

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

June 15, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Lindsay, Plant General Manager
FP&L Martin Plant
Post Office Box 176
Indiantown, Florida 34946-0176

Re: DEP File No. 0850001-005-AC (PSD-FL-146G)
FPL Martin Plant
Inlet Foggers Installation

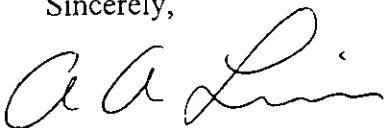
Dear Mr. Lindsay:

Enclosed is one copy of the Draft Permit and Technical Evaluation and Preliminary Determination, for the referenced project in Martin County. The Department's Intent to Issue PSD Permit Modification and the "PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION" are also included.

The "Public Notice of Intent to Issue PSD Permit Modification" must be published one time only, as soon as possible, the legal advertising section of a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any questions, please call Ms. Teresa Heron at 850/921-9529.

Sincerely,

 P.E. 6/15
for C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/th

Enclosures

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

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US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

PS Form 3800, April 1995

Sent to	
John Lindsay	
Street & Number	
FD & L - Martin	
Post Office, State, & ZIP Code	
Indiantown FL	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	6-15-99

your RETURN ADDRESS completed on the reverse side?

SENDER: ■ Complete items 1 and/or 2 for additional services. ■ Complete items 3, 4a, and 4b. ■ Print your name and address on the reverse of this form so that we can return this card to you. ■ Attach this form to the front of the mailpiece, or on the back if space does not permit. ■ Write "Return Receipt Requested" on the mailpiece below the article number. ■ The Return Receipt will show to whom the article was delivered and the date delivered.		I also wish to receive the following services (for an extra fee): 1. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.
3. Article Addressed to: Mr. John Lindsay, Plant Gen. Mgr. FD & L Martin Plant PO Box 176 Indiantown, FL 34946-0176	4a. Article Number Z 333 618 163	
5. Received By (Print Name) Bob Pilgrim	4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Insured <input type="checkbox"/> COD	
6. Signature: (Addressee or Agent) X Bob Pilgrim	7. Date of Delivery 6-22-99	
	8. Addressee's Address (Only if requested and fee is paid)	

Thank you for using Return Receipt Service.

In the Matter of an
Application for Permit by:

Mr. John Lindsay
Plant General Manager
FP&L Martin Plant
Post Office Box 176
Indiantown, Florida 34956-0176

DEP File No. 0850001-005-AC (PSD-FL-146G)
Combustion Turbines 003-006
Inlet Foggers Installation
Martin Power Plant
Martin County

INTENT TO ISSUE PSD PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD permit modification (copy of DRAFT PSD Permit Modification attached) for the proposed project, detailed in the application specified above and the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Florida Power & Light, Inc (FP&L), applied on March 29, 1999, to the Department to add inlet foggers to four combined cycle combustion turbine-electrical generators (Units 003 to 006) at the Martin Plant in Martin County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212, and 40 CFR 52.21. The above actions are not exempt from permitting procedures. The action is not a modification of the facility with respect to the rules for the Prevention of Significant Deterioration (PSD). However, the Department has determined that a modification of the existing PSD permit (PSD permit modification) is required to conduct the work.

The Department intends to issue this PSD permit modification based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "Public Notice of Intent to Issue PSD Permit Modification." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). The Department suggests that you publish the notice within thirty days of receipt of this letter. You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit or other authorization. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final PSD Permit Modification with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of thirty (30) days from the date of publication of "Public Notice of Intent to Issue PSD Permit Modification." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the PSD Permit Modification with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station # 35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

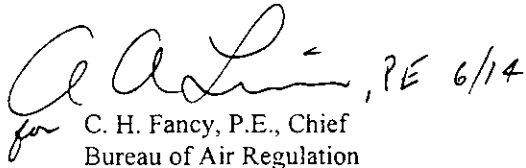
In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.


for C. H. Fancy, P.E., Chief
Bureau of Air Regulation

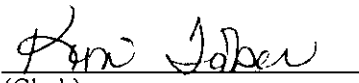
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT MODIFICATION (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, and the DRAFT PSD Permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 6-15-99 to the person(s) listed:

John Lindsay, FP&L*
Richard G. Piper, FP&L
Ken Kosky P.E., Golder Associates
Isidore Goldman, SED
Gregg Worley, EPA

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.


(Clerk) 6-15-99
(Date)

July XX, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Lindsay
Plant General Manager
Florida Power & Light
Post Office Box 176
Indiantown, Florida 34956-0176

Re: DEP File No. PSD-FL-146(G) and 0850001-005AC
Inlet Foggers Project
Martin Power Plant

Dear Mr. Lindsay:

The Department reviewed your request to modify the PSD Permit to authorize the installation of inlet foggers on the four General Electric PG7221 combustion turbine-electrical generators (Combustion Turbines 3A&B, 4A&B). The request is acceptable as detailed in the Department's Technical Evaluation and Preliminary Determination.

PSD-FL-146 permit is hereby modified as follows:

Inlet Fogger Installation

Inlet foggers may be installed on Units CT3A, CT3B, CT4A and CT4B. Operation of the foggers on each unit may not exceed 34,320 °F-hours for gas firing and 4,000 °F-hours for No. 2 fuel oil firing. The temperature drop across the inlet foggers shall be monitored whenever water is injected at the foggers and hourly average temperature drops shall be calculated and recorded automatically using computer system. The product of each hour of fogger operation and the average temperature depression for that hour shall be summed for each calendar year and shall be submitted to the DEP SE District Office with the Annual Operating Report. The temperature monitoring system shall be calibrated annually in accordance with Guidance Document No. DAMR-EM-03 (attached).

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of 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

Mr. John Lindsay
July XX, 1999

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 of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/aal
Enclosures

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE PSD PERMIT MODIFICATION (including the PUBLIC NOTICE, Technical Evaluation and Preliminary Determination, and the DRAFT PSD Permit Modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the person(s) listed:

John Lindsay, FP&L*
Richard G. Piper, FP&L
Ken Kosky P.E., Golder Associates
Isidore Goldman, SED
Gregg Worley, EPA

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.

(Clerk)

(Date)


Division of Air Resource Management

DARM DARM-EM-03

 Information

TO: District Air Program Administrators Local Air
Program Administrators Bureau of Air Regulation
Engineers

 Ozone Net


 Programs

FROM: Howard L. Rhodes, Director Division of Air
Resources Management

 Regulations


DATE: October 10, 1994

 Forms

 Permitting

SUBJECT: Guidance on Calibration of the Temperature
Monitoring System for Soil Thermal Treatment Facilities

 Outreach

 Downloads

Rule 62-296.415(1)(c), F.A.C., requires the temperature of the flue gases leaving the high temperature zone of a soil thermal treatment facility to be monitored continuously. Rule 62-297.500(6), F.A.C., requires the temperature monitoring system to be calibrated at least annually from 10 percent below to 10 percent above its normal operation range by the procedures recommended by the manufacturer. The temperature monitoring system generally consists of a thermocouple, a temperature indicator, and a recorder. The purpose of the calibration is to provide reasonable assurance that the temperature being recorded by the monitoring system is the actual temperature of the flue gases.

If the manufacturer has provided recommended calibration procedures, those procedures should be followed. If the manufacturer has not provided recommended calibration procedures, the following general calibration procedures should be used:

THERMOCOUPLE: The calibration points should bracket the hot zone temperature range over which the thermocouple is to be used. The rule requires the voltage output from the thermocouple to be measured at a minimum of three temperatures and over a range from 10% below to 10% above the designed flue gas hot zone temperature. The thermocouple should be calibrated against a NIST (National Institute of Standards and Technology) traceable reference thermocouple. The

thermocouple may be calibrated using ASTM E 220, Method B. For these high temperature calibrations, electrical tube furnaces or dry fluidized baths can be used as stable heat sources. The incinerator duct may also be used for thermocouple calibration as discussed in guideline document GD-24, "Temperature Measurements and Calibration of Type K Thermocouples in High Temperature Stacks."

This document is available from the EPA Emission Measurement and Technical Information Center (EMTIC). The telephone number for the EPA bulletin board system is (919) 541-5742. Alternatively, the thermocouple can be replaced each year with a new thermocouple certified by the manufacturer to be accurate to within 0.9% of the flue gas temperatures being measured. A certificate of conformance from the manufacturer (certifying that the new thermocouple conforms to published specifications) will satisfy the annual calibration requirements of Rule 62-297.500(6), F.A.C.

TEMPERATURE INDICATOR: The instrument, which converts voltage output from the thermocouple to a temperature reading, can be calibrated by applying known voltages (mv), and reading the reported temperatures. The voltage values should correspond to the voltages generated by the thermocouple for temperatures over a range from 10% below to 10% above the designed flue gas hot zone temperature. The reference voltage supply should be accurate to within 0.1% of the reading.

RECORDER: The strip chart recorder or digital data acquisition system should be connected to the temperature indicator during its calibration and can be calibrated at the same time. The recorder should be adjusted to reproduce the readings of the temperature indicator.

The temperature monitoring system calibration error should not exceed 1% of the temperature reading pursuant to Rule 62-297.500(6), F.A.C.

HLR/mh/hf

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT MODIFICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0850001-005-AC (PSD-FL-146G)

Florida Power & Light Martin Plant
Inlet Fogger Project
Martin County

The Department of Environmental Protection (Department) gives notice of its intent to issue a PSD permit modification to Florida Power & Light (FP&L). The permit is to install foggers at the compressor inlets of four natural gas and No. 2 fuel oil-fired General Electric PG7221FA combined cycle combustion turbine-electrical generators at the Martin Plant in Martin County. A Best Available Control Technology (BACT) determination was not required pursuant to Rule 62-212.400, F.A.C. The applicant's name and address are Florida Power & Light, Post Office Box 176, Indiantown, Florida 34956.

The primary movers are the combustion turbines, which are typically nominally rated by General Electric at approximately 160 MW at 59 degrees when firing gas. The combustion turbines (exclusive of the steam cycle) normally achieve their maximum rated output of approximately 170 MW on cold (32 degrees) days because the greater compressor inlet air density allows greater throughput in the rotor or expansion section of the combustion turbine. The maximum power output is only about 140 MW on hot (95 degrees) days because of the lower compressor inlet air density. The foggers can increase hot-day power output (under very dry conditions) by as much as 15 MW, thus almost restoring the units to their nominal rating. Under the design conditions for this Florida site, an improvement of about 8 MW can be expected.

The foggers provide no benefit under humid or cold (less than approximately 50 degrees) conditions and will not be used when they occur. The maximum output of approximately 170 MW will continue to occur at low ambient temperature. The result is that maximum hourly emissions will not increase although actual annual emissions will increase within their permitted limits because more fuel will be used on hot, relatively dry days.

Although the number of days during which the foggers can economically operate probably limits emissions increases to levels below significance for the purposes of PSD applicability, FP&L proposes enforceable conditions to insure non-applicability. FP&L asserts and the Department accepts that the modification will not cause any meaningful change in the actual hours of operation of these combined cycle units. The units are allowed to operate continuously and already have a very high availability factor. The maximum increase in annual emissions caused by the project in tons per year is summarized below along with the PSD-significant levels.

<u>Pollutants</u>	<u>Annual Emission Increase</u>	<u>PSD Significant Levels</u>
PM/PM ₁₀	4	25/15
SO ₂	34	40
NO _x	38	40
VOC	1	40
CO	18	100

An air quality impact analysis was not required or conducted. No significant impacts are expected to occur as a result of this project. It will not cause or contribute to a violation of any ambient air quality standard or increment.

The Department will issue the FINAL permit modification with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of thirty (30) days from the date of publication of "Public Notice of Intent to Issue a PSD Permit Modification." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station # 35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen (14) days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under Section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen (14) days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Department of Environmental Protection
Southeast District Office
400 North Congress Avenue
West Palm Beach, Florida 33401
Telephone: 561/681-6600
Fax: 561/681-6790

The complete project file includes the application, technical evaluation, Draft PSD Permit Modification, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. Applicant

Florida Power & Light
Environmental Services Department
700 Universe Blvd
Juno Beach, FL 33408

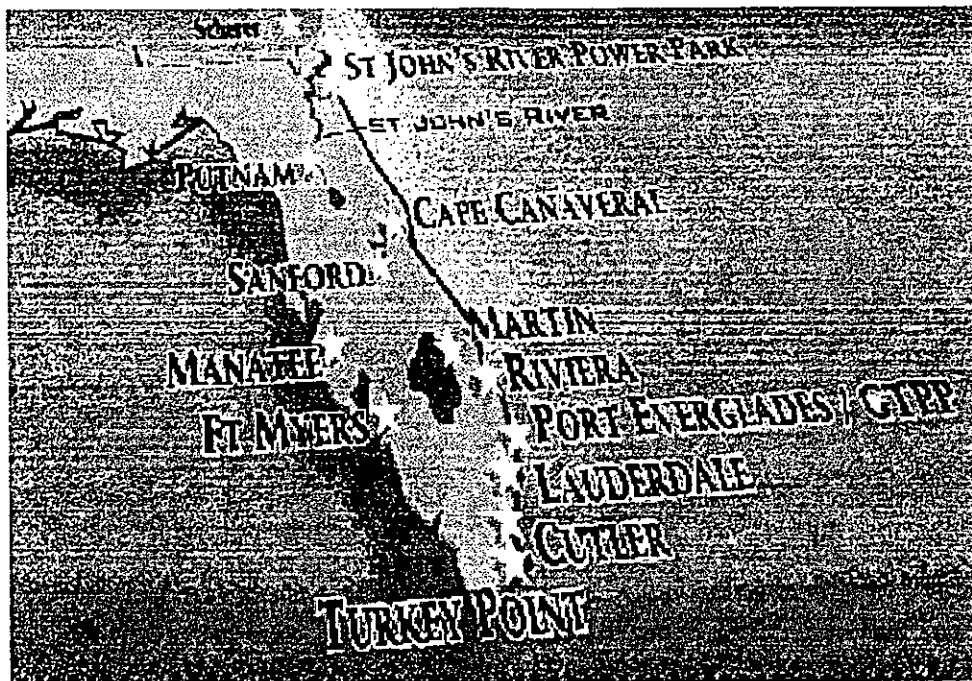
Authorized Representative: John Lindsay, FP&L Martin Plant General Manager

2. Source Name and Location

FP&L Martin Plant
Post Office Box 176
Indiantown, Florida 32956

UTM Coordinates: Zone 17, 543.2 km East and 2993.0 km North

The plant is located 7 miles North of Indiantown, Martin County. The location the Martin Plant within the FP&L system is shown below followed by a photograph of the site downloaded from the FP&L website:



3. Source Description

The Florida Power & Light (FP&L) Martin Plant consists of two oil and natural gas fired conventional steam generating stations, and two oil and natural gas fired combined cycle units. In addition, the facility includes one auxiliary boiler, and two diesel generators (one unregulated). Also included in this permit are two unregulated emissions units identified as facility-wide particulate matter emissions and facility-wide VOC emissions. Based on the Title V application, this facility is a major source of hazardous air pollutants (HAPs).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Each conventional steam unit has the maximum capacity of 863.3 megawatts (MW) and consists of a boiler/steam generator which drives a single reheat turbine generator, and is equipped with low NO_x dual fuel firing burners to reduce emissions of nitrogen oxides; and, multicyclones, with fly ash reinjection, to control particulate matter emissions. In addition, the units have a continuous emission monitoring system for measuring opacity, NO_x, and sulfur dioxide. Unit 1 (ARMS Emission Unit 001) commenced commercial operation in December 1980. Unit 2 (ARMS Emission Unit 002) commenced commercial operation in June 1981.

Each combined cycle unit consists of two General Electric PG7221FA combustion turbine-electrical generator with unfired heat recovery steam generators. A single steam electrical turbine serves each combined cycle unit. Each combined cycle unit has a net hot weather capacity of roughly 400 MW. Nitrogen oxide emissions are controlled by dry low NO_x (DLN-2) combustors for natural gas with steam injection for fuel oil firing. Based on information contained in the Title V Permit Application, only natural gas has been fired in the units to date. Units 3A and 3B (ARMS Emissions Units 003 and 004) commenced commercial operation in February 1994. Units 4A and 4B (ARMS Emissions Unit 005 and 006) commenced commercial operation in April 1994.

4. Current Permit and Major Regulatory Program Status

Construction of the Martin Power Plant Units 1 and 2 was authorized by the Department under permits AC43-4037 and 4038. Units 3 and 4 were authorized under Site Certification PA89-27 and Permit.PSD-FL-146.

The facility operates under Title V Air Operation Permit No. 0850001-004-AV issued in June 1998. This facility is a major source of hazardous air pollutants (HAPs) based on information submitted in the Title V application.

The combustion turbines are subject to 40 CFR 60, Subpart GG, Standards of Performance for New Stationary Gas Turbines. The combined cycle units and the fossil fuel steam generators are regulated under the Title IV of the Clean Air Act, Acid Rain, Phase II.

5. Permit Modification Request

On March 29, 1999 the Department received a request from FPL for modification of its permits to install direct water spray fogging systems in the inlet ducts of Combustion Turbines (CT) 3A/B and 4A/B (ARMS Emissions Units 003 through 006). The project is a performance enhancement that can improve both the turbine power output and the heat rate of the unit. The principle is based on evaporative cooling of the incoming, filtered, ambient air to lower its temperature and increase its density.

The individual combustion turbines are typically rated by General Electric at approximately 160 MW each at 59 degrees when firing gas. The combustion turbines (exclusive of the steam cycle) normally achieve their maximum rated output of approximately 170 MW on cold (32 degrees) days because the greater compressor inlet air density allows greater throughput in the rotor or expansion section of the combustion turbine. The maximum power output is only about 140 MW on hot (95 degrees) days because of the lower compressor inlet air density. The foggers can increase hot-day power output (under dry conditions) by around 15 MW, thus almost restoring the units to their nominal rating. The foggers provide no benefit under humid or cold (less than approximately 50 degrees) conditions and will not be used when they occur. The maximum output of approximately 170 MW will continue to occur at low ambient temperature.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Inlet foggers are routinely included in new combustion turbine projects and have not affected the Department's decisions regarding Best Available Control Technology.

6. Emissions Increases Due to Modification/Method of Operation

The foggers are physical pieces of equipment whose addition and use can increase emissions on hot or dry days. The use of the foggers can also be considered a change in method of operation of the inlet "air conditioning system" that is already used to filter incoming air.

Assuming a design condition for Florida of 95 degrees (°F) and 50 percent (%) relative humidity, evaporative cooling to the point of saturation of the incoming gas stream results in a temperature decrease of approximately 16 °F to 79 °F. This represents an increase of roughly 5% in power output or on the order of 7 MW per unit. Under average annually averaged conditions, the reduction typically possible is on the order of 5.5 °F, with an associated power increase of about 3 MW.

Refer to attached Heat Input versus Ambient Temperature Curve. FP&L estimated that that heat input to each combustion turbine will increase by approximately 4.7 mmBtu per hour per degree of temperature reduction (mmBtu/hr/°F) by evaporative cooling. If emissions rates are known in terms of pounds per mmBtu (lb/mmBtu), the increase on hourly emissions can be estimated.

FP&L assumed that each unit will be operated 6240 hours per year gas and 125 hours on oil with the fogger on and that the average temperature decrease will be 5.5 °F when the foggers are on. Annual emissions are estimated as detailed in the following table.

TOTAL EMISSIONS INCREASES DUE TO USE OF INLET FOGGERS AT FOUR UNITS

Pollutant	Emission Rate lb/mmBtu (gas)	Emission Rate lb/mmBtu (oil)	Emission Increase ton/yr (gas)	Emission Increase ton/yr (oil)	Annual Increase tons/vr (Oil & Gas)	PSD Threshold tons/vr
NO _x	0.0900	0.2497	29.04	9.39	38.43	40
PM/PM ₁₀	0.0092	0.0328	2.95	1.23	4.19	25/15
CO	0.0480	0.0573	15.47	2.15	17.63	100
VOC	0.0015	0.0060	0.491	0.22	0.72	40
SO ₂	0.0465	0.4984	15.01	18.74	33.75	40

Source: Application and additional information submitted on March 29 and May 7, 1999 respectively.

Limiting each unit to 6240 hours of operation on gas and 125 hours of operation on oil will not effectively insure that annual emissions increases will not exceed the values given above. This is because the hours of operation will be chosen with a bias toward the days when the possible temperature decrease is greater than 5.5.

To insure enforceability of a limit on annual emissions increases, FP&L proposes to limit the annual "degree-hours (°F-hr)" that the foggers operate. Degrees during a given hour can be calculated by measuring the temperature difference between the ambient and cooled air, while hours are easily documented. These values can be integrated over a year to calculate annual degree hours. Actual annual °F-hr can be directly multiplied by the lb/mmBtu of each pollutant and the 4.7 mmBtu/hr/°F factor and converted to tons to calculate actual annual emissions increases.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The emissions increases calculated are the direct result from the physical change in or change in method of operation such as is the installation of the inlet foggers. These assume that the ability to achieve greater power output when the foggers are used does not result in emissions increases outside the turbines original power curve. The rationale is discussed below.

The emissions characteristics (GE performance curves) do not change as a result of the use of the foggers from what would normally occur throughout the entire range of temperatures and relative humidity. Rather, the foggers move the operating points along the same curve toward the power and emissions that normally occur at lower temperatures. The worst case emissions scenario will still occur during the winter months and will occur with the foggers off. According to GE (reference: Brooks, 1996), evaporative cooling is limited to ambient temperatures of 59 °F and above because of the potential for icing the compressor.

7. Evaluation of PSD Applicability

As a major source, a modification or change in method of operation of CTs 3A&B and 4A&B resulting in **significant net emissions increases** is subject to PSD review. Significant net emissions increase is defined in Rule 62-212.400, F.A.C as follows:

*Significant Net Emissions Increase – A significant net emissions increase of a pollutant regulated under the Act is a **net emissions increase** equal to or greater than the applicable significant emission rate listed in Table 212.400-2, Regulated Air Pollutants – Significant Emission Rates.*

The significant emission rates are included (see PSD Threshold) in the Table above. The meaning of a net emissions increase is given in Rule 62-212.400, F.A.C. as:

*Net Emissions Increase - A modification to a facility results in a net emissions increase when, for a pollutant regulated under the Act, the sum of all of the contemporaneous creditable increases and decreases in the **actual emissions** of the facility, including the increase in emissions of the modification itself and any increases and decreases in quantifiable fugitive emissions, is greater than zero.*

The definition of actual emissions is given in Rule 62-210.200, F.A.C. (definitions) as follows:

Actual Emissions - The actual rate of emission of a pollutant from an emissions unit as determined in accordance with the following provisions:

- (a) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during a two year period which precedes the particular date and which is representative of the normal operation of the emissions unit. The Department may allow the use of a different time period upon a determination that it is more representative of the normal operation of the emissions unit. Actual emissions shall be calculated using the emissions unit's actual operating hours, production rates and types of materials processed, stored, or combusted during the selected time period.*
- (b) The Department may presume that unit-specific allowable emissions for an emissions unit are equivalent to the actual emissions of the emissions unit provided that, for any regulated air pollutant, such unit-specific allowable emissions limits are federally enforceable.*

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

- (c) For any emissions unit (other than an electric utility steam-generating unit specified in subparagraph (d) of this definition) which has not begun *normal operations* on a particular date, actual emissions shall equal the *potential emissions* of the emissions unit on that date.
- (d) For an electric utility steam generating unit (other than a new unit or the replacement of an existing unit) actual emissions of the unit following a physical or operational change shall equal the representative actual annual emissions of the unit following the physical or operational change, provided the owner or operator submits to the Department on an annual basis, for a period of 5 years representative of normal post-change operations of the unit, within the period not longer than 10 years following the change, information demonstrating that the physical or operational change did not result in an emissions increase. The definition of "representative actual annual emissions" found in 40 CFR 52.21(b)(33) is adopted and incorporated by reference in Rule 62-204.800, F.A.C.

The term electric utility steam-generating unit is defined as:

Electric Utility Steam Generating Unit – Any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam-electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the unit.

Based on Department records, actual hours of operation since 1993 are as follows:

Unit/Year	Annual Operating Hours 1993 - 1998					
	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
3A (003)	786	7554	8334	7977	8121	8067
3B (004)	804	7789	8172	8281	8551	8301
4A (005)	91	5181	5974	8305	8243	8417
4B (006)	91	6780	8315	8310	8254	8345

As expected, there was a rapid increase in annual hours of operation after these very efficient units were installed in 1993. Their operation can presently be characterized as "baseload." The foggers will be allowed to operate continuously but will be limited in terms of "degree-hours." As previously mentioned, if the average temperature drop is in fact 5.5 °F, they can operate 6240 hours on gas and 125 hours on oil each.

The combustion turbines have clearly begun *normal operation*. As modern combined cycle units, they are very efficient in comparison with conventional boiler-based steam-electrical units. Each combustion turbine-electrical generator produces 160 MW (nominal) of electrical power excluding the power produced through the steam cycle. The steam cycle associated with each combustion turbine, including the unfired HRSG and steam turbine-electrical generator produces about 70 MW (well in excess of 25 MW) so that the units are clearly steam electrical units. Therefore, the correct approach to determine the magnitude of a net emissions increase is to compare actual emissions from preceding years with representative actual annual emissions as described for steam electrical units.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

FP&L asserts and the Department accepts that use of the inlet foggers will not affect the hours of operation of the units. As mentioned previously, they are already baseload units and any downtime is more likely due to maintenance than to demand. Most likely the Martin combined cycle units will continue their normal baseload operation within the recent historical hours per year per unit. The emissions are directly related to the hours of operation.

The modification project can be isolated from the normal operation of the units and its effects can be directly predicted and measured without having to make annual comparisons of actual emissions from the combined cycle units before and after the change. The modification itself (i.e. installation and operation of the foggers), however, has not yet begun normal operation. The future actual emissions caused by the modification are equal to the potential-to-emit, which is based on the increases in heat input associated with the use of the fogging system.

The number of days during which the foggers can economically operate probably limits actual emissions increases to levels below significance for the purposes of PSD applicability. However, FP&L proposes to limit operation of the foggers to the equivalent of 6240 (gas) and 125 (oil) hours per combustion turbine per year on the basis of a 5.5 °F average compressor. This equates to 34,320 °F-hr on gas and 4000 °F-hr on oil per combustion turbine. If, for example, the average temperature drop is actually 11 °F, the foggers will only be allowed to operate half as many hours as the base case. Emissions will increase under these limitations (as previously tabulated) by levels less than the significant emissions rates. The Department concludes, therefore, that PSD does not apply to this project.

8. Proposed Addition of New Conditions to Power Plant Siting Certification No. PA 74-01 and PSD-FL-146

The combustion turbines were constructed under the authority of the Power Plant Siting Certification No. PA89-27 issued on 2/20/91. These conditions of certification PA 89-27 were been modified on 2/20/91, 9/28/94 and 9/06/96. The Department will amend PSD-FL-146 and the conditions of certification by adding a new condition authorizing installation and operation of the inlet foggers.

The new condition applicable to the inlet foggers proposed for CTs 3A&B and 4A&B (ARMS Units 003-006) are shown in the draft PSD permit modifications. It limits operation of each inlet fogger to 34,320 °F-hr on gas and 4000 °F-hr on oil. Monitoring and compliance procedures are included to insure the temperature drop and hours of operations are properly measured, documented and reported.

9. Conclusions

The project will not increase the maximum short-term emission rates as these are already achieved under natural conditions of low ambient temperatures without the use of the foggers.

The Department concludes that PSD is not applicable to this project since this project as presented will not result in significant net emissions increase to major facility. The changes will not cause a significant impact or cause or contribute to a violation of any ambient air quality standard or PSD increment.

The Department's conclusion does not set a precedent for projects implemented at any facilities other than combined cycle unit inlet fogger installations. It does not set precedents related to any physical changes within the compressors, combustors, rotors, or other key components at such units.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

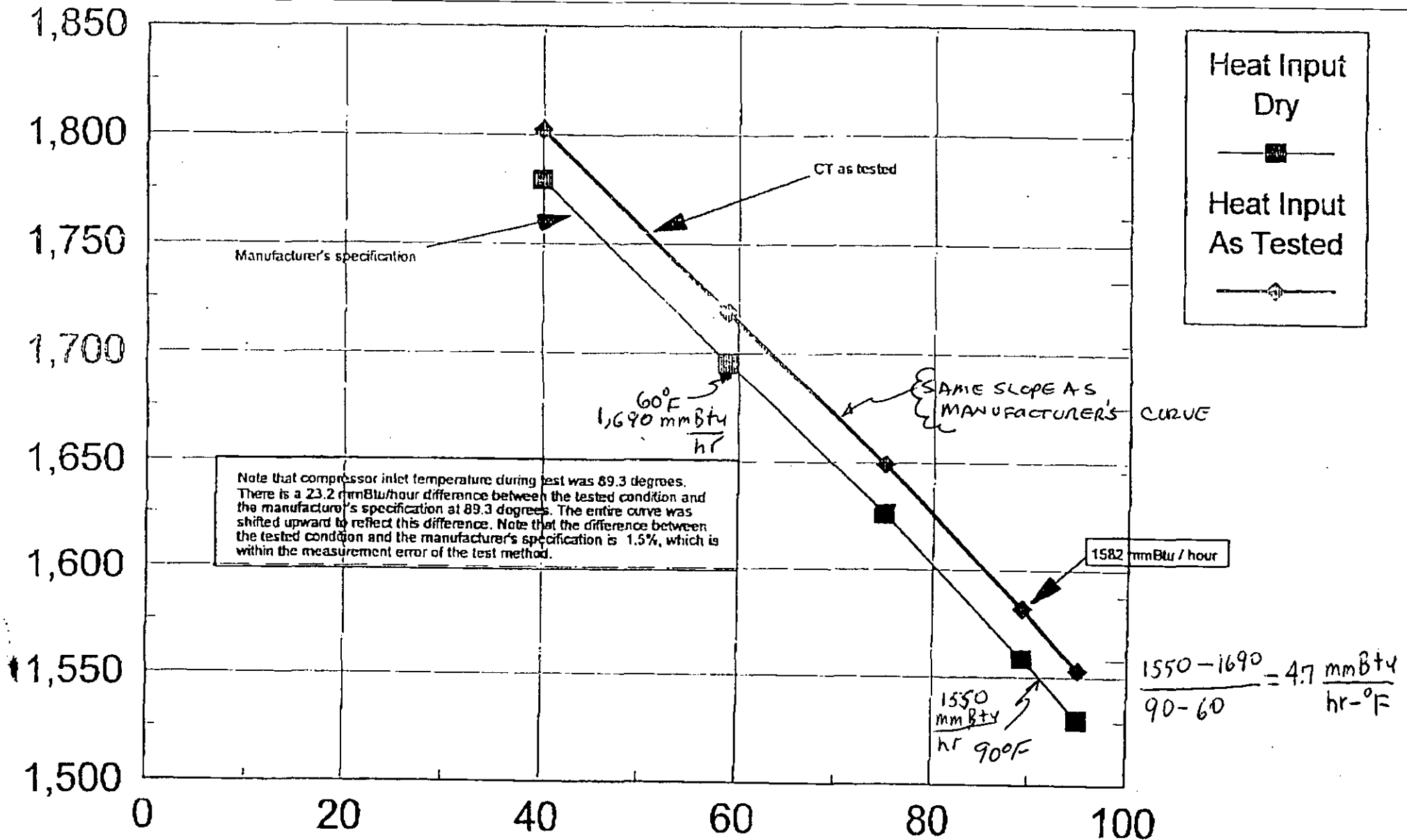
The application and determination of the Department's rules does not constitute an interpretation of the EPA rules under 40CFR52.21, Prevention of Significant Deterioration or 40CFR60, New Source Performance Standards.

For further details regarding this review, contact:

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Teresa Heron, Review Engineer
New Source Review Section
Bureau of Air Regulation
850/488-0114*

Martin Unit 3A

Heat Input vs. Ambient Temperature Curve



Memorandum

Florida Department of Environmental Protection

TO: ~~C. H. Fancy~~

THRU: Al Linero *aal 6/15*

FROM: Teresa Heron *T.H.*

DATE: June 15, 1999

SUBJECT: FP&L Martin Plant
DEP File No. 0850001-005-AC

Attached is the draft public notice package including the Intent to Issue and the Technical Evaluation and Preliminary Determination for the compressor inlet fogger project at the FP&L Martin Plant. The application is to install inlet foggers ahead of the compressor inlets of four combined cycle combustion turbines. The foggers will operate on hot days and days of relatively low humidity. The evaporative cooling effected by the foggers will allow the units to operate closer to their rated capacity.

Both short-term and annual emissions will increase because the heat rate through the units will increase when the foggers. Maximum short-term emissions will still occur during cold days when use of the foggers is not feasible. The units already comply with 40 CFR 60, Subpart GG, so NSPS applicability is not an issue. FP&L proposes to limit operation of the coolers to 34,320 degrees F-hour on gas and 4000 degrees F-hour on oil to insure PSD is not triggered by their use.

I recommend your signature and approval of the cover letter and Intent to Issue.

AAL/th

Attachments