UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW
ATLANTA, GEORGIA 30303-8909

MAY 21 1998

4APT-ARB

Mr. Clair H. Fancy, P.E.
Chief
Bureau of Air Regulation
Florida Department of Environmental
Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJ: PSD Permit for City of Lakeland, McIntosh Power Plant, Lakeland, Florida (PSD-FL-245)

Dear Mr. Fancy:

Thank you for your April 22, 1998, letter submitting a preliminary determination and draft Prevention of Significant Deterioration (PSD) permit for the above referenced facility. The permit is for the construction of a 250 MW continuous duty, simple cycle combustion turbine (CT) at the existing McIntosh Power Plant. A 230 MW Westinghouse Model 501G advanced CT with dry low-NO_x (DLN) burners is proposed. The CT will include a once-through steam generator (OTSG) which will use the waste heat to produce steam for cooling of critical components and for power augmentation. Electric power production will be increased from about 230 MW to about 250 MW by using power augmentation. The primary fuel for the CT will be natural gas, and distillate fuel oil (maximum sulfur content of 0.05 percent) will be used as a backup fuel. The CT and OTSG will operate no longer than 7,008 hours per year and will operate no more than 250 hours per year while firing distillate fuel oil.

Although there are no plans to convert the unit to a combined cycle system, flexibility is provided in the draft permit to allow such a conversion in the future. Conditions are provided in the draft permit for possible future conversion to a 350 MW combined cycle installation, provided there are no increases in emissions associated with the conversion. Section II, Condition 7 of the draft permit indicates that in the event of a conversion to a combined cycle operation, the best available control technology (BACT) will be reviewed and modified as appropriate, in accordance with 40 CFR 52.21(j). Condition 7 also indicates that this reassessment will be conducted only if the conversion to a combined cycle operation is accompanied by any increases in heat input limits, hours of operation, oil firing, low or baseload operation, short-term or annual emission limits, or similar changes, in accordance with 40 CFR 52.21(j)(4).

Emission estimates for the project indicate that significance thresholds for the following pollutants will be exceeded, requiring

PSD review: CO, NO_x, VOC, PM, and PM_{10}. As indicated in the preliminary determination and draft permit, the proposed BACT for NO_x emissions from the CT while firing natural gas consists of the use of advanced DLN combustion during the first 36 months of operation to achieve an emission limit of 25 ppm (based on manufacturer guarantee). Within 36 months after startup, the initial combustors must be replaced with Westinghouse ultra low-NO_x (ULN) combustors, which are currently under development, to accomplish further NO_x control to a level of 9 ppm. If 9 ppm is not achievable with ULN technology, a high temperature selective catalytic reduction (SCR) system must be installed within 36 months after initial start-up to achieve a NO_x emission rate of 9 ppm. If the facility is converted to a combined cycle system and an emission rate of 9 ppm is not achievable with either ULN combustion or high temperature SCR, a low temperature SCR system will be required to achieve an emission rate of 7.5 ppm (70 percent reduction from 25 ppm). When firing distillate fuel oil, a NO_x emission rate of 42 ppm must be achieved with the use of water injection, unless a high temperature SCR or low temperature SCR system is later installed. If a high temperature or a low temperature SCR system is installed, a NO_x emission rate of 15 ppm must be achieved when firing fuel oil. CO and VOC emissions will be controlled by the use of good combustion practices. The CO emission limit is 25 ppm when firing natural gas and 90 ppm when firing fuel oil. If the 25 ppm CO limit is not met by combustion optimization, an alternate limit of 10 ppm must be met by catalytic oxidation. Prior to issuance of the final permit, the City will submit a plan describing how the CO limits will be met. The VOC emission limit is 4 ppm when firing natural gas and 10 ppm when firing fuel oil.

As indicated in the draft permit, the regulations at 40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines will be applicable to the new combustion turbine, and 40 CFR Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels will apply to the new 1.05 million gallon fuel oil storage tank.

We have received a copy of the May 6, 1998, letter from the City of Lakeland which requests modifications to the draft permit. Based on our review of the preliminary determination/draft permit and the letter from the City of Lakeland, we have the following comments.

1. In the City of Lakeland's May 6, 1998, letter, they have requested a BACT NO_x emission limit of 12 ppm (while firing natural gas) if ULN combustion technology is installed within 36 months of the initial performance test, or an emission limit of 9 ppm if a high temperature SCR system is installed within 36 months of the initial performance test. With the use of ULN combustion, the City has requested that the State remove from the permit the 9 ppm limit (with compliance determined annually at baseload by an EPA Reference Method test). The PSD regulations define BACT as an "emission

limitation." As indicated in the State's preliminary determination, the present BACT for simple cycle operation of the proposed CT is the use of high temperature SCR, which is both technically and economically feasible, to achieve an emission rate of 9 ppm. If the facility is operated as a simple cycle system and it is determined that the BACT emission limit of 9 ppm is not achievable with the use of ULN combustion, an emission rate of 9 ppm will need to be achieved with the use of a high temperature SCR system. We do not object to allowing a period of time to complete the development of a new combustion technology to achieve the same emission rate. However, the permit should not provide any flexibility in meeting an emission limit of 9 ppm. Also, the permit should require compliance with the emission limit of 9 ppm within 36 months after startup, as indicated in the draft permit, instead of within 36 months of the initial performance test, as requested by the City. The period of time provided in the draft permit for refining the ULN technology should be adequate, without allowing up to an additional 6 months.

2. As indicated in the draft permit (Section III. 21.), if ULN combustion is used, a NO_x emission rate of no greater than 9 ppmvd (at 15 percent O_2) must be demonstrated at baseload during an annual compliance test. The same permit condition also requires that NO_x emissions shall not exceed 12 ppmvd on a 30-day rolling average, as measured by continuous emission monitor (CEM) data. Since the BACT emission limit has been defined as 9 ppmvd, a higher emission limit should not be provided on a 30-day rolling average basis. Although CTs at other facilities have been permitted with a higher emission limit under peak load conditions, we do not consider the 12 ppmvd 30-day rolling average limit to be appropriate since it would allow frequent violation of the 9 ppm BACT limit. Also, since compliance with BACT NO_x emission limits in other States are typically demonstrated on a shorter term (e.g., a rolling one hour or three hour average) with the use of CEM data, we recommend the use of a similar averaging period at the McIntosh Power Plant for monitoring of NO_x emissions with the use of either combustion controls or an SCR system. The use of a shorter averaging period will more accurately demonstrate continuous compliance with the BACT emission limit. [Also, when a longer averaging time is provided in a permit, it is typically associated with an emission limit which is lower than the short term limit. However, the draft permit for the City of Lakeland provides a short term limit of 9 ppm in combination with a less stringent 30-day rolling average limit of 12 ppm.]

3. The City of Lakeland has also requested that the State modify the draft permit by replacing all short term "lb/hr" BACT emission limits with "ton/year" emission limits. To ensure that the PSD permit is practically enforceable, short term BACT emission limits need to be provided in the PSD permit, as opposed to "ton/year" limits.

4. The proposed combined cycle NO_x emission limit of 7.5 ppm with the use of low temperature SCR is based on a reduction of 70 percent from the rate of 25 ppm achieved at start-up with the use of DLN technology. The draft permit seems to indicate that ULN combustion would not be used unless it would achieve an emission rate of 9 ppm. However, if ULN combustors are installed to achieve a higher emission rate and the facility is converted to a combined cycle system, the final emission limit associated with the use of low temperature SCR should be based on the performance capability of the SCR system. A PSD application for another CT combined cycle project in Region 4 has recently been submitted which proposes an emission limit of 3.5 ppm with the use of SCR (based on a removal efficiency of 70 percent). If low temperature SCR is used in combination with ULN combustion, we recommend that the State define the actual emission limit at the time of conversion to combined cycle operation. The limit should be based on the actual efficiency of the SCR system with an emission limit of 7.5 ppm or less.

5. The City of Lakeland has requested modifications to replace the limit on hours of operation of 7,008 hours per year (Section III. 13. of the draft permit) with a limit on fuel usage. A limit of "15.235 x 10^{12} Btu(LHV) per year while firing natural gas and emission rate of 25 ppmvd corrected at 15% O_2 on 30-day rolling average," which is based on 7,008 hours/year, is requested. In the same permit condition, another fuel usage limit is requested of "19.044 x 10^{12} Btu(LHV) per year while firing natural gas and emission rate of 12 ppmvd or less corrected at 15% O_2 on 30-day rolling average." Since the City of Lakeland has based the PSD permit application (which includes an ambient air impact analysis) on operation of the CT for a maximum of 7,008 hours/year, the permit needs to be based on this restriction, and the request for unrestricted hours of operation needs to be denied. The environmental benefits gained by achieving the more stringent final BACT emission limit for NO_x within 36 months should not be offset by a 25 percent increase in operating hours of the CT (with an associated increase in emissions of all pollutants).

6. The City of Lakeland has requested a modification in the draft permit language regarding excess emissions (Section III. 26.) by deleting the restriction on excess emissions to no more than four hours in any 24 hour period for cold startup or two hours in any 24 hour period for other reasons unless specifically authorized by the State for longer duration. The City is correct in that the New Source Performance Standards (NSPS) regulations do not place limits on the duration of excess emissions resulting from startup, shutdown, malfunction, or fuel switching. However, since the excess emissions language in the draft permit is based on the State Implementation Plan and previous PSD permits issued by the

State of Florida have included similar language, we believe that it should remain in the permit.

7. The City of Lakeland has requested a modification in the draft permit (Section III. 31.) to indicate that - "an operating day shall consist of at least 18 hours of operation." The City indicates that the suggested modification would be similar to the definition of "operating day" in the NSPS regulations. However, NSPS Subpart GG, which is applicable to the CT, does not define "operating day." We recommend that the State deny the City's request. The City has also requested a modification in condition 41 to indicate that - "periods of startup, shutdown, malfunction, and fuel switching shall be excluded from the 30-day averages but monitored, recorded, and reported as excess emissions when the emission levels cause the 30-day average to exceed BACT standards..." This language should only be allowed if consistent with State regulations. As discussed in comment no. 2 above, we have concerns regarding the use of the 30-day rolling average emission limits provided in the draft permit.

8. The City has requested a modification in condition no. 42 (Section III) of the permit by deleting the statement - "Upon request from the DEP, the CEMS emission rates for NO_x on Unit 5 shall be corrected to ISO conditions to demonstrate compliance with the NO_x standard established in 40 CFR 60.332." Although it would not be necessary to convert results to ISO standard day conditions on a continuous basis, records of the data needed to make the conversion need to be maintained so that NO_x results could be calculated on an ISO standard day condition basis anytime at the request of EPA or the State. Since the BACT NO_x limits are more stringent than those in Subpart GG, compliance with Subpart GG for the CT would be a concern only in cases when the CT is in violation of the BACT NO_x limits. Therefore, when the CEM data indicates an exceedance of the BACT NO_x limits, a conversion of NO_x results to ISO standard day conditions should be conducted to assure compliance with the NO_x limit in Subpart GG.

Thank you for the opportunity to review and comment on the draft permit and supporting information. If you have any questions, please contact Keith Goff of my staff at (404)562-9137.

cc: T. Deron, BAR
B. Owen, PPS
K. Kosky, GA
SWD
Polk Co.
F. Shelton, C&L

Sincerely yours,

Douglas Neeley

R. Douglas Neeley
Chief
Air and Radiation Technology Branch
Air, Pesticides, and Toxics
Management Division

LAKELAND
ELECTRIC & WATER

Excellence Is Our Goal, Service Is Our Job

Farzie Shelton, chE; REM

Manager of Environmental Licensing & Permitting

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 6, 1998

Mr. C.H. Fancy, P.E.
Chief Bureau of Air Regulation
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Re: Draft Air Construction Permit, DEP File No. 1050004-004-AC (PSD-FL-245)
250 Megawatt Combustion Turbine - McIntosh Power Plant Unit No. 5

We are in receipt of your letter dated April 22, 1998 and attached Draft Air Construction Permit , Technical Evaluation and Preliminary Determination, and Draft BACT Determination, and Public Notice of Intent to Issue Air Construction Permit for the above referenced unit.

We would like to thank you and your staff in particular Mr. Al Linero who has diligently worked with us to prepare this draft permit in a timely manner fully cognizant of our tight time schedule.

Accordingly, we have reviewed this draft permit and have prepared our comments for your consideration. Therefore, enclosed please find this draft permit containing our comments depicted by strikethrough for language we request deletion, bold underlined and in blue color for our suggested addition, italic and in red color offering our explanation and rationale. Additionally, we are enclosing a diskette containing this document, in Word 6.0 for Windows, for your convenience.

Once again we very much appreciate your cooperation in this matter. If you should have any questions, please do not hesitate to contact me at (941) 499-6603; by Fax at (941) 603-6335; or by E-Mail at fshel@city.lakeland.net.

Sincerely

Farzie Shelton

Enclosure

cc: EPA
NPS
SWD
Polk Co.
file

cc: Mr. A.A. Linero P.E.
Administrator
New Source Review Section
Florida Department of Environmental Protection
111 S. Magnolia
Suite 4
Tallahassee, Fl 32301

Mr. Hamilton Oven P.E.
Siting Coordinator
Florida Department of Environmental Protection
2600 Blair Stone Rd
MS-48
Tallahassee Fl 32399-2400

Mr. Ken Kosky P.E.
Golder Associates
6241 NW 23rd Street, Suit 500
Gainseville, Florida 32653-1500

PERMITTEE:

City of Lakeland
Department of Electric & Water Utilities
501 East Lemon Street
Lakeland, Fl 33801-5079

Authorized Representative:
Ronald W. Tomlin
Assistant Managing Director

File No.	1050004-004-AC
FID No.	1050004-004
SIC No.	4911
Permit No.	PSD-FL-245
Expires:	~~December 31, 1999~~

December 31, 2003
The suggested date is consistent with the permit requirement to achieve lower N O_X limits within 36 months of the initial performance test and would accommodate construction and operation of simple cycle configuration. Establishing a future date is consistent with many of the previous FDEP permits for future compliance. (e.g., Tiger Bay Cogeneration Facility, Orange Cogeneration Facility, and Mulberry Cogeneration Facility).

PROJECT AND LOCATION:

Permit for the construction of 250 megawatt (MW) simple cycle, gas-fired, stationary combustion turbine (CT), a once-through steam generator, and a 1.05 million gallon storage tank for back-up distillate fuel oil. Conditions are included for possible future conversion to a 350 megawatt combined cycle installation including a heat recovery steam generator provided there are no increases in emissions associated with the conversion. The turbine is designated as Unit No. 5 and will be located at the C.D. McIntosh, Jr., Power Plant, 3030 East Lake Parker Drive, Lakeland, Polk County. UTM coordinates are: Zone 17; 409.0 km E; 3106.2 km N.

STATEMENT OF BASIS:

This 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 above named permittee is authorized to modify the facility 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 of Environmental Protection (Department).

SECTION I. FACILITY INFORMATION

Attached appendices and Tables made a part of this permit:

Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

SECTION I. FACILITY INFORMATION

SUBSECTION A. FACILITY DESCRIPTION

The existing facility includes: two small diesel powered electric generators; one small gas and distillate-fired combustion turbine; one 90 MW gas and fuel oil-fired steam generator; one 115 MW gas and fuel oil-fired steam generator; and one 364 MW multiple (primarily coal) fuel-fired steam **generator**. This permit is for the installation of: a 250 MW simple cycle, gas-fired, stationary combustion turbine; a once-through steam generator; a 1.05 million gallon storage tank for back-up (0.05 percent sulfur) distillate fuel oil; and an 85-foot stack. It is possible that in the future the turbine will be converted by the addition of a heat recovery steam generator and a new stack to a 350 MW combined cycle operation without increases in emissions.

Emissions from Unit 5 will be initially controlled by Advanced Dry Low NO_X combustors, ~~steam~~ **wet** injection when firing fuel oil, use of inherently clean fuels, and good combustion practices. Ultimately the combustors will be replaced and nitrogen oxides emissions reduced by more sophisticated Ultra Low NO_X burners. Otherwise emissions will be reduced by the addition of a selective catalytic reduction (SCR) system.

SUBSECTION B. EMISSION UNITS

This permit addresses the following emission units:

EMISSION UNIT NO.	SYSTEM	EMISSION UNIT DESCRIPTION
~~001~~ **007**	Power Generation	250 Megawatt Combustion Turbine and Once Through Steam Generator
~~002~~ **008**	Fuel Storage	1.05 Million Gallon Fuel Oil Storage Tank

The emission unit numbers are based on the Title V designations for other units at the site.

SUBSECTION C. REGULATORY CLASSIFICATION

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

This facility is within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 100 TPY for at least one criteria pollutant, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD). Per Table 62-212.400-2, modifications (such as the construction of Unit 5) at the facility resulting in emissions increases greater than 40 TPY of NO_X or SO_2, 25/15 TPY of PM/PM_{10}, or 3 TPY of fluorides (F) require review per the PSD rules and a determination for Best Available Control Technology (BACT) per Rule 62-212.410, F.A.C.

SECTION I. FACILITY INFORMATION

This facility is also subject to the provisions of Title IV, Acid Rain, Clean Air Act as amended in 1990.

SUBSECTION D. PERMIT SCHEDULE

- 04/xx/98 Notice of Intent published in the Lakeland _____
- 04/23/98 Distributed Intent to Issue Permit
- 12/08/97 Received Application

SUBSECTION E. RELEVANT DOCUMENTS:

The documents listed below are the basis of the permit. They are specifically related to this permitting action, but not all are incorporated into this permit. These documents are on file with the Department.

- Application received on December 8, 1997
- Department letters dated January 5, January 12, and March 9, 1998
- Comments and letters from the National Park Service dated January 6, January 12, April 2 and April 15, 1998.
- EPA letters dated February 10 and March 6, 1998
- City of Lakeland letters dated March 4, March 11, and March 31, 1998
- Letters from Westinghouse dated March 25, March 30, and March 31, 1998
- Department's Intent to Issue and Public Notice Package dated April 22, 1998
- Department's Final Determination and Best Available Control Technology Determination dated May xx, 1998

SECTION II. EMISSION UNIT(S) GENERAL REQUIREMENTS

GENERAL AND ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), at 2600 Blairstone Road, Tallahassee, Florida 32399-2400 and phone number (850)488-1344. All documents related to reports, tests, and notifications should be submitted to the DEP Southwest District office (DEPSW), 3804 Coconut Palm Drive, Tampa, Florida 33619 and phone number 813/744-6100.
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Forms and Application Procedures: 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. [Rule 62-210.900, F.A.C.]
5. Modifications: The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change. [Chapters 62-210 and 62-212]
6. Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)].
7. BACT Determination: In accordance with paragraph (4) of 40 CFR 52.21(j) the Best Available Control Technology (BACT) determination shall be reviewed and modified as appropriate in the event of a conversion to combined cycle operation. This paragraph states: "For phased construction project, the determination of best available control technology shall be reviewed and modified as appropriate at the latest reasonable time which occurs no later than 18 months prior to commencement of construction of each independent phase of the project. At such time, the owner or operator of the applicable stationary source may be required to demonstrate the adequacy of any previous determination of best available control technology for the source."

SECTION II. EMISSION UNIT(S) GENERAL REQUIREMENTS

This reassessment will be conducted for this project only if the conversion to combined cycle operation is accompanied by any increases in heat input limits, ~~hours of operation~~, oil firing, low or baseload operation, short-term or annual emission limits, or **annual fuel heat input limits** ~~similar changes~~. [40 CFR 52.21(j)(4)] *See Conditions 13 and 14 for explanation.*

8. Application for Title V Permit: An application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to the DEP's Bureau of Air Regulation, and a copy to the Department Southwest District office (DEPSW). [Chapter 62-213, F.A.C.]

9. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., 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.]

10. Annual Reports: Pursuant to Rule 62-210.370(2), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports shall be sent to the DEP's Southwest District office by March 1st of each year.

11. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

12. Permit Extension: The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (Rule 62-4.090, F.A.C.).

13. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7 (7) (c) (1997 version), shall be submitted to the DEP's Southwest District office.

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

APPLICABLE STANDARDS AND REGULATIONS:

1. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, 62-297; and the applicable requirements of the Code of Federal Regulations Section 40, Parts 60, 72, 73, and 75.

2. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]

3. These emission units shall comply with all applicable requirements of 40CFR60, Subpart A, General Provisions including:

   - 40CFR60.7, Notification and Recordkeeping
   - 40CFR60.8, Performance Tests
   - 40CFR60.11, Compliance with Standards and Maintenance Requirements
   - 40CFR60.12, Circumvention
   - 40CFR60.13, Monitoring Requirements
   - 40CFR60.19, General Notification and Reporting requirements

4. Emission Unit ~~001~~ **007**, Power Generation, consisting of a 250 megawatt combustion turbine with a once-through steam generator shall comply with all applicable provisions of 40CFR60, Subpart GG, Standards of performance for Stationary Gas Turbines, adopted by reference in Rule 62-204.800(7)(b), F.A.C. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s).

5. Emission Unit ~~002~~ **008**, Fuel Storage, consisting of a 1.05 million gallon distillate fuel oil storage tank shall comply with all applicable provisions of 40CFR60, Subpart Kb, Standards of performance for Storage Tanks, adopted by reference in Rule 62-204.800, F.A.C.

6. All notifications and reports required by the above specific conditions shall be submitted to the DEP's Southwest District office.

GENERAL OPERATION REQUIREMENTS

7. Fuels: Only pipeline natural gas or maximum 0.05 percent sulfur ~~No. 2~~ distillate fuel oil shall be fired in this unit. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)] *This sugested change would allow the use of No. 2 and better grades of fuel (e.g., Jet-A).*

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

8. Capacity: The maximum heat input rates, based on the lower heating value (LHV) of each fuel to Unit 5 at ambient conditions of 59°F temperature, 60% relative humidity, 100% load, and 14.7 psi pressure shall not exceed 2,174 million Btu per hour (mmBtu/hr) when firing natural gas, nor 2,236 mmBtu/hr when firing ~~No. 2~~ **distillate** fuel oil. These maximum heat input rates will vary depending upon ambient conditions and the combustion turbine characteristics. Manufacturer's curves corrected for site conditions or equations for correction to other ambient conditions shall be provided to the Department of Environmental Protection (DEP) within 45 days of completing the initial compliance testing. [Design, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

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.

10. 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 owner or operator shall notify the Permitting Authority as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the 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 and the regulations. [Rule 62-4.130, F.A.C.]

11. Operating Procedures: Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]

12. Circumvention: The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]

~~Hours of Operation~~ Production Limits

13. ~~Hours of operation~~ **Fuel usage** for the stationary gas turbine ~~and once through steam generator~~ shall not exceed ~~7008 hours~~ **15.235 x 10^{12} Btu (LHV)** per year **while firing natural gas and emission rate of 25 ppmvd corrected at 15% O_2 on 30-day rolling average. Fuel usage for the stationary gas turbine should not exceed 19.044 x 10^{12} Btu (LHV) per year while firing natural gas and emission rate of 12 ppmvd or less corrected at 15% O_2 on 30-day rolling average**. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)] *The City requested 7,008 hours of operation at a heat input of 2,174 mmBtu/hr (see Page 20). The amount of natural gas could be included as an alternative as listed on Page 26 of the application [i.e., 16,037 million cubic feet per year at 950 Btu (LHV)/cf]. The*

potential emissions calculation and basis of the BACT evaluation used this fuel usage. This limit in production would be federally enforceable and easily monitored. The heat input or fuel usage is monitored with the digital control system and is the basis of the fuel cost (a important plant parameter). Typically there are several back-ups for fuel usage. For emission limits of 12 ppmvd or less corrected at 15% O_2 on 30-day rolling average there shall not be any operational restrictions as per The City of Tallahassee.

14. Hours of operation for the stationary gas turbine ~~and once through steam generator~~ shall not exceed ~~250 hours~~ **559.0 x 10^9 Btu (LHV)** per year while firing distillate fuel oil. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)] *The City requested 250 hours of operation at a heat input of 2,236 mmBtu/hr (see Page 20). The amount of distillate oil could be included as an alternative as listed on Page 26 of the application [i.e., 42.558 million gallons per year at 18,500 Btu (LHV)/gal]. The potential emissions calculation and basis of the BACT evaluation used this fuel usage . This limit in production would be federally enforceable and easily monitored. The heat input or fuel amount can be monitored with the digital control sysyem and is the basis of the fuel cost (a important plant parameter). Typically there are several back-ups for fuel usage.*

Control Technology

15. Westinghouse Second Generation Advanced Dry Low NO_X (DLN) combustors (or equivalent) shall be installed on the stationary combustion turbine to control nitrogen oxides (NO_X) emissions while firing natural gas. [Design, Rule 62-4.070, F.A.C.]

16. The initial combustors shall be replaced with Westinghouse Ultra Low NO_X (ULN) ~~Piloted Ring Combustors~~ **or equivalent** within 36 months after ~~start-up~~ **the Initial Performence Test (IPT) required by Condition 29** to accomplish further NO_X control unless a high temperature selective catalytic reduction (Hot SCR) system or a low temperature SCR system is installed within 36 months. [Design, Rules 62-4.070 and 62-212.410, F.A.C.] *This condition as well as Condition 20 and 21 require meeting lower NOx emissions within 36 months of start-up. The 36 months from startup is not sufficient to accomodate since any installation or adjustments of both the DLN and ULN must be within the period. In addition, since a lower limit must be demonstrated at a future date, it must accomodate testing for the lower limit. By designating the IPT, Westinghouse and the City could accomodate the installation of the alternative controls as well as the testing.. The IPT would also provide both the City and the Department with specific date as to the future compliance date.*

17. The permittee shall design the stationary gas turbine, ducting, possible future heat recovery steam generator, and stack(s) to accommodate installation of SCR equipment or oxidation catalyst in the event that the ULN technology fails to achieve the NO_X ~~or carbon monoxide (CO)~~ limits given in Specific Condition No. 21 ~~and 22~~ within 36 months after ~~start-up~~ **IPT**. [Rule 62-4.070, F.A.C.]*The Department has already established CO emission limits for which compliance must be demonstrated annually. It is unnecessary to include a requirement for CO in this condition.*

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

18. A water injection system shall be installed for use when firing ~~No. 2~~ fuel oil for control of NO_X emissions. [Design, Rules 62-4.070 and 62-212.410, F.A.C.]

~~19. The Advanced DLN and ULN systems shall each be tuned upon initial operation to optimize emissions reductions and shall be maintained to minimize NO_X emissions and CO emissions. Operation of the Advanced DLN or ULN systems in the diffusion firing mode shall be minimized when firing natural gas. [Rule 62-4.070, and 62-210.650 F.A.C.]~~ *This condition is not necessary. It is the City's understanding that DLN and ULN operating parameters are established by Westinghouse and the ability of "tuning" the combustors in the traditional sense is not applicable. Also the DCS that controls the turbine operation will automatically control the gas regulation for the pre-mix and diffusion modes. The City will not have the ability to control these parameters. Moreover, the requirement to meet specific emission limits will dictate in part how the turbine is operated.*

EMISSION LIMITS AND STANDARDS

20. The following emission limits ~~based~~ shall apply upon completion of the initial performance tests: Best Available Control Technology (BACT). Following is a summary of the BACT determination by DEP. Values for NO_X **and CO** are **ppmvd** corrected to 15% O_2. [Rule 62-212.410, F.A.C.]

Operational Mode	NO_X (ppm)	CO (ppm)	VOC (ppm)	PM/Visibility (% Opacity)	Technology and Comments
Simple Cycle	25 - NG **(30-day)** 42 - FO	25 - NG or 10 - Ox Cat 90 - FO	4 - NG 10 - FO	10 - **NG** **20 - FO**	Adv. DLN on gas, WI on oil. Applies first 36 months after ~~startup~~ **IPT**. Clean fuels, good combustion
SC or CC	~~9 - NG~~ 12 - **NG** (30 day) 42 - FO	25 - NG or 10 - Ox Cat 90 - FO	4 - NG 10 - FO	10 - **NG** **20 - FO**	ULN on gas, WI on oil. Applies after 36 months ~~operation~~ **IPT**. Clean fuels, good combustion
Simple Cycle	9 - NG 15 - FO	25 - NG or 10 - Ox Cat 90 - FO	4 - NG 10 - FO	10 - **NG** **20 - FO**	Hot SCR. Applies after 36 months **from IPT** if 9 ppm NOX not achievable by ULN. Clean fuels, good combustion.
Combined Cycle	7.5 - NG 15 - FO	25 - NG or 10 - Ox Cat 90 - FO	4 - NG 10 - FO	10 - **NG** **20 - FO**	Conventional SCR if converted to combined cycle, unless 9 ppm is attained by ULN or Hot SCR as described above. Clean fuels, good combustion

The dates have included IPT as the basis; see Condition 16. Compliance with a limit of 9 ppm for a short-term period is not consistent with the Department's recent decisions for the City of Tallahassee. Moreover, the BACT evaluation and impact analyses for NOx use even longer averaging times (i.e., annual) than the 30-day rolling average and therefore providing the basis that the 30-day average is more stringent than the air quality impact of BACT evaluations. In addition, the 30-day average is a rolling average for which compliance is evaluated each day. The use of ULN should also list combined cycle (CC) as being appropriate.

21. Nitrogen Oxides (NO_X) Emissions:

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

- When NO_X monitoring data is not available, substitution for missing data shall be handled as required by Title IV (40 CFR 75) to calculate any specified average time.

- During the first 36 months after ~~start-up (commercial operation)~~ **IPT**, the concentration of NO_X in the exhaust gas shall not exceed 25 ppmvd at 15% O_2 when firing natural gas and 42 ppmvd at 15% O_2 when firing fuel oil on the basis of a ~~24-hr~~ **30-day rolling** average except during periods of startup, shutdown, malfunction or fuel switching, as measured by the continuous emission monitoring system (CEMS). NOx emissions calculated as NO_2 (~~at ISO conditions~~) **from the CEM system** shall not exceed **863 tons/year** ~~237 lb/hr (gas) and 413 lb/hr (oil) to be demonstrated by stack test~~. [Rule 62-212.400, F.A.C.]*The basis of the impact evaluation for NOx is the annual emissions which were demonstrated to achieve the national ambient air quality standards (NAAQS). The 30-day rolling average and tons/year limits are consistent with the City of Tallahassee PSD determination recently made by the Department (PSD -FL-239/PA97-36 and the PPSA). The 863 tons/year is contained in the application (page 2-9).*

- Beginning 36 months after ~~start-up~~ **IPT**, ~~achievable short-term NO_X concentrations in the exhaust gas shall be demonstrated at baseload during an annual compliance test not to exceed 9 ppmvd at 15% O_2 when firing natural gas.~~ NO_X emissions shall not exceed 12 ppmvd at 15% O_2 when firing natural gas and 42 ppmvd at 15% O_2 when firing fuel oil on the basis of a 30-day rolling average (except during periods of startup, shutdown, malfunction or fuel switching), as measured by the CEMS. NO_X emissions calculated as NO_2 ~~(at ISO conditions)~~ **from the CEM system** shall not exceed **535.7 tons/year** ~~85 lb/hr (gas) and 413 lb/hr (oil) to be demonstrated by stack test~~. [Rule 62-212.400, F.A.C.] *The 436 tons/year is based on 12 ppmvd at 15% oxygen for gas firing and the 42 ppmvd at 15% oxygen for oil firing.*

- If Hot SCR is installed, ~~achievable short-term NO_X concentrations in the exhaust gas shall be demonstrated at baseload during the first compliance test following installation not to exceed 9 ppmvd at 15% O_2 when firing natural gas~~. NO_X emissions shall not exceed 9 ppmvd at 15% O_2 when firing natural gas and 15 ppmvd at 15% O_2 when firing fuel oil on the basis of a 30-day rolling average (except during periods of startup, shutdown, malfunction or fuel switching), as measured by the CEMS. NO_X emissions calculated as NO_2 ~~(at ISO conditions)~~ **from the CEM system** shall not exceed **414.7 tons/year** ~~85 lb/hr (gas) and 148 lb/hr (oil) to be demonstrated by stack test~~. [Rule 62-212.400, F.A.C.] *Again, the tons/year is consistent with the City of Tallahassee determination.*

- If conventional SCR is installed in conjunction with conversion to combined cycle operation, ~~achievable short-term NO_X concentrations in the exhaust gas shall be demonstrated at baseload during the first compliance test following installation not to exceed 7.5 ppmvd at 15% O_2 when firing natural gas. If conventional SCR catalyst is installed~~, NO_X emissions shall not exceed 7.5 ppmvd at 15% O_2 when firing natural gas and 15 ppmvd at 15% O_2 when firing fuel oil on the basis of a 30-day rolling average (except during periods of startup, shutdown, malfunction or fuel switching), as measured by the

CEMS. NOx emissions calculated as NO_2 ~~(at ISO conditions)~~ **from the CEM system** shall not exceed **300.8 tons/year** ~~71.1 lb/hr (gas) and 148 lb/hr (oil) to be demonstrated by stack test~~. [Rule 62-212.400, F.A.C.]

22. Carbon Monoxide (CO) emissions: The concentration of CO in the exhaust gas**, at baseload,** when firing natural gas shall not exceed 25 ppmvd ~~when firing natural gas~~ and 90 ppmvd when firing fuel oil as measured by EPA Reference Method 10 test **and corrected to 15% O_2.** ~~CO emissions (at ISO conditions) shall not exceed 106 lb/hr (gas) and 386 lb/hr (oil).~~ [Rule 62-212.400, F.A.C.] *The provision for correcting to 15% O_2 would provide some margin for increased efficiency of the turbine. The more efficient turbines have lower O_2 with less emissions per MW generated (as described in the application and subsequent information transmitted to the Department). The use of the oxygen correction would be equivalent of adjusting the "G" turbine performance to the "F"class turbine. The CO emission limits contained herein are the same as those for approved by the Department for the City of Tallahassee's "F" class turbines; the oxygen correction would therefore provide additional margin due to the increased efficiency of the "G" turbine technology. There is no appropriate reason for adding lb/hr or tons/year limits for CO. The environmental impacts are extremely low even with much higher emissions. Also, the recent City of Tallahassee PSD approval did not contain lb/hr of ton/year limits for CO.*

23. Sulfur Dioxide (SO_2) emissions: SO_2 emissions ~~(at ISO conditions)~~ shall **be limited** ~~not exceed 7.2 pounds per hour when~~ **by** firing pipeline natural gas and ~~127 pounds per hour when~~ firing maximum 0.05 percent sulfur distillate fuel oil ~~No. 2 as measured by applicable compliance methods described below~~. Emissions of SO_2 shall not exceed 38.4 tons per year. [Rules 62-4.070 and 62-212.400, F.A.C. to avoid PSD Review] *With the use of clean fuels and not having a BACT determination, it is unnecessary to establish lb/hr limits. Moreover, the modeling demonstrate that compliance with NAAQS is readily achieved. The suggesed change is consistent with the City of Tallahassee approval.*

24. Visible emissions (VE): VE emissions shall not exceed 10 percent opacity when firing natural gas or **20 percent opacity when firing** ~~No. 2~~ **distillate** fuel oil. *The Westinghouse guarentees provide for 10 percent or less opacity for gas and 20 percent or less opacity for oil. These levels are consitent with other permits using such fuels (e.g., Hardee Unit 3 using Westinghouse 501F turbines). Moreover, the use of oil is limited to only 250 hours/year which is very infrequent.*

25. Volatile Organic Compounds (VOCs) Emissions: The concentration of VOCs in the exhaust gas when firing natural gas shall not exceed 4 ppmvd when firing natural gas and 10 ppmvd when firing fuel oil as asured by EPA Methods 18, and/or 25 A. ~~VOCs emissions (at ISO conditions) shall not exceed 10 lb/hr (gas) and 25 lb/hr (oil)~~. -[Rule 62-212.400, F.A.C.] *Since there is no PSD applicablility at these emission limits (i.e., emissions are 37 tons/year; see page 2-9 in application), there should be no lb/hr or tons/year emission limits for VOC. There is no NAAQS and the ppmvd levels provide sufficient basis.*

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

EXCESS EMISSIONS

26. Excess emissions resulting from startup, shutdown, malfunction or fuel switching shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized. ~~Excess emissions occurrences shall in no case exceed four hours in any 24-hour period for cold startup or two hours in any 24-hour period for other reasons unless specifically authorized by DEP for longer duration~~. *In accordance with the NSPS, excess emission resulting from startup, shutdown, malfunction or fuel switching is not limited to any specific period or duration. This is also consistent with the EPA's comments (and FDEP agreement) on proposed Title V permits for the FPL's facilities.*

27. Excess emissions 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 pursuant to Rule 62-210.700, F.A.C.

28. Excess Emissions Report: If excess emissions occur due to malfunction, the owner or operator shall notify DEP's Southwest District office within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rules 62-4.130 and 62-210.700(6), F.A.C.]

COMPLIANCE DETERMINATION

29. Compliance with the allowable emission limiting standards shall be determined **by an Initial Performance Test (IPT) to be conducted** within 60 days after achieving the maximum production rate, for each fuel, at which this unit will be operated, but not later than 180 days of initial operation of the unit for that fuel, and annually thereafter as indicated in this permit, by using the following reference methods as described in 40 CFR 60, Appendix A (1997 version), and adopted by reference in Chapter 62-297, F.A.C. *The IPT added for clarification.*

30. ~~Initial (I) performance tests~~ **IPT** shall be performed on Unit 5 while firing natural gas as well as while firing fuel oil. These initial (I) tests shall also be conducted after **installation or modification of equipment used to achieve the emission limits specified in Conditions 20 and 21. The IPT shall be conducted within the time periods specified in Condition 29.** ~~any modifications (and shake down period not to exceed 100 days after re-starting the CT) of air pollution control equipment, including installation of Ultra Low NOX burners, Hot SCR, or conventional SCR~~. Annual (A) compliance tests shall be performed during every federal fiscal year (October 1 - September 30) pursuant to Rule 62-297.340, F.A.C., on Unit 5 as indicated. The following reference methods shall be used.. No other test methods may be used for compliance testing unless prior DEP approval is received in writing. *The condition should be constructed around the time periods in Conditions 20 and 21 and allow a similar period for*

performing initial performance tests. The term "shake down" has no regulatory meaning and 100 days seems arbitary.

- EPA Reference Method 9, "Visual Determination of the Opacity of Emissions from Stationary Sources" (I, A).
- EPA Reference Method 10, "Determination of Carbon Monoxide Emissions from Stationary Sources" (I, A).
- EPA Reference Method 20, "Determination of Oxides of Nitrogen Oxide, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines." Initial test only for compliance with 40CFR60 Subpart GG~~. and (I,A)~~ **The** short-term NO_X BACT limits **(A),** (Method 7E or RATA test data may be used to demonstrate compliance for annual test requirement)
- EPA Reference Method 18, and/or 25A, "Determination of Volatile Organic Concentrations." Initial test only.

31. Continuous compliance with the NO_X emission limits: ~~Except as noted in Specific Condition No. 21, continuous c~~ Compliance with the NO_X emission limits shall be demonstrated with the CEM~~S~~ system based on a 30 day rolling average. ~~Based on~~ **Using** CEMS data, a separate compliance ~~test~~ **determination** is ~~conducted~~ **made** at the end of each operating day ~~and a new~~ **based on the** 30 day **rolling** average, emission rate is calculated from the arithmetic average of all valid hourly emission rates during the previous 30 operating days. **An operating day shall consist of at least 18 hours of operation. Periods of allowable excess emissions as provided for in Conditions 26, 27 and 28 shall be excluded from the 30 day average.** [Rule 62-4.070, F.A.C., 40CFR75] *The suggested wording clarifies the intent of the condition. It also provides a definition of operating day similar to the NSPS.*

32. Compliance with the SO_2 and PM/PM_{10} emission limits: Not withstanding the requirements of Rule 62-297.340, F.A.C., the use of pipeline natural gas and the use of ~~no more than 250 hours per year of maximum~~ 0.05 percent sulfur (by weight) distillate ~~No. 2~~ fuel oil, is the method for determining compliance for SO_2 and PM_{10}. For the purposes of demonstrating compliance with the 40 CFR 60.333 SO_2 standard and the 0.05% S limit, fuel oil analysis using ASTM D2880-71 or D4294 (or equivalent) for the sulfur content of liquid fuels and D1072-80, D3031-81, D4084-82 or D3246-81 (or equivalent) for sulfur content of gaseous fuel shall be utilized in accordance with the EPA-approved custom fuel monitoring schedule. The applicant is responsible for ensuring that the procedures above are used for determination of fuel sulfur content. Analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency pursuant to 40 CFR 60.335(e) (1997 version).

33. Compliance with CO emission limit: An ~~initial test~~ **IPT** for CO, **shall be conducted** concurrent**ly** with the ~~initial~~ **IPT for** NO_X ~~test~~, ~~is~~ **as** required. The ~~initial~~ **IPT for** NO_X and CO ~~test results~~ shall be the average of three valid one-hour runs. Annual compliance testing may be

conducted concurrent with the annual RATA testing required pursuant to 40 CFR 75 (required for gas only). *The suggested wording is provided for clarification.*

34. Compliance with the VOC emission limit: An ~~initial test~~ **IPT** is required to demonstrate compliance with the ~~BACT~~ VOC emission limit. Thereafter, CO emission limit will be employed as surrogate. *The VOC emission limits established by the Department would result in emissions below the PSD significant emission rates and therefore BACT is not applicble. This should also be addressed in the BACT determination.*

35. Testing procedures: Testing of emissions shall be conducted with the combustion turbine operating at permitted capacity. Permitted capacity is defined as 95-100 percent of the maximum heat input rate allowed by the permit, corrected for the average ambient air temperature during the test (with 100 percent represented by a curve depicting heat input vs. ambient temperature). If it is impracticable to test at permitted capacity, the source may be tested at less than permitted capacity. In this case, subsequent operation is limited by adjusting the entire heat input vs. ambient temperature curve downward by an increment equal to the difference between the maximum permitted heat input (corrected for ambient temperature) and 105 percent of the value reached during the test until a new test is conducted. **S**ince the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity. Test procedures shall meet all applicable requirements (i.e., testing time frequency, minimum compliance duration, etc.) of Chapter 62-297 F.A.C.

36. Test Notification: The DEP's Southwest District office shall be notified, in writing, at least 30 days prior to the ~~initial performance tests~~ **IPT** and at least 15 days before annual compliance test(s).

37. Special Compliance Tests: The DEP may request a special compliance test pursuant to Rule 62-297.340(2), F.A.C., when, after investigation (such as complaints, increased visible emissions, or questionable maintenance of control equipment), there is reason to believe that any applicable emission standard is being violated.

38. Test Results: Compliance test results shall be submitted to the DEP's Southwest District office no later than 45 days after completion of the last test run.

NOTIFICATION, REPORTING, AND RECORDKEEPING

39. Records: All measurements, records, and other data required to be maintained by the City of Lakeland Department of Electric & Water Utilities shall be recorded in a permanent form and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. These records shall be made available to DEP representatives upon request.

40. Emission Compliance Stack Test Reports: A test report indicating the results of the required compliance tests shall be filed with the DEP SW District Office as soon as practical, but no later than 45 days after the last sampling run is completed. [Rule 62-297.310(8), F.A.C.]. The test report shall provide sufficient detail on the tested emission unit and the procedures used to

allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in Rule 62-297.310(8), F.A.C.

MONITORING REQUIREMENTS

41. Continuous Monitoring System: The permittee shall install, calibrate, maintain, and operate a continuous emission monitor in the stack to measure and record the nitrogen oxides emissions from Unit 5. Periods when NOX emissions (ppmvd @ 15% oxygen **30 day rolling average**) are above the BACT standards listed in Subsection C. Specific Condition C.1. shall be reported to the DEP Southwest District Office pursuant to Rule 62-4.160(8), F.A.C. Periods of startup, shutdown, malfunction, and fuel switching shall be **excluded from the 30 day averages but** monitored, recorded, and reported as excess emissions when emission levels **cause the 30 day average to** exceed the BACT standards following the format of 40 CFR 60.7 (1997 version). *The suggested wording corresponds to the 30 day rolling average limits requested.*

42. CEMS in lieu of Water to Fuel Ratio: Subject to EPA approval, the NO_X CEMS shall be used in lieu of the water/fuel monitoring system for reporting excess emissions in accordance with 40 CFR 60.334(c)(1), Subpart GG (1997 version). Subject to EPA approval, the calibration of the water/fuel monitoring device required in 40 CFR 60.335 (c)(2) (1997 version) will be replaced by the 40 CFR 75 certification tests of the NO_X CEMS. ~~Upon request from DEP, the CEMS emission rates for NOX on Unit 5 shall be corrected to ISO conditions to demonstrate compliance with the NOX standard established in 40 CFR 60.332.~~ *The NSPS NOx emission limits are at least 4 times higher than the BACT emission limits. The potential for requiring some correction to ISO conditions is unnecessary and if required would add unnecessary costs and reporting complications.*

43. Continuous Monitoring System Reports: The monitoring devices shall comply with the certification and quality assurance, and any other applicable requirements of Rule 62-297.520, F.A.C., 40 CFR 60.13, and 40 CFR 60.75 including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) **or 40 CFR Part 75**. Quality assurance procedures must conform to all applicable sections of 40 CFR 60, Appendix F or 40 CFR 75. Data on CEM equipment specifications, manufacturer, type, calibration and maintenance needs, and its proposed location shall be provided to the Department's Southwest District Office (DEPSWD) for review at least 90 days prior to installation. *Clarification added to allow Part 75 as a basis for equipment and performance specificaions.*

44. Fuel Oil Monitoring Schedule: The following monitoring schedule for ~~No. 2~~ **distillate** fuel oil shall be followed: For all bulk shipments of ~~No. 2~~ **distillate** fuel oil received at the C.D. McIntosh , Jr. Power Plant, an analysis which reports the sulfur content and nitrogen content of the fuel shall be provided by the fuel vendor. The analysis shall also specify the methods by which the analyses were conducted and shall comply with the requirements of 40 CFR 60.335(d).

45. Natural Gas Monitoring Schedule: The following custom monitoring schedule for natural gas is approved (pending EPA concurrence) in lieu of the daily sampling requirements of 40 CFR 60.334 (b)(2):

- Monitoring of natural gas nitrogen content shall not be required.
- Analysis of the sulfur content of natural gas shall be conducted using one of the EPA-approved ASTM reference methods in Specific Condition No. 32 for the measurement of sulfur in gaseous fuels, or an approved alternative method. Once Unit 5 becomes operational, monitoring of the sulfur content of the natural gas shall be conducted twice monthly for six months. If this monitoring shows little variability in the fuel sulfur content, and indicates consistent compliance with 40 CFR 60.333, then fuel sulfur monitoring shall be conducted once per quarter for six quarters and after that, semiannually.
- Should any sulfur analysis indicate noncompliance with 40 CFR 60.333, the City shall notify DEP of such excess emissions and the customized fuel monitoring schedule shall be reexamined. The sulfur content of the natural gas will be monitored weekly during the interim period while the monitoring schedule is reexamined.
- The City shall notify DEP of any change in natural gas supply for reexamination of this monitoring schedule. A substantial change in natural gas quality (i.e., sulfur content variation of greater than 1 grain per 100 cubic foot of natural gas) shall be considered as a change in the natural gas supply. Sulfur content of the natural gas will be monitored weekly by the natural gas supplier during the interim period when this monitoring schedule is being reexamined.
- Records of sampling analysis and natural gas supply pertinent to this monitoring schedule shall be retained by the City for a period of five years, and shall be made available for inspection by the appropriate regulatory personnel.
- The City may obtain the sulfur content of the natural gas from the fuel supplier (Florida Gas Transmission) provided the test methods listed in Specific Condition E.4 are used.

46. Determination of Process Variables:

- The permittee shall operate and maintain equipment and/or instruments necessary to determine process variables, such as process weight input or heat input, when such data is needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- Equipment and/or instruments used to directly or indirectly determine such process variables, including devices such as belt scales, weigh 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.].** *The original text was cut off and remainder of the rule language was added.*

THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Permit by:

Lakeland Electric & Water Utilities
501 East Lemon Street
Lakeland, Florida 33801-5079
/

OGC No. 98-_____

DRAFT Permit No.: 1050004-004-AC
(PSD-FL-245)
C.D. McIntosh, Jr. Power Plant
Polk County

REQUEST FOR EXTENSION OF TIME

By and through undersigned counsel, Lakeland Electric & Water Utilities (Lakeland) hereby requests, pursuant to Florida Administrative Code Rules 28-106.111(3) and 62-103.050(1), an extension of time, to and including June 1, 1998, in which to file a Petition for Administrative Proceedings in the above-styled matter. As good cause for granting this request, Lakeland states the following:

1. On or about April 22, 1998, Lakeland received from the Department of Environmental Protection (Department) an "Intent to Issue Air Constriction Permit" (Permit No. 1050004-004-AC) (PSD-FL-245) for the C.D. McIntosh, Jr. Power Plant located in Polk County, Florida. Along with the Intent to Issue, Lakeland received a Draft Air Construction Permit and "Public Notice of Intent to Issue Air Construction Permit."

2. Based on Lakeland's review, the Draft Permit and associated documents contain several provisions that warrant clarification or correction.

3. This request is filed simply as a protective measure to avoid waiver of Lakeland's right to challenge certain conditions contained in the Draft Air Construction Permit. Grant of

this request will not prejudice either party, but will further their mutual interest and hopefully avoid the need to file a petition and proceed to a formal administrative hearing or formal mediation.

4. A.A. Linero with the Bureau of Air Regulation has agreed to an extension until June 1, 1998, on behalf of the Department. Counsel for Lakeland has attempted without success to contact W. Douglas Beason with the Office of General Counsel regarding this request.

WHEREFORE, Lakeland respectfully requests that the time for filing of a Petition for Administrative Proceedings in regard to the Department's Intent to Issue Draft Air Construction Permit for Permit No. 1050004-004-AC (PSD-FL-245) be formally extended to and including June 1, 1998.

Respectfully submitted this 1st day of May, 1998.

HOPPING GREEN SAMS & SMITH, P.A.

Robert A. Manning

Robert A. Manning
Fla. Bar. No. 0035173
123 South Calhoun Street
Post Office Box 6526
Tallahassee, FL 32314
(850) 222-7500

Attorney for LAKELAND ELECTRIC & WATER UTILITIES

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing has been furnished to the following by U.S. Mail on this 1st day of May, 1998:

Clair H. Fancy, P.E.
Chief
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2600

W. Douglas Beason
Office of General Counsel
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2600

A.A. Linero, P.E.
Administrator
New Source Review Section
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2600

Robert A. Manning

FACSIMILE · TELEX · TELEGRAM (1/2)

通過番号(No.)		
受付時刻(Receipt Time)	至 急・親 展・秘親展・人事親展 (Urgent · Confidential) LT	発信記号·番号(Sender No.) 98G-0543 号 1998 年 Apl. 月 29 日
あて先(To) (宛) Mr. Al Linero P.E. Department of Environment Protection, State of Florida 1-850-922-6979		K.HASEGAWA MHI TAKASAGO / MHI Takasago Gas Turbine Engineering Section
関連文書(Ref.No.) 年 月 日付 号		発信側査印
件名(Subject) 501G GT Gas Turbine 501G Question		伺出·通知·報告·送付 依頼·照会·回答

Dear Mr. Al Linero P.E.

Regarding to the above subject, we answer as following sheet.

Please see attached sheet.

Best regards.

Katsuhiko Abe

K. Abe

Engineer

Tel. (0794)45-6691 Fax. (0794)45-6936 JPN

写) か技, タ技部, 建設

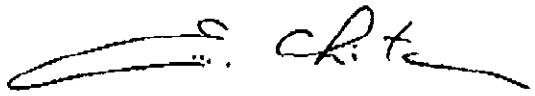
Sub.: Question for 501G Gas Turbine

To: Mr. Al Linero P.E.
Department of Environment Protection,
State of Florida

Dear Mr. Linero

Thank you very much for your attention to our 501G Gas Turbine.
As regarding your question, we would like to make comments below.
What we have to state at first is, unfortunately, that 501G of MHI and 501G of Westinghouse are not identical. MHI and Westinghouse started the development of this Gas Turbine in common, and did conceptional & basic design together, but circumstances forced us to design in detail separately. Therefore, there are many differences between MHI's 501G and Wesginthouse's 501G even though they are similar in appearance.
As for combustor, we hear they are developing new one that is different type from our multi nozzle type DLN (Dry Low NOx) combustor which has many experiences. As you know, purchasing Westinghouse by Siemens has announced the other day. MHI and Westinghouse have little interchange in technical matter from a few years ago. Our proto type 501G in Takasago achieved planned NOx value and CO Emissions using our multi nozzle type DLN combustor. We installed a catalyst only for NOx reduction (not for CO reduction) However, we would like to refrain from stating definite value, because we don't know what kind of combustor is applied for Westinghouse 501G.
So we are very sorry that we are not able to reply to your question. We would like to help you in many ways when 501G of MHI will be installed in Florida.

Yours Faithfully,



Eiji Akita
Manager, G/T Designing Section,
Turbine Engineering Department,
Takasago Machinery Works,
Mitsubishi Heavy Industries, Ltd.

LAKELAND
ELECTRIC & WATER

Excellence Is Our Goal, Service Is Our Job

Farzie Shelton, chE;, REM

Manager of Environmental Licensing & Permitting

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 29, 1998

Mr. C.H. Fancy, P.E.
Chief Bureau of Air Regulation
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Re: Draft Air Construction Permit, DEP File No. 1050004-004-AC (PSD-FL-245)
250 Megawatt Combustion Turbine - McIntosh Power Plant Unit No. 5

We are in receipt of your letter dated April 22, 1998 and attached Draft Air Construction Permit , Technical Evaluation and Preliminary Determination, and Draft BACT Determination, and Public Notice of Intent to Issue Air Construction Permit.

Pursuant to Section 403.815, Florida Statutes and DEP Rule 62-103.150, F.A.C., on April 23, 1998 we published the "Notice of Intent to Issue Air Construction Permit " in the Lakeland Ledger. Therefore, enclosed please find Affidavit of Publication confirming publication of the Department's notice.

If you should have any questions, please do not hesitate to contact me at (941) 499-6603; by Fax at (941) 603-6335; or by E-Mail at fshel@city.lakeland.net.

Sincerely

Farzie Shelton

Enclosure

cc: T. Heron, BAR
Polk Co.
SWD
K. Kosky, Golder Assoc.
NPS
EPA

AFFIDAVIT OF PUBLICATION

THE LEDGER
Lakeland, Polk County, Florida

Case No .....

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Nelson Kirkland, who on oath says that he is Classified Advertising Manager of The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being a

Public Notice Of Intent

in the matter of .....

DEP File No. 1050004-002AC (PSD-FL-245)

in the .....

Court, was published in said newspaper in the issues of .....

April 23;

1998

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed .....
Nelson Kirkland
Classified Advertising Manager
By Nelson Kirkland who is personally known to me

Sworn to and subscribed before me this 27TH day of APRIL A.D. 19 98

(Seal) Donald Ray Jenkins
Notary Public

DONALD RAY JENKINS
MY COMMISSION # CC 586345
EXPIRES: September 18, 2000
Bonded Thru Notary Public Underwriters

My Commission Expires .....

Order#693059
S Jones

B447

Attach Notice Here

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 1050004-002AC (PSD-FL-245)

City of Lakeland Electric and Water Utilities Department
C.D. McIntosh, Jr. Power Plant - Unit No. 5,
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit under the requirements for the Prevention of Significant Deterioration (PSD) of Air Quality to The City of Lakeland Electric & Water Utilities Department. The permit is to construct a 250 megawatt (MW) natural gas and distillate fuel oil-fired combustion turbine with a once-through steam generator, a 1.05 million gallon fuel oil storage tank, and a new 85-foot stack at the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County. A Best Available Control Technology (BACT) determination was required for particulate matter (PM/PM_{10}), nitrogen oxides (NO_x), volatile organic compounds (VOC) and carbon monoxide (CO) pursuant to Rules 62-212.400 and 410, F.A.C. and 40 CFR 52.21. The applicant's name and address are The City of Lakeland Electric and Water Utilities Department, 501 East Lemon Street, Lakeland, Florida 33801-5079.

The new unit is a Westinghouse 501 G 250 MW turbine which will operate in simple cycle mode as a continuous duty unit. It will be the largest and most efficient simple cycle gas turbine installed in the United States to-date. The unit will operate primarily on natural gas and will be permitted to operate 7008 hours per year of which no more than 250 will be on 0.05 percent sulfur distillate fuel oil.

During the first three years of operation, NO_x emissions will be controlled by "Advanced Dry Low NO_x" technology combustors capable of achieving emissions of 25 parts per million by volume at 15 percent oxygen (ppm @15% O_2). "Ultra Low NO_x" technology consisting of Piloted Ring Combustors is under development to achieve a limit of 9 ppm @15% O_2 (12 ppm averaged over 30 days) three years after start-up. Emissions of NO_x will be controlled under the minimal back-up fuel oil operation by water injection. SO_2 and PM/PM_{10} will be limited by use of clean fuels. Emissions of VOC will be controlled by good combustion practices. Emissions of CO will be similarly controlled unless the City chooses to install an oxidation catalyst.

The maximum potential annual emissions in tons per year based on the original application are summarized below. NO_x emissions will be reduced by over half after installation of the Ultra Low NO_x combustors. CO emissions will also be substantially lower as a result of the Department's BACT determination.

Pollutants	Maximum Potential Emissions	PSD Significant Emission Rate
PM/PM10	41	25/15
SO_2	38	40
NO_x	863	40
VOC	93	40
CO	1264	100

An air quality impact analysis was conducted. Maximum predicted impacts due to proposed emissions from the project are less than the applicable PSD Class I and Class II significant impact levels.

The Department will issue the FINAL Permit, in accordance with the conditions of the DRAFT Permit 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 and requests for public meetings concerning the proposed DRAFT Permit issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in this DRAFT Permit, the Department shall issue a Revised DRAFT Permit and require, if applicable, another Public Notice.

The Department will issue FINAL Permit with the conditions of the DRAFT Permit unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. The procedures for petitioning for a hearing are set forth below. Mediation is not available for the proposed action.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57 F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, telephone: 904/488-9370, fax: 904/487-4938. Petitions 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. A petitioner must 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 28-5.207 of the Florida Administrative Code.

A petition must contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by petitioner, if any; (e) A statement of the facts that the petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement identifying the rules or statutes that the petitioner contends require reversal or modification of the Department's action; and (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wants the Department to take with respect to the Department's action or proposed action addressed in this notice of intent.

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 of intent. 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:

Florida Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Telephone: (850) 488-1344
Fax: (850) 922-6979

Florida Department of Environmental Protection
Southwest District Office
3804 Coconut Drive
Tampa, Florida 33619-8218
Telephone: (813) 744-6100
Fax: (813) 744-6084

City of Lakeland
Electric and Water Utilities
Attention: Ms. Farzie Shelton
501 East Lemon Street
Lakeland, Florida 33801-5079
Telephone: (941) 499-6603
Fax: (941) 603-6535

The complete project file includes the application, technical evaluations, Draft Permit, 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 904/488-1344, for additional information.

B-447 - 4-23, 1998

STATE OF FLORIDA

DEPARTMENT OF COMMUNITY AFFAIRS

"Helping Floridians create safe, vibrant, sustainable communities"

LAWTON CHILES
Governor

JAMES F. MURLEY
Secretary

29 April 1998

Hamilton S. Oven, Jr.
Siting Coordination Office - Mailstop 48
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

DEPARTMENT OF
ENVIRONMENTAL PROTECTION
APR 30 1998
SITING COORDINATION

Dear Mr. Oven:

On 16 March 1998 the Department received a copy of a request to modify conditions of certification for the Lakeland Utilities McIntosh power plant site. Pursuant to section 403.516, Florida Statutes, the Department and other agencies that participated in the original certification of the McIntosh site may comment on or object to the proposed modification.

Lakeland proposes to add a 250-megawatt combustion turbine (called McIntosh Unit 5) at its McIntosh site. Materials supplied with the modification request describe the characteristics of the combustion turbine and its probable environmental effects. It appears from a review of this material that the turbine will have minimal environmental impacts, except for its air emissions.

Unit 5's expected emissions of nitrogen oxides (NOx) and carbon monoxide (CO) when burning natural gas, the designated primary fuel, are of concern to the Department. The Department's position on air emissions is guided by the Florida State Comprehensive Plan policies on air quality. The most relevant are Air Quality policies nos. 1, 2, and 3:

> Air Quality Policy 1. Improve air quality and maintain the improved level to safeguard human health and prevent damage to the natural environment.
>
> Air Quality Policy 2. Ensure that developments and transportation systems are consistent with the maintenance of optimum air quality.
>
> Air Quality Policy 3. Reduce sulfur dioxide and nitrogen oxide emissions and mitigate their effects on the natural and human environment.

Lakeland proposes that Best Available Control Technology (BACT) emission rates for NOx be set at 25 parts per million (ppm) and that the CO emissions rate be set at 50 parts per million. Lakeland proposes to reduce Unit 5's NOx emissions to 12 ppm after 5 years of operation.

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
Internet address: http://www.state.fl.us/comaff/dca.html

FLORIDA KEYS
Area of Critical State Concern Field Office
2796 Overseas Highway, Suite 212
Marathon, Florida 33050-2227

GREEN SWAMP
Area of Critical State Concern Field Office
155 East Summerlin
Bartow, Florida 33830-4641

SOUTH FLORIDA RECOVERY OFFICE
P.O. Box 4022
8600 N.W. 36th Street
Miami, Florida 33159-4022

Recent power plant certifications in which the Department has participated have resulted in lower emission levels being set for NOx and CO. BACT emission rates for the City of Tallahassee's Purdom Unit 8 were set at 12 ppm for NOx and 25 ppm for CO, both on natural gas. During the recent certification proceeding for Florida Power Corporation's Tiger Bay power plant, the BACT emission rate for NOx was also set at 25 ppm on natural gas, but it is to be reduced to 15 ppm or lower by 31 December 1998.

Department staff discussed the issue of the combustion turbine's air emissions with the Air Regulation office of the Florida Department of Environmental Protection (FDEP), which has also reviewed the modification request. The Department of Environmental Protection's preliminary BACT determination would modify Lakeland's requested BACT determination as follows: BACT limits for NOx are set at 25 ppm on natural gas, to be lowered to 9 ppm within 36 months after start-up, and BACT limits for CO are set at 25 ppm on natural gas using combustion optimization or 10 ppm using an oxidation catalyst. These lower limits are more consistent with the State Comprehensive Plan Air Quality policies. The Department recommends that they be adopted for Unit 5.

An additional concern with the project is its energy efficiency (electrical power output per unit of energy consumed). The State Comprehensive Plan contains a policy that bears on this point:

> Energy Policy 6. Increase the efficient use of energy in design and operation of buildings, public utility systems, and other infrastructure and related equipment.

Lakeland has chosen a simple-cycle combustion turbine for its Unit 5 power plant. A combustion turbine operating in combined-cycle mode (with a heat recovery steam generator and separate steam turbine) is one of the most efficient power-generating technologies currently available; however, a simple-cycle combustion turbine, such as the proposed Unit 5, is significantly less efficient. In this era of elevated concern about global warming, it would seem advisable that utilities, when constructing new power plants, should select the most efficient energy-generating technologies available—those that produce relatively low emissions of "greenhouse gases" per unit of power generated—unless there are overriding concerns. For Lakeland, it appears that the overriding concern is cost: the simple-cycle unit is cheaper to construct than the combined-cycle unit. Lakeland has stated that Unit 5 might be switched to a combined-cycle configuration later, when the system needs additional power. There is no state requirement for power plant efficiency applicable to a site modification request; however, the Department encourages the City of Lakeland to convert Unit 5 to a combined-cycle configuration as soon as is feasible.

The Department wishes to raise one additional issue related to this modification request. As noted in Lakeland's modification request, combustion turbines in simple-cycle mode are not required to be certified under the Florida Electrical Power Plant Siting Act (sections 403.501–403.518, Florida Statutes). This is true no matter how

large the generating capacity of the unit. No need determination by the Public Service Commission is required, nor is there a site review by state, regional, and local agencies. Because combustion turbines have become so much larger than they were when the act was created and because it is conceivable that not having to apply for state certification may have some bearing on whether utilities choose combined-cycle or simple-cycle combustion turbines for their new generating capacity, it may be advisable to revisit this exemption in the act for combustion turbines. We suggest that this be discussed at the next siting quarterly interagency meeting.

If you have any questions concerning this letter, please call Paul Darst at (850) 922-1764.

Sincerely,

James L. Quinn, chief
Bureau of State Planning

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

April 27, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ronald W. Tomlin
Assistant Managing Director
Lakeland Electric & Water Utilities
501 East Lemon Street
Lakeland, Florida 33801-5079

Re: DEP File No. 1050004-004-AC (PSD-FL-245)
McIntosh Unit No. 5 Combustion Turbine

Dear Mr. Tomlin:

We recently sent you the Public Notice package including the Intent to Issue for the referenced project. We understand the Public Notice was published on April 23. Prior to issuance of the final permit, we will provide you with any comments that we receive from the public as well as from other agencies.

In our review, we determined that some of additional details are needed prior to issuance of a final permit. These are related to the characteristics of the combustors that will be installed. Because the units do not operate in the "Low NO_X (lean pre-mix) range" throughout the entire operating range, we request that the City develop an operational plan to minimize the time the burners function in the "diffusion mode."

Specifically, please provide diagrams similar to the ones attached for the Westinghouse "Advanced Dry Low NO_X Combustors" as well as for the "Ultra Low NO_X (Piloted Ring) Combustors." As can be discerned from the diagrams, the lean pre-mixed (Low NO_X) mode is fully in effect at 40 percent of full capacity for what is believed to be a GE gas turbine. Based on a Westinghouse 501 F project in Florida, we understand that the lean pre-mixed mode may not be effected until the gas turbine reaches 60-70 percent of capacity. For this reason, we would like to see an operational plan for the 501G that encourages operation at 70-100 percent whenever possible (unless the Westinghouse 501G combustors also exhibit full lean pre-mix at low operational levels). Operation at the higher levels will also minimize carbon monoxide emissions.

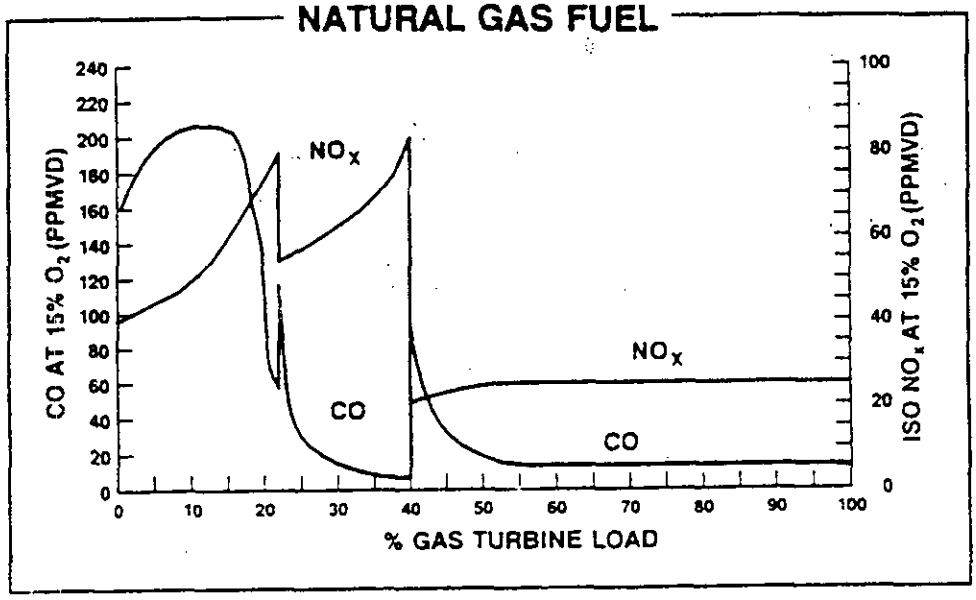
We advised your consultant, KBN that we planned to make this request. We have not contacted Westinghouse about the matter regarding this project, but have discussed it with them regarding the 501F gas turbine. If you have any questions regarding this matter, please contact me at 850/921-9523 or Teresa Heron at 921-9529.

Sincerely,

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/aal

cc: Farzie Shelton, City of Lakeland
Ken Kosky, Golder Associates



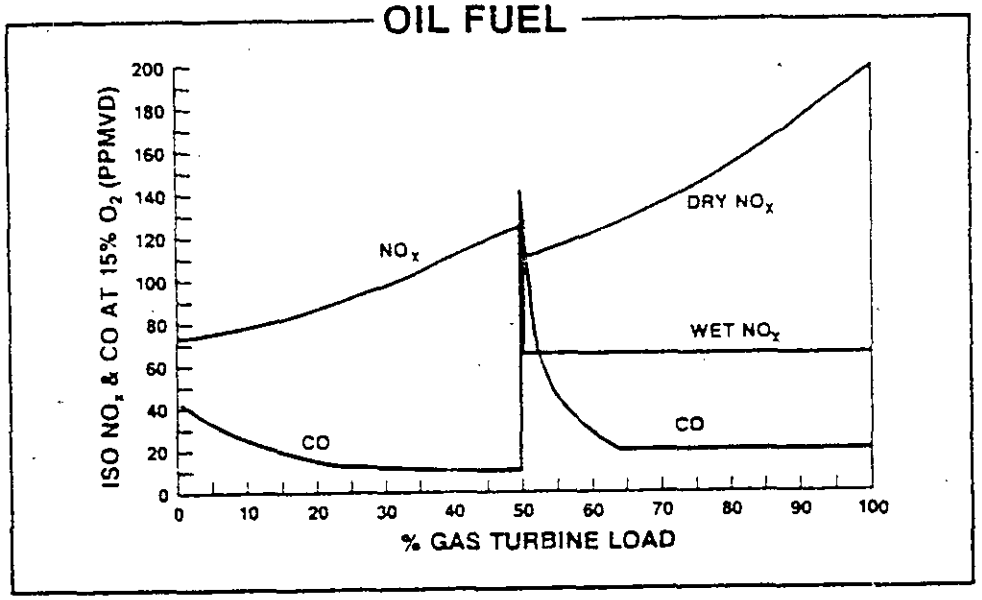


Figure 5-21. "Stepped" NO_x and CO emissions for a low-NO_x can-annular combustor burning natural gas and distillate oil fuels.[47]

Florida Department of
Environmental Protection

Memorandum

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. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Ronald W. Jonlin
Lakeland Electric + Water
501 E. Lemon Street
Lakeland, FL 33801-5079

4a. Article Number P 265 659 340

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery APR 10 1998

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X Bonnie Brim

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994 Domestic Return Receipt

P 265 659 340

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

Sent to Ronald Jonlin	
Street & Number Lakeland Electric	
Post Office, State, & ZIP Code + Water Lakeland, 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	

PS Form **3800**, April 1995

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603

April 27, 1998

Ms. Ellen Porter
U.S. Fish & Wildlife Service
Air Quality Branch
P.O. Box 25287
Denver, CO 80225-0287

RE: Lakeland Visibility Analysis
Response to Comments by the U.S. Fish & Wildlife Service

Dear Ms. Porter:

The following responses have been prepared that address your comments on April 2, 1998 concerning the revised regional haze analysis performed by the City of Lakeland for the proposed project's impacts at the Chassahowitzka National Wildlife Refuge (CNWR). On April 16, 1998, I discussed the approach used in the revised analysis with Mr. Bud Rolofson, U.S. Fish & Wildlife Service (FWS).

The revised regional haze analysis followed the Interagency Workgroup on Air Quality Modeling (IWAQM) recommendations and used the ISCST model to estimate sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulate matter concentrations for the project's emissions. These concentrations were estimated for 1987 to 1991, the years of meteorological data used to address the project's compliance with ambient air quality standards (AAQS) and prevention of significant impact (PSD) maximum allowable increments.

From earlier discussions with Mr. Rolofson, a procedure has been developed by the FWS to address the chemical transformation of SO_2 and NO_x to sulfates and nitrates, which are used in the regional haze analysis. For example, the chemical transformation of SO_2 to sulfate is assumed to occur at an hourly rate of 3 percent per hour. The sulfate is then assumed to be transformed to ammonium sulfate ($(NH_4)_2SO_4$), a compound used to assess regional haze. For NO_x conversion, all of the NO_x concentration (100 percent) is assumed to convert to nitrate (NO_3), a very conservative assumption. The NO_3 is then assumed to convert to ammonium nitrate (NH_4NO_3), another compound used to assess regional haze. In the revised regional haze analysis prepared by Golder, a more realistic approach was developed to account for the conversion rate of NO_x to NO_3 (similar to the conversion of SO_2 to sulfate). Based on modeling with the MESOPUFF model using one year of meteorological data (1986), a chemical transformation rate of 31 percent was developed to convert NO_x to NO_3 over a 24-hour averaging period. The transformation rate was based on one year of modeling since the meteorological data needed for running the model for other years (e.g., 1987 to 1991) were not available. As will be shown later in the discussion, the procedure to multiply the NO_2 concentrations predicted with the ISCST model by the 31-percent transformation rate produces higher NO_3 concentrations than NO_3 concentrations produced directly from the MESOPUFF model. As a result, the approach used in the revised regional haze analysis is conservative and does produce higher deciview values than are expected from the project.

Based on comments from the FWS, the regional haze analysis was redone using the MESOPUFF model to predict sulfate, NO_3, and particulate matter concentrations for the project's emissions. Again, these analysis followed the approach recommended by the NPS in the "Interagency Workgroup on Air Quality Modeling (IWAQM) Phase I Report" (April 1993). The MESOPUFF model using one year of meteorological data (1986) predicted the maximum sulfate, NO3, and particulate matter concentrations. A summary of the input parameters, assumptions, and results is presented in Table 1. This deciview value of 0.20 is less than the revised screening deciview value of 0.5 recommended in guidance developed by the FWS in December 1997. This value is lower than the results from the previous regional haze analysis that used the results of the ISCST model and 31-percent NO_x transformation rate.

Please call Mr. Ken Kosky or me at (352) 336-5600 if you have any questions or comments on this analysis.

Sincerely yours,

Robert C. McCann Jr.

Robert C. McCann, Jr.
Manager, Air Resources

RCM/arz

cc: K.F. Kosky, Golder
F. Shelton, City of Lakeland
C. Holladay, Florida DEP
File (2)

Checked w/ Bud Rolofson
This one is OK

Table 1. Estimated Change in Deciview Due to the City of Lakeland-McIntosh Plant, Proposed Westinghouse 501G Combustion Turbine, Fuel-oil Firing at Baseload Conditions and 30 °F Temperature (MESOPUFF Model)

Pollutant	Value	Reference
Maximum Emission Rates (lb/hr)		
SO_2	126.70	(1)
NOx	433.00	(1)
PM10	95.50	(1)
Highest Predicted 24-Hour Concentrations (µg/m³)		
SO_4	0.0216	(2)
NO_3	0.0415	(2)
PM10	0.0726	(3)
$(NH_4)_2\ SO_4$	0.0297	(4)
$NH_4\ NO_3$	0.0535	(5)
Average RH (percent)	76	(6)
RH factor, f(RH)	4.0	(7)
Extinction Coefficients (km^{-1})		
Background: (bextb)	0.0602	(8)
Source: (bexts)		
$(NH_4)_2\ SO_4$	0.0004	(9)
$NH_4\ NO_3$	0.0006	(9)
PM10	0.000218	(10)
Total (bexts)	0.0012	
Deciview Change		
total delta dv =	0.200	(11)

(1) Maximum hourly emissions due to CT firing oil at 30° F.
(2) Impacts based on highest 24-hour concentration predicted for 1986 from MESOPUFF. (Note: wet deposition not included in analysis.)
(3) PM concentrations based on highest 24-hour concentration for 1986 from MESOPUFF. (PM impact modeled as sulfate).
(Note: chemical transformation and wet deposition not included in analysis.)
(4) $(NH_4)_2\ SO_4 = SO_4$ times 1.375 from IWAQM Appendix B
(5) $NH_4\ NO_3 = NO_3$ times 1.29 from IWAQM Appendix B
(6) Based on meteorological data collected at the National Weather Service station in Tampa.
(7) From IWAQM Figure B-1. Based on average hourly relative humidity factor for day.
(8) bextb = 3.912 / 65 where background visual range is 65 km.
(9) values= 0.003 * compound concentration* factor (RH) from IWAQM Appendix B
(10) PM10 = 0.003 * compound concentration. factor (RH) set = 1 for fine PM
(11) Delta DV = 10 * ln (1 + bexts/bextb)