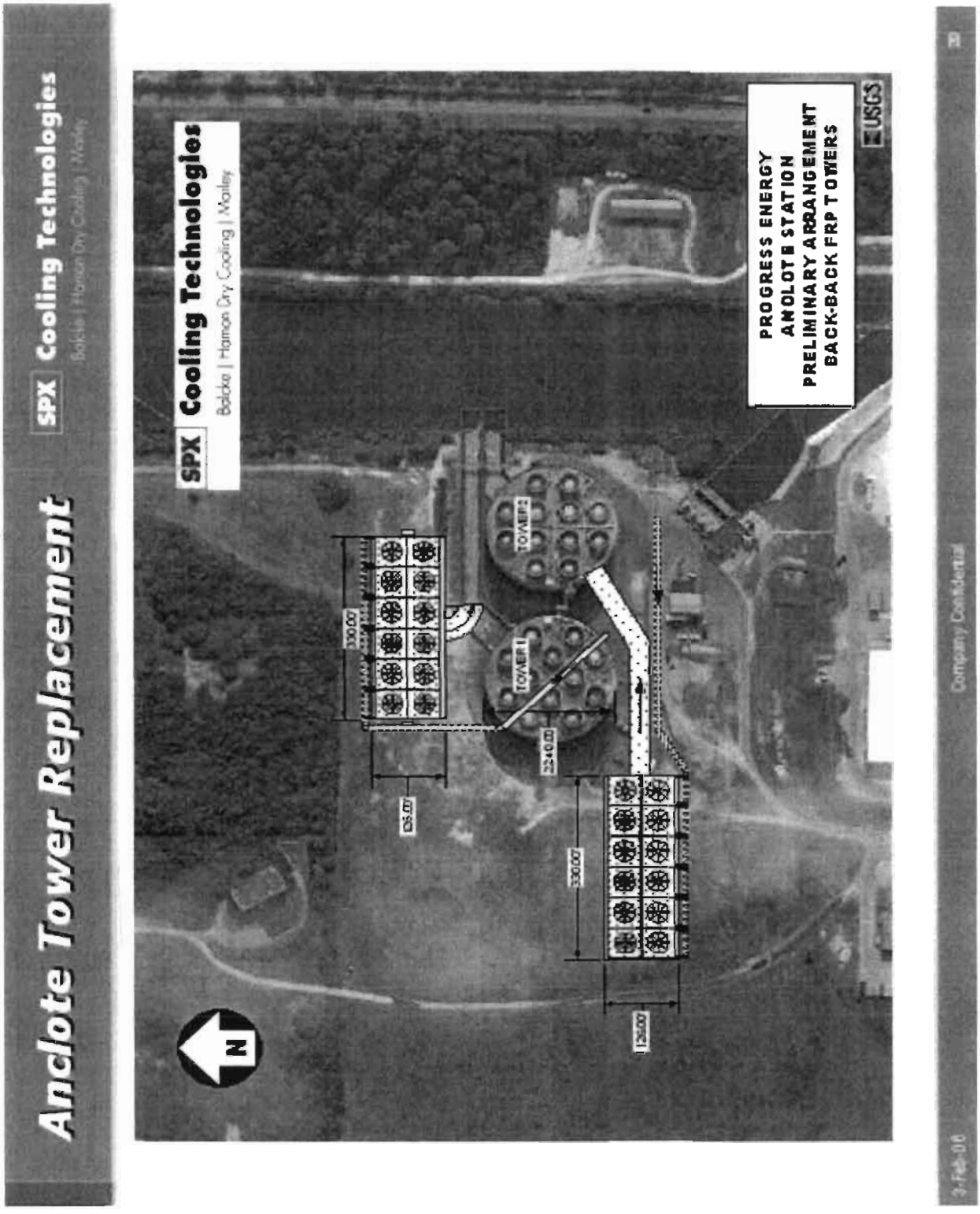


Figure 2.3
Preliminary Cooling Tower Arrangement

2.4 Stack Parameters

The new replacement cooling towers will have the same number of cells as the old towers, 12 cells per unit or 24 cells total. The cooling tower cell height is expected to be 50 - 59 feet, with the stack height estimated to be 10 - 14 feet.

3. AIR QUALITY REVIEW REQUIREMENTS AND APPLICABILITY

3.1 National and State Ambient Air Quality Standards

EPA promulgated primary national ambient air quality standards ("NAAQS") to protect public health and secondary NAAQS to protect public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Attainment areas, which Florida is one, are locations of the country which meet these NAAQS.

Florida's ambient air quality standards are identical to the NAAQS (see Rule 62-204.240, F.A.C.) with the exception of sulfur dioxide which includes the 24-hour secondary standard. The NAAQS for particulate matter is as follows:

Table 3.1. National and State AAQS, Allowable PSD Increments, and Significant Impact Levels – Particulate Matter

Pollutant	Averaging Time	AAQS ($\mu g/m^3$)[a]			PSD Increments ($\mu g/m^3$)[a]		PSD Class II Significant Impact Levels ($\mu g/m^3$)[b]
		Primary Standard	Secondary Standard	Florida	Class I	Class II	
Particulate Matter[c] (PM_{10})	Annual Arithmetic Mean	50	50	50	4	17	1
	24-Hour Maximum	150	150	150	8	30	5

Note: Particulate matter (PM_{10}) = particulate matter with aerodynamic diameter less than or equal to 10 micrometers.

[a] Short-term maximum concentrations are not to be exceeded more than once per year except for the PM_{10} AAQS. The 24-hour PM_{10} AAQS is attained when the expected number of days per year with a 24-hour concentration above 150 $\mu g/m^3$ is equal to or less than 1. For modeling purposes, compliance is based on the sixth highest 24-hour concentration over a 5-year period.

[b] Maximum concentrations are not to be exceeded.

[c] On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, $PM_{2.5}$ standards were introduced with a 24-hour standard of 65 $\mu g/m^3$ (3-year average of 98th percentile) and an annual standard of 15 $\mu g/m^3$ (3-year average at community monitors).

Sources: Federal Register, Vol. 43, No. 118, June 19, 1978; 40 CFR 50; 40 CFR 52.21; Chapter 62-204, F.A.C.

3.2 Prevention of Significant Deterioration (PSD) Requirements

Per federal and Florida Prevention of Significant Deterioration ("PSD") review requirements, major new or modified emission sources regulated by the Clean Air Act ("CAA") must undergo review as well as obtain a pre-construction

permit. As Florida's EPA approved State Implementation Plan ("SIP") includes Florida's PSD requirements, the FDEP has PSD approval authority.

A "major facility" is any 1 of 28 named source categories that have the potential to emit 100 TPY or more or any other stationary facility that has the potential to emit 250 TPY or more of a PSD pollutant. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. For an existing source that is to be modified or a new source at a major facility, the proposed project would be subject to PSD review if the resulting net emissions increase (i.e. proposed future potential versus past actual emissions) is greater than the PSD significant emissions rates. Particulate matter PSD significant emission rates are 25 TPY for PM and 15 TPY for PM_{10}. See Rule 62-210.200, F.A.C. Also, EPA has promulgated regulations providing that impacts from PSD review projects above an air quality baseline concentration level of criteria pollutants such as PM_{10} would constitute significant deterioration of air quality. Florida has adopted the EPA class designations and allowable PSD increments (See Table 3.1 for particulate matter).

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility (see 40 CFR 51.166, Prevention of Significant Deterioration of Air Quality and Rule 62-212.400, F.A.C.). Major facilities subject to review are required to undergo the following for each PSD pollutant emitted in significant amounts:

1. Control technology review,
2. Source impact analysis,
3. Air quality analysis (monitoring),
4. Source information, and
5. Additional impact analyses.

In addition to these analyses, review with respect to good engineering practice ("GEP") stack height regulations may also be required.

Control Technology Review. Per the PSD control technology review requirements, all applicable federal and state emission-limiting standards must be met and the Best Achievable Control Technology ("BACT") applied to control emissions from the source. The BACT requirements are applicable to all regulated pollutants for which the increase in emissions from the new source or existing source modification exceeds the significant emissions rate.

Per Rule 62-210.200(38), F.A.C., Best Achievable Control Technology is defined as follows:

(a) An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account:

1. Energy, environmental and economic impacts, and other costs;

2. All scientific, engineering, and technical material and other information available to the Department; and

3. The emission limiting standards or BACT determinations of Florida and any other state; determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.

(b) if the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation.

(c) Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

(d) In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.

BACT requirements were promulgated within the PSD provisions in the 1977 Clean Air Act amendments [Public Law 95-95; Part C, Section 165(a)(4)]. The primary purpose of BACT is to optimize consumption of PSD air quality increments and thereby enlarge the potential for future economic growth without significantly degrading air quality (EPA, 1978; 1980). Guidelines for the evaluation of BACT can be found in *Guidelines for Determining Best Available Control Technology (BACT)* (EPA, 1978) and in the *PSD Workshop Manual* (EPA, 1980). These EPA guidelines were issued to provide a consistent approach to BACT and to ensure that the impacts of alternative emission control systems are measured by the same set of parameters. However, BACT in one area may not be identical to BACT in another area. According to EPA (1980), "BACT analyses for the same types of emissions unit and the same pollutants in different locations or situations may determine that different control strategies should be applied to the different sites, depending on site-specific factors. Therefore, BACT analyses must be conducted on a case-by-case basis."

The BACT requirements are intended to ensure that the control systems incorporated in the design of a proposed project reflect the latest in control technologies used in a particular industry and take into consideration existing and future air quality in the vicinity of the facility. BACT must, at a minimum, demonstrate compliance with applicable New Source Performance Standards ("NSPS") for a source. An evaluation of the air pollution control techniques and systems, including a cost-benefit analysis of alternative control technologies capable of achieving a higher degree of emissions reduction than the proposed control technology, is required. The cost-benefit analysis requires the documentation of the materials, energy, and economic penalties associated with the proposed and alternative control systems, as well as the environmental benefits derived from these systems. A BACT decision is to be based on sound judgment, balancing environmental benefits with energy, economic, and other impacts (EPA, 1978).

Historically, a "bottom-up" approach consistent with the BACT Guidelines and the PSD Workshop Manual has been used. With this approach, an initial control level, which is usually NSPS, is evaluated against successively more stringent controls until a BACT level is selected. Later, EPA decided that the bottom-up approach was not providing the level of BACT originally intended by the rule. As a result, in December 1987, the EPA Assistant Administrator for the Office of Air and Radiation mandated changes in the implementation of the PSD program, including a new "top-down" approach to BACT decision making.

The top-down approach begins with the most stringent (or top) technology and emission limits that have been applied elsewhere to the same or similar source category. The applicant must then provide a basis for rejecting this technology in favor of the next most stringent technology or basis for using it. Rejection of control alternatives may be based on technical or economic infeasibility. Such decisions are made on the basis of physical (e.g., fuel type), locational (e.g., availability of water), or significant differences that may exist in environmental, economic, or energy impacts. The differences between the proposed facility and the facility, for which the control technique was applied previously, must be justified. EPA has issued a draft guidance document on the top-down approach entitled *Top-Down Best Available Control Technology Guidance Document* (EPA, 1990). FDEP utilizes this "top-down" BACT approach.

Additional Impact Analysis. In addition to air quality impact analyses, PSD regulations require analysis of visibility impairment and the impacts on soils and vegetation that would occur as a result of the proposed source (see Rule 62-212.400(8), F.A.C.). Impacts as a result of general commercial, residential, industrial, and other growth associated with the source also must be addressed for each PSD pollutant emitted in significant amounts. However since PM was the only pollutant to trigger PSD review for the helper cooling tower replacement project, no additional impact analysis was conducted.

PSD Applicability for Proposed Project.

Area Classification. This cooling tower replacement project at the PEF Anclote Power Plant is located in Pasco County, which is considered an attainment or maintenance area for all criteria pollutants.

Pollutant Applicability. The Anclote Power Plant is considered a "major existing facility" because it is 1 of the 28 named source categories and the annual emissions of several regulated pollutants are greater than 100 TPY (i.e. PM). Therefore, PSD review is required for any modification which results in a net increase greater than the PSD significant emissions rates.

As shown in Table 1.1, the comparison of the future potential-to-emit to the past actual annual emissions for the cooling tower replacement project results in a significant increase in PM emissions, but a decrease of PM_{10} emissions. Therefore, PSD review is required for only PM.

3.3 Nonattainment Requirements

Florida is considered to be in attainment with all federal and state AAQS. Therefore, there are no non-attainment areas. Hence, non-attainment new source review is not required.

3.4 Emission Standards

There are no New Source Performance Standards ("NSPS") or National Emissions Standards for Hazardous Air Pollutants ("NESHAP" and "MACT") which apply to this cooling tower replacement project.

4. AMBIENT MONITORING ANALYSIS

Per Rule 62-212.400(7), F.A.C., ambient monitoring analysis may be required as in 40 CFR 52.21(m) for a project under PSD review. A project can be exempted from monitoring if the predicted increase in ambient concentrations is less than a specific de minimis concentration for the PSD pollutant under review. Also, if PSD review is only triggered for PM, as with this cooling tower replacement project, no ambient monitoring is required.

5. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

5.1 Requirements and BACT Summary

As previously discussed (see Section 3), Best Available Control Technology ("BACT") must be applied for each pollutant under PSD review and BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives using a top-down approach.

For the Anclote Power Plant helper cooling tower replacement project, the proposed BACT for PM emissions is as follows:

Table 5.1 Proposed BACT for Cooling Tower Replacement

PSD Pollutant	BACT
PM	0.0005% Drift Rate[a]

[a] Based on 660,000 gpm throughput and 4500 hours per year.

5.2 Cooling Tower BACT Analysis – Particulate Matter (PM)

Previous BACT Determinations. As part of the BACT analysis, a review of previous PM BACT determinations for cooling towers listed in the RACT/BACT/LAER Clearinghouse on EPA's web site was performed. See Table 5.2 below. The pollution control technology was drift elimination for these determinations.

Table 5.2: RACT/BACT/LAER Clearinghouse, Cooling Towers Permitted 6/2003 through 6/2006[a]

Facility	Drift Rate (%)	Pollution Control Technology	State	Basis	Permit Date
Auburn Nugget	0.0050	(N)	IN	BACT-PSD	5/31/2005
Newmount Nevada Energy Investment, LLC	0.0005	Drift Eliminators	NV	BACT-PSD	5/5/2005
Trigen-Nassau Energy Corporation	0.0005	(N)	NY	BACT-PSD	3/31/2005
Mirant Mid-Atlantic, LLC	0.0010	Mist Eliminators	MD	BACT-PSD	11/5/2004
Longview Power, LLC	0.0002	Drift Eliminators	WV	BACT-PSD	3/2/2004
Midamerican Energy Company	0.0005	Mist Eliminators	IA	BACT-PSD	6/17/2003

[a] RACT/BACT/LAER Clearinghouse is on EPA's website: http://cfpub.epa.gov/rblc/htm/bl02.cfm.

Control Technology Feasibility. For cooling towers, drift eliminators are usually a part of the tower design in order to remove as many droplets as possible from the air stream before it exits the tower. Such drift eliminators depend on the inertial separation caused by the directional changes when passing through the eliminators.

Common drift eliminator designs include herringbone (blade-type), wave form, and cellular (or honeycomb) configurations, with cellular units being the most efficient. Various materials can be used, including ceramics, fiber reinforced cement, fiberglass, metal, plastic, and wood installed or formed into closely spaced slats, sheets, honeycomb assemblies, or tiles. The materials may include additional features, such as corrugations and water removal channels, to enhance the removal performance. (EPA, AP42 Section 13.4, January 1995)

PM BACT Selection. For this Anclote Power Plant helper cooling tower replacement project, PEF proposes the use of drift eliminators with a design 0.0005% drift rate as the BACT limit. Note that at 660,000 gpm, 4500 hours per year, the potential-to-emit is estimated to be 108 TPY PM and 0.9 TPY PM_{10}. Per Table 5.2, this proposed drift rate meets the current BACT for cooling towers.

Attachment AR2
Rule Applicability Analysis
Title V Core List
EU -007, HELPER COOLING TOWERS

Title V Core List

Effective: 03/01/02

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61, Subpart M: NESHAP for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 06-21-01

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(5), F.A.C.: Notification of Startup.

62-210.300(6), F.A.C.: Emissions Unit Reclassification.
62-210.300(7), F.A.C.: Transfer of Air Permits.
62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.
62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400, F.A.C.: Emission Estimates.
62-210.650, F.A.C.: Circumvention.
62-210.700, F.A.C.: Excess Emissions.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1), F.A.C.: Application for Air Permit – Title V Source, Form and Instructions.
62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.
62-210.900(7), F.A.C.: Application for Transfer of Air Permit – Title V and Non-Title V Source.

CHAPTER 62-212, F.A.C.: STATIONARY SOURCES - PRECONSTRUCTION REVIEW, effective 08-17-00

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.415, F.A.C.: Trading of Emissions Within a Source.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.450, F.A.C.: Permit Review by EPA and Affected States
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
62-213.900(7), F.A.C.: Statement of Compliance Form.

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99

62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.

CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99

62-297.310, F.A.C.: General Test Requirements.
62-297.330, F.A.C.: Applicable Test Procedures.
62-297.340, F.A.C.: Frequency of Compliance Tests.
62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
62-297.350, F.A.C.: Determination of Process Variables.
62-297.570, F.A.C.: Test Report.
62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

Miscellaneous:

CHAPTER 28-106, F.A.C.: Decisions Determining Substantial Interests
CHAPTER 62-110, F.A.C.: Exception to the Uniform Rules of Procedure, effective 07-01-98

CHAPTER 62-256, F.A.C.: **Open Burning and Frost Protection Fires, effective 11-30-94**

CHAPTER 62-257, F.A.C.: **Asbestos Notification and Fee, effective 02-09-99**

CHAPTER 62-281, F.A.C.: Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

Attachment EC1

Emission Calculation Information

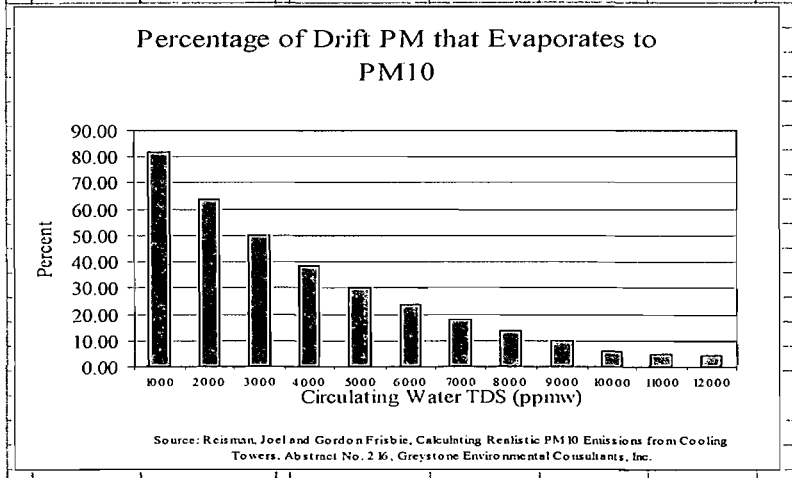
EU -007, HELPER COOLING TOWERS

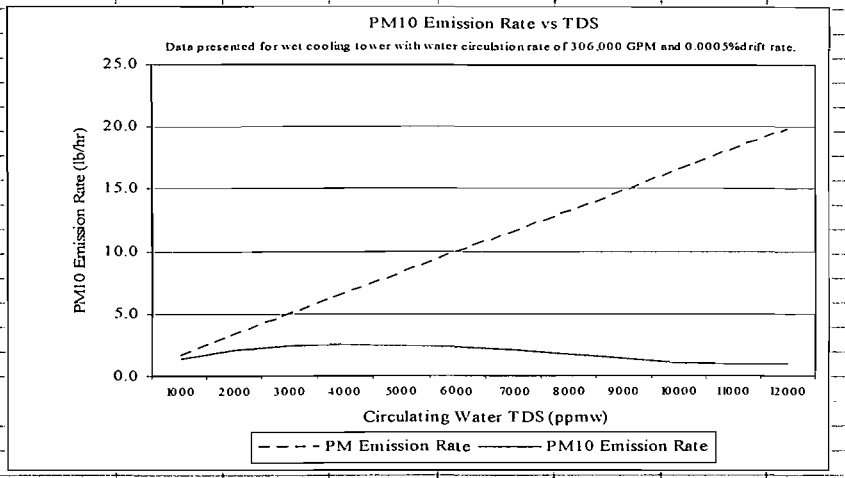
Attachment EC1 – Emission Calculation Information
Florida Power Corporation dba Progress Energy Florida, Inc., EU -007 Helper Cooling Towers
Estimate of PM10 Fraction of Cooling Tower Drift

TDS (ppmw)	PM Emission Rate (lb/hr)	Percent of Emissions < or = PM10 %	PM10 Emissions (lb/hr)
1000	1.65	82.04	1.355
2000	3.30	63.50	2.097
3000	4.95	50.00	2.477
4000	6.61	38.33	2.532
5000	8.26	29.97	2.475
6000	9.91	23.59	2.337
7000	11.56	18.20	2.104
8000	13.21	13.57	1.793
9000	14.86	9.65	1.434
10000	16.51	6.28	1.037
11000	18.16	5.11	0.928
12000	19.82	4.46	0.884
17500	28.90	1.83	0.529
29000	47.89	0.82	0.393
89600	147.96	0.22	0.326

Tower Circulation Rate (GPM)	Drift Rate %
660,000	0.0005
Salt water	
density	
(lb/gal)	
8.34	

Calculated PM10 % < or = PM10 %
82.04
63.50
50.00
38.33
29.97
23.59
18.20
13.57
9.65
6.28
5.11
4.46
1.83
0.82
0.22





Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers,* Abstract No. 216, Greystone Environmental Consultants, Inc.

Calculating Realistic PM_{10} Emissions from Cooling Towers

Abstract No. 216 Session No. AM-1b

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ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM_{10}) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42[1], which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM_{10}. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM_{10} emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM_{10} modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM_{10} non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM_{10} emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fenceline. This paper presents a method for computing realistic PM_{10} emissions from cooling towers with medium to high TDS levels.

INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42[1] provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically

expressed as a percentage of the cooling tower water circulation rate). AP-42 states that "a *conservatively high* PM_{10} emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM_{10} range." (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$PM = \text{Water Circulation Rate} \times \text{Drift Rate} \times \text{TDS} \qquad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$PM = 146{,}000 \text{ gpm} \times 8.34 \text{ lb water/gal} \times 0.0006/100 \times 7{,}700 \text{ lb solids}/10^6 \text{ lb water} \times 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM_{10}, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM_{10}.

COMPUTING THE PM_{10} FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM_{10} can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull[2], 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore,

this size distribution data can be assumed to be conservative for predicting the fraction of PM_{10} in the total cooling tower PM emissions.

In calculating PM_{10} emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density (ρ_w) of water; $1.0\ g/cm^3$ or $1.0 * 10^{-6}\ \mu g/\mu m^3$.
- The solid particles were assumed to have the same density (ρ_{TDS}) as sodium chloride, (i.e., $2.2\ g/cm^3$).

Using the formula for the volume of a sphere, $V = 4\pi r^3/3$, and the density of pure water, $\rho_w = 1.0\ g/cm^3$, the following equations can be used to derive the solid particulate diameter, D_p, as a function of the TDS, the density of the solids, and the initial drift droplet diameter, D_d :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \qquad [2]$$

$$\text{Mass of solids in drift droplet} = (TDS)(\rho_w)(\text{Volume of drift droplet}) \qquad [3]$$

substituting,

$$\text{Mass of solids in drift} = (TDS)(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{TDS})(\text{solid particle volume}) = (\rho_{TDS})(4/3)\pi(D_p/2)^3 \qquad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{TDS})(4/3)\pi(D_p/2)^3 = (TDS)(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [6]$$

Solving for D_p:

$$D_p = D_d\,[(TDS)(\rho_w/\rho_{TDS})]^{1/3} \qquad [7]$$

Where,

TDS is in units of ppmw
D_p = diameter of solid particle, micrometers (μm)
D_d = diameter of drift droplet, μm

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10 μm in diameter, we conclude that approximately 14.9 percent of the mass emissions are equal to or smaller than PM_{10}. The balance of the solid

particulate are particulate greater than 10 μm. Hence, PM_{10} emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall PM_{10} emissions are actually lower, because more of the solid particles are larger than 10 μm.

Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

[1] Bracketed numbers refer to equation number in text.

The percentage of PM_{10}/PM was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted PM_{10} emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the PM_{10} emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

CONCLUSION

The emission factors and methodology given in EPA's AP-42[1] Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than PM_{10} once the water has evaporated. Particles larger than PM_{10} are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift

droplet size distribution, a method is now available for calculating realistic PM_{10} emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.61E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.69	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.96E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70685.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
600	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

Figure 1: Percentage of Drift PM that Evaporates to PM10

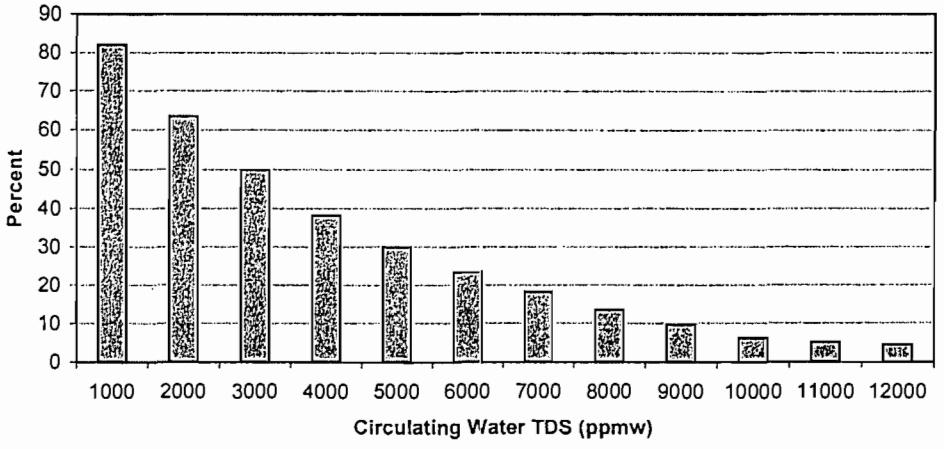
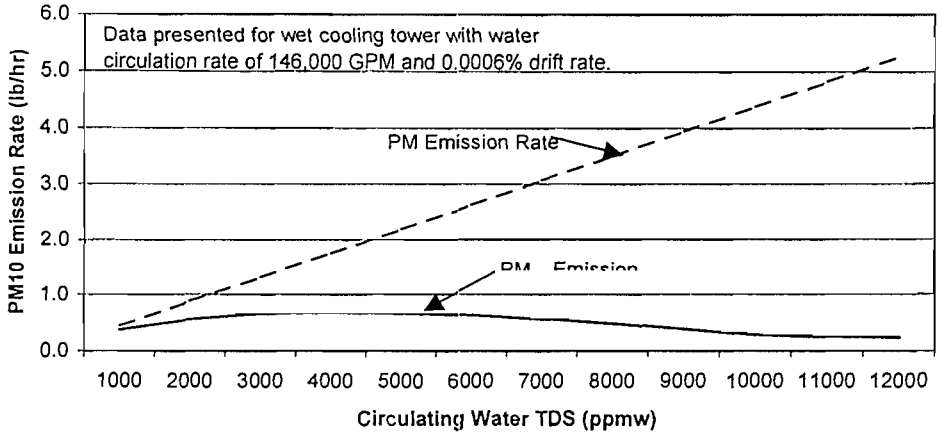


Figure 2: PM_{10} Emission Rate vs. TDS



REFERENCES

1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, http://www.epa.gov/ttn/chief/ap42/, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.

2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

KEY WORDS

Drift
Drift eliminators
Cooling tower
PM_{10} emissions
TDS

Progress Energy

RECEIVED
MAY 09 2006
BUREAU OF AIR REGULATION

May 8, 2006

Mr. Jeff Koerner, PE
Professional Engineer Administrator
Division of Air Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, M.S. 5500
Tallahassee, Florida 32399-2400

RE: Application for Air Construction Permit
Florida Power Corporation dba Progress Energy Florida, Inc.
Anclote Power Plant
Facility ID 1010017
Unregulated Emissions Unit-007, Helper Cooling Towers

Dear Mr. Koerner:

Please find enclosed four (4) copies of an application for a minor source air construction permit at the Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") Anclote Power Plant. PEF is replacing its two old helper cooling towers, unregulated emissions unit -007, with two new cooling towers. The new cooling towers will use the existing circulating water pumps therefore resulting in no increase in throughput and no significant increase in emissions.

Thank you for your assistance. Please let me know at (727) 820-5962, if you have any questions.

Sincerely,

Ann Quillian

Ann Quillian, PE
Senior Environmental Specialist
Environmental Services Section

Enclosure

cc: Mr. Jason Waters, FDEP Southwest District

Progress Energy Florida, Inc.
100 Central Avenue
Saint Petersburg, FL 33701

Department of Environmental Protection

Division of Air Resource Management

RECEIVED
MAY 09 2006
BUREAU OF AIR REGULATION

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for any air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Florida Power Corporation dba Progress Energy Florida
2. Site Name: Anclote Power Plant
3. Facility Identification Number: 1010017
4. Facility Location...
   Street Address or Other Locator: 1729 Baillies Bluff Road
   City: Holiday County: Pasco Zip Code: 34691-9753
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: Ann Quillian
2. Application Contact Mailing Address...
   Organization/Firm: Progress Energy Florida, Inc.
   Street Address: 100 Central Avenue – CX1B
   City: Saint Petersburg State: FL Zip Code: 33701
3. Application Contact Telephone Numbers...
   Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229
4. Application Contact Email Address: Ann.Quillian@pgnmail.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 5-9-06
2. Project Number(s): 1010017-007-AC
3. PSD Number (if applicable):
4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

- [X] Air construction permit.
- [ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- [ ] Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- [ ] Initial Title V air operation permit.
- [ ] Title V air operation permit revision.
- [ ] Title V air operation permit renewal.
- [ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- [ ] Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- [ ] Air construction permit and Title V permit revision, incorporating the proposed project.
- [ ] Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- [ ] I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Air construction permit application for the replacement of the unregulated emissions unit -007, helper cooling towers. The existing circulating water pumps will be reused, therefore no increase in throughput and no significant increase in emissions.

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
-007	Helper Cooling Towers	AC1C	

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Jeffrey Swartz

2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: Progress Energy Florida, Inc.
   Street Address: 1729 Baillies Bluff Road
   City: Holiday State: FL Zip Code: 34691

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: (727) 943 - 3006 ext. Fax: (727) 943 - 3050

4. Owner/Authorized Representative Email Address:

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.

Michelle E. Crane for Jeff Swartz — Signature

5/4/06 — Date

Anclote - Air Correspondence

BEST AVAILABLE COPY

Progress Energy

August 24, 2005

Mr. Michael Cooke, Director
Florida Department of Environmental Protection
Division of Air Resources Management
2600 Blair Stone Rd. MS 5500
Tallahassee, FL 32399-2400

Ms. Deborah Getzoff, District Director
Southwest District Office
3404 Coconut Palm Drive
Tampa, FL 33619-8218

Subject: Responsible Official Notification for Title V – Anclote Plant

Dear Mr. Cooke and Ms. Getzoff:

As the new plant manager for the Florida Power Corporation (d/b/a Progress Energy Florida, Inc.) Anclote plant, I am submitting a Department of Environmental Protection form 62-213.900(8) to identify Responsible Officials.

If you have any questions, please contact me at (727) 943-3006.

Sincerely,

Jeff Swartz
Plant Manager

Attachment

c: Ms. Michelle Crane
Mr. Charles M. Gates
Mr. J. Michael Kennedy
Mr. Al Renedo

Department of Environmental Protection

Division of Air Resource Management

RESPONSIBLE OFFICIAL NOTIFICATION FORM

Note: A responsible official is not necessarily a designated representative under the Acid Rain Program. To become a designated representative, submit a certificate of representation to the U.S. Environmental Protection Agency (EPA) in accordance with 40 CFR Part 72.24.

Identification of Facility

1. Facility Owner/Company Name: Florida Power Corporation d/b/a Progress Energy Florida, Inc.	
2. Site Name: Anclote Plant	3. County: Pasco
4. Title V Air Operation Permit/Project No. *(leave blank for initial Title V applications)*: 1010017-006-AV	

Notification Type *(Check one or more)*

- ☐ **INITIAL:** Notification of responsible officials for an initial Title V application.
- ☐ **RENEWAL:** Notification of responsible officials for a renewal Title V application.
- ☑ **CHANGE:** Notification of change in responsible official(s).
  Effective date of change in responsible official(s) August 8, 2005

Primary Responsible Official

1. Name and Position Title of Responsible Official: Jeff Swartz – Plant Manager
2. Responsible Official Mailing Address:
   Organization/Firm: Progress Energy Florida, Inc./Anclote Plant
   Street Address: 1729 Baillies Bluff Road
   City: Holiday State: FL Zip Code: 34691-9753
3. Responsible Official Telephone Numbers:
   Telephone: 352-943-3006 Fax: 727-943-3050
4. Responsible Official Qualification *(Check one or more of the following options, as applicable)*:

[✓] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

[ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

[ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

[ ] The designated representative at an Acid Rain source.

5. Responsible Official Statement:

I, the undersigned, am a responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this notification. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this notification are true, accurate and complete. Further, I certify that I have authority over the decisions of all other responsible officials, if any, for purposes of Title V permitting.

JR Swartz — Signature

8/24/05 — Date

Additional Responsible Official

1. Name and Position Title of Responsible Official: Charles M. Gates, General Manager Operations South

2. Responsible Official Mailing Address:
Organization/Firm: Progress Energy Florida, Inc./Crystal River Plant (Fossil)
Street Address: 15760 W. Power Line Street
City: Crystal River State: FL Zip Code: 34428-6708

3. Responsible Official Telephone Numbers:
Telephone: 352/563-4335 Fax: 352-563-4727

4. Responsible Official Qualification *(Check one or more of the following options, as applicable)*:

[✓] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

[ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

[ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

[ ] The designated representative at an Acid Rain source.

Additional Responsible Official

1. Name and Position Title of Responsible Official: Michelle E. Crane, Superintendent - Operations & Results

2. Responsible Official Mailing Address:
Organization/Firm: Progress Energy Florida, Inc./Anclote Plant
Street Address: 1729 Baillies Bluff Road
City: Holiday State: FL Zip Code: 34691

3. Responsible Official Telephone Numbers:
Telephone: 727/943-3007 Fax: 727-943-3050

4. Responsible Official Qualification *(Check one or more of the following options, as applicable)*:

[✓] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

[ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

[ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

[ ] The designated representative at an Acid Rain source.

Additional Responsible Official

1. Name and Position Title of Responsible Official: Al Renedo, Superintendent - Maintenance

2. Responsible Official Mailing Address:
Organization/Firm: Progress Energy Florida, Inc./Anclote Plant
Street Address: 1729 Baillies Bluff Road
City: Holiday State: FL Zip Code: 34691

3. Responsible Official Telephone Numbers:

Telephone: 727/943-3008 Fax: 727-943-3050

4. Responsible Official Qualification *(Check one or more of the following options, as applicable)*:

[✓] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

[ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

[ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

[ ] The designated representative at an Acid Rain source.

Additional Responsible Official

1. Name and Position Title of Responsible Official: J. Michael Kennedy, DR

2. Responsible Official Mailing Address:

Organization/Firm: Progress Energy Florida, Inc./Environmental Services

Street Address: 100 Central Ave. Mail Code: CX1B

City: St. Petersburg State: FL Zip Code: 33701

3. Responsible Official Telephone Numbers:

Telephone: 727/820-5567 Fax: 727/820-5229

4. Responsible Official Qualification *(Check one or more of the following options, as applicable)*:

[ ] For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

[ ] For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

[ ] For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

[✓] The designated representative at an Acid Rain source.

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

Professional Engineer Certification

1. Professional Engineer Name: Ann M. Quillian
   Registration Number: 047610

2. Professional Engineer Mailing Address...
   Organization/Firm: Progress Energy Florida, Inc.
   Street Address: 100 Central Avenue – CX1B
   City: Saint Petersburg State: FL Zip Code: 33701

3. Professional Engineer Telephone Numbers...
   Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229

4. Professional Engineer Email Address:

5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

ANN M. QUILLIAN
No. 47610
(seal)
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Signature

5-3-06
Date

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 324.4 North (km) 3118.7		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 28/48/17 Longitude (DD/MM/SS) 82/47/08	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4911
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: Ann Quillian
2. Facility Contact Mailing Address... Organization/Firm: Progress Energy Florida, Inc. Street Address: 100 Central Avenue – CX1B City: Saint Petersburg State: FL Zip Code: 33701
3. Facility Contact Telephone Numbers: Telephone: (727) 820 - 5962 ext. Fax: (727) 820 - 5229
4. Facility Contact Email Address: Ann.Quillian@pgnmail.com

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☐ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☐ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
CO	A	N
NOx	A	N
PB	A	N
PM	A	N
PM10	A	N
SO2	A	N
VOC	A	N
SAM	A	N
FL	A	N
HAPS	A	N
H106	A	N
H107	A	N
H133	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: 05/14/2004

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location:
   ☐ Attached, Document ID:_____ ☒ Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):
   ☒ Attached, Document ID: AR1
3. Rule Applicability Analysis:
   ☒ Attached, Document ID: AR2
4. List of Exempt Emissions Units (Rule 62-210.300(3), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification:
   ☐ Attached, Document ID:_____ ☒ Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):
   ☐ Attached, Document ID:_____ ☒ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):
    ☐ Attached, Document ID:_____ ☒ Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:_____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☒ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Helper cooling towers.

3. Emissions Unit Identification Number: -007

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C			49	☐ Yes ☒ No

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
This project is to replace the existing helper cooling towers with new towers built from salt water corrosion resistant materials. The existing circulating water pumps will be reused, therefore no increase in throughput will result.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   Drift Eliminators

2. Control Device or Method Code(s): 151

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: 166 E9 Gallons per Year (Sum of 2 Towers)	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	8760 hours/year

6. Operating Capacity/Schedule Comment:

The cooling towers only operate as needed during 6 to 7 months out of the year, therefore an estimated annual hours of operation of 4200 hours per year was used to calculate the throughput rate, as follows:

Max. Throughput Rate = Circulation Water Flow Rate = 660,000 GPM x 60 min/hr x 4200 hrs/yr = 166 E9 GPY
This is the total for both towers, with the maximum for each tower of 83.2 E9 GPY.

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: EU 007	2. Emission Point Type Code: 3	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Cooling tower cells (Rectangular or circular)		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 17.5 feet	7. Exit Diameter: 32 feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: 36 E 6 acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Same number of cooling tower cells as in the old towers: 12 - 13 cells per unit or 24 - 26 cells total. The cooling tower cell height expected to equal 82 feet, with the stack height estimated to be 17.5 feet.		

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type): Circulation Water		
2. Source Classification Code (SCC): 3-85-001-01	3. SCC Units: Million Gallons Cooling Water	
4. Maximum Hourly Rate: 39.6	5. Maximum Annual Rate: 166,000	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: Max Hourly Rate is sum of two cooling towers. Max Annual Rate is sum of two cooling towers at 4200 hrs per year. The same circulating water pumps will be used with the new towers, therefore resulting in no increase in throughput.		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	151		WP
PM10	151		WP

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 48 lb/hour 101 tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.0005% Drift Rate Reference: Project Specification	7. Emissions Method Code: 5
8.a. Baseline Actual Emissions (if required): 37 tons/year	8.b. Baseline 24-month Period: From: 1/1/2004 To: 12/31/2005
9.a. Projected Actual Emissions (if required): 42 tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:
Emissions are the total for both cooling towers.

PTE:
Water from both the Gulf of Mexico and the Anclote River mix in the inlet before the water intake. No salinity data was available, therefore assumed the same as for Crystal River of 29,000 ppm.

660,000 gpm (60min/hr) (8.34 lb/gal) (29,000 ppm) (10 E-6) (0.0005 Drift Rate/100) = 48 lb PM/hr
48 lb PM/hr (4200 hr/year) (tons/2000 lbs) = 101 TPY

Projected Actual:
330,000 gpm (60 min/hr) (8.34 lb/gal) (29,000 pm) (10 E-6) (0.0005 Drift Rate/100) (3500 hr/year) (tons/2000 lbs) = 42 TPY

11. Potential, Fugitive, and Actual Emissions Comment:
Baseline Actual Emissions based on AOR annual emissions reported for 2004 and 2005.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Design Drift Rate of 0.0005%	4. Equivalent Allowable Emissions: 48 lb/hour 101 tons/year
5. Method of Compliance: Work practice.	
6. Allowable Emissions Comment (Description of Operating Method): This Emissions Unit is unregulated. Equivalent Allowable Emissions based on project design drift rate and an assumed TDS of 29000 ppm.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.4 lb/hour 0.8 tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: 0.82% of PM Reference: See Attachment AR2	7. Emissions Method Code: 5
8.a. Baseline Actual Emissions (if required): 37 tons/year	8.b. Baseline 24-month Period: From: 1/1/2004 To: 12/31/2005
9.a. Projected Actual Emissions (if required): 0.3 tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:

Estimated that 0.82% of Total PM is PM 10 emissions per "Calculating Realistic PM10 Emissions from Cooling Towers" J.Reisman and G. Frisbie (See Attachment EC1)

PTE:
Sum for both cooling towers:
48 lbs PM/hr * 0.82% = 0.4 lb/hr PM10
101 PM TPY * 0.82% = 0.8 TPY PM 10

Projected Actual
Sum of both cooling towers:
42 PM TPY * 0.82% = 0.3 TPY

11. Potential, Fugitive, and Actual Emissions Comment:

Baseline Actual Emissions based on AOR submittals for 2004 and 2005.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Design Drift Rate of 0.0005%	4. Equivalent Allowable Emissions: 0.4 lb/hour 0.8 tons/year
5. Method of Compliance: Work practice.	
6. Allowable Emissions Comment (Description of Operating Method): This Emissions Unit is unregulated. Equivalent Allowable Emissions based on project design drift rate, assumed TDS of 29000 ppm and 0.82% of Total PM.	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype: N/A	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation ___ of __

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: ☐ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: AR1 [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [X] Attached, Document ID: AR1 [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [ ] Previously Submitted, Date _____
   [X] Not Applicable

6. Compliance Demonstration Reports/Records
   [ ] Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   [X] Not Applicable

   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   [ ] Attached, Document ID: _____ [X] Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   [X] Attached, Document ID: AR1 ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(4)(d), F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ [X] Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ [X] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
   ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
EU -007, HELPER COOLING TOWERS

Additional Requirements Comment

Attachment AR1

Description of Proposed Construction Project
EU -007, HELPER COOLING TOWERS

Attachment AR1 - Description of Proposed Project
Florida Power Corporation dba Progress Energy Florida, Inc.
EU -007 Helper Cooling Towers
Air Construction Permit Application

PROPOSED PROJECT DESCRIPTION

Site Description

The Anclote Power Plant consists of two oil/natural gas fired fossil fuel steam generating ("FFSG") units with two mechanical draft helper cooling towers.

Proposed Project

The proposed project involves the replacement of two existing circular cooling towers, which had been installed in the early 1980's, with new fiberglass circular or rectangular once-through, counterflow, mechanical draft cooling towers. These towers are primarily operated in the summer months (April through September), in order to reduce the discharge canal temperature to meet current water permit conditions. This will enable Florida Power Corporation dba Progress Energy Florida, Inc. ("PEF") to reduce the number and extent of de-rates and thereby reduce replacement fuel and purchase power costs.

The reason for this replacement is the degraded structural condition of the existing reinforced concrete towers and the potential safety hazards to employees that it causes. The new towers will use the existing circulating water pumps, thus maintaining the same flow characteristics of the existing cooling tower system. There are two (2) potential cooling tower vendors, SPX Marley and GEA, being considered at the date of this air construction permit application.

Wet cooling towers provide direct contact between cooling water and air passing through the tower. Cooling tower drift is created when small amount of the cooling water becomes entrained in the air stream and carried out of the tower. PM emissions from cooling towers are related to the total dissolved solids (TDS) and amount of drift through the cooling tower. Drift eliminators are the control technology used to reduce the amount of drift, therefore reduce the amount of PM emissions.

Site Layout and Structures

An aerial photo showing proposed cooling tower locations is below. If new rectangular towers are selected in lieu of replacement circular towers, they will be located near the existing towers and will utilize the existing intake and discharge points.

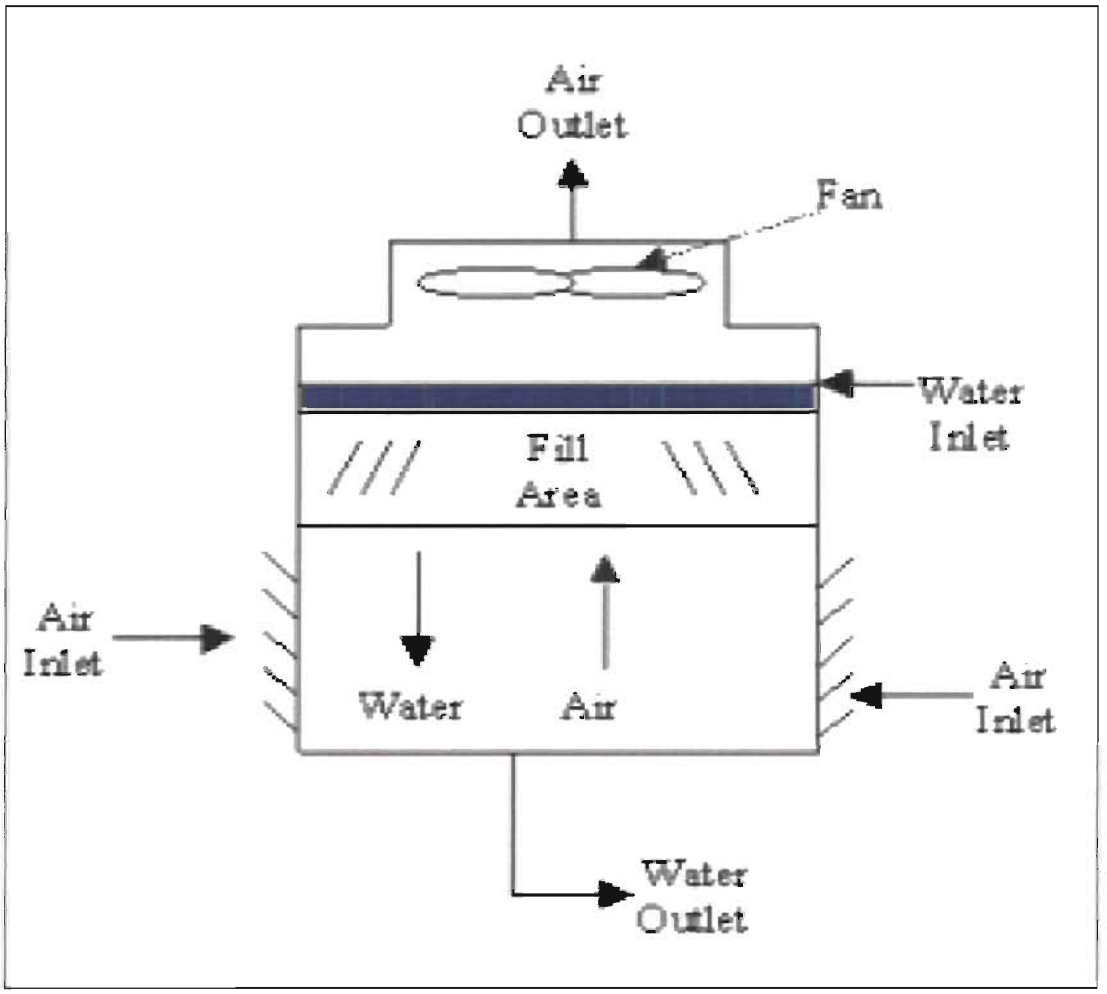
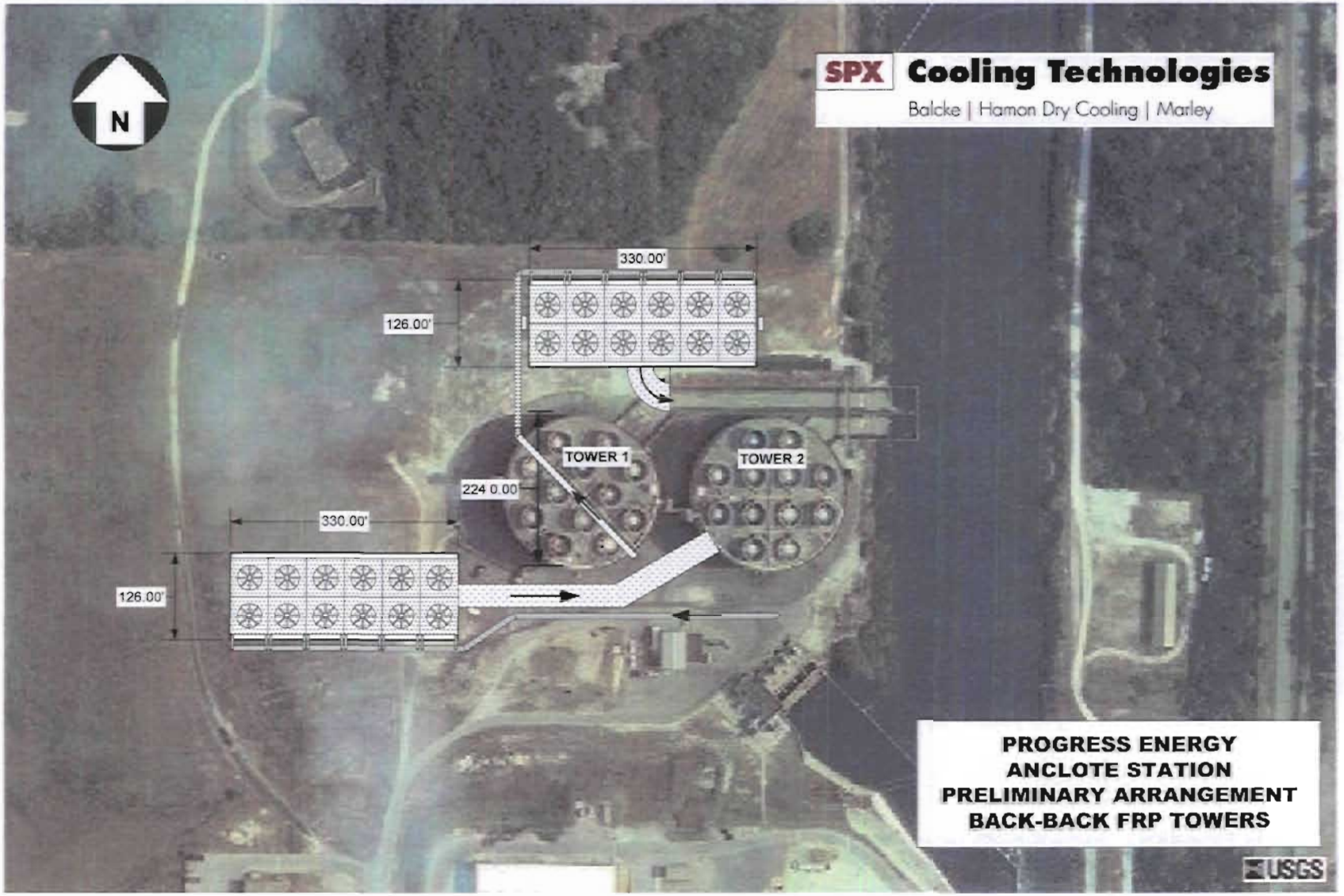


Diagram of Typical Counterflow Mechanical Draft Cooling Tower
(See http://www.cheresources.com/ctowerszz.shtml)

Anclote Tower Replacement

SPX Cooling Technologies
Balcke | Hamon Dry Cooling | Marley



Attachment AR2
Rule Applicability Analysis
EU -007, HELPER COOLING TOWERS

Title V Core List

Effective: 03/01/02

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61, Subpart M: NESHAP for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 06-21-01

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(5), F.A.C.: Notification of Startup.

62-210.300(6), F.A.C.: Emissions Unit Reclassification.
62-210.300(7), F.A.C.: Transfer of Air Permits.
62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.
62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400, F.A.C.: Emission Estimates.
62-210.650, F.A.C.: Circumvention.
62-210.700, F.A.C.: Excess Emissions.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1), F.A.C.: Application for Air Permit – Title V Source, Form and Instructions.
62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.
62-210.900(7), F.A.C.: Application for Transfer of Air Permit – Title V and Non-Title V Source.

CHAPTER 62-212, F.A.C.: STATIONARY SOURCES - PRECONSTRUCTION REVIEW, effective 08-17-00

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.415, F.A.C.: Trading of Emissions Within a Source.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.450, F.A.C.: Permit Review by EPA and Affected States
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
62-213.900(7), F.A.C.: Statement of Compliance Form.

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99

62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.

CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99

62-297.310, F.A.C.: General Test Requirements.
62-297.330, F.A.C.: Applicable Test Procedures.
62-297.340, F.A.C.: Frequency of Compliance Tests.
62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
62-297.350, F.A.C.: Determination of Process Variables.
62-297.570, F.A.C.: Test Report.
62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

Miscellaneous:

CHAPTER 28-106, F.A.C.: Decisions Determining Substantial Interests
CHAPTER 62-110, F.A.C.: Exception to the Uniform Rules of Procedure, effective 07-01-98

CHAPTER 62-256, F.A.C.: **Open Burning and Frost Protection Fires, effective 11-30-94**

CHAPTER 62-257, F.A.C.: **Asbestos Notification and Fee, effective 02-09-99**

CHAPTER 62-281, F.A.C.: Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

Attachment EC1

Emission Calculation Information
EU -007, HELPER COOLING TOWERS

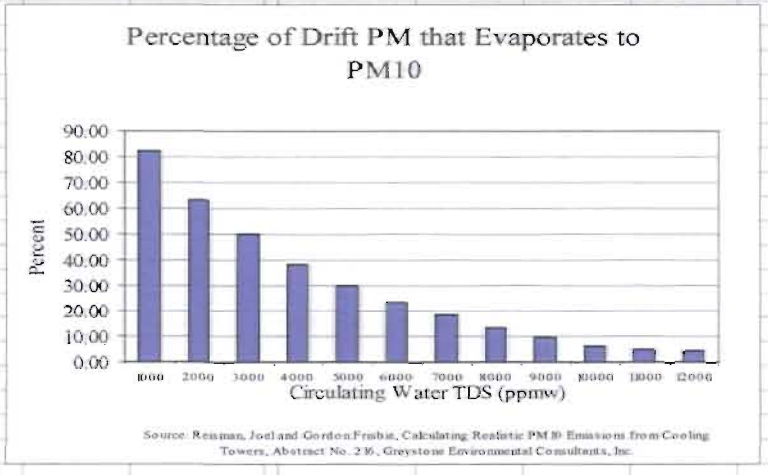
Attachment EC1 – Emission Calculation Information
Florida Power Corporation dba Progress Energy Florida, Inc., EU -007 Helper Cooling Towers
Estimate of PM10 Fraction of Cooling Tower Drift

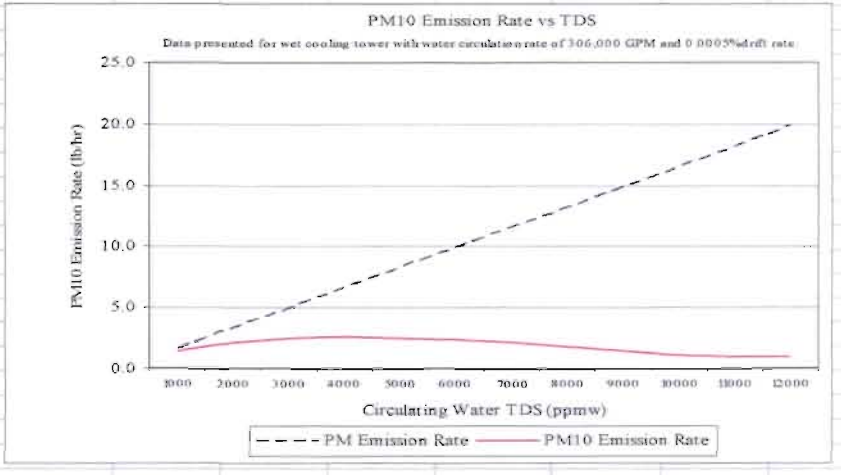
TDS (ppmw)	PM Emission Rate (lb/hr)	Percent of Emissions < or = PM10 %	PM10 Emissions (lb/hr)
1000	1.65	82.04	1.355
2000	3.30	63.50	2.097
3000	4.95	50.00	2.477
4000	6.61	38.33	2.532
5000	8.26	29.97	2.475
6000	9.91	23.59	2.337
7000	11.56	18.20	2.104
8000	13.21	13.57	1.793
9000	14.86	9.65	1.434
10000	16.51	6.28	1.037
11000	18.16	5.11	0.928
12000	19.82	4.46	0.884
17500	28.90	1.83	0.529
29000	47.89	0.82	0.393
89600	147.96	0.22	0.326

Tower Circulation Rate (GPM)	Drift Rate %
660,000	0.0005

Salt water density (lb/gal)
8.34

Calculated PM10 % < or = PM10 %
82.04
63.50
50.00
38.33
29.97
23.59
18.20
13.57
9.65
6.28
5.11
4.46
1.83
0.82
0.22





Reisman, Joel and Gordon Frisbie, *Calculating Realistic PM10 Emissions from Cooling Towers*, Abstract No. 216, Greystone Environmental Consultants, Inc.

Calculating Realistic PM_{10} Emissions from Cooling Towers

Abstract No. 216 **Session No. AM-1b**

Joel Reisman and Gordon Frisbie
Greystone Environmental Consultants, Inc., 650 University Avenue, Suite 100, Sacramento, California 95825

ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM_{10}) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42[1] , which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM_{10}. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM_{10} emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM_{10} modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM_{10} non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM_{10} emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fenceline. This paper presents a method for computing realistic PM_{10} emissions from cooling towers with medium to high TDS levels.

INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42[1] provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically

expressed as a percentage of the cooling tower water circulation rate). AP-42 states that "a *conservatively high* PM_{10} emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM_{10} range." (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$PM = \text{Water Circulation Rate} \times \text{Drift Rate} \times \text{TDS} \qquad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$PM = 146{,}000 \text{ gpm} \times 8.34 \text{ lb water/gal} \times 0.0006/100 \times 7{,}700 \text{ lb solids}/10^6 \text{ lb water} \times 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM_{10}, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM_{10}.

COMPUTING THE PM_{10} FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM_{10} can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull[2], 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore,

this size distribution data can be assumed to be conservative for predicting the fraction of PM_{10} in the total cooling tower PM emissions.

In calculating PM_{10} emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density (ρ_w) of water; $1.0\ g/cm^3$ or $1.0 * 10^{-6}\ \mu g/\mu m^3$.
- The solid particles were assumed to have the same density (ρ_{TDS}) as sodium chloride, (i.e., $2.2\ g/cm^3$).

Using the formula for the volume of a sphere, $V = 4\pi r^3/3$, and the density of pure water, $\rho_w = 1.0\ g/cm^3$, the following equations can be used to derive the solid particulate diameter, D_p, as a function of the TDS, the density of the solids, and the initial drift droplet diameter, D_d :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \qquad [2]$$

$$\text{Mass of solids in drift droplet} = (TDS)(\rho_w)(\text{Volume of drift droplet}) \qquad [3]$$

substituting,

$$\text{Mass of solids in drift} = (TDS)(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{TDS})\ (\text{solid particle volume}) = (\rho_{TDS})(4/3)\pi(D_p/2)^3 \qquad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{TDS})(4/3)\pi(D_p/2)^3 = (TDS)(\rho_w)(4/3)\pi(D_d/2)^3 \qquad [6]$$

Solving for D_p:

$$D_p = D_d\ [(TDS)(\rho_w/\rho_{TDS})]^{1/3} \qquad [7]$$

Where,

TDS is in units of ppmw
D_p = diameter of solid particle, micrometers (μm)
D_d = diameter of drift droplet, μm

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10 μm in diameter, we conclude that approximately 14.9 percent of the mass emissions are equal to or smaller than PM_{10}. The balance of the solid

particulate are particulate greater than 10 μm. Hence, PM_{10} emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall PM_{10} emissions are actually lower, because more of the solid particles are larger than 10 μm.

Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

[1] Bracketed numbers refer to equation number in text.

The percentage of PM_{10}/PM was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted PM_{10} emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the PM_{10} emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

CONCLUSION

The emission factors and methodology given in EPA's AP-42[1] Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than PM_{10} once the water has evaporated. Particles larger than PM_{10} are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift

droplet size distribution, a method is now available for calculating realistic PM_{10} emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2][1]	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.61E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.69	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.96E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70685.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
600	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

Figure 1: Percentage of Drift PM that Evaporates to PM10

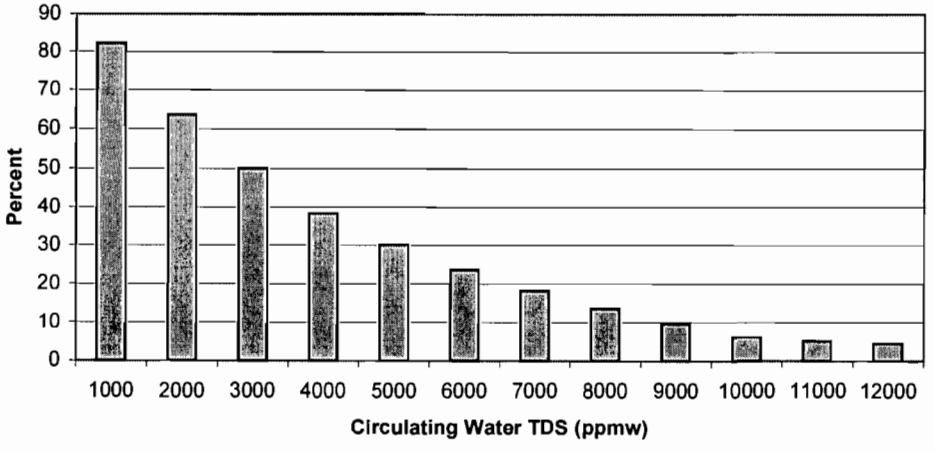
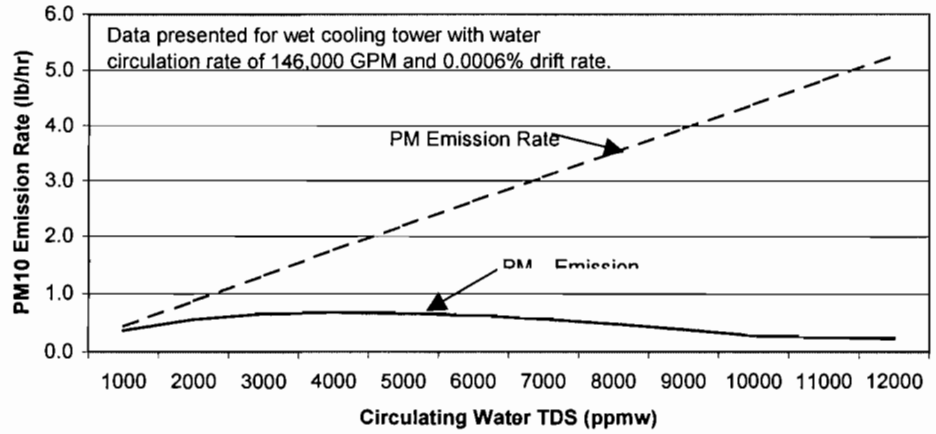


Figure 2: PM_{10} Emission Rate vs. TDS



REFERENCES

1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, http://www.epa.gov/ttn/chief/ap42/, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.

2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

KEY WORDS

Drift
Drift eliminators
Cooling tower
PM_{10} emissions
TDS

Harvey, Mary

From: Nasca, Mara
Sent: Monday, October 23, 2006 7:26 AM
To: Harvey, Mary
Subject: RE: Final Permit #1010017-007-AC

Thanks Mary....have a great day !

From: Harvey, Mary
Sent: Friday, October 20, 2006 2:07 PM
To: Nasca, Mara; 'worley.gregg@epa.gov'; 'Ann.Quillian@pgnmail.com'; 'jeffrey.swartz@pgnmail.com'
Cc: Adams, Patty; Koerner, Jeff; Gibson, Victoria
Subject: Final Permit #1010017-007-AC

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Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: Quillian, Ann [Ann.Quillian@pgnmail.com]
To: Harvey, Mary
Sent: Monday, October 23, 2006 9:07 AM
Subject: Read: FW: Final Permit #1010017-007-AC

Your message

To: Ann.Quillian@pgnmail.com
Subject:

was read on 10/23/2006 9:07 AM.

Harvey, Mary

From: Swartz, Jeffrey [Jeffrey.Swartz@pgnmail.com]
Sent: Monday, October 23, 2006 1:21 PM
To: Harvey, Mary
Cc: Quillian, Ann; Hamilton, Suzanne
Subject: RE: Final Permit #1010017-007-AC

The plant is in receipt of your e-mail and 5 attachments.
-Jeff

-----Original Message-----
From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Friday, October 20, 2006 4:16 PM
To: Quillian, Ann; Swartz, Jeffrey
Cc: Koerner, Jeff
Subject: FW: Final Permit #1010017-007-AC

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Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Friday, October 20, 2006 2:07 PM
To: Nasca, Mara; 'worley.gregg@epa.gov'; 'Ann.Quillian@pgnmail.com'; 'jeffrey.swartz@pgnmail.com'
Cc: Adams, Patty; Koerner, Jeff; Gibson, Victoria
Subject: Final Permit #1010017-007-AC
Attachments: 1010017.007.AC.F_pdf[1].zip

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Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: System Administrator
To: Koerner, Jeff
Sent: Friday, October 20, 2006 4:16 PM
Subject: Delivered:FW: Final Permit #1010017-007-AC

Your message

To:	'Ann.Quillian@pgnmail.com'; 'jeffrey.swartz@pgnmail.com'
Cc:	Koerner, Jeff
Subject:	FW: Final Permit #1010017-007-AC
Sent:	10/20/2006 4:16 PM

was delivered to the following recipient(s):

Koerner, Jeff on 10/20/2006 4:16 PM

Harvey, Mary

From: System Administrator
To: Nasca, Mara
Sent: Friday, October 20, 2006 2:08 PM
Subject: Delivered:Final Permit #1010017-007-AC

Your message

To:	Nasca, Mara; 'worley.gregg@epa.gov'; 'Ann.Quillian@pgnmail.com'; 'jeffrey.swartz@pgnmail.com'
Cc:	Adams, Patty; Koerner, Jeff; Gibson, Victoria
Subject:	Final Permit #1010017-007-AC
Sent:	10/20/2006 2:07 PM

was delivered to the following recipient(s):

Nasca, Mara on 10/20/2006 2:07 PM

Memorandum

Florida Department of Environmental Protection

TO: Joseph Kahn, Director of DARM

THROUGH: Trina Vielhauer, Chief of BAR

FROM: Jeff Koerner, Air Permitting North

DATE: October 16, 2006

SUBJECT: Final Permit No. 1010017-007-AC (PSD-FL-379)
Florida Power Corporation dba Progress Energy Florida, Inc.
Anclote Power Plant – Installation of Helper Cooling Towers

Attached for approval and signature is a final air construction permit for the Anclote Power Plant. The air permit authorizes the installation of two new mechanical draft helper cooling towers to replace the existing equipment. The project is subject to PSD preconstruction review for PM emissions. As described in the attached Final Determination, comments received from the applicant resulted in minor changes and corrections to the Final Permit. I recommend your approval and signature.

Attachments

TV/jfk