STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF FINAL PERMIT

In the Matter of an Application for Permit by:

Orange Cogeneration Limited Partnership 1125 U.S. 98 South Suite 100 Lakeland, Florida 33801 DEP File No.1050231-005-AC, PSD-FL-206C Orange Cogeneration Facility Polk County

Enclosed is Final Permit Number 1050231-005-AC. This permit authorizes Orange Cogeneration Limited Partnership to install wet technologies on the Orange Cogeneration Facility's Units 1 and 2 in an effort to reduce the NO_X emission rate to 15 ppmvd while firing natural gas or biogas. This permit is issued pursuant to Chapter 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this <u>Notice of Final Permit</u> (including the Final permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-28-99 to the person(s) listed:

Wade Smith, Orange Cogeneration *
Gregg Worley, EPA
Doug Neeley, EPA
John Bunyak, NPS
Bill Proses, DEP-SWD

Clerk Stamp

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

(Clerk)

(Date)

FINAL DETERMINATION

Orange Cogeneration Limited Partnership
Orange Cogeneration Facility
DEP File No. 1050231-005-AC, PSD-FL-206C

The Department distributed a public notice package on November 23, 1999 to allow the applicant to modify its permit at the Orange Cogeneration Facility located in Polk County. The <u>Public Notice of Intent to Issue</u> was published in the Polk County Democrat on November 25, 1999.

COMMENTS/CHANGES

No comments were received by the Department from the public.

Neither the EPA nor the National Park Service had adverse comments.

No comments were received from the applicant.

CONCLUSION

The final action of the Department is to issue the permit without changes.



Department of Environmental Protection

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

David B. Struhs Secretary

December 28, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Wade Smith General Manager Orange Cogeneration Limited Partnership 1125 US Highway 98 South Suite 100 Lakeland, Florida 33801

Re: DEP File No. 1050231-005-AC; Modification of Permit No. PSD-FL-206C Orange Cogeneration / Polk County

The applicant, Orange Cogeneration Limited Partnership (OCLP), applied on October 25, 1999, to the Department for a modification to air construction permit number PSD-FL-206C for its Orange Cogeneration Facility located in PolkCounty. The request is to allow the facility to install NO_X control equipment on Emission Units 001 and 002, GE LM 6000 DLE units configured for combined cycle operation. The specific equipment requested will allow SPRINTTM and selective water injection to be installed in addition to the Dry Low Emissions equipment. The Department has reviewed the modification request. The referenced permit is hereby modified as follows:

Specific Condition 8 and Table 1 (note e): Each CT shall have a maximum heat input (LHV) of 368.3 MMBtu/hr, which is approximately 389,300 CFH of natural gas, when using dry low NO_x and/or wet injection technologies technology to control NO_x emissions.

Specific Condition 10: Prior to September January 1, 2000 2001, the maximum NO_X concentration, 1 hour average, from each CT/HRSG unit shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen at ISO standard ambient conditions (ppmvd @ 15% O_2 at ISO conditions), as determined by the procedures in Specific Conditions No. 16, 17 and 18.

Specific Condition 11 and Table 1 (note d): After December 31, 1999 August 31, 2001, the maximum NO_X concentration, $\frac{1}{2}$ 24-hour block average, from each CT/HRSG unit shall not exceed 15 ppmvd @ 15% O_2 at ISO conditions as determined by the procedure in Specific Condition Nos. 16, 17 and 18. No further extensions of this permit shall be granted for the purpose of achieving the targeted 15 ppmvd NO_X emissions, with the exception of a reasonable time required to install SCR. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_X emission standard. The Department may revise the limit based upon the capabilities of alternative equipment installed.

Specific Condition 19: Prior to January 1, 1998 September 1, 2000, the permittee shall provide a report showing how the allowable NO_x emissions of 15 ppmvd @ 15% O_2 ISO conditions is achieved by the CTs.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

Howard L. Rhodes, Director Division of Air Resources Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-28-99 to the person(s) listed:

Wade Smith, Orange Cogeneration LP *
Doug Neely, EPA
John Bunyak, NPS
Bill Proses, DEP-SWD
Mr. Gregg Worley, EPA

Clerk Stamp

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



Governor

Florida Department of Environmental Protection

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

Virginia B. Wetherell Secretary

PERMITTEE:

Orange Cogeneration Limited Partnership 23046 Avenida De La Carlota Suite 400 Laguna Hills, CA 92653

Permit Number: AC53-233851 PSD-FL-206

Expiration Date: April 1, 1998

County: Polk

27°52'15"N Latitude/Longitude:

81°49'31"W

Project: Two Combustion Turbines

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-212 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto specifically described as follows:

Installation of two natural gas/equivalent biogas fired GE LM 6000 (or equivalent) combustion turbines (CT), two heat recovery steam generators, one steam turbine and, being permitted separately, an auxiliary boiler (AC53-233852). The CTs will be initially equipped with either a water injection system or a dry low NO_X system to control nitrogen oxides (NO_X) emission. The water injection system, if installed, will be replaced with dry low NO_X combustion technology by December 31, 1995. Each CT will be equipped with a 100 ft. high, 11 ft. diameter stack that will handle approximately 300,000 actual cubic feet per minute of flue gas at 230°F. The cogeneration facility will be located on Clear Springs Road, Bartow, Polk County, Florida 33830.

The UTM coordinates of this facility are Zone 17, 418.75 kmE and 3083.0 kmN.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

- Application received July 1, 1993
- DEP July 22, 1993, letter 2.
- 3.
- KBN August 5, 1993, letter KBN August 29, 1993, letter 4.
- 5. Tables 1 and 2, Allowable Emission Rates

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851 Expiration Date: April 1, 1998

GENERAL CONDITIONS:

- 1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- 2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- 3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- 4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- 5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- 6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851 Expiration Date: April 1, 1998

GENERAL CONDITIONS:

- 7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy any records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

- 8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

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

PERMITTEE: Permit Number: AC53-233851
Orange Cogeneration Limited Expiration Date: April 1, 1998
Partnership

GENERAL CONDITIONS:

- 10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- 11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- 12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
- 13. This permit also constitutes:
 - (X) Determination of Best Available Control Technology (BACT)
 - (X) Determination of Prevention of Significant Deterioration (PSD)
 - (X) Compliance with New Source Performance Standards (NSPS)
- 14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

Permit Number: AC53-233851 Orange Cogeneration Limited Expiration Date: April 1, 1998

GENERAL CONDITIONS:

- c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling measurements;
 - the person responsible for performing the sampling or measurements;
 - the dates analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.
- When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

Construction Requirements

- Water/steam injection systems or dry low NO_x systems shall be installed and operated on each combustion turbine (CT). If a water/steam injection system is initially installed, it will be replaced by dry low NOx combustion technology.
- Dry low NO_X combustion technology shall be installed and in 2. operation on the CTs prior to December 31, 1995.
- A system, accurate to within 5 percent, to continuously monitor the fuel consumption and the ratio of water/steam to fuel being fired shall be installed on each CT.
- 4. The heat recovery steam generator (HRSG) installed on each CT shall not be equipped with an auxiliary/duct burner.
- Each CT stack shall be equipped with stack sampling facilities (sample ports, work platforms, access, and electrical power) that meet the specifications given in F.A.C. Rule 17-297.345.

Operation Limitations

The CTs shall comply with all requirements of 40 CFR 60, Subpart GG (July, 1993), Standard of Performance for Stationary Gas Turbines, which is adopted by references in F.A.C. 17-296.800(2)(a).

SPECIFIC CONDITIONS:

- 7. The facility is allowed to operate continuously, 8760 hours per year.
- 8. Only natural gas/equivalent biogas fuel shall be used for fuel at this facility.
- 9. Each CT shall have a maximum heat input based on the lower heating value (LHV) of the fuel of 388 million British thermal units per hour (MMBtu/hr), which is approximately 409,900 cubic feet per hour (CFH) of natural gas, when using water/steam injection to control nitrogen oxides (NO_X) emission.
- 10. Each CT shall have a maximum heat input (LHV) of 368.3 MMBtu/hr, which is approximately 389,300 CFH of natural gas, when using dry low NO_X technology to control NO_X emissions.
- 11. The operation of this facility shall not create a nuisance or discharge air pollutants that cause or contribute to objectionable odors.

Emission Limitation

- 12. Prior to January 1, 1998, the maximum NO_{X} concentration, 1 hour average, from each CT/HRSG unit shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen and ISO standard ambient conditions (ppmvd @ 15% O_2 ISO conditions), as determined by the procedures in Specific Conditions No. 18 and 19.
- 13. After December 31, 1997, the maximum NO_X concentration, 1-hour average, from each CT/HRSG unit shall not exceed 15 ppmvd @ 15% O_2 ISO conditions as determined by the procedure in Specific Conditions Nos. 18 and 19. Should 15 ppmvd NO_X @ 15% O_2 ISO conditions not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard. If the standard has not been met by December 31, 1997, the Department may require the installation of a selective catalytic reduction system (SCR) on these CTs.
- 14. The maximum emission rates for particulate matter (PM/PM₁₀), volatile organic compounds (VOC), NO_X , and carbon monoxide (CO) shall not exceed any of the rates listed in Tables 1 and 2, Allowable Emission Rates. Allowable emissions shall be extrapolated between the temperatures listed in the CT manufacturer's curve for emission rates of different air inlet temperatures.
- 15. Visible emissions shall not exceed 10 percent opacity, 6 minute average.
- 16. The emission rates for sulfur dioxide (SO_2) and sulfuric acid mist (H_2SO_4), listed in the following table, shall be used for inventory purposes only.

ORANGE COGENERATION LIMITED PARTNERSHIP AC53-233851 (PSD-FL-206) 42 MW SIMPLE CYCLE GAS TURBINE

Table 1 - Allowable Emission Rates for each combustion turbine Allowable Emissions Standards/Limitationsb ISO Conditions Maximum Corrected^C Basis for <u>Pollutanta</u> lb/hr TPY 1b/hr TPY Limit Basis 25 ppmvdd 36.3 159.1 168.5 $NO_{\mathbf{x}}$ 38.5 BACT at 15% O2 CO 30 ppmvd 26.8 117.5 27.8 122.0 BACT PM/PM₁₀ 0.0139 21.9 21.9 BACT lb/MMBtu voc 10 ppmvd 3.83 16.8 3.98 17.4 BACT

a Pollutant emissions are based on 8,760 hours per year operation firing natural gas or equivalent biogas at 590 F.

b Emissions rates are based on 100% load and at ISO conditions. Pollutant emission rates may vary depending on the air inlet temperature to the combustion turbine (CT) and CT characteristics. Manufacturer's curves for the emission rate corrections to other temperatures at different loads shall be provided to DEP for review 90 days after selection of the CT. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of temperature for the purpose of compliance determination.

Maximum emission rates not to be exceeded after correction for air inlet temperature to the combustion turbine.

d The $\mathrm{NO_X}$ maximum concentration will be lowered to 15 ppmvd at 15% $\mathrm{O_2}$ at ISO conditions by 12/31/97 using appropriate combustion technology improvements. Should this level of control not be achieved when the compliance demonstration stack test are performed, the permittee must provide the Department with the expected compliance dates which will be updated annually. After 12/31/97, the Department may require SCR to be installed. $\mathrm{NO_X}$ emission concentrations are to be corrected to ISO conditions to demonstrate compliance with the $\mathrm{NO_X}$ emissions standard.

ORANGE COGENERATION LIMITED PARTNERSHIP AC53-233851 (PSD-FL-206) 42 MW COMBINED CYCLE GAS TURBINE

Table 2 - Allowable Emission Rates for each combustion turbine Allowable Emissions Standards/Limitationsb ISO Conditions Maximum Corrected^C Basis for Pollutanta Controle Basis lb/hr TPY lb/hr TPY Limit 25 ppmvd^d 36.3 WI 159.1 38.5 168.5 NOx BACT at 15% O2 25 ppmvd 34.8 DLN 152.3 37.0 161.9 BACT at 15% O2 CO WI 30 ppmvd 26.8 117.5 27.8 122.0 BACT DLN 30 ppmvd 27 118.2 27.8 161.9 BACT PM/PM₁₀ WI 0.0139 21.9 5 21.9 BACT lb/MMBtu DLN 0.0147 5 21.9 5 21.9 BACT lb/MMBtu VOC WI 10 ppmvd 3.83 16.8 3.98 17.4 BACT DLN 19.8 17.4 10 ppmvd 3.86 3.98 BACT

Pollutant emissions are based on 8,760 hours per year operation firing natural gas or equivalent biogas at 59° F.

b Emissions rates are based on 100% load and at ISO conditions. Pollutant emission rates may vary depending on the air inlet temperature to the combustion turbine (CT) and CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 90 days after selection of the CT. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of temperature for the purpose of compliance determination.

^C Maximum emission rates not to be exceeded after correction for air inlet temperature to the combustion turbine.

 $^{^{\}rm d}$ The NO $_{\rm X}$ maximum concentration will be lowered to 15 ppmvd at 15% O2 at ISO conditions by 12/31/97 using appropriate combustion technology improvements. Should this level of control not be achieved when the compliance demonstration stack test are performed, the permittee must provide the Department with the expected compliance dates which will be updated annually. After 12/31/97, the Department may require SCR to be installed. NO $_{\rm X}$ emission concentrations are to be corrected to ISO conditions to demonstrate compliance with the NO $_{\rm X}$ emissions standard.

 $^{^{\}mathrm{e}}$ Wet injection (WI) and Dry Low-NO $_{\mathrm{x}}$ (DLN) combustors.

SPECIFIC CONDITIONS:

Maximum Emission Rates for Each Combustion Turbine For inventory purposes or PSD tracking

Pollutant		Combustion Turbine Water Injection		Combustion Turbine Dry Low NO _x Combustion	
	lb/hr	TPY	lb/hr	TPY	
SO ₂ H ₂ SO ₄	1.17 0.09	5.1 0.39	1.11	4.87 0.37	
112504	0.09	0.39	0.005	0.37	

17. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 90 days after selection of the CT. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of inlet air temperatures for the purpose of compliance determination. The maximum allowable emissions at different air inlet temperatures shall be based on the CT manufacturer's curve but shall not exceed the maximum rates listed in Tables 1 and 2, Allowable Emission Rates.

Compliance Determination

18. Testing of emissions shall be conducted with the source operating at capacity. Capacity is defined as 90-100% of rated capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Compliance with the visible emissions, NO_X, SO₂, CO, PM/PM₁₀, and VOC emission standards shall be determined within 60 days of achieving maximum production but not later than 180 days after initial firing of each CT (40 CFR 60.8). Compliance with the visible emission, NO_X, and SO₂ standards will be determined annually thereafter. The tests shall be conducted initially when the CTs are using water/steam system and again when dry low-NO_X technology is employed. Tests will be conducted on both natural gas and biogas fuels.

PERMITTEE: Partnership

Permit Number: AC53-233851 Orange Cogeneration Limited Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

19. Compliance shall be determined by the following test methods listed in 40 CFR 60, Appendix A (July, 1993).

EPA Method	Pollutant		
5, 201A, or 201B 9 10 20	PM/PM ₁₀ Visible Emissions CO NO _x and SO ₂		
18 or 25	VOC VOC		

Other test methods may be used for compliance testing after prior Department approval.

Administrative Requirement

- 20. Prior to January 1, 1998, the permittee shall provide a report showing how the allowable NO_X emissions of 15 ppmvd @ 15% O_2 ISO conditions is achieved by the CTs.
- The permittee shall provide the Southwest District office with the following notifications required by 40 CFR 60.7:
 - When construction commenced within 30 days of commencement of construction
 - Anticipated date of initial starting 30 to 60 days prior to startup
 - Actual date of startup up within 15 days after the starting
 - Notification of the date of the compliance tests not less than 30 days prior to the test
- 22. Pursuant to F.A.C. Rule 17-210.300(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: content and the lower heating value of the fuel being fired, fuel usage, hours of operation, and air emissions. Annual reports shall be sent to the Department's Southwest District office by March 1 of each calendar year.
- 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 (F.A.C. Rule 17-4.090).

PERMITTEE: Partnership

Permit Number: AC53-233851 Orange Cogeneration Limited Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

24. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (f.A.C. Rules 17-4.055 and 17-4.220).

Issue	ed t	his	 day
of _			 1993

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell, Secretary



Florida Department of Environmental Protection

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

Virginia B. Wetherell Secretary

PERMITTEE:
Orange Cogeneration Limited
Partnership
23046 Avenida De La Carlota
Suite 400
Laguna Hills, CA 92653

Permit Number: AC53-233852 PSD-FL-206

Expiration Date: April 1, 1996 Latitude/Longitude: 27°52'15"N

81°49′31"W

Project: Auxiliary Boiler

County: Polk

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-212 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto and specifically described as follows:

Installation of a 100 million British thermal unit per hour (MMBtu/hr) natural gas/equivalent biogas fired tube boiler equipped with a 65 foot high, 3.67 foot diameter stack designed to produce approximately 83,000 pounds per hour of saturated steam at 205 pounds per square inch gauge (psig) pressure. The heat input is based on the High Heating Value (HHV) of the fuel. The auxiliary boiler will be located on Clear Springs Road, Bartow, Polk County, Florida 33830.

The UTM coordinates of this facility are Zone 17, 418.75 kmE and 3083.0 kmN.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

- 1. Application received July 1, 1993
- 2. DEP July 22, 1993, letter
- 3. KBN August 5, 1993, letter

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233852 Expiration Date: April 1, 1996

GENERAL CONDITIONS:

- 1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- 2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- 3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- 4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- 5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- 6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

GENERAL CONDITIONS:

- 7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - Have access to and copy any records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

- 8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

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

Permit Number: AC53-233852 Orange Cogeneration Limited Expiration Date: April 1, 1996

GENERAL CONDITIONS:

- The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- This permit or a copy thereof shall be kept at the work site of the permitted activity.
- This permit also constitutes: 13.
 - (X) Determination of Best Available Control Technology (BACT)
 - (X) Determination of Prevention of Significant Deterioration (PSD)
 - (X) Compliance with New Source Performance Standards (NSPS)
- The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

GENERAL CONDITIONS:

- c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling measurements;
 - the person responsible for performing the sampling or measurements;
 - the dates analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and the results of such analyses.
- When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

Construction Requirements

- The auxiliary boiler shall be equipped with burners.
- The boiler stack shall be equipped with stack sampling facilities (sample ports, work platforms, access, electrical power) that meet the specifications given in F.A.C. Rule 17-297.345.

Operation Limitations

- The auxiliary boiler shall comply with all applicable requirements of 40 CFR 60, Subpart Dc.
- The boiler is allowed to operate continuously, 8760 hours per year.
- Only natural gas/equivalent biogas fuel shall be burned in this boiler.
- The maximum heat input to the boiler based on the high heating value (HHV) of the fuel shall not exceed 100 MMBtu/hr which is the heat content of approximately 105,700 cubic feet of natural gas per hour.
- The maximum allowable sulfur content (total) of the natural gas/biogas burned in the boiler shall not exceed 1 grain per 100 cubic feet (1 gr/100 CF) of gas.

SPECIFIC CONDITIONS:

- 8. The operation of this boiler shall not emit air pollutants that cause or contribute to objectionable odors.
- 9. Visible emissions shall not exceed 15 percent opacity.
- 10. Emissions from the boiler shall not exceed any of the following limits:

Pollutant	lbs/MMBtu	lbs/hr	TPY
NOx	0.13	13.0	56.9
CO	0.10	10.0	43.8
VOC	0.04	4.3	18.8

- 11. Sulfur dioxide (SO₂) emissions from the boiler shall not exceed 0.003 lbs/MMBtu, 0.30 lbs/hr, and 1.3 TPY. An analysis of the fuel showing the sulfur content does not exceed 1 grain of total sulfur per 100 cubic feet of gas will be accepted as proof of compliance with the sulfur dioxide emission limit. Total sulfur content of the gas shall be determined by test method ASTM D 1072-80 (40 CFR 60.17 (July, 1993)).
- 12. Particulate matter (PM/PM $_{10}$) emissions from the boiler shall not exceed 0.01 lbs/MMBtu, 1.0 lbs/hr, and 4.4 TPY. No PM/PM $_{10}$ stack test that is required if the visible emissions are less than 15 percent opacity.

Testing Requirements

13. Testing of emissions shall be conducted with the source operating at capacity. Capacity is defined as 90-100% of rated capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Compliance with the visible emissions, NO_{X} , CO, and VOC emission standards shall be determined within 60 days of achieving maximum production but not later than 180 days after initial firing of the boiler. Compliance with the visible emissions and NO_{X} standards will be determined annually thereafter.

SPECIFIC CONDITIONS:

14. Compliance shall be determined by the following test methods listed in 40 CFR 60, Appendix A (July, 1993).

EPA Method Pollutant	
9	Visible Emissions
10	CO
7E	$NO_{\mathbf{x}}$
18 or 25	VOC

Other test methods may be used for compliance testing after prior Department approval.

- 15. The permittee shall provide the Southwest District office with the following notifications required by 40 CFR 60.7:
 - When construction commenced within 30 days of commencement of construction.
 - Anticipated date of initial startup, 30 to 60 days prior to startup.
 - Actual date of startup within 15 days after the startup.
 - Notification of the date of the compliance tests not less than 30 days prior to the tests.
- 16. Pursuant to F.A.C. Rule 17-210.300(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur content and the lower heating value of the fuel being fired, fuel usage, hours of operation, air emission limits, etc. Annual reports shall be sent to the Department's Southwest District office by March 1 of each calendar year.
- 17. 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 (F.A.C. Rule 17-4.090).
- 18. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233852 Expiration Date: April 1, 1996

SPECIFIC CONDITIONS:

application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

Issued this _____ day
of _____, 1993

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell, Secretary

Best Available Control Technology (BACT) Determination Orange Cogeneration Limited Partnership Polk County AC53-233851, AC53-233852, PSD-FL-206

The applicant proposes to construct a 103 gross megawatt (MW) natural gas/equivalent biogas fired cogeneration facility in Bartow, Polk County, Florida. Major components of the cogeneration facility are: two combustion turbines (CT), each with a heat recovery steam generator (HRSG), an auxiliary boiler, steam turbine generator, and associated equipment. Both CTs will consume up to 776 million British thermal units per hour (MMBtu/hr) of gas fuel based on the lower heating value (LHV) of the fuel and produce 78 MW of electricity. The HRSGs, which do not use supplemental fuel, produce approximately 100,000 lbs/hr of steam that can generate 25 MW of electricity. The fire-tube auxiliary boiler consumes 100 MMBtu/hr of gas fuel and produces approximately 83,000 lbs/hr of steam.

The following table lists the estimated maximum emissions from the cogeneration facility.

•	Two	CTs	<u>Auxiliary</u>	<u>Boiler</u>
Pollutant ·	lbs/hr	TPY	lbs/hr	TPY
Sulfur dioxide (SO ₂)	2.34	10.3	0.3	1.3
Particulate Matter (PM/PM ₁₀)	10	43.8	1.0	4.4
Nitrogen Oxide (NO _x)	77.0	336.9	13.0	56.9
Carbon Monoxide (CO)	57.2	343.9	10.0	43.8
Volatile Organic Compounds (VOC)	8.17	34.9	4.3	18.8
Sulfuric Acid Mist	0.18	0.79	0.023	0.1

The cogeneration facility requires a BACT determination for NO_X , CO, PM, and VOC. In addition, the auxiliary boiler requires a BACT determination for SO_2 .

Date of Receipt of a BACT Application

July 1, 1993

BACT Requested by the Applicant

<u>Proposed Limit</u> <u>Air Pollution Control</u>

Combustion Turbine

PM 0.01 gr/scf* Clean Fuel (gas) NO $_{\rm X}$ 25 ppmvd @ 15%** Wet Injection (WI) or 15 ppmvd @ 15%** Dry Low-NO $_{\rm X}$ Combustors

CO	30 ppmvd	Combustion Controls
VOC	10 ppmvd	Combustion Controls

Auxiliary Boiler

PM	0.01 lbs/MMBtu	Clean Fuel (gas)
$NO_{\mathbf{X}}$	0.13 lbs/MMBtu	Low-NO _X burners
SO ₂	1 grain/100CF natural gas	Clean Fuel (natural gas)
co	0.10 lbs/MMBtu	Combustion Control
VOC	0.043 lbs/MMBtu	Combustion Control

*grains per standard cubic foot **parts per million by volume dry at 15 percent oxygen and ISO conditions Applicant is committed to meeting 15 ppmvd @ 15% O_2 and ISO conditions with dry low-NO $_X$ combustors after December 31, 1997.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-212, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from cogeneration facilities can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulates matter). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., CO). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., NO_X). Controlled generally by gaseous control devices.

Although all of the pollutants addressed in the BACT analysis may be subjected to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT Pollutant Analysis for Combustion Turbines (CT)

Nitrogen Oxides (NO_X)

The emissions of nitrogen oxides represent a significant proportion of the total emissions generated by this project, and need to be controlled if deemed appropriate. As such, the applicant presented an extensive analysis of the different available technologies for $\rm NO_X$ control. The control technologies evaluated were selective catalytic reduction (SCR), wet injection (WI), dry low-NO_X combustor, NO_XOUT process, thermal DeNO_X, and selective noncatalytic reduction (SNCR).

 $\rm NO_XOUT$ (urea with catalyst), thermal $\rm DeNO_X$ (ammonia with catalyst), and selective noncatalytic reduction system (ammonia without catalyst) to reduce $\rm NO_X$ emissions from the CT were not feasible because of process constraints (flue gas temperature too low and oxygen content too high).

SCR, dry low-NO $_{\rm X}$ combustor technology, and wet injection controls were considered feasible.

The applicant has stated that BACT for nitrogen oxides will be met initially by using water/steam injection or advanced combustor design to limit emissions to 25 ppmvd 15% $\rm O_2$ and ISO conditions when burning natural gas/equivalent biogas. After December 31, 1995, dry low $\rm NO_X$ combustion will be used to meet the same $\rm NO_X$ emission limit of 25

ppmvd @ 15% O_2 and ISO conditions. After December 31, 1997, a limit of 15 ppmvd @ 15% O_2 and ISO conditions will be met. Should 15 ppmvd NO_X @ 15% O_2 and ISO conditions not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard. If the standard has not been met by December 31, 1997, the Department may require the installation of SCR system on the CT's.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NO_X emission limit established to date for a combustion turbine is 4.5 ppmvd at 15% oxygen. This level of control was accomplished through the use of water injection and a SCR system.

SCR is a post-combustion method for control of NO_X emissions. The SCR process combines vaporized ammonia with NO_X in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage though the catalyst bed. With a new catalyst the SCR process can achieve up to 90% reduction of NO_X . As the catalyst ages, the maximum NO_X reduction will decrease.

The effect of exhaust gas temperature on NO_X reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_X control over a $100-300\,^{\circ}\text{F}$ operating window within the bounds of $450-800\,^{\circ}\text{F}$, although recently developed zeolite-based catalysts are claimed to be capable of operating at temperatures as high as $950\,^{\circ}$.

Most commercial SCR systems operate over a temperature range of about $600-750\,^{\circ}\text{F}$. At levels above and below this window, the specific catalyst formulation will not be effective and NO_X reduction will decrease. Operating at high temperatures can permanently damage the catalyst through sintering of surfaces.

Increased water vapor content in the exhaust gas (as would result from water or steam injection in the gas turbine combustor) can shift the operating temperature window of the SCR reactor to slightly higher levels.

Although technically feasible, the applicant has rejected using SCR on the combined cycle because of economic, energy, and environmental impacts. The applicant has identified the following limitations:

- a) Reduced power output.
- b) Emissions of unreacted ammonia (slip).
- c) Disposal of hazardous waste generated (spent catalyst).
- d) Ammonium bisulfate and ammonium sulfate particulate emissions (ammonium salts) due to the reaction of NH₃ with SO₃ present in the exhaust gases.

e) The energy impacts of SCR will reduce potential electrical power generation by 0.8 percent.

f) Incremental cost effectiveness for the application of SCR technology to the Orange Cogeneration L.P. project was considered to be \$7,970 when emissions are at 25 ppm and \$23,510 when emissions are at 15 ppm. Since SCR has been determined to be BACT for gas turbines, the EPA has clearly stated that there must be unique circumstances to consider the rejection of such control on the basis of economics.

In a letter from EPA Region IV to the Department regarding the permitting of a combined cycle facility (Tropicana Products, Inc.), the following statement was made:

"In order to reject a control option on the basis of economic considerations, the applicant must show why the costs associated with the control are significantly higher for this specific project than for other similar projects that have installed this control system or in general for controlling the pollutant."

The cost associated with controlling NO_X emissions must take into account the potential operating problems that can occur with using SCR.

A concern associated with the use of SCR on combustion turbines is the formation of ammonium bisulfate. For the SCR process, ammonium bisulfate can be formed due to the reaction of sulfur in the fuel and the ammonia injected. The ammonium bisulfate formed has a tendency to plug the tubes of the heat recovery steam generator leading to operational problems. As this is the case, SCR has been judged to be technically infeasible in some previous BACT determinations. This salt also increases particulate matter (PM/PM_{10}) emissions.

For natural gas/equivalent biogas firing operation, NO_X emissions can be controlled with up to a 90 percent efficiency using a 1 to 1 or greater ammonia injection ratio. When the injection ratio is lowered there is not a problem with ammonium bisulfate formation since essentially all of the ammonia is able to react with the nitrogen oxides present in the combustion gases. Based on this strategy SCR has been both proposed and established as BACT with NO_X emission limits ranging from 11.7 to 25 ppmvd depending on the efficiency of control established.

The applicant has indicated that the total levelized annual operating cost to install SCR on two CTs for this project at 100 percent capacity factor and burning natural gas/equivalent biogas is \$1,648,000. Taking into consideration the total annual cost, a cost/benefit analysis of using SCR can now be developed.

Initially, NO_X emissions will be 25 ppmvd @ 15% O_2 and ISO conditions. Emissions will be 318 TPY NO_X with WI. When dry-low NO_X controls are installed, NO_X emissions will be 305 TPY. After the combustion turbines meet the NO_X emissions standard of 15 ppmvd @ 15% O_2 and ISO conditions, NO_X emissions will be 191 TPY. A SCR would reduce the NO_X emissions by 207 TPY during the first 2 years of operation when the CTs emit 25 ppmvd @ 15% O_2 and ISO conditions. Thereafter, when dry-low NO_X controls are used, a SCR would reduce NO_X emissions by 120 TPY. When these reductions are taken into consideration, the total cost with SCR is \$21,900 per ton of NO_X removed. This calculated cost is higher than has previously been approved as BACT.

A review of the latest Department BACT determinations show limits of 15 ppmvd (natural gas) using low-NO $_{\rm X}$ burn technology for gas turbines. Most combustion turbine manufacturers are currently developing programs using both steam/water injection and dry low NO $_{\rm X}$ combustor to achieve NO $_{\rm X}$ emission control level of 9 ppm when firing natural gas. Therefore, this technology will likely be available by 1998.

BACT Determination for NO_Y for the CT's by Department

NO_Y Control

The information that the applicant presented and Department calculation indicate that the cost per ton of controlling NO_{X} for this turbine [\$21,900 per ton] is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant, the Department believes that the use of SCR for NO_{X} control is not justifiable as BACT at this time.

A review of the permitting activities for combustion turbine proposals across the nation indicates that SCR has been required and most recently proposed for installations with a variety of operating conditions (i.e., natural gas, fuel oil, and various capacity factors). Although, the cost and other concerns expressed by the applicant are valid, the Department, in this case, is willing to accept water/steam injection and low NO_X burner design as BACT for this project for a limited time (up to 12/31/97).

It is the Department's understanding that combustion turbine manufacturers are developing programs using either steam/water injection or dry low NO_X combustor technology to achieve a NO_X emission control level of 9 ppm when firing natural gas.

Based on this, the Department has determined to revise and lower the allowable BACT limit for this project to 15 ppmvd at 15% O_2 no later than 12/31/97. If the CT's are not meeting this standard by December 31, 1997, the Department may require the installation of an SCR system on each CT. For this turbine, an even lower NO_X emission level than 15 ppmvd, at 15% O_2 ISO conditions, may become a condition of the permit pursuant to F.A.C. Rule 17-4.080.

Carbon Monoxide (CO)

CO emissions are caused by incomplete combustion of the fossil fuel. The applicant investigated the use of combustion control and catalytic oxidation to control CO emission. With combustion control, CO emissions would be 30 ppmvd (236 TPY). With catalytic oxidation, CO emissions would be 10 ppmvd (78 TPY). The air quality impact of 236 TPY CO emissions is below the significant impact level. The annualized cost of the catalyst system is \$834,700 or \$5,280 per ton of CO removed.

BACT Determination for CO for the CT's by Department

Because catalytic oxidation would increase operation cost by \$5,280 per ton of CO removed, and have no measurable reduction in air quality impact, the Department accepts an emission limit for CO of 30 ppmvd obtained through combustion control as BACT for these CTs.

Volatile Organic Compounds (VOC)

VOC emissions are caused by incomplete combustion of fossil fuel. The applicant proposes to meet an emission limit of 10 ppmvd through the use of clean fuel (natural gas) and combustion controls. This is similar to the BACT applied to other sources.

BACT Determinations for VOC for the CTs by Department

The Department accepts an emission limit for VOC of 10 ppmvd obtained through the use of clean fuel (natural gas) and combustion control as BACT for these CTs.

Particulate Matter (PM/PM₁₀)

PM emissions are caused by incomplete combustion and traces of solids in the fuel. Proper combustion of clean fuel will emit only trace amounts of PM/PM_{10} . Each proposed CT will emit 5 lbs/hr of PM/PM_{10} or about 0.01 grains per standard cubic foot (gr/dscf). This is similar to the PM/PM_{10} emissions that can be met with the best air pollution control device, a baghouse.

BACT Determination for PM/PM₁₀ for the CTs by Department

The Department accepts an emission limit for PM/PM_{10} of 5 lbs/hr and 10 percent opacity as BACT for each CT.

BACT Pollutant Analysis for the Auxiliary Boiler

Nitrogen Oxides (NOx)

.a. (3)

Nitrogen oxide emissions from boilers can be controlled by selective catalytic reduction (SCR), flue gas recirculation (FGR), and low-NO $_{\rm X}$ combustors.

The applicant proposes to meet a NO_X emission limit of 0.13 lbs/MMBtu through the use of low- NO_X combustors. This emission limit is below the new source performance standard for large boilers. The cost of using SCR or FGR would exceed \$5,000 per ton NO_X removed.

BACT Determined for NOv for the Boiler by Department

The Department accepts an emission limit for NO_X of 0.13 lbs/MMBtu as BACT for this boiler.

<u>Particulate Matter (PM/PM₁₀), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC)</u>

PM/PM₁₀, CO and VOC are the products of incomplete combustion of fossil fuel. The applicant proposes to meet emission limits of 0.01 lbs PM/MMBtu, 0.10 lbs CO/MMBtu, 0.04 lbs VOC/MMBtu through the use of clean fuel (natural gas/equivalent biogas) and combustion control. Visible emissions shall not exceed 15 percent opacity.

BACT Determination for PM, CO, and VOC for the Boiler by Department

The Department accepts the use of clean fuel (natural gas/equivalent biogas) and combustion controls to meet the proposed emission limits for PM/PM_{10} , CO, and VOC as BACT for this boiler.

Sulfur Dioxide (SO₂)

Sulfur dioxide emissions are caused by the oxidation of sulfur in the fuel. Natural gas/equivalent biogas contains only trace amounts of sulfur - 1 grain per 100 cubic feet (gr/100 CF). This will result in an estimated sulfur dioxide emission of 0.30 lbs/hr. Cleaner fuel is not available and add on controls for SO₂ are not justified at this low emission rate.

BACT Determination for SO₂ for the Boiler by Department

Natural gas/equivalent biogas fuel containing a maximum of 1 gr/100 CF is accepted as BACT for SO_2 control for this boiler.

Summary of the BACT Determination by Department

Pollutant	Emission Limits	EPA Test Methods
COMBUSTION TURBINE		
NOX	25 ppmvd @ 15% O_2 ISO conditions by Dec. 31, 1997	20
	15 ppmvd @ 15% O ₂ ISO conditions after Dec. 31, 1997	
СО	30 ppmvd	10
VOC	10 ppmvd	25
PM/PM ₁₀	5 lbs/hr	5,17,201, or 201A (any one)
AUXILIARY BOILER		·
$NO_{\mathbf{X}}$	0.13 lbs/MMBtu	7 E
PM/PM ₁₀	0.01 lbs/MMBtu	5,17,201,201A, or 9
СО	0.10 lbs/MMBtu	10 or 9
VOC	0.04 lbs/MMBtu	25 or 9
so ₂	1 gr sulfur/100 CF gas	fuel analysis
Visible Emissions	15 percent opacity	9

Details of the Analysis May be Obtained by Contacting: Doug Outlaw, P.E., BACT Coordinator Department of Environmental Protection Bureau of Air Regulation 2600 Blair Stone Road Tallahassee, Florida 32399-2400

Recommended by:

Date

	·
C. H. Fancy, P.E., Chief Bureau of Air Regulation	Virginia B. Wetherell, Secretary Dept. of Environmental Protection
1993	1993

Date

Approved by:

Best Available Control Technology (BACT) Determination Orange Cogeneration Limited Partnership Polk County AC53-233851, AC53-233852, PSD-FL-206

The applicant proposes to construct a 103 gross megawatt (MW) natural gas/equivalent biogas fired cogeneration facility in Bartow, Polk County, Florida. Major components of the cogeneration facility are: two combustion turbines (CT), each with a heat recovery steam generator (HRSG), an auxiliary boiler, steam turbine generator, and associated equipment. Both CTs will consume up to 776 million British thermal units per hour (MMBtu/hr) of gas fuel based on the lower heating value (LHV) of the fuel and produce 78 MW of electricity. HRSGs, which do not use supplemental fuel, produce approximately 100,000 lbs/hr of steam that can generate 25 MW of electricity. The fire-tube auxiliary boiler consumes 100 MMBtu/hr of gas fuel and produces approximately 83,000 lbs/hr of steam.

The following table lists the estimated maximum emissions from the cogeneration facility.

	Two	CTs	Auxiliary	Boiler
Pollutant	lbs/hr	TPY	lbs/hr	TPY_
Sulfur dioxide (SO ₂)	2.34	10.3	0.3	1.3
Particulate Matter (PM/PM ₁₀)	10	43.8	1.0	4.4
Nitrogen Oxide (NO _X)	77.0	336.9	13.0	56.9
Carbon Monoxide (CO)	55.6	243.9	10.0	43.8
Volatile Organic Compounds (VOC)	7.96	34.9	4.3	18.8
Sulfuric Acid Mist	0.18	0.79	0.023	0.1

The cogeneration facility requires a BACT determination for NOx, CO, PM, and VOC. In addition, the auxiliary boiler requires a BACT determination for SO2.

Date of Receipt of a BACT Application

July 1, 1993

BACT Requested by the Applicant

Air Pollution Control Pollutant Proposed Limit

Combustion Turbine

PM0.01 gr/scf* Clean Fuel (gas) $NO_{\mathbf{X}}$ 25 ppmvd @ 15%** Wet Injection (WI) or

15 ppmvd @ 15%** Dry Low-NO_x Combustors

CO	÷, •	30	ppmvd	Combustion	Controls
VOC		10	ppmvd	Combustion	Controls

Auxiliary Boiler

PM		0.01 lbs/MMBtu	Clean Fuel (gas)
$NO_{\mathbf{X}}$		0.13 lbs/MMBtu	Low-NO _X burners
SO ₂		1 grain/100CF natural gas	Clean Fuel (natural gas)
co		0.10 lbs/MMBtu	Combustion Control
VOC	No. of the	0.043 lbs/MMBtu	Combustion Control

*grains per standard cubic foot

**parts per million by volume dry at 15 percent oxygen and ISO conditions

Applicant is committed to meeting 15 ppmvd @ 15% O₂ and ISO conditions
with dry low-NO_x combustors after December 31, 1997.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-212, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from cogeneration facilities can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulates matter). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., CO). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., NO_X). Controlled generally by gaseous control devices.

Although all of the pollutants addressed in the BACT analysis may be subjected to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT Pollutant Analysis for Combustion Turbines (CT)

Nitrogen Oxides (NO_x)

The emissions of nitrogen oxides represent a significant proportion of the total emissions generated by this project, and need to be controlled if deemed appropriate. As such, the applicant presented an extensive analysis of the different available technologies for NO_{X} control. The control technologies evaluated were selective catalytic reduction (SCR), wet injection (WI), dry low-NO_{\mathrm{X}} combustor, NO_{\mathrm{X}}\mathrm{OUT} process, thermal DeNO_{\mathrm{X}}, and selective noncatalytic reduction (SNCR).

 ${
m NO_XOUT}$ (urea with catalyst), thermal ${
m DeNO_X}$ (ammonia with catalyst), and selective noncatalytic reduction system (ammonia without catalyst) to reduce ${
m NO_X}$ emissions from the CT were not feasible because of process constraints (flue gas temperature too low and oxygen content too high).

SCR, dry low-NO_X combustor technology, and wet injection controls were considered feasible.

The applicant has stated that BACT for nitrogen oxides will be met initially by using water/steam injection or advanced combustor design to limit emissions to 25 ppmvd 15% O_2 and ISO conditions when burning natural gas/equivalent biogas. After December 31, 1995, dry low NO_X combustion will be used to meet the same NO_X emission limit of 25

ppmvd @ 15% O_2 and ISO conditions. After December 31, 1997, a limit of 15 ppmvd @ 15% O_2 and ISO conditions will be met. Should 15 ppmvd NO_X @ 15% O_2 and ISO conditions not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NC_X emission limit established to date for a combustion turbine is 4.5 ppmvd at 15% oxygen. This level of control was accomplished through the use of water injection and a SCR system.

SCR is a post-combustion method for control of NO_X emissions. The SCR process combines vaporized ammonia with NO_X in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage though the catalyst bed. With a new catalyst the SCR process can achieve up to 90% reduction of NO_X . As the catalyst ages, the maximum NO_X reduction will decrease.

The effect of exhaust gas temperature on NO_X reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_X control over a 100-300°F operating window within the bounds of 450-800°F, although recently developed zeolite-based catalysts are claimed to be capable of operating at temperatures as high as 950°.

Most commercial SCR systems operate over a temperature range of about 600-750°F. At levels above and below this window, the specific catalyst formulation will not be effective and NO_X reduction will decrease. Operating at high temperatures can permanently damage the catalyst through sintering of surfaces.

Increased water vapor content in the exhaust gas (as would result from water or steam injection in the gas turbine combustor) can shift the operating temperature window of the SCR reactor to slightly higher levels.

Although technically feasible, the applicant has rejected using SCR on the combined cycle because of economic, energy, and environmental impacts. The applicant has identified the following limitations:

- a) Reduced power output.
- b) Emissions of unreacted ammonia (slip).
- c) Disposal of hazardous waste generated (spent catalyst).
- d) Ammonium bisulfate and ammonium sulfate particulate emissions (ammonium salts) due to the reaction of NH₃ with SO₃ present in the exhaust gases.

e) The energy impacts of SCR will reduce potential electrical power generation by 0.8 percent.

f) Incremental cost effectiveness for the application of SCR technology to the Orange Cogeneration L.P. project was considered to be \$7,970 when emissions are at 25 ppm and \$23,510 when emissions are at 15 ppm. Since SCR has been determined to be BACT for gas turbines, the EPA has clearly stated that there must be unique circumstances to consider the rejection of such control on the basis of economics.

In a letter from EPA Region IV to the Department regarding the permitting of a combined cycle facility (Tropicana Products, Inc.), the following statement was made:

"In order to reject a control option on the basis of economic considerations, the applicant must show why the costs associated with the control are significantly higher for this specific project than for other similar projects that have installed this control system or in general for controlling the pollutant."

The cost associated with controlling NO_X emissions must take into account the potential operating problems that can occur with using SCR.

A concern associated with the use of SCR on combustion turbines is the formation of ammonium bisulfate. For the SCR process, ammonium bisulfate can be formed due to the reaction of sulfur in the fuel and the ammonia injected. The ammonium bisulfate formed has a tendency to plug the tubes of the heat recovery steam generator leading to operational problems. As this is the case, SCR has been judged to be technically infeasible in some previous BACT determinations. This salt also increases particulate matter (PM/PM10) emissions.

For natural gas/equivalent biogas firing operation, NO_X emissions can be controlled with up to a 90 percent efficiency using a 1 to 1 or greater ammonia injection ratio. When the injection ratio is lowered there is not a problem with ammonium bisulfate formation since essentially all of the ammonia is able to react with the nitrogen oxides present in the combustion gases. Based on this strategy SCR has been both proposed and established as BACT with NO_X emission limits ranging from 11.7 to 25 ppmvd depending on the efficiency of control established.

The applicant has indicated that the total levelized annual operating cost to install SCR on two CTs for this project at 100 percent capacity factor and burning natural gas/equivalent biogas is \$1,648,000. Taking into consideration the total annual cost, a cost/benefit analysis of using SCR can now be developed.

Initially, NO_X emissions will be 25 ppmvd @ 15% O_2 and ISO conditions. Emissions will be 318 TPY NO_X with WI. When dry-low NO_X controls are installed, NO_X emissions will be 305 TPY. After the combustion turbines meet the NO_X emissions standard of 15 ppmvd @ 15% O_2 and ISO conditions, NO_X emissions will be 191 TPY. A SCR would reduce the NO_X emissions by 207 TPY during the first 2 years of operation when the CTs emit 25 ppmvd @ 15% O_2 and ISO conditions. Thereafter, when dry-low NO_X controls are used, a SCR would reduce NO_X emissions by 120 TPY. When these reductions are taken into consideration, the total cost with SCR is \$21,900 per ton of NO_X removed. This calculated cost is higher than has previously been approved as BACT.

A review of the latest Department BACT determinations show limits of 15 ppmvd (natural gas) using low-NO $_{\rm X}$ burn technology for gas turbines. Most combustion turbine manufacturers are currently developing programs using both steam/water injection and dry low NO $_{\rm X}$ combustor to achieve NO $_{\rm X}$ emission control level of 9 ppm when firing natural gas. Therefore, this technology will likely be available by 1998.

BACT Determination for NO_Y for the CT's by Department

NOx Control

The information that the applicant presented and Department calculation indicate that the cost per ton of controlling NO_{X} for this turbine [\$21,900 per ton] is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant, the Department believes that the use of SCR for NO_{X} control is not justifiable as BACT at this time.

A review of the permitting activities for combustion turbine proposals across the nation indicates that SCR has been required and most recently proposed for installations with a variety of operating conditions (i.e., natural gas, fuel oil, and various capacity factors). Although, the cost and other concerns expressed by the applicant are valid, the Department, in this case, is willing to accept water/steam injection and low NO_X burner design as BACT for this project for a limited time (up to 12/31/97).

It is the Department's understanding that combustion turbine manufacturers are developing programs using either steam/water injection or dry low NO_X combustor technology to achieve a NO_X emission control level of 9 ppm when firing natural gas.

Based on this, the Department has determined to revise and lower the allowable BACT limit for this project to 15 ppmvd at 15% O_2 no later than 1/1/98.

Carbon Monoxide (CO)

CO emissions are caused by incomplete combustion of the fossil fuel. The applicant investigated the use of combustion control and catalytic oxidation to control CO emission. With combustion control, CO emissions would be 30 ppmvd (236 TPY). With catalytic oxidation, CO emissions would be 10 ppmvd (78 TPY). The annualized cost of the catalyst system is \$834,700 or \$5,280 per ton of CO removed.

BACT Determination for CO for the CT's by Department

Because catalytic oxidation would increase operation cost by \$5,280 per ton of CO removed, and have no significant reduction in ambient air quality, the Department accepts an emission limit for CO of 30 ppmvd obtained through combustion control as BACT for these CTs.

Volatile Organic Compounds (VOC)

VOC emissions are caused by incomplete combustion of fossil fuel. The applicant proposes to meet an emission limit of 10 ppmvd through the use of clean fuel (natural gas) and combustion controls. This is similar to the BACT applied to other sources.

BACT Determinations for VOC for the CTs by Department

The Department accepts an emission limit for VOC of 10 ppmvd obtained through the use of clean fuel (natural gas) and combustion control as BACT for these CTs.

Particulate Matter (PM/PM₁₀)

PM emissions are caused by incomplete combustion and traces of solids in the fuel. Proper combustion of clean fuel will emit only trace amounts of PM/PM $_{10}$. Each proposed CT will emit 5 lbs/hr of PM/PM $_{10}$ or about 0.01 grains per standard cubic foot (gr/dscf). This is similar to the PM/PM $_{10}$ emissions that can be met with the best air pollution control device, a baghouse.

BACT Determination for PM/PM₁₀ for the CTs by Department

The Department accepts an emission limit for PM/PM_{10} of 5 lbs/hr and 10 percent opacity as BACT for each CT.

BACT Pollutant Analysis for the Auxiliary Boiler

Nitrogen Oxides (NO_x)

Nitrogen oxide emissions from boilers can be controlled by selective catalytic reduction (SCR), flue gas recirculation (FGR), and low-NO $_{\rm X}$ combustors.

The applicant proposes to meet a NO_X emission limit of 0.13 lbs/MMBtu through the use of low- NO_X combustors. This emission limit is below the new source performance standard for large boilers. The cost of using SCR or FGR would exceed \$5,000 per ton NO_X removed.

BACT Determined for NO_Y for the Boiler by Department

The Department accepts an emission limit for NO_X of 0.13 lbs/MMBtu as BACT for this boiler.

Particulate Matter (PM/PM₁₀), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC)

PM/PM₁₀, CO and VOC are the products of incomplete combustion of fossil fuel. The applicant proposes to meet emission limits of 0.01 lbs PM/MMBtu, 0.10 lbs CO/MMBtu, 0.04 lbs VOC/MMBtu through the use of clean fuel (natural gas/equivalent biogas) and combustion control. Visible emissions shall not exceed 15 percent opacity.

BACT Determination for PM, CO, and VOC for the Boiler by Department

The Department accepts the use of clean fuel (natural gas/equivalent biogas) and combustion controls to meet the proposed emission limits for PM/PM_{10} , CO, and VOC as BACT for this boiler.

Sulfur Dioxide (SO₂)

Sulfur dioxide emissions are caused by the oxidation of sulfur in the fuel. Natural gas/equivalent biogas contains only trace amounts of sulfur - 1 grain per 100 cubic feet (gr/100 CF). This will result in an estimated sulfur dioxide emission of 0.30 lbs/hr. Cleaner fuel is not available and add on controls for SO₂ are not justified at this low emission rate.

BACT Determination for SO2 for the Boiler by Department

Natural gas/equivalent biogas fuel containing a maximum of 1 gr/100 CF is accepted as BACT for SO₂ control for this boiler.

Summary of the BACT Determination by Department

<u>Pollutant</u>	Emission Limits	EPA Test Methods
COMBUSTION TURBINE		
NOx	25 ppmvd @ 15% O ₂ ISO conditions until Dec. 31, 1997	20
	15 ppmvd @ 15% O ₂ ISO conditions after Dec. 31, 1997	
CO	30 ppmvd	10
VOC	10 ppmvd	18, 25 or 25A
PM/PM ₁₀	5 lbs/hr	5, 17*, or 201A and 202
AUXILIARY BOILER		
NOX	0.13 lbs/MMBtu	7E
PM/PM ₁₀	0.01 lbs/MMBtu	5, 17*, or 201A and 202
co	0.10 lbs/MMBtu	10
VOC	0.04 lbs/MMBtu	18, 25 or 25A
so ₂	1 gr sulfur/100 CF gas	fuel analysis
Visible Emissions	15 percent opacity	9

^{*}Stack flue gas temperature must be less than 320°F.

Details of the Analysis May be Obtained by Contacting:
Doug Outlaw, P.E., BACT Coordinator
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

Dec 29 1993

Date

Virginia B. Wetherell, Secretary Dept. of Environmental Protection

29 Dec 1993

Date

Florida Department of

Environmental Protection

TO:

Howard L. Rhodes

Clair H. Fancy J 5, (40 9)

FROM:

DATE:

December 27, 1999

SUBJECT:

FINAL Permit No.: 1050231-005-AC

Orange Cogeneration Limited Partnership

Orange Cogeneration Facility

This permit is for a minor modification to the air construction permit for the subject facility. The permitted emission rate of nitrogen oxides (NO_x) for Units 1 and 2 while firing natural gas or biogas is 25 ppm. Effective January 1, 2000 the permitted NO_x emission rate for each unit decreases to 15 ppm while firing natural gas or biogas firing, causing the potential TPY of NO_x to be reduced by 67.4 TPY for each unit.

OCLP requests that the aforementioned NO_x emission rates for each unit remain at 25 ppm, for a period of time adequate to allow for the installation and testing of wet technologies. OCLP has determined that an extension of 20 months (through August 2001) will allow adequate time for the units to be capable of achieving the lower (15 ppm) limits through the application of this technology. No other emission limit increases are requested.

We received no public comments and no comments from OCLP on the DRAFT permit.

We received no adverse comments from Region 4, U.S. EPA or the NPS.

I recommend your signature.

Attachment

CHF/aal/mph

Z 031 391 913

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

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Street & Number

Post Office State of Typode

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Certified Fee

Special Delivery Fee

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Return Receipt Showing to Whom & Date Delivered

Whom & Date Delivered

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TOTAL Postage & Fees

Postmark or Date

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the reverse side?	SENDER: Complete items 1 and/or 2 for additional services. Complete items 3, 4a, and 4b. Print your name and address on the reverse of this form so that we card to you. Attach this form to the front of the mailpiece. or on the back if space permit. Write "Return Receipt Requested" on the mailpiece below the article The Return Receipt will show to whom the article was delivered and delivered.	e does not e number.	I also wish to rec following services extra fee): 1. Addresse 2. Restricte Consult postmas	s (for an ee's Address d Delivery	ipt Service.
your <u>RETURN ADDRESS</u> completed on	3. Article Addressed to: Nade Smith, Hen. They's Dranch Cosen, LP 1125 US 96 South Jakeland, Fl 33801 5. Received By: (Print Name) 6. Signature: (Addressede for Adent) X	7. Date of D	Type ed Mail ceipt for Merchandise elivery:	9/3 Certified Insured COD	Thank you for using Return Receipt
<u>s</u>	PS Form 3811 , December 1994	2595-98-B-0229	Domestic Retu	ırn Receipt	



Department of Environmental Protection

Jeb Bush Governor Marjory Stoneman Douglas Building 3900 Commonwealth Boulevard Tallahassee, Florida 32399-3000

November 24, 1999

David B. Struhs Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Wade Smith, General Manager Orange Cogeneration Limited Partnership 1125 U.S. 98 South Suite 100 Lakeland, Florida 338701

Re: DEP File No. (PSD-FL-206C)

Orange Cogeneration / Polk County

Dear Mr. Smith:

Enclosed is one copy of the Draft Air Construction Permit Modification for the installation of wet technologies on Orange Cogeneration Units 1 and 2, specifically the implementation of SPRINT™ and selective water injection. The Department's Intent to Issue Air Construction Permit Modification and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" are also included.

The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" must be published within 30 (thirty) days of receipt of this letter. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit amendment.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A.A. Linero, P.E., New Source Review Section at the above letterhead address. If you have any other questions, please contact Mr. M. P. Halpin, P.E. at 850/921-9530.

Sincerely,

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

CHF/mph

Enclosures

In the Matter of an Application for Permit Modification by:

Orange Cogeneration Limited Partnership 1125 U.S. 98 South, Suite 100 Lakeland, Florida 33801 DEP File No. 1050231-005-AC Permit PSD-FL-206C Orange Cogeneration Polk County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification (copy of DRAFT Permit modification attached) for the proposed action, as detailed in the application specified above, for the reasons stated below.

The applicant, Orange Cogeneration Limited Partnership (OCLP) applied on October 25, 1999, to the Department for an air construction permit modification to allow for the installation of NO_X control equipment, including SPRINTTM and selective water injection for its combined cycle combustion turbines located at the Orange Cogeneration facility, Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above action is not exempt from permitting procedures. The Department has determined that an air construction permit modification is required to install the associated NO_x control equipment.

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

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

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

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

DEP File No. 1050231-005-AC (PSD-FL-206C) Orange Cogeneration Limited Partnership Page 2 of 3

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

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

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

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

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

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

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

DEP File No. 1050231-005-AC (PSD-FL-206C) Orange Cogeneration Limited Partnership Page 3 of 3

underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

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

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

Executed in Tallahassee, Florida.

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION (including the PUBLIC NOTICE, and DRAFT permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 11-23-99 to the person(s) listed:

Wade Smith, Orange Cogeneration *
Gregg Worley, EPA
Doug Neeley, EPA
John Bunyak, NPS
Bill Proses, DEP-SWD

Clerk Stamp

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

(Clerk)

(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Orange Cogeneration Limited Partnership, Orange Cogeneration Facility
DEP File No. PSD-FL-206C, 1050231-005-AC
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue a modification of a Prevention of Significant Deterioration (PSD) Permit to Orange Cogeneration Limited Partnership (OCLP) for its Orange Cogeneration Facility located in Polk County. A Best Available Control Technology (BACT) determination was not required for this modification pursuant to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). The applicant's name and address are: Orange Cogeneration Limited Partnership, 1125 U.S. 98 South, Suite 100, Lakeland, Florida 33801.

This is an existing facility consisting of two nominal 40 Megawatt combined cycle combustion turbines (Units 1 and 2). Both units fire natural gas and biogas with heat inputs of 368.3 MMBtu/hr each (at an ambient temperature of 47°F). These units have a Title V permit (1050231-001-AV) issued by the State of Florida.

The permitted emission rate of nitrogen oxides (NO_X) for Units 1 and 2 while firing natural gas or biogas is 25 ppm. On an annual basis the permitted tons per year (TPY) of potential NO_X emissions are 168.6 each. Effective January 1, 2000 the permitted NO_X emission rate for each unit decreases to 15 ppm while firing natural gas or biogas firing, causing the potential TPY of NO_X to be equal to 101.2 (a reduction of 67.4 TPY for each unit).

OCLP requests that the aforementioned NO_X emission rates for each unit remain at 25 ppm, for a period of time adequate to allow for the installation and testing of wet technologies. OCLP has determined that an extension of 20 months (through August 2001) will allow adequate time for the units to be capable of achieving the lower (15 ppm) limits through the application of this technology. No other emission limit increases are requested.

It is noted that emissions from each unit have ranged from 52.5 to 61.1 tons per year of NO_X over a 3-year period. This reflects the intermediate loading duty of these units. It is expected that each unit will typically operate in a similar manner in the future.

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

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 (fourteen) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit Modification." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

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

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

party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

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

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

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

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

Department of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida 32301

Telephone: 850/488-0114

Fax: 850/922-6979

Department of Environmental Protection

Southwest District Office 3804 Coconut Palm Drive Tampa, Florida 33619-8218

Telephone: 813/744-6100

Fax: 813/744-6084

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

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Orange Cogeneration Limited Partnership
Orange Cogeneration Facility
Polk County

DEP File No. 1050231-005-AC PSD-FL-206C

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

November 24, 1999

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. Applicant

Orange Cogeneration Limited Partnership 1125 U.S. Highway 98 South Suite 100 Lakeland, FI 33801

Authorized Representative: Mr. Wade Smith, General Manager

2. Source Name and Location

Orange Cogeneration Limited Partnership Clear Springs Road Bartow, Florida 33830

UTM Coordinates: Zone 17, 418.75 km East and 3083.0 km North

The location of the site is shown below:





3. Source Description

The Orange Cogeneration Limited Partnership (OCLP) facility consists of two combustion turbines, each with an associated heat recovery steam generator; an auxiliary boiler, and "unregulated or insignificant" emissions units.

Each combustion turbine is a GE LM6000 DLE unit nominally rated at 40 MW generating capacity, with a maximum heat input for natural gas or biogas of 368.3 MMBtu/hr. The auxiliary boiler has a maximum heat input for natural gas of 100 MMBtu/hr.

4. Current Permit and Major Regulatory Program Status

The HRSGs and the combustion turbines are regulated under Rule 62-210.300, F.A.C. Permits Required. Based on the BACT and permit information, the combustion turbines are required to operate at lower NO_X levels than authorized at this time. The original PSD permit authorized a NO_X emission limit of 25 ppmvd until 12/31/97, after which the emission limit was to be reduced to 15 ppmvd. The

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

applicant filed two requests for extensions, which were granted by the Department, allowing for the current compliance date of 12/31/99 in order for the lower NO_X limit to be achieved.

5. Permit Modification Request

On October 25, 1999 the Department received a request from OCLP for modification of its permit to install SPRINTTM and selective water injection on Emission Units 001 and 002. The applicant indicated that this request was required in order to meet the Department's BACT limit of 15 ppmvd on each combustion turbine. General Electric has "partnered" with OCLP and met with the Department on September 2 in order to present the subject proposal. GE and OCLP believe that pursuing this proposal will lead to a system solution which has environmental benefits over SCR, will yield lower ongoing operating costs when compared to SCR and will advance the state of the art in emissions technology for the LM6000 AeroDerivative gas turbine.

Orange Cogeneration has further requested that the Department revise the PSD permit to reflect that the 25 ppmvd limit for NO_X is appropriate as BACT if the subject proposal should fail to achieve 15 ppmvd.

6. Emissions Increases Due to Modification/Method of Operation

The only emissions increase which this modification will cause relate to the differential NO_X emission levels of 15 ppmvd versus 25 ppmvd for the extension period requested. The Department estimates this as per the table below. This is based on 8760 hours of operation at maximum output for each CT, although this is unlikely based upon past operation (actual past emissions are also shown):

EMISSIONS INCREASES DUE TO PERMIT EXTENSION ON BOTH CT's THROUGH 8/2001

Unit	Emission Rate 15 ppm (lb/hr)	Emission Rate 25 ppm (lb/hr)	Emission Increase At 8760 hr (TPY)	Actual Emissions (96-98 avg. TPY)	Facility PTE Increase (TPY)	PSD Threshold tons/yr
1	23.1	38.5	67.4	57.3	Yr. 2000 - 134.8	40
2	23.1	38.5	67.4	55.0	Yr. 2001 – 89.9	40

7. Conclusions

Based upon information that the Department has reviewed, this project has the ability to reduce NO_X emissions to the required 15 ppmvd rate. Therefore, the Department concludes that the project is worth implementing and authorizes the appropriate extension of time in order to do so. However, the applicant demonstrates some "hedging" based upon the request to revise the permit limit to 25 ppmvd should the proposal fail. Accordingly, the Department concludes that there exists some possibility that the proposal will fail and is not inclined to revise the permit to the 25 ppmvd level in the event of failure. Additionally, since this action represents the third extension of time to achieve 15 ppmvd, no further extensions of time should be authorized to meet the targeted rate, short of the time required to implement an SCR.

For further details regarding this review, contact:

Michael P. Halpin, P.E., Review Engineer New Source Review Section Bureau of Air Regulation 850/488-0114



GE Power Systems.
One Neumann Way, \$158
Cincinnati, OH 45215-1988
Phone: (513) 552-5925
Fax: (513) 552-5059

October 18, 1999

Orange Cogeneration Limited Partnership 1125 US 98 South, Suite 100 Lakeland, FL 33801

Attn: Wade Smith

The purpose of this letter is to document two new technical alternatives that have the potential to achieve the desired emission levels of 15 ppm NOx without the use of exhaust treatment. The new alternatives are:

- Application of Sprint[™] technology
- Use of selective H2O injection into the combustor

These alternatives were presented to the Florida Department of Environmental Protection (DEP) in a meeting held September 2, 1999. A copy of that presentation is attached for reference.

Background

During the last six months, GE evaluated various alternatives to meeting the contractual agreements with Orange Cogeneration Limited Partnership (OCLP) regarding gas turbine NOx emissions. These were documented in a 6-25-99 letter from OCLP to FL-DEP.

Technically viable alternatives evaluated included SCR and derated LM6000PD. Of these, SCR was the more cost effective.

About the same time (June 1999) GE conducted some additional measurements which suggested that the needed NOx improvements could likely be achieved via small amounts of H₂O injection using Sprint™ technology and/or by selectively injecting H₂O into certain areas of the combustor. GE disclosed this work to the FL-DEP in early July and made a technical presentation on Sept. 2 at Tallahassee.

The advantages of using "damp" technology over SCR are as follows:

- Provides lower total emissions to atmosphere (when ammonia slip is considered).
 - An SCR with 10 ppm ammonia slip will add an additional 48 ton per year of NH3. For the two gas turbines at the plant. Additional introduction of ammonia into the atmosphere is a concern since it could potentially lead to increased O2 consumption by algae in sensitive water areas causing fishkills or other degradation of the environmental ecosystems.
 - > Therefore damp technology would avoid 48 ton per year of additional emissions.
- Avoids visible haze emissions associated with ammonia slip
- Avoids possible complaints of odor due to ammonia
- Reduces operating costs
 - Ammonia costs
 - > Catalyst replacement costs
 - Catalyst disposal costs
 - > Gas turbine performance losses due to SCR back pressure
- Avoids additional opportunity for "fugitive" ammonia release and impacts to nearby residential areas due to transportation, handling and storage

This memo provides the technical rationale and proposal to pursuing "damp" technology to capitalize on the aforementioned benefits.

SPRINT™ Technology

Tests were conducted at the OCLP facility at Bartow, Florida that included injecting a water mist into the engine inlet. The tests were conducted at high power operating conditions and the water injection rate was approximately 5 gallons per minute. Figures 1 and 2 show the results of these tests for the two different engines at the site. These figures show how NOx emissions vary as a function of power with and without water injection into the engine inlet. With water injection NOx emissions were lower by approximately three ppm at a given power level. The results were nearly identical on both of the engines at the site.

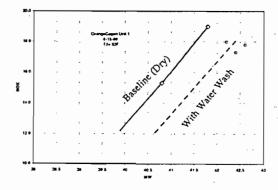


Figure 1 SPRINT Results on Unit #1

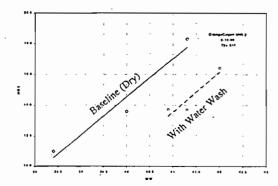


Figure 2 SPRINT Results on Unit #2

What is significant in these results is that data obtained during the tests indicate that the NOx permit level of 15 PPM was *nearly achieved* on both engines at rated power. In fact, NOx levels of 15.5 and 16.0 PPM were recorded on units one and two, respectively.

This demonstration was conducted using a crude water mist injection system that is normally used to clean the engine inlet, which is known to produce a circumferentially non-uniform water mist. This is significant in two respects. First, it can be expected that a system that provides more uniform injection will also provide lower emission levels. Second, the demonstrator system used for the tests is not suitable for long term operation. GE is currently developing a system for the LM6000 PC that should provide a uniform injection pattern. This system will be developed and demonstrated during fourth quarter 1999. This system would then have to be adapted for use on the LM6000PB models at OCLP.

Selective Water Injection

Major factors driving and NOx emissions on LM6000PB

The LM6000PB combustor is a triple annular design in which there are three concentric burning zones called domes. At high power operating conditions all three combustor domes are lit. Also, at these conditions all engine bleeds are closed and the control mode is called "throttle push". In throttle push control mode the flame temperatures in the inner and outer domes ("C" and "A" domes) are regulated to a control schedule that is determined by combustor acoustic boundaries. As power is increased, inner and outer dome flame temperatures are regulated to preset temperatures and any additional fuel flow required to achieve power is fed to the center dome ("B" dome).

Therefore, during throttle push control mode, the B dome temperature increases as power is increased. The NOx also increases as power is increased.

Statistical evaluation of NOx emissions during these operating conditions has verified that the B-dome flame temperature is the main NOx production driver. Therefore, control of the B dome flame temperature is the primary key to achieving low NOx on the LM6000.

Previously, the strategy that was being pursued to lower NOx emissions was to add more air to this dome. While high flow premixers achieved some success in reducing NOx by adding air to the B dome, there were several factors which limited the amount of air which could be added to this dome. These included issues relative to idle operation and turbine cooling.

Method for controlling B dome temperature

The Sprint[™] feasibility data was encouraging in that water could be added into the engine system without increasing combustor acoustic activity.

This suggests that low levels of water or steam could be introduced into the B dome region of the combustor thereby reducing temperatures and suppressing NOx generation. By so doing, it should be possible, at the OCLP facility rating condition, to duplicate flame temperatures at the minimum NOx point thereby achieving the lowest possible NOx emissions from these gas turbines. The current LM6000s at the OCLP plant have produced NOx emissions levels in the range of the 12-13 ppm at the minimum NOx point. GE believes that, with the use of water or steam injection, levels below 15 ppm may be achieved at the rated conditions for OCLP.

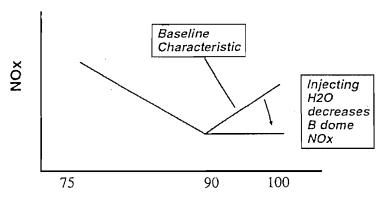


Figure 3 Impact of H2O Injection on NOx Emissions Characteristic

Figure three (above) shows how water or steam injection could potentially flatten out the NOx versus power characteristic and high power. This could also benefit the degradation characteristics of the engine. As fuel flow increases are required to maintain power as the units performance degrades between major maintenance repair cycles, resulting B dome temperature increases can conceivably be offset by water flow increases.

Technology demonstration plan

GE proposes to demonstrate this technology using an existing dual fuel dry low emissions premixer design. Water or steam will be introduced into the B-dome of the combustor using the liquid passages in the dual fuel premixer.

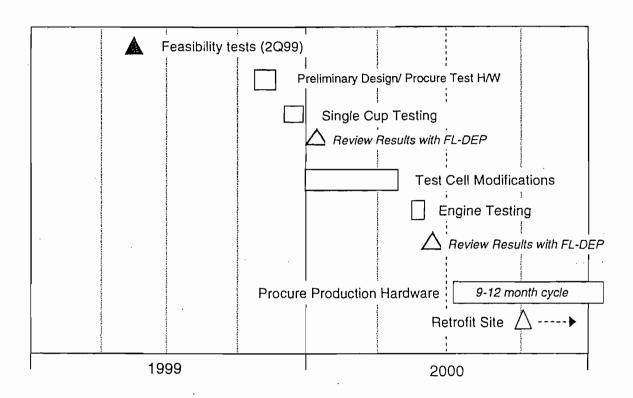
The first element of the program will be to conduct a single test in a combustor rig to determine lean blow out characteristics and flame stability with water and steam

injection. This test will determine whether water or steam is the best alternative for achieving the B dome NOx suppression.

After a determination is made whether water or steam is the best alternative, an engine demonstration test will be undertaken, in GE's engine test facility. The outcome of the engine test will determine if selective water injection, or SPRINT™, or if some combination of the two approaches provides the best solution. It should be noted that the selective water injection system, by itself, may satisfy contract requirements and, in that event, GE reserves the right to implement this system solely as a resolution to this contract. The test will also determine if there are any technology issues, such as acoustic boundaries or CO emissions, that will require further development.

The availability of hardware and the modification of the test cell for water injection and SPRINT™ operation will pace this test. The engine test will be complete no later than the end of June 2000. At that time, a technical review will be conducted with the FL-DEP and a determination made as to whether this approach is practical for commercialization. A preliminary milestone chart is provided below.

Water Injection Program Schedule



If the wet injection scheme is shown to be feasible, GE intends to proceed with design and procurement of a production quality system to be installed at the OCLP facility. The cycle time will depend on whether there are changes required to the

fuel nozzles, however it is expected that this could be accomplished by end June 2001.

If, on the other hand, it is determined that this technology is not capable of achieving the permit levels at the OCLP plant, installation of selective catalytic reduction systems can be pursued to address the emissions limit. GE is working very closely with an SCR supplier to make commercial arrangements for this scenario.

Summary

We believe that pursuing the proposed technology demonstration plan will lead to a system solution which has many environmental benefits over SCR, will be a favorable alternative in terms of net plant profitability for OCLP due to lower ongoing operating costs when compared to SCR, and will also advance the state of the art in emissions technology for the LM6000 AeroDerivative gas turbine

Based on our discussion in Tallahassee earlier this month, we are optimistic that the regulatory agencies and other concerned parties will find value in these advantages and provide a permit extension to mid-2001 to allow us to demonstrate this technology and implement it at the site.

Best regards,

RB Hook

LM6000 Technical Program Mgr.

GE Industrial Aeroderivative Gas Turbines

Concurred:

Bob Ausdenmoore

Systems Engineer

GE Industrial Aeroderivative Gas Turbines

November 24, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Wade Smith General Manager Orange Cogeneration Limited Partnership 1125 US Highway 98 South Suite 100 Lakeland, Florida 33801

Re: DEP File No. 1050231-005-AC; Modification of Permit No. PSD-FL-206C Orange Cogeneration / Polk County

The applicant, Orange Cogeneration Limited Partnership (OCLP), applied on October 25, 1999, to the Department for a modification to air construction permit number PSD-FL-206C for its Orange Cogeneration Facility located in PolkCounty. The request is to allow the facility to install NO_x control equipment on Emission Units 001 and 002, GE LM 6000 DLE units configured for combined cycle operation. The specific equipment requested will allow SPRINTTM and selective water injection to be installed in addition to the Dry Low Emissions equipment. The Department has reviewed the modification request. The referenced permit is hereby modified as follows:

Specific Condition 8 and Table 1 (note e): Each CT shall have a maximum heat input (LHV) of 368.3 MMBtu/hr, which is approximately 389,300 CFH of natural gas, when using dry low NO_X and/or wet injection technologies technology to control NO_X emissions.

Specific Condition 10: Prior to September January 1, 2000 2001, the maximum NO_X concentration, 1 hour average, from each CT/HRSG unit shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen at ISO standard ambient conditions (ppmvd @ 15% O_2 at ISO conditions), as determined by the procedures in Specific Conditions No. 16, 17 and 18.

Specific Condition 11 and Table 1 (note d): After December 31, 1999 August 31, 2001, the maximum NO_X concentration, $\frac{1}{2}$ 24-hour block average, from each CT/HRSG unit shall not exceed 15 ppmvd @ 15% O_2 at ISO conditions as determined by the procedure in Specific Condition Nos. 16, 17 and 18. No further extensions of this permit shall be granted for the purpose of achieving the targeted 15 ppmvd NO_X emissions, with the exception of a reasonable time required to install SCR. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_X emission standard. The Department may revise the limit based upon the capabilities of alternative equipment installed.

Specific Condition 19: Prior to January 1, 1998 September 1, 2000, the permittee shall provide a report showing how the allowable NO_X emissions of 15 ppmvd @ 15% O_2 ISO conditions is achieved by the CTs.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

Howard L. Rhodes, Director Division of Air Resources Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on ______ to the person(s) listed:

Wade Smith, Orange Cogeneration LP *
Doug Neely, EPA
John Bunyak, NPS
Bill Proses, DEP-SWD
Mr. Gregg Worley, EPA

Clerk Stamp

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

(Clerk)	_	(Date)	



Department of Environmental Protection

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

David B. Struhs Secretary

July 19, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Wade Smith, General Manager Orange Cogeneration Limited Partnership 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: Orange Cogeneration Facility, ARMS ID No. 1050231
Re-Evaluation of Best Available Control Technology (BACT) for NOx

Dear Mr. Smith:

On June 28, 1999, the Department received your request for a determination on the economic feasibility of installing Selective Catalytic Reduction (SCR) on the existing General Electric LM6000PB gas-fired combined cycle combustion turbines. Based on the information available to the Department, including your letter, the Department has determined that Orange Cogen will need to install SCR on these units. The key factors in making this determination are:

- The units presently operate under and comply with an initial nitrogen oxides (NO_X) permit emission limit of 25 ppmvd @15 percent oxygen.
- The units were to have achieved a Best Available control Technology (BACT) limit of 15 ppmvd by January 1, 1998.
- After December 31, 1999, the maximum NO_X concentration, 1-hour average, from each CT/HSRG unit, shall not exceed 15 ppmvd @ 15% O2, as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_X emission standard. The Department may revise the limit based on the capabilities of alternative equipment installed.¹
- GE had provided reasonable assurance that it would meet the compliance date through its research and development efforts. They now report that the technology barrier will not allow achievement of 15 ppmvd @ 15% oxygen by Dry Low-Emissions (DLE) technology alone.
- NO_X control by XONONTM technology was rejected by Orange Cogen as not commercially available.
 The Department confirmed that GE and Catalytica have no plans for applying the XONONTM controls to the line of aeroderivative gas turbines. However, plans are under way to evaluate this technology on the larger GE Frame 7EA and 7FA units.
- SCONOxTM technology was rejected by Orange Cogen as not demonstrated for this size gas turbine
 and having limited commercial availability.
- Replacement of the LM6000PB units with derated LM6000PD units was rejected by Orange Cogen as not economically feasible.

• Economic analyses were presented based on three different levels of NO_X control with SCR: 3.5, 6.0, and 15.0 ppmvd @ 15% oxygen. The estimates ranged from \$5,500 to 12,000 per ton removed.

Based on the information provided, the Department does not believe the cost effectiveness for SCR to be prohibitive to the applicant considering that GE "is contractually obligated to correct the engines or implement alternate technology to meet air permit limits of 15 ppmvd.²" The Department is also aware that other companies have installed SCR on both simple and combined cycle LM6000 units^{3,4,5}.

We understand you are obtaining actual bids. We will be happy to discuss with you the minimum requirements for submitting a complete application. An extension of the compliance date can be considered to provide time to install and test a properly designed system.

We received a late E-Mail from GE regarding simulations incorporating Spray Intercooling (SPRINT) technology to accomplish power and emissions improvements. There will be a demonstration in the first half of 2000. The description does not (yet) provide reasonable assurance that SPRINT will actually result in achievement of 15 ppmvd and it would obviously cause at least a further year-long extension of the 25 ppmvd limit.

If you have any additional questions, please contact Al Linero at 850/921-9523 or Jeff Koerner at 850/414-7268.

Sincerely.

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

cc: Gregg Worley, EPA
Don Shepherd, NPS
C. St. Cin, Foster Wheeler Environmental Corporation
R.B. Hook, GE AeroDerivative
D. Oehring – CSWE Operations Orange Cogeneration

References ...

Permit Condition 11. DEP File No. 1050231-003-AC (PSD-FL-206C). Permit Modification Orange Cogen. December, 1998.

Letter. Hook, R.B., GE to Smith, W., Orange Cogen. GE's Position with respect to Contractual Agreement. June 25, 1999.

Permit. Texas Air Resources Board Permit No. 37984 for Lubbock Power & Light. Two LM6000PC units with a NO_X limit of 9 ppmvd @ 15% oxygen controlled with SCR.

⁴ Article. "LP&L Begins the LM6000 Sprint." Power Engineering. November 1998.

⁵ Document. Guidance for Power Plant Siting and BACT. California Air Resources Board. June. 1999.



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

RE:

Orange Cogeneration Limited Partnership Permit No. PSD-FL-206/1050231-002-AC

Nitrogen Oxides Requirements Request for Permit Modification

1050231-065-AC pso-F1-206(c)

Dear Mr. Fancy:

Thank you for meeting with representatives from Orange Cogeneration Limited Partnership (Orange Cogeneration) and General Electric Corporation (GE) in September regarding possible nitrogen oxides (NOx) controls for the Orange Cogeneration facility in Polk County. We appreciate your openness to consider GE's newest NOx control strategies for the LM6000 series of industrial aeroderivative gas turbines. As promised during our meeting, we have enclosed documentation from GE regarding its current schedule for development of these new inlet water injection technologies (Sprint[™] and selective water injection).

As we discussed at our recent meeting, Orange Cogeneration would like to obtain Department approval of these new technologies with a further extension of the compliance deadline for the targeted NOx emission rate of 15 ppm. In addition, Orange Cogeneration respectfully requests that the Department revise the PSD permit to reflect that the 25 ppm limit for NOx is appropriate as Best Available Control Technology (BACT) if these new technologies should fail to achieve 15 ppm (with a margin for compliance and possible degradation over time).

Please accept this letter as Orange Cogeneration's formal request, pursuant to Rule 62-4.080(3) and Rule 62-212.400, FAC., to amend Orange Cogeneration's PSD permit (PSD-FL-206) (as amended on August 25, 1997 and December 18, 1998) to extend the date for compliance with the NOx emission limit of 15 ppm and to provide that the NOx emission limit will be established at 25 ppm in the event the new technology is unable to achieve the lower limit. Enclosed is a check in the amount of \$250 made payable to the Department as the fee for this request. The requested permit modifications to the modified permit are as follows:

Under Modified Specific Condition

#8	Add to the list of control technologies to control NO _x emission: "using dry
	low NO _x or wet injection technologies technology to control NO _x emissions."

- #10 Change the compliance date from "Prior to January 1, 1999," to "Prior to September 1, 2001".
- Change compliance date to "After August 31, 2001," instead of "After December 31, 1998". Insert a new sentence: "Should the NO_x standard of 15 ppm @ 15% O₂ not be achieved during the initial compliance tests (with a reasonable margin for compliance and degradation over time), the NO_x emission limit for this facility shall be 25 ppm @ 15% O₂."
- #15 Change review date from "...review by January 1, 1998." to "...review by September 1, 1999."
- Table 1 Change the compliance date in the body of the table and in note (d) to "9/1/01" instead of "1/1/99". Insert a new sentence in note (d) to read: "Should the NO_x standard of 15 ppm @ 15% O₂ not be achieved during the initial compliance tests (with a reasonable margin for compliance and degradation over time), the NO_x emission limit for this facility shall be 25 ppm @ 15% O₂." Also, add wet injection technology to note (e) and to the "Control" column in the table.

As explained in GE's letters to Orange Cogeneration dated October 7, 1999, copies of which are attached, these new water injection technologies being proposed for the Polk County facility offer lower NOx emissions with minimal environmental, energy and economic impacts, especially when compared to a selective catalytic reduction (SCR) system. While these water injection systems rely on a well-demonstrated approach to minimizing NOx emissions by reducing the combustor flame temperature, full-scale implementation is not expected to be available until the third quarter of 2001. Orange Cogeneration believes that it is reasonable to continue to pursue these technologies for its facility in an effort to meet the targeted rate of 15 ppm for NOx and requests that the Department authorize the use of these technologies. Because of the time needed by GE for further testing, development, and full-scale implementation, Orange Cogeneration also respectfully requests that the compliance deadline for achieving the 15 ppm NOx rate be extended from January 1, 2000 to September 1, 2001.

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While GE and Orange Cogeneration have made every effort to achieve NOx rates of 15 ppm on the Polk County units using dry low NOx combustion technology (including an expenditure of over \$20 million by GE in pursuit of lower NOx rates on LM6000 machines), it appears that

combustion technology alone will be insufficient to achieve rates this low on a long-term basis. We would therefore appreciate your consideration of these water injection technologies as a reasonable alternative to achieve the targeted rate. In support of its request, and in response to some of the issues raised in the Department's July 19, 1999 letter, Orange Cogeneration offers the following.

Implementation of BACT: When the BACT determination was originally made, the Department apparently relied on available information from existing combustion turbines that had demonstrated the achievability of NOx levels in the range of 25 ppm. Relying on vendor guarantees and advances made with other types of combustion turbines such as Frame 7EA's and 7F's (but not LM6000's), the Department's determination found that NOx levels of 15 ppm should be achievable in the future using dry low NOx combustion technology. The permit therefore reflected a NOx limit of 25 ppm that would be reduced to 15 ppm at a point in the future, with both limits to be achieved using dry low NOx combustion technology unless a different technology were approved by the Department. Even though significant advances were made in lowering NOx levels on other types of combustion turbines and despite its best efforts, GE has been unable to reach consistent NOx levels at or below 15 ppm with the LM6000 aeroderivative gas turbines due to a technology barrier. To implement the current BACT, Orange Cogeneration therefore proposes to utilize water injection technology, as described in the attached documentation from GE and as we discussed at our meeting in September. With the information provided, we trust that the Department will have sufficient reasonable assurance that GE's technology will achieve the targeted levels. If additional information is needed, please let us know.

The use of this alternative water injection technology should be considered as implementation of the original BACT determination, consistent with prior actions by the Department. For example, in a similar situation, the Department found low-NOx burner technology to be BACT and established a certain emission rate in the original determination; the Department later authorized an SCR system to be installed as an implementation of the BACT to meet the original limit. That facility's permit specifically stated that the Department's approval of the alternative technology was not subject to PSD review. (PSD-FL-195A, Florida Power Corporation, Condition B.1.i). Similarly, Orange Cogeneration's use of a water injection technology should be considered an implementation of the original BACT and should not trigger a reopening of the determination.

Target Rate of 15 PPM: The Department should revise the permit to reflect that the 25 ppm limit is appropriate as BACT if the water injection system fails to achieve the targeted rate, notwithstanding GE's concerted effort that has a reasonable potential for success. While the target rate of 15 ppm was placed in the permit as part of the BACT determination based on a vendor guarantee (limited to initial operation only), it was not a demonstrated technology at the time. While there have been significant attempts to reduce NOx emissions to achieve levels at or

below 15 ppm using dry low NOx combustion technology in recent years, NOx rates at this low level have not been demonstrated on this type of unit using combustion controls alone.

The original BACT determination found that the use of an SCR system to achieve NOx levels of 15 ppm was not justified based on economic and environmental factors, and this holds true today. As indicated in our June 25, 1999 submittal, incremental costs to achieve levels of 15 to 3.5 ppm of NOx using SCR are currently in the range of \$5,562 to \$11,971 per ton removed, which are not reasonable or cost-effective based on previous Department determinations. Department stated in its July 19, 1999 letter that the costs were reasonable because GE was contractually liable for a portion of the SCR costs, the costs are nevertheless being incurred by someone and neither the Department's rules nor federal guidance provides that costs paid or assumed by a third party are to be disregarded in a BACT analysis. The contractual arrangement between GE and Orange Cogeneration is not relevant for consideration in the cost analysis--the incremental cost-benefit analysis appropriately considers the full costs of an SCR system regardless of who may pay for the system, its components, or its operation. Even considering GE's contractual obligations, however, a significant portion of the costs including ammonia supply, certain capital costs (e.g., related to catalyst sizing), catalyst maintenance and replacement, and other continuing operating and maintenance costs will be incurred by Orange Cogeneration for the life of the project. Orange Cogeneration therefore requests that the Department revise the permit to reflect that the BACT limit is appropriately 25 ppm if the water injection technologies fail to achieve the targeted rate of 15 ppm.

Reopening of BACT: There is no basis at this time for the Department to reopen the original BACT determination to lower the NOx emission rate below 15 ppm. While a 1985 draft EPA guidance document provides that BACT should be reconsidered when a facility requests an extension of the 18-month period within which to commence construction, the extensions requested by Orange Cogeneration have been compliance-related and not tied to construction. Once a unit has been constructed, as the Orange Cogeneration facility has, federal guidance provides that BACT should be reopened only where a modification is triggered or a significant revision causing an increase in emissions is being requested. Because Orange Cogeneration has

not triggered a modification and is not proposing a change in operations that would increase emissions, it is inappropriate to reopen the BACT determination or consider imposing a lower emission rate.

In summary, Orange Cogeneration formally requests that the Department amend PSD FL-206 to authorize the use of water injection technology to meet the targeted NOx level of 15 ppm (assuming an appropriate margin for compliance and degradation over time) by September 1, 2001, and that the Department also revise the permit to reflect that the appropriate BACT limit for NOx is 25 ppm if, despite best efforts, the facility is unable to achieve the targeted lower NOx

levels using water injection technology in conjunction with the existing dry low emissions controls. The requested revised language of the PSD permit is set forth above.

Orange Cogeneration appreciates your consideration of this request to revise the PSD permit. We also request a meeting at your earliest convenience to further discuss this matter in greater detail. If you have any questions in the meantime, please call me at (941) 682-6338.

Sincerely,

ORANGE COGENERATION LIMITED PARTNERSHIP
By: Orange Cogeneration GP, Inc., its General Partner

Wade Smith General Manager

Enclosure

cc: Al Linero, DEP BAR
Bill Proses, DEP SWD
Gregg Worley, EPA
Ellen Porter, NPS
R. B. Hook, GE Aeroderivative
D. Oehring, CSWE Operations Orange Cogeneration

ORANGE COGENERATION, LP

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Database Report Vendor Acct:

FLORIDA DEP OL Florida DEP Voucher Number

000000000000000867

Invoice Number 10/22/99

10/22/99

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DEC 02 1999

BUREAU OF AIR REGULATIO

December 1, 1999

Mr. A. A. Linero, P.E.
Administrator
New Source Review Section
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re:

DEP File No. (PSD-FL-206C)

Orange Cogeneration / Polk County

Dear Mr. Linero:

I have enclosed an affidavit from The Polk County Democrat showing that the <u>PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION</u> for the Orange Cogeneration Facility located near Bartow, Florida was published in their paper on November 25, 1999.

If you have any questions please call me at 941-682-6338.

CC: M. Halpin, BAR EPA NPS SWD

Sincerely,

Orange Cogeneration Limited Partnership

by Orange Cogeneration GP/Inc.

its general partner

Allan Wade Smith General Manager

enclosure

AFFIDAVIT OF PUBLICATION

The Polk County Democrat

Published Semi-Weekly Bartow, Polk County, Florida

Case No.

STATE OF FLORIDA COUNTY OF POLK
Before the undersigned authority personally appeared Mary G. Frisbie, who on oath says that (s)he is Treasurer of The Polk County Democrat, a newspaper
published at Bartow, Polk County, Florida; that the attached copy of advertisement, being a Public Notice of Intent in the matter of Issue Air Construction Permit Modification #1050231-005-AC
in the Court, was published in said newspaper in the issues of Nov. 25, 1999
Affiant further says that The Polk County Democrat is a newspaper published at Bartow, in said Polk County, Florida, and that said newspaper has heretofore been continuously published in said Polk County, Florida, each Monday and Thursday, and has been entered as second class matter at the post office in Bartow, in said Polk County, Florida, for a period of one year next preceeding 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 said newspaper.
Signed Mary H. Freshie
Sworn to and subscribed before me this 29th, day of Nov., 19 99,
by, Mary G. Frisbie,
who is personally known to me. (Signature of Notary Public) C. Joanne Ethington
(Printed or typed name of Notary Public) Notary Public
My Commission Expires:

C. JOANNE ETHINGTON

MY COMMISSION # CC 791462

£XPIRES: December 13, 2002

Bonded Thru Pichard Insurance Agency

PUBLIC NOTICE OF INTENT
TO ISSUE AIR CONSTRUCTION PERMIT
MODIFICATION
STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION
Orange Congeneration
Limited
Partnership, Orange
Congeneration Facility
DEP File No. PSD-FL-206C,
1050231-005-AC

Polk County
The Department of Environmental Protection
(Department) gives notice of its
intent to Issue a modification of
a Prevention of Significant
Deterioration (PSD) Permit to
Orange Congeneration Limited
Partnership (OCLP) for its
Orange Congeneration Facility
located in Polk County. A Best
Available Control Technology
(BACT) determination was not
required for this modification
pursuant to Rule 62-212.400,
F.A.C., Prevention of Significant
Deterioration (PSD). The
applicant's name and address
are: Orange Cogeneration
Limited Partnership, 1125 U.S.
98 South, Suite 100, Lakeland,
Fiorida 33801.

This is an existing facility consisting of two nominal 40 Megawatt combined cycle combustion turbines (Units 1 and 2). Both units fire natural gas and blogas with heat inputs of 368.3 MMBtu/hr each (at an amblent temperature of 47°F). These units have a Title V permit (1050231-001-AV) issued by the State of Florida.

The permitted emission rate

The permitted emission rate of nitrogen oxides (NOx) for Units 1 and 2 while firing natural gas or blogas is 25 ppm. On an annual basis the permitted tons per year (TPY) of potential NOx emmissions are 168.6 each. Effective January 1, 2000 the permitted NOx emission rate for each unit decreases to 15 ppm while firing natural gas or blogas firing, causing the potential TPY of Nox to equal to 101.2 (a reduction of 67.4 TPY for each unit).

OCLP requests that the aforementioned NOx emission rates for each unit remain at 25 ppm, for a period of time adequate to allow for the installations and testing of wet technologies. OCLP has determined that an extension of 20 months (through August 2001) will allow adequate time for the units to be capable of achieving the lower (15 ppm) limits through the application of the technology. No other emission limit increases are requested.

It is noted that emissions from each unit have ranged from 52.5 to 61.1 tons per year of NOx over a 3-year period. This reflects the intermediate loading duty of these units. It is expected that each unit will typically operate in a similar manner in the future.

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

The Department will accept written comments concerning the proposed permit Issuance action for a period of 14 (four-teen) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit Modification." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written #5505. comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action. the Department shall revise the proposed permit and require, If applicable, another Public Notice.

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

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under Sections 120.569 and 120,57 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 at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitioners filed by any persons other than those entitled to written notice under Section 120.60(3) F.S. of the State of Florida, must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of entent, whichever occurs first. Under Section 120.60(3) however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120,569 and 120,57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of deach agency affected and each agency's file or, identification number, if known; (b) The name, address,

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

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

Because the administrative nearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons who 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

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979
Department of Environmental Protection
Southwest District Office
3804 Coconut Palm Drive
Tampa, Florida 33619-8218
Telephone: 813/744-61001
Fax: 813/744-6084

The complete project file includes the Draft Permit modification, the application, and the information submitted by the responsible official exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Fiorida 32301, or call 850/488-0114, for additional information. Nov. 25, 1999-3731



RECEIVED

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BUREAU OF AIR REGULATION

Hopping Green Sams & Smith

October 22, 1999

Ms. Angela R. Morrison Hopping Green Sams & Smith 123 South Calhoun Street Tallahassee, FL 32314

Dear Angela:

I have enclosed your copy of the letter to the FDEP regarding a permit modification for Orange Cogeneration Limited Partnership. I have also enclosed the original and a check for delivery to Mr. Fancy. Please have his copy delivered on Monday.

I appreciate your help and look forward to working with you in resolving this issue with the FDEP.

Sincerely,

Wade Smith General Manager

Enclosures

December xx, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: Permit Modification No. 1050231-001-AV and 1050231-004-AV Orange Cogeneration Facility, Extension of NO_x Compliance Date

Dear Mr. Smith:

The Department has reviewed the modification requested in your letter dated September 25, 1998. The referenced permit is hereby modified as follows:

SPECIFIC CONDITION A.6

The compliance date is hereby changed to <u>January 1, 2000</u> in the table for NOx for this specific condition.

APPENDIX S, TABLE 1-1

The compliance date is hereby changed to <u>January 1, 2000</u> in the table for NOx.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit revision is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit revision) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Howard I Phodes Director	Howard L. Rhodes, Director Division of Air Resources	Sincerely,	
Howard I Phodes Director	· · · · · · · · · · · · · · · · · · ·		
	,	Howard I	Rhodes Director

<u>PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION AND TITLE V PERMIT</u> MODIFICATIONS

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File Nos. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C Orange Cogeneration Facility Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue air construction and Title V permit modifications to Orange Cogeneration for its facility located in Bartow, Polk County. This permitting action will also ultimately revise Title V permit number 1050231-001-AV. A Best Available Control Technology (BACT) determination was not required for this modification pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's name and address are: Orange Cogeneration GP, Inc., 1125 US Highway 98 South, Suite 100, Lakeland, Florida 33801.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boiler. The applicable nitrogen oxides (NOx) emission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant has requested an extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This will allow General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

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

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

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

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties

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

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

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

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

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:

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

Dept. of Environmental Protection Southwest District Office 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/744-6084 Polk County Public Works Dept. Natural Resources & Drainage Div. 4189 Ben Durrance Road Bartow, Florida 33830 Telephone: 941/534-7377 Fax: 941/534-7374

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

In the Matter of an Application for Permit Modifications by:

Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801 DEP File Nos. 1050231-003-AC 1050231-004-AV PSD-FL-206C Orange Cogeneration Facility Polk County

INTENT TO ISSUE AIR CONSTRUCTION AND TITLE V PERMIT MODIFICATIONS

The Department of Environmental Protection (Department) gives notice of its intent to issue air construction and Title V permit modifications (copy of draft air construction and Title V permit modifications attached) for the proposed action, as detailed in the application specified above, for the reasons stated below. This permitting action will also ultimately modify Title V permit number 1050231-001-AV.

The applicant, Orange Cogeneration L.P., Inc. applied on September 29, 1998, to the Department for air construction and Title V permit modifications to extend the final nitrogen oxides emissions compliance date for its combined cycle combustion turbine located in Bartow, Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above action is not exempt from permitting procedures. The Department has determined that air construction and Title V permit modifications are required to extend the final date until January 1, 2000 to comply with the lower nitrogen oxides emission standard (15 ppm).

The Department intends to issue these air construction and Title V permit modifications based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C.

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

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

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

Orange Cogeneration L.P., Inc. DEP File No. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C Page 2 of 3

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

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

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

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

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

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

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

Orange Cogeneration L.P., Inc. DEP File No. 1050231-003-AC and 1050231-004-AV, PSD-FL-2 Page 3 of 3	06C	
the underlying statute (implemented by the rule); and (h) A temporary and, if temporary, a statement of the dates showing		•
The Department will grant a variance or waiver when the rule would create a substantial hardship or violate principles 120.542(2) F.S., and that the purpose of the underlying status petitioner.	s of fairness, as each of those terms	s is defined in Section
Persons subject to regulation pursuant to any federally of Florida is specifically not authorized to issue variances or widelegated or approved program. The requirements of the prothe EPA and by any person under the Clean Air Act unless a variance or waiver in accordance with the procedures of the	raivers from any requirements of an rogram remain fully enforceable by and until the Administrator separat	ny such federally the Administrator of
Executed in Tallahassee, Florida.		
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	H. Fancy, P.E., Chief Sureau of Air Regulation	
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<u>CERTIFICATE</u>	OF SERVICE	
The undersigned duly designated deputy agency clerk h and Title V Permit Modifications (including the Public Notionail (*) and copies were mailed by U.S. Mail before the clo	ce, and Draft permit modifications) was sent by certified
Allan Wade Smith, Orange Cogeneration L.P., Inc. * Doug Neeley, EPA Gracy Danois, EPA John Bunyak, NPS Bill Thomas, SWD		
C	lerk Stamp	
da de	ILING AND ACKNOWLEDGM ate, pursuant to §120.52, Florida S esignated Department Clerk, receip cknowledged.	tatutes, with the
$\overline{(C)}$	Clerk)	(Date)



RESPONSE REQUESTED

RECEIVED

JUN 28 1999

BUREAU OF AIR REGULATION

June 25, 1999

Mr. A. A. Linero, P.E.
Administrator, New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Orange Cogeneration Facility, Facility ID No.: 1050231

Re-Evaluation of Best Available Control Technology (BACT) for Nitrogen Oxides

Dear Mr. Linero:

As was presented during our May 11, 1999 meeting, GE has been involved in a continuous program to reduce NO_x emissions from the LM6000 in an effort to meet the 15 ppmvd permit limit at the Orange Cogeneration Facility. In its efforts, GE has spent approximately \$20 million on dry low NO_x technology for the LM6000 program nationwide. These efforts have resulted in slight improvements in emissions but not at sufficient levels to meet the 15 ppmvd limit on continuous day to day operation. As a result, GE has reported that the technology barrier will not allow them to achieve the 15 ppmvd on our LM6000 units using dry low NO_x technology alone.

Based on the results of the GE program and our earlier meeting, alternative solutions to reaching the 15 ppmvd limit have been evaluated. The alternatives have included the following:

- XONON Technology
- SCONO_x Technology
- SCR Technology
- Derated LM6000 PD

For XONON Technology, GE's investigation revealed that it is not yet commercially available for an LM6000 combustion turbine. Since it is not commercially available it was rejected from further consideration as an available technology.

For SCONOx Technology, GE's investigation revealed that it is commercially available but not yet proven on units as large as the LM6000. According to GE, there is only one SCONOx unit in commercial service and it is on an LM2500 at Sunlaw "Federal Plant" facility in the Los Angeles area. This plant has been operating since 1996 at predominantly baseload operating conditions.

Reliability has not been demonstrated on plants the size of Orange Cogeneration nor on units which start up every day. GE's reservations center around long term durability of the system performance on a long term basis.

For SCR Technology, GE's investigation revealed that it is commercially available, mature, and capable of reducing emissions to the 15 ppmvd level and possibly lower. Based on its availability, GE obtained budgetary quotes from two SCR Vendors (Attachments 1 & 2). The quotes were used to perform economic analyses based on the EPA Guidelines and procedures used in their Control Techniques Guideline for Combustion Turbines. The economic analyses used to determine overall cost effectiveness of the SCR systems are contained in Attachment 3.

In addition to SCR, GE evaluated replacement of the existing units with derated LM6000 PD units. As GE reported during the meeting, the derated LM6000 PD units operating at 41.4 MW can meet the 15 ppmvd level, with data indicating the derated units can achieve levels as low as 13 ppmvd. As an available option, GE performed an economic analysis similar to that for the SCR systems to determine overall cost effectiveness of the option. The economic analysis is contained in Attachment 4. In addition to the higher cost, a concern with this option is that the LM6000 PD may not be able to sustain the current emission level over time due to age and performance degradation in general.

As requested, the focus of the BACT evaluation was placed primarily on the economic analysis since the environmental and energy impacts associated with SCR have been documented and found to be insufficient by themselves to reject the technology. For the economic analyses the following options were reviewed:

- Base Case Existing LM6000 Combustion Turbines at 25 ppmvd.
- Option 1 Replacement with the Derated LM6000 PD Units at 15 ppmvd (See Attachment 4)
- Option 2 SCR System at 15 ppmvd (See Attachment 3)
- Option 3 SCR System at 6 ppmvd (See Attachment 3)
- © Option 4 SCR System at 3.5 ppmvd (See Attachment 3)

The findings of the economic analysis for each option are summarized below.

	Total Capital	Total Annual	Incremental Cost	Emission
	Investment	Costs	Effectiveness	Reductions
Option #	(\$MM)	(\$K/year)	(\$/ton)	(TPY)
1	8.48	1,496	11,971	125
2	1.63-3.51	900-1,168	7,200 – 9,350	125
3	2.26-4.30	1,343-1,674	5,643 – 7,033	238
4	2.64	1,496	5,562	269

Attachment 5 contains a letter from GE which was issued following the May 11 meeting. The letter advises that GE's position is that by their contract GE is only responsible for achieving the 15 ppmvd emission limit and that any additional costs associated with a lower emissions

standard will be the responsibility of Orange Cogeneration Limited Partnership ("OCLP"). As for a breakdown of the costs between GE and OCLP, the Total Capital Investment should be covered by GE (although their letter indicates that they are only willing to pay to get the plant to 15 ppmvd) and the Annual Operating costs going forward will be paid by OCLP.

Option 4 represents the most stringent emission limitation for a greenfield facility proposing to construct in early 1999, the lowest incremental costs, and highest NO_x reductions when compared to the other systems.

As was discussed during the meeting, the incremental costs for all the options are high and in response to comments made during the meeting GE has requested firm fixed price bids from the SCR vendors. Initial responses from the vendors have indicated that the capital costs may increase slightly since GE is now asking for contractual guarantees, but overall incremental cost effectiveness is not expected to vary by more than 10%. In addition, the vendors have been asked to evaluate the HRSGs to determine the available space for the ammonia injection system and catalyst. Based upon their evaluation, the vendors will quote systems capable of meeting NO_x levels of 15, 6, and 3.5 ppmvd provided no structural changes are required. If structural changes are required, the vendors will quote systems providing the maximum available reduction without structural changes as we discussed during our meeting.

In response to comments that incremental costs of \$4,000 per ton have been reported for projects involving SCR, GE will update the economic analyses based on the firm fixed price bids should a new construction permit be required. However, the differences between the preliminary estimates and the Department's \$4,000 per ton value may be associated with the higher exhaust flow rates of the GE Frame 7FA and larger Westinghouse units. As an example, the recently permitted Purdom Unit 8 project (Frame 7FA) emits nearly 58 lb/hr of NO_x at 9 ppmvd which can be scaled to approximately 97 lb/hr at 15 ppmvd. When compared to the LM6000's 37 lb/hr at 25 ppmvd which scales to about 23 lb/hr at 15 ppmvd the effects of combustion turbine size become apparent. Within an economic analysis a larger unit reducing emissions from 25 ppmvd to 3.5 ppmvd will have higher capital and operating costs but nearly four (4) times the available NO_x reductions. This would account for the lower incremental costs associated with SCR systems on these larger combustion turbines.

As requested during the meeting, we are formally presenting the economic analyses associated with the available alternatives for review by both the Department and the Park Service for purposes of determining the economic feasibility of SCR. Mr. Darrel Graziani, formally of Foster Wheeler Environmental, discussed the issue of re-evaluating the BACT for the facility with Mr. Don Shepard of the Park Service. Mr. Graziani reported that the Park Service would be open to the re-evaluation pending verification with the Department.

It is our understanding that if the Department determines that SCR is not economically feasible for our site, we will be required to submit an application for a new construction permit. The application will reflect the relaxation of the federally enforceable 15 ppmvd NO_x emission limitation. In addition, the application will include a full BACT analysis of the available alternatives, technical feasibility, and economic impacts. Technical feasibility for SCR will

focus primarily on the need for structural changes to the HRSG to meet the 15, 6, and 3.5 ppmvd NO_x levels with the lower levels rejected if structural changes are required. However, if the Department determines that SCR is economically feasible for our site, we will be required to install the system and meet an appropriate emission limit specified by the Department. This new emission limitation will account for any structural limitations of the HRSG as identified by the vendors during the bid process.

As suggested during the meeting, we are requesting a formal determination by the Department on the economic feasibility of SCR for the Orange Cogeneration Facility based on the information presented in this letter. In an attempt to meet the extension schedule which is due to expire on 12/31/99, we will need to initiate actions to secure a new construction permit or install an SCR system within the next month.

For a new construction permit, our consultant has advised us that they will need 30 days to develop the application package provided no additional dispersion modelling is required. Following application development our schedule includes the Department's 90 day review period and a 30 day public comment period with issuance of the permit on or about January 1, 2000.

For SCR installation, the schedule includes receiving bids by July 9 and a determination on the economic feasibility from the Department by July 30. The schedule includes a two (2) week period following the determination for negotiations on the final emission limit, including review of the vendor findings associated with structural capabilities of the HRSG. This would allow approximately 5.5 months to purchase, install, and conduct performance tests on the SCR, which may not be sufficient time. Based on the availability of the equipment and installation contractors, OCLP would submit a formal compliance plan within 60 days of the negotiated emission limit including a final compliance date.

As you are aware, this issue has been on going for several years and your immediate attention is greatly appreciated. Should you have any additional questions please feel free to contact me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

By: Orange Cogeneration GP, Inc.

Its general partner

Wade Smith

General Manager

cc: D. Shepard, Park Service

C. St. Cin, Foster Wheeler Environmental Corporation

RB Hook, GE Industrial AeroDerivative

D. Oehring –CSWE Operations Orange Cogeneration

CC: J. Kahn 7BA. J. Koemer 7BA. אל משוקו עם יפני נבי מאחה FN SERUICE

908 713 3210 TO 915135525722

P.01/08



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FOSTER WHEELER ENERGY CORPORATION TO WAR SUNTE

PERRYVILLE CORPORATE PARK+CLINYON=NJ 44204-4944-4945-1114-4944

Into

FAX TRANSMITTAL SHEET 04/13/99

MR. RICK HOOK	PACMI YAJAIRA ORTIZ
CSW ENERGY	TOTAL NO. OF PAGES INCLUDING COVER.
FAX NUMBER: (513) 552-5722	\$ENDER'S TELEPHONE NUMBER: (908) 713 - 3315
PHONE NUMBER	SINDER'S PAX NUMBER: (908) 713 - 2405

SCR BUDGETARY PRICE: FWEC P856

Dear Mr. Hook,

Attached please find a budgetary pricing for your CSW Energy Project, Tampa Florida. Referring to the two (2) GE LMP 6000 turbines.

Should you need any further information please contact myzelf or Dr. Howard Franklin.

Sincerely.

Yajaira Ortiz SCR Systems Engineering



FOSTER WHEELER ENERGY CORPORATION

PERRYVILLE CORPORATE PANK - CLINTON, NEW JERSEY 04809-4000 - PHONE 808-730-4000

April 23, 1999 P&56

Mr. Rick Hook CSW Energy Tampa, Fi

Subject:

SCR Estimate for CSW Energy Project, Tampa, Fl

TWEC Services Reference No. P-886

References:

 Estimate Request by Email from Mr. Darrel Graziani to Dr. Howard Franklin, dated 4/15/99 - 4/22/99

Dear Mr. Hook:

Foster Wheeler Energy Corporation, Services Division is pleased to have this opportunity to provide budgetary pricing for the subject SCR system based upon the flow rates and information provided by Mr. Darrei Graziani.

COMMERCIAL:

The budgetary pricing (excluding all taxes) for the design and supply of two (2) Aqueous Ammonia, SCR Systems:

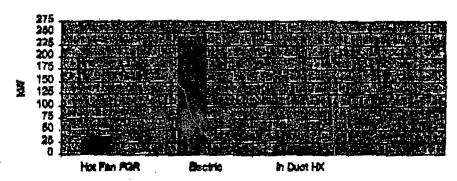
STWILL BURGLOOM CC 17 NAM

COMMENTS

Our budgetary pricing is based on the referenced data. Comments and exceptions include:

- 1. FWEC reserves the right to revise this budgetary quote upon receipt of a formal Request for Quote.
- 2. Any purchase order must be based upon Foster Wheeler acceptable Terms and Conditions.
- 3. The particulars of the fuel and flue gas are not given. Should either fuel contain potential catalyst poisons (Na, Si, HF, HCl, SOx) or NH, oxidizing agents (Pt, Pd, Rh. Os, Ir) that will be in the flue gas and/or dust in abnormally high levels please inform us immediately for possible extalyst design modification.
- NH₂ exidizing agents from other areas (for example, CO catalyst) shall not be dispersed to the SCR catalyst.
- 5. The allowed start-up and shut-down temperature gradient for the catalyst is 10 °C/min below and 60 °C/min above the flue gas dew point.
- NOx reduction requires the proper operation of the SCR system, including the control system per our logic and control panel.
- 7. The maximum allowable exhaust/flue gas temperature at the catalyst is \$00 °F. The minimum operating temperature is \$00 °F.
- 8. FWEC or its agent shall be allowed to witness and/or inspect the catalyst storage .
- FWEC and/or it agent shall be allowed to comment upon SCR catalyst test procedures and witness any
 performance tests.
- 10. Performance of the catalyst is dependent on reasonably uniform flue gas distribution at the AIG and catalyst as well as sufficient mixing time between the AIG and catalyst. The flue gas distribution at the ammonia injection grid should satisfy an RMS deviation ≤ 10% of the mean. At the catalyst inlet the flow distribution should satisfy an RMS deviation ≤ 15% of the mean. The AIG should be located sufficiently upstream of the SCR reactor to assure adequate residence time before the catalyst. The catalyst should not be blocked in such a way as to disrupt the flow distribution into the catalyst. The temperature distribution should no more than ± 20 °F at the catalyst.
- 11. FWEC does not recommend flue gas recirculation for vaporization and transport because of the higher fan energy requirement and problematic nature of a hot fan. In addition, flue gas recirculation cannot be used when firing oil containing any sulfur. SOx in the flue gas would react with the high concentration of ammonia in the mixing system and result in pluggage of the injection equipment. FWEC can provide flue gas recirculation equipment if requested.
- 12. Transitions are included for Options 3, 5, and 6. Off-skid piping is not included, FWEC does not know the corresponding pipe distances for an accurate estimate.
- 13. The PWEC design uses hot air through an in-duct heat exchanger for aqueous ammonia vaporization and transport. Ambient air from a dedicated blower is directed through a heat exchanger located after the SCR in the flue gas ducting. The In-Duct exchanger system has the advantages of using hot air as the ammonia vaporization, dilution and transport medium and the operational cost savings of using a cold air fan source without requiring any electric or steam heating.

Comparison of Energy Requirements for Vaporizing Systems



14. A scale model of catalyst and ammonia injection grid for acrodynamic model testing is not included in this scope. FWEC has sufficient experience to guide and avoid this expense. Should a model be required, FWEC suggests a computer model as an option to the 1/20 scale model.

REFERENCES

Scope of Supply - General
Scope of Supply - Aqueous Ammonia System
Typical P&ID for In-Duct Heat Exchanger System

Please submit a formal request, including terms, when prepared for a complete proposal.

Very traly yours,

FWEC - Services

Yajaira I. Ortiz

SCR Systems Engineer

FOSTER WHEELER ENERGY CORPORATION SCR SYSTEM SCOPE OF SUPPLY - GENERAL

Page 1 of 1

TEN	DESCRIPTION	FWEC	OPTION	NOT		
1	SCR CATALYST IN BASKETS	X		knoluded		
2	AQUEOUS AMMONIA INJECTION SYSTEM	H				
3	ANHYDROUS AMMONIA INJECTION SYSTEM			X.		
	CATALYST REACTOR HOUSING:					
4	CATALYST HOUSING WITH INTERNAL INSULATION AND LINER	и				
5	CATALYST MODULE SUPPORT STRUCTURE	X		· · · · · · · · · · · · · · · · · · ·		
•	SPACE IN REACTOR FOR ADDITION OF CATALYST AT A LATER DATE			×		
7	ADDITIONAL CATALYST SUPPORT STRUCTURE FOR ADDITION OF CATALYST IN THE FUTURE			X		
	CATALYST HANDLING / MAINTENANCE FACILITIES:					
8	CATALYST LOADING DOORS			×		
9	ACCESS DOORS IF WE SUPPLY TRANSITIONS			х		
10	MONORAIL AND HOIST			X		
11	PLATFORMS, LADDERS AND STAIRWAYS			×		
	HRSG TRANSITIONS:					
12	INLET AND OUTLET TRANSITION DUCTS WITH INTERNAL INSULATION AND LINER		ĸ			
	ACCESSORIES:					
13	Housing Bampling Ports - Transitions			x		
14	CATALYST FOR SAMPLING CELLS	X				
15	FOUNDATIONS			x		
18	SELF SUPPORT OF ITEMS WITHIN THIS SCOPE OF SUPPLY	X				
17	SURFACE PREPARATION PER THE SPECIFICATION	X				
12	SHIPMENT OF ALL EQUIPMENT TO SITE	х				
19	ERECTION OF CATALYST HOUSING			X		
20	INSTALLATION OF AMMONIA INJECTION SKIDS		t de Arcenta	×		
	TECHNICAL FIELD ASSISTANCE:					
21	8 DAYS TECHNICAL FIELD ASSISTANCE FOR ERECTION AND INSTALLATION			x		
22	TECHNICAL FIELD ASSISTANCE FOR START-UP OF CATALYST			X		
23	TECHNICAL FIELD ASSISTANCE FOR PERFORMANCE TESTS			×		

FOSTER WHEELER ENERGY CORPORATION SCR SYSTEM SCOPE OF SUPPLY AQUEOUS AMMONIA INJECTION SYSTEM

ПЕН	DESCRIPTION	FWEG SCOPE	OPTION	NOT Included		
1	AMMONIA INJECTION GRID WITH NOZZLES OR ORIFICES	x	***************************************			
2	INJECTION GRID HOUSING & SUPPORT IN YOUR FLUE			Х		
	AMMONIA INJECTION HEADER ASSEMBLY (MOUNTED AT GRADE):					
3	AMMONIA INJECTION HEADER - ONE PIECE	X				
4	MANUAL TRIM VALVES	×				
8	FLOWINDICATORS	×				
6	MANUAL SHUT-OFF VALVES	×				
7	SUPPORT OF INJECTION HEADER	×				
	AQUEOUS AMMONIA DILUTION/ EVAPORATION	& FLOW	CONTRO	L SKID:		
8	DILUTION AIR FANS WITH MOTOR (QTY, 2)	×				
9	IN-DUCT HEAT EXCHANGERS	×				
10	AMMONIA VAPORIZER/MIXER WITH INJECTION NOZZLE	×				
11	ALL AMMONIAVAIR PIPING AND VALVES ON SKID	x				
12	ALL CONTROL INSTRUMENTATION ON SKIDS					
13	TUBING AND WIRING ON SKID	X				
14	Insulation on skid	×				
18	PROVISIONS FOR NITROGEN PURGE OF AMMONIA INJECTION SYSTEM	ĸ				
16	AMMONIA FLOW CONTROL VALVE	X				
49	AMMONIA SHUT-OFF VALVE (SOLENOID OPERATED)	x				
18	AMMONIA FLOW TRANSMITTER	×				
19	DILUTION / VAPORIZING AIR FLOW TRANSMITTER	X		- Charles		
20	ALL MANUAL BYPASS & ISOLATION VALVES ON SKID	×				
21	PRESSURE / TEMPERATURE TRANSMITTERS FOR CONTROL	ĸ				
22	LOCAL PRESSURE / TEMPERATURE INDICATORS	×				
23	ALL INSTRUMENTATION AND VALVES FOR CONTROL OF EQUIPMENT ON INJECTION SKID	x				

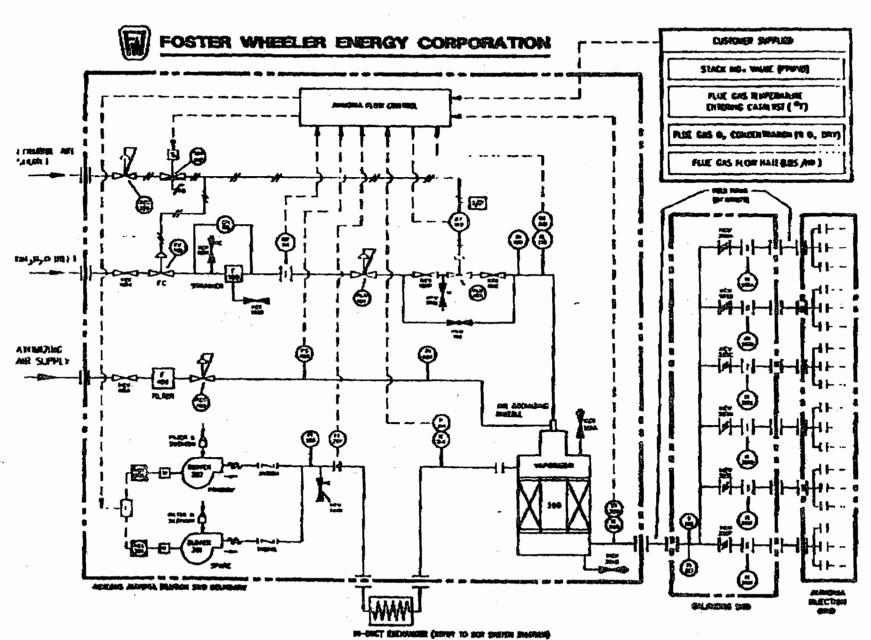
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FOSTER WHEELER ENERGY CORPORATION SCR SYSTEM SCOPE OF SUPPLY AQUEOUS AMMONIA INJECTION SYSTEM

Page 2 of 2

·				
	AQUEOUS AMMONIA STORAGE AND FORWAR	DING EQ	UIPMENT	
24	AQUEOUS AMMONIA STORAGE TANK			X
25	AQUEOUS AMMONIA TRUCK OFF-LOADING STA.			X
28	AQUEOUS AMMONIA FORWARDING PUMPS			X
27	AQUEOUS AMMONIA STRAINER			X
	EXTERNAL PIPING:			
28	PIPING TO & DILUTION SKID TO INDUCT HEAT EXCHANGER			×
25	PIPING FROM AMMONIA DILUTION SKID TO AMMONIA INJECTION HEADER			X
30	PIPING FROM AMMONIA INJECTION HEADER TO HRSG DUCT (INJECTION GRID)			x
	ANCILLIARY EQUIPMENT:			n
31	FLUE GAS INLET TEMPERATURE TRANSMITTER			X
32	CATALYST PRESSURE DROP TRANSMITTER (1 FOR EACH CATALYST BED) (MITH HEAD INDICATOR)	1		X
33	LOCAL CATALYST PRESSURE DROP INDICATOR (1 FOR EACH CATALYST BED)			X
34	CONTROL LOGIC	X		
35	LOCAL CONTROL PANEL			X
36	CONTROL SYSTEM HARDWARE			×
37	MOTOR CONTROL CENTER			X
38	POWER SUPPLY OF ELECTRICAL EQUIPMENT		32.5	X
	FLUE GAS ANALYZERS:		y	, in the second
39	SCR INLET NOX/02 ANALYZER WITH PROBE AND BAMPLING LINE			X
40	SCR OUTLET NOX/02 ANALYZER WITH PROBE AND SAMPLING LINE			×
41	SCR OUTLET NH3 ANALYZER WITH PROBE AND SAMPLING LINE	×		
	GAS SAMPLING PORTS:			
42	INLET NOX/02 PORT IN YOUR FLUE			×
43	STACK SAMPLING PORTS IN YOUR STACK			X

Best Available Copy



TYPICAL AQUEOUS AMMONIA SYSTEM
PROCESS & INSTRUMENTATION DIAGRAM WITH IN DUCT HEAT EXCHANGER

Attachment 2



National Energy Production Corporation Industrial Division 1840 W. Fairbanks St., Lakeland, FL 33805 Tel: (941) 687-1844 Fax: (941) 687-4498

April 29, 1999

Mr. Rick Hook General Electric IAD 1 Neumann Way Cincinnati, OH 45215

SUBJECT:

SCR Installation Orange Cogeneration Bartow, FL Proposal No. 98P-1011

Dear Mr. Hook:

We appreciate the opportunity to submit our budget to supply and install two (2) Selective Catalytic Reduction Units at the above location. The budget price includes the following:

- 1. Supply and installation of two (2) SCR Units
- 2. Ammonia tank and delivery system.
- 3. Ammonia system concrete containment area.
- 4. Ammonia piping from containment area to SCR units.
- 5. Modification of existing HRSGs, piping and platforms to accommodate SCR installation.
- 6. 2000 hrs. of NEPCO Engineering
- 7. 20 Days SCR Vendor Start Up Engineer
- 8. Power and Control Wiring (assumes power is available from existing MCC)
- 9. Prime and Finish Painting of all new work and modifications.

Our proposal does not include instrumentation, modifications to the CEM System or initial fill of the Ammonia system tank.

The SCR design and fabrication will require approximately 12 months from initial order to delivery. Construction was estimated based on installing one unit at a time, 7 days / week, two 10 hr. shifts /

C:\My Documents\ORANGE\Proposal 98-1010 - SCR.doc

day schedule. The total construction time is estimated to be approximately 5 months, with one 6 week outage for each unit.

Our budget price for the above work is with a SCR Unit of reducing NOx to 6 ppm is \$3,372,917.00 (Three million three hundred seventy two thousand nine hundred and seventeen dollars).

Our budget price for the above work is with a SCR Unit of reducing NOx to 3.5 ppm is \$3,720,628.00 (Three million seven hundred twenty thousand six hundred and twenty eight dollars).

This budget is based on conceptual design and can be refined as the system design is developed further.

As you know, NEPCO designed and constructed the Orange Cogeneration Facility. Naturally we are very familiar with the plant and currently maintain an excellent working relationship with the plant operations group. We are extremely interested in the SCR installation project and would like to work with General Electric should the SCR installation provide the best solution in achieving the emission requirements. Our SCR vendor is very experienced in SCR technology and will guarantee design emissions levels.

If the SCR installation does not prove to be in the best interest of General Electric and your client, NEPCO would like to offer their assistance with any alternate solution. NEPCO's Lakeland office provides a local presence and has full capabilities in civil, mechanical and electrical construction services with full engineering support provided by our Redmond, Washington headquarters.

Thanks again for the opportunity and we look forward to hearing from you. Please contact me at (941) 687-1844 if you have any questions or comments.

Sincerely.

Robert Terrell, P.E. Project Manager

cc: H. Wyngate



National Energy Production Corporation

Industrial Division 1840 W. Fairbanks St., Lakeland, FL 33805 Tel: (941) 687-1844 Fax: (941) 687-4498

August 18, 1998

Mr. Paul Zembrodt General Electric IAD 1 Neumann Way Cincinnati, OH 45215

SUBJECT:

SCR Installation

Orange Cogeneration

Bartow, FL

Proposal No. 98P-1010

Dear Mr. Zembrodt:

We appreciate the opportunity to submit our budget to supply and install two (2) Selective Catalytic Reduction Units at the above location. The budget price includes the following:

- 1. Supply and installation of two (2) SCR Units
- 2. Ammonia tank and delivery system.
- 3. Ammonia system concrete containment area.
- 4. Ammonia piping from containment area to SCR units.
- 5. Modification of existing HRSGs, piping and platforms to accommodate SCR installation.
- 6. 1500 hrs. of NEPCO Engineering
- 7. 20 Days SCR Vendor Start Up Engineer
- 8. Power and Control Wiring (assumes power is available from existing MCC)
- 9. Prime and Finish Painting of all new work and modifications.

Our proposal does not include instrumentation, modifications to the CEM System or initial fill of the Ammonia system tank.

The SCR design and fabrication will require approximately 9 months from initial order to delivery. Construction was estimated based on installing one unit at a time, 7 days / week, two 10 hr. shifts / day schedule.

Our budget price for the above work is \$2,756,000.00 (Two million seven hundred fifty six thousand dollars). This budget is based on conceptual design and can be refined as the system design is developed further.

As you know, NEPCO designed and constructed the Orange Cogeneration Facility. Naturally we are very familiar with the plant and currently maintain an excellent working relationship with the plant operations group. We are extremely interested in the SCR installation project and would like to work with General Electric should the SCR installation provide the best solution in achieving emission requirements. Our SCR vendor is very experienced in SCR technology and will guarantee design emissions levels.

If the SCR installation does not prove to be in the best interest of General Electric and your client, NEPCO would like to offer their assistance with any alternate solution. NEPCO's Lakeland office provides a local presence and has full capabilities in civil, mechanical and electrical construction services with full engineering support provided by our Redmond, Washington headquarters.

Thanks again for the opportunity and we look forward to hearing from you. Please contact me at (941) 687-1844 if you have any questions or comments.

Sincerely,

Robert Terrell, P.E.

Project Manager

cc: H. Wyngate M. Ranz

S. Daniels

Attachment 3

FOSTER WHEELER ENVIRONMENTAL CORPORATION EXCEL 5.0 CALCULATION SHEET

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.: File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor. SCR-BACT to 15 ppm, Quote F

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM	COST FACTOR	REFERENCE	COST (\$1999)	
DIRECT COSTS (DC)	*1			
PURCHASED EQUIPMENT COSTS (PEC) SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	\$930,000.00	
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	\$46,500.00	
STATE SALES TAXES	0.05 X A	State Sales Tax	\$55,800,00	
FREIGHT	0.05 X A	(EPA, 1990d)	\$0.00	included
PEC SUBTOTAL	1.16 X A = B	(EFA, 19900)	\$1,032,300.00	liciadea
	1.10 X A - B		¥1,002,000.00	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	\$82,584.00	
LABOR	0.14 X B	(EPA, 1990d)	\$144,522.00	
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$41,292.00	
PIPING	N/A	VENDOR QUOTE	-	
INSULATION	N/A	VENDOR QUOTE	•	
PAINTING	0.01 X B	(EPA, 1990d)	\$10,323.00	
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$278,721.00	
SITE PREPARATION	N/A			
BUILDINGS	N/A	-	-	
TOTAL DC	1.27 X B		\$1,311,021.00	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$103,230.00	
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$51,615.00	
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$103,230.00	
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$30,969.00	
START-UP	0.02 X B	(EPA, 1990d)	\$15,646.00	5 days of support included in quote
PERFORMANCE TESTING	0.01 X B	(EPA, 1990d)	\$10,323.00	
TOTAL IDC	0.53 X B	-	\$315,013.00	
TOTAL CAPITAL INVESTMENT (TCI)	1,84 X B		\$1,626,034.00	

Workbook: Orange SCR BACT r2
Worksheet; SCR-BACT for 15 PPM - FWEC

Appendix 10,1.5 PSD Appendix G

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

CHEMICAL ENGINEERING PLANT COST INDEX

1990 1993

Date:

357.6 359.2

Jun-99

392.3

estimate

CAPITAL RECOVERY FACTOR (CRF) @j=10%,n=20:

0.1175 cost of money 10%

0.1	1			
2!	0		1999	
DIRECT ANNUAL COSTS, \$/YR	FACTOR	REFERENCE	COSTS, \$/YR	
OPERATING LABOR	\$27.82/HR @ 1HR/12HR	(COT & EPA 1993b)	\$20,309	
SUPERVISORY LABOR	15 % OF OPERATING L	(EPA, 1993b)	\$3,046	
MAINTENANCE LABOR AND MATERIALS	1,250 (MW) + 25,800	(EPA, 1993b)	\$137,392	
CATALYST REPLACEMENT (CR)	N/A	Vendor Estimate	\$88,000	Assume same as NEPCO
CATALYST DISPOSAL	\$15/CF	(EPA, 1993b)	\$10,800	Assume same as NEPCO
AQUEOUS AMMONIA	\$378/ton	(EPA, 1993b)	\$310,929	Assume same as NEPCO
DILUTION SYSTEM	N/A	(EPA, 1993b)		
ELECTRICITY	N/A	(EPA, 1993b)		
PERFORMANCE LOSS	0.50%	(EPA, 1993b)	\$19,320	
BLOWER	N/A	(EPA, 1993b)	•	
PRODUCTION LOSS	N/A	(EPA, 1993b)	•	
			\$589,796	
INDIRECT ANNUAL COSTS, \$/YR				
OVERHEAD	60% OF ALL LABOR M	(EPA, 1990d)	\$96,448	
INSURANCE & ADMINISTRATION	2.5%OF TCI	(EPA, 1990d)	\$40,651	
CAPITAL RECOVERY	CRF X (TCI - CR)	N/A	\$173,393	
			\$310,493	
TOTAL ANNUAL COSTS, \$/YR			\$900,289	
TOTAL NET NOV REDUCTIONS (TPY)				

Oil Firing Gas Firing Total

0 125 125

INCREMENTAL COST EFFECTIVENESS, \$/TON

\$7,202

Workbook: Orange SCR BACT r2 Worksheet: SCR-BACT for 15 PPM - FWEC

Appendix 10.1.5 PSD Appendix G

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor.

SCR-BACT to 15 ppm, Quote N

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM DIRECT COSTS (DC)	COST FACTOR	REFERENCE	COST (\$1999)	
PURCHASED EQUIPMENT COSTS (PEC)				
SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	\$2,749,762,40	
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	\$137,488.12	
STATE SALES TAXES	0.06 X A	State Sales Tax	\$164,985.74	
FREIGHT	0.05 X A	(EPA, 1990d)	\$137,488.12	
PEC SUBTOTAL	1.16 X A = B		\$3,189,724.38	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0,08 X B	(ULRICH, 1984)	\$0.00	included in quote
LABOR	0.14 X B	(EPA, 1990d)	\$0.00	included in quote
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$0.00	included in quote
PIPING	N/A	VENDOR QUOTE	-	
INSULATION	N/A	VENDOR QUOTE	-	
PAINTING	0.01 X B	(EPA, 1990d)	\$0.00	included in quote
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$0.00	
SITE PREPARATION	N/A		•	
BUILDINGS	N/A	-	-	
TOTAL DC	1.27 X B	-	\$3,189,724.38	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$0.00	included in quote
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$0.00	included in quote
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$0.00	included in quote
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$318,972.44	final quote not complete - use 10%
START-UP	0.02 X B	(EPA, 1990d)	\$0.00	included in quote
PERFORMANCE TESTING	0.01 X B	(EPA, 1990d)	\$0.00	included in quote
TOTAL IDC	0.53 X B	-	\$318,972.44	
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$3,508,696.82	

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 15 PPM - NEPCO

Appendix 10.1.5 PSD Appendix G

Page 1 of 2

By: RB Hook Date: 3/31/99

Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

1999

File: COTBACT.XLS Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA
CHEMICAL ENGINEERING PLANT COST INDEX
1990 357.6

1993 359.2 Jun-99 392.3

 Jun-99
 392.3
 estimate

 CAPITAL RECOVERY FACTOR (CRF) @i=10%,n=20:
 0.1175
 cost of money 10%

0.1 20

DIRECT ANNUAL COSTS, \$/YR FACTOR REFERENCE COSTS, \$/YR OPERATING LABOR \$27.82/HR @ 1HR/12HR (COT & EPA 1993b) \$20,309 SUPERVISORY LABOR 15 % OF OPERATING L (EPA, 1993b) \$3,046 MAINTENANCE LABOR AND MATERIALS 1,250 (MW) + 25,800 (EPA, 1993b) \$137,392 CATALYST REPLACEMENT (CR) \$88,000 N/A Vendor Estimate CATALYST DISPOSAL \$15/CF (EPA, 1993b) \$10,800 360 cu ft AQUEOUS AMMONIA \$378/ton (EPA, 1993b) \$310,929 93.9pph DILUTION SYSTEM N/A (EPA, 1993b) ELECTRICITY (EPA, 1993b) N/A PERFORMANCE LOSS 0.50% (EPA, 1993b) \$19,320 **BLOWER** (EPA, 1993b) N/A PRODUCTION LOSS (EPA, 1993b) N/A \$589,796 INDIRECT ANNUAL COSTS, \$/YR OVERHEAD 60% OF ALL LABOR M (EPA, 1990d) \$96,448 **INSURANCE & ADMINISTRATION** 2.5%OF TCI (EPA, 1990d) \$87,717 CAPITAL RECOVERY CRF X (TCI - CR) N/A \$394,530 \$578,696 TOTAL ANNUAL COSTS, \$/YR \$1,168,492 TOTAL NET NOx REDUCTIONS (TPY) Oil Firing 0

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 15 PPM - NEPCO

Appendix 10.1.5 PSD Appendix G

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.: File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor. SCR-BACT to 6 ppm, Quote F

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM	COST FACTOR	REFERENCE	COST (\$1999)	
DIRECT COSTS (DC)				
PURCHASED EQUIPMENT COSTS (PEC)				
SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	\$1,290,000.00	
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	\$64,500.00	
STATE SALES TAXES	0.06 X A	State Sales Tax	\$77,400.00	
FREIGHT	0.05 X A	(EPA, 1990d)	\$0.00	included
PEC SUBTOTAL	1.16 X A = B		\$1,431,900.00	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	\$114,552.00	
LABOR	0.14 X B	(EPA, 1990d)	\$200,466.00	
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$57,276.00	
PIPING	N/A	VENDOR QUOTE		
INSULATION	N/A	VENDOR QUOTE		
PAINTING	0.01 X B	(EPA, 1990d)	\$14,319.00	
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$386,613.00	
SITE PREPARATION	· N/A		-	
BUILDINGS	N/A	•	-	•
TOTAL DC	1.27 X B		\$1,818,513.00	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$143,190.00	
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$71,595.00	
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$143,190.00	
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$42,957.00	
START-UP	0.02.X B	(EPA, 1990d)	\$23,638.00	5 days of support included in quote
PERFORMANCE TESTING	0.01 X B	(EPA,1990d)	\$14,319.00	
TOTAL IDC	0.53 X B	-	\$438,889.00	
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$2,257,402.00	

Workbook: Orange SCR BACT r2
Worksheet: SCR-BACT for 6 PPM - FWEC

Appendix 10.1.5 PSD Appendix G

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By: OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA

Date:

CHEMICAL ENGINEERING PLANT COST INDEX

1990 357.6 1993 359.2 Jun-99 392.3

Jun-99 392.3 estimate

CAPITAL RECOVERY FACTOR (CRF) @/=10%,n=20: 0.1175 cost of money 10%

0.1

20 1999 DIRECT ANNUAL COSTS, \$/YR **FACTOR** REFERENCE COSTS, \$/YR OPERATING LABOR \$27.82/HR @ 1HR/12HR(COT & EPA 1993b) \$20,309 SUPERVISORY LABOR 15 % OF OPERATING L (EPA, 1993b) \$3,046 MAINTENANCE LABOR AND MATERIALS 1,250 (MW) + 25,800 (EPA, 1993b) \$137,392 CATALYST REPLACEMENT (CR) \$167,200 N/A Vendor Estimate CATALYST DISPOSAL \$15/CF (EPA.1993b) \$20.520 AQUEOUS AMMONIA \$378/ton (EPA, 1993b) \$590,765 DILUTION SYSTEM N/A (EPA, 1993b) ELECTRICITY N/A (EPA, 1993b) PERFORMANCE LOSS 0.50% (EPA, 1993b) \$19,320 **BLOWER** N/A (EPA, 1993b) PRODUCTION LOSS N/A (EPA, 1993b) \$958,553 INDIRECT ANNUAL COSTS, \$/YR 60% OF ALL LABOR M (EPA, 1990d) **OVERHEAD** \$96,448

2.5%OF TCI

CRF X (TCI - CR)

Assume same as NEPCO Assume same as NEPCO Assume same as NEPCO

TOTAL ANNUAL COSTS, \$/YR

TOTAL NET NOx REDUCTIONS (TPY)

CAPITAL RECOVERY

Oil Firing Gas Firing

INCREMENTAL COST EFFECTIVENESS. \$/TON

INSURANCE & ADMINISTRATION

\$1,343,150 ·

\$56,435

\$231,714 \$384,597

(EPA, 1990d)

N/A

238 238

\$5,643

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 6 PPM - FWEC

Appendix 10.1.5 PSD Appendix G

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By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for theSCR was supplied by a vendor. SCR-BACT to 6 ppm, Quote N

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

6 ppm

PURCHASED EQUIPMENT COSTS (PEC) SCR & AUXILIARY EQUIPMENT AS INSTRUMENTATION STATE SALES TAXES	0.05 X A 0.05 X A 0.05 X A	VENDOR QUOTE (EPA, 1990d) State Sales Tax	\$3,372,917.00 \$168,645.85	Twice the cost NEPCO Budgetary
FREIGHT PEC SUBTOTAL	1.16 X A = B	(EPA, 1990d)	\$202,375.02 \$168,645.85 \$3,912,583.72	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	\$0.00	included in quote
LABOR	0.14 X B	(EPA, 1990d)	\$0.00	included in quote
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$0.00	included in quote
PIPING	N/A	VENDOR QUOTE	-	•
INSULATION	N/A	VENDOR QUOTE	-	
PAINTING	0.01 X B	(EPA, 1990d)	\$0.00	included in quote
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$0.00	
SITE PREPARATION	N/A		-	
BUILDINGS	N/A	-	-	
TOTAL DC	1.27 X B	-	\$3,912,583.72	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$0.00	included in quote
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$0.00	included in quote
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$0.00	included in quote
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$391,258.37	final quote not in use 10%
START-UP	0.02 X B	(EPA, 1990d)	\$0.00	included in quote
PERFORMANCE TESTING	0.01 X B	(EPA,1990d)	\$0.00	included in quote
TOTAL IDC	0.53 X B		\$391,258.37	
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$4,303,842.09	

Workbook: Orange SCR BACT r2 Worksheet: SCR-BACT for 6 PPM - NEPCO

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA

CHEMICAL ENGINEERING PLANT COST INDEX

1990 1993 Jun-99 357.6 359.2

392.3

92.3 estimate

CAPITAL RECOVERY FACTOR (CRF) @F=10%,n=20:

0.1175

cost of money 10%

(EPA, 1993b)

(EPA, 1993b)

(EPA, 1993b)

0.1 20

1999 DIRECT ANNUAL COSTS, \$/YR FACTOR REFERENCE COSTS, \$/YR OPERATING LABOR \$27.82/HR @ 1HR/12HR(COT & EPA 1993b) \$20,309 SUPERVISORY LABOR 15 % OF OPERATING L (EPA, 1993b) \$3,046 MAINTENANCE LABOR AND MATERIALS \$137,392 1,250 (MW) + 25,800 (EPA, 1993b) CATALYST REPLACEMENT (CR) N/A Vendor Estimate \$176,000 CATALYST DISPOSAL \$15/CF (EPA, 1993b) \$21,600 AQUEOUS AMMONIA \$378/TON (EPA, 1993b) \$621,858

N/A

N/A

0.50%

Twice the amount for 15 ppm Twice the amount for 15 ppm Twice the amount for 15 ppm

PERFORMANCE LOSS BLOWER PRODUCTION LOSS

DILUTION SYSTEM

ELECTRICITY

N/A (EPA,1993b) N/A (EPA,1993b)

INDIRECT ANNUAL COSTS, \$/YR

OVERHEAD INSURANCE & ADMINISTRATION CAPITAL RECOVERY

60% OF ALL LABOR M (EPA, 1990d) 2.5%OF TCI (EPA, 1990d) CRF X (TCI - CR) N/A

A,1990d) \$96,448 A,1990d) \$107,596 N/A \$470,328 \$674,372

TOTAL ANNUAL COSTS, \$/YR \$1,673,898

TOTAL NET NOx REDUCTIONS (TPY)

Oil Firing Gas Firing Total 0 238 **238**

\$19,320

\$999,526

INCREMENTAL COST EFFECTIVENESS, \$/TON

\$7,033

Workbook: Orange SCR BACT r2 Worksheet: SCR-BACT for 6 PPM - NEPCO

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor.

SCR-BACT to 3.5 ppm, Quote F

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM	COST FACTOR	REFERENCE	COST (\$1999)	
DIRECT COSTS (DC)				
PURCHASED EQUIPMENT COSTS (PEC)	AC FOTIMATED A	VENDOR OHOTE	*4 540 000 00	
SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A			
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	\$75,500.00	
STATE SALES TAXES	0.06 X A	State Sales Tax	\$90,600.00 \$0.00	included .
FREIGHT	0.05 X A	(EPA, 1990d)		included
PEC SUBTOTAL	1.16 X A = B		\$1,676,100.00	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	. 0.08 X B	(ULRICH, 1984)	\$134,088.00	
LABOR	. 0.14 X B	(EPA, 1990d)	\$234,654.00	
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$67,044.00	
PIPING	N/A	VENDOR QUOTE	-	
INSULATION	, N/A	VENDOR QUOTE	•	
PAINTING	0.01 X B	(EPA, 1990d)	\$16,761.00	•
DIC SUBTOTAL	0.27 X B	(EPÄ, 1990d)	\$452,547.00	
SITE PREPARATION	N/A		-	
BUILDINGS	N/A	-	-	
TOTAL DC	1.27 X B	-	\$2,128,647.00	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$167,610.00	
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$83,805,00	
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$167,610.00	
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$50,283,00	
START-UP	0.02 X B	(EPA, 1990d)	\$28,522.00	5 days of support included in quote
PERFORMANCE TESTING	0.01 X B	(EPA, 1990d)	\$16,761.00	o days or support management and
	0.0	(=, -, ,	• 10(1222	
TOTAL IDC	0.53 X B	-	\$514,591.00	
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$2,643,238.00	

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 3.5 PPM - FWEC

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By: OFS No.:

File: COTBACT.XLS Sheet:; SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA							
	CHEMICAL	ENGINEERING PLANT COST INDEX					
	1990	357.6					
	1993	359.2					
	Jun-99	392.3					

Jun-99 392.3 estimate

CAPITAL RECOVERY FACTOR (CRF) @j=10%,n=20: 0.1175 cost of money 10%

0.1

1999 20 DIRECT ANNUAL COSTS, \$/YR FACTOR REFERENCE COSTS, \$/YR OPERATING LABOR \$27.82/HR @ 1HR/12HR(COT & EPA 1993b) \$20,309 SUPERVISORY LABOR 15 % OF OPERATING L (EPA, 1993b) \$3,046 MAINTENANCE LABOR AND MATERIALS 1,250 (MW) + 25,800 (EPA, 1993b) \$137,392 CATALYST REPLACEMENT (CR) Vendor Estimate \$189,200 Scaled CATALYST DISPOSAL \$15/CF (EPA 1993b) \$23,220 Scaled \$378/ton \$668,498 AQUEOUS AMMONIA (EPA, 1993b) Scaled DILUTION SYSTEM N/A (EPA, 1993b) ELECTRICITY N/A (EPA, 1993b) PERFORMANCE LOSS (EPA, 1993b) \$19,320 0.50% BLOWER N/A (EPA, 1993b) PRODUCTION LOSS N/A (EPA, 1993b)

\$1,060,985

INDIRECT ANNUAL COSTS, \$/YR OVERHEAD

 OVERHEAD
 60% OF ALL LABOR M
 (EPA, 1990d)
 \$96,448

 INSURANCE & ADMINISTRATION
 2.5% OF TCI
 (EPA, 1990d)
 \$66,081

 CAPITAL RECOVERY
 CRF X (TCI - CR)
 N/A
 \$272,634

 \$435,163

TOTAL ANNUAL COSTS, \$/YR \$1,496,148

TOTAL NET NOx REDUCTIONS (TPY)

Oil Finng Gas Firing Total 0 269 **269**

INCREMENTAL COST EFFECTIVENESS, \$/TON

\$5,562

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 3.5 PPM - FWEC

Appendix 10.1.5 PSD Appendix G Attachment 4

FOSTER WHEELER ENVIRONMENTAL CORPORATION EXCEL 5.0 CALCULATION SHEET

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor.

LM 6000 PD Retrofit

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM	COST FACTOR	REFERENCE	COST (\$1999)		
DIRECT COSTS (DC)					
PURCHASED EQUIPMENT COSTS (PEC) Engine Upgrade	AS ESTIMATED, A	Engine Exchange	\$5,600,000.00		
Fuel System Mods	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	SSEP estimate	\$350,000.00		
PKG MODS & INSTRUMENTATION	0.05 X A	S&S Quote	\$1,200,000.00		
STATE SALES TAXES	0.06 X A	State Sales Tax	\$336,000.00		
FREIGHT	0.05 X A	(EPA, 1990d)	\$280,000.00		
PEC SUBTOTAL	1.16 X A = B		\$7,766,000.00		
DIRECT INSTALLATION COSTS (DIC)					
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	\$0.00	included already	
LABOR	0.14 X B	(EPA, 1990d)	\$0.00	inc	
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$0.00	inc	
PIPING	N/A	VENDOR QUOTE	-		
INSULATION	N/A	VENDOR QUOTE	-		
PAINTING	0.01 X B	(EPA, 1990d)	\$0.00		
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$0.00		
SITE PREPARATION	N/A	-	-		
BUILDINGS	N/A	•	-		
TOTAL DC	. 1.27 X B	-	\$7,766,000.00		,
INDIRECT COSTS (IDC)					
ENGINEERING	0.10 X B	(EPA, 1990d)	\$250,000.00	Optimizer	
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$0.00		
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$0.00		
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$232,980.00		
START-UP	0.02 X B	(EPA, 1990d)	\$155,320.00		
PERFORMANCE TESTING	0.01 X B	(EPA, 1990d)	\$77,660.00	•	
TOTAL IDC	0.53 X B	-	\$715,960.00		
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$8,481,960.00		

Workbook: Orange LM6000PD BACT

Worksheet: PD Retrofit BACT

Appendix 10.1.5 PSD Appendix G

Page 1 of 2

By: RB Hook Date: 3/31/99 Ckd. By: Date:

Rev. By:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

No incremental cost

\$11,971

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA

CHEMICAL ENGINEERING PLANT COST INDEX

1990 1993 357.6 359.2 392.3

Jun-99 392.3

estimate 0.1175 cost

CAPITAL RECOVERY FACTOR (CRF) @j=10%,n=20:

0.1175 cost of money 10%

1999 20 DIRECT ANNUAL COSTS, \$/YR REFERENCE COSTS, \$/YR FACTOR \$27.82/HR @ 1HR/12HR(COT & EPA 1993b) OPERATING LABOR \$0 SUPERVISORY LABOR 15 % OF OPERATING L (EPA, 1993b) \$0 MAINTENANCE LABOR AND MATERIALS 1,250 (MW) + 25,800 (EPA, 1993b) \$0 CATALYST REPLACEMENT (CR) Vendor Estimate \$0 CATALYST DISPOSAL \$15/CF (EPA, 1993b) \$0 AQUEOUS AMMONIA \$360/TON (EPA, 1993b) \$0

DILUTION SYSTEM (EPA, 1993b) N/A ELECTRICITY (EPA, 1993b) N/A PERFORMANCE LOSS 0.50% (EPA, 1993b) BLOWER N/A (EPA, 1993b) PRODUCTION LOSS N/A (EPA, 1993b) \$288,000 \$288,000

INDIRECT ANNUAL COSTS, \$/YR

 OVERHEAD
 60% OF ALL LABOR M
 (EPA, 1990d)
 \$0

 INSURANCE & ADMINISTRATION
 2.5% OF TCI
 (EPA, 1990d)
 \$212,049

 CAPITAL RECOVERY
 CRF X (TCI - CR)
 N/A
 \$996,288

 \$1,208,337

TOTAL ANNUAL COSTS, \$/YR \$1,496,337

TOTAL NET NOx REDUCTIONS (TPY)

 Oil Firing
 0

 Gas Firing
 125

 Total
 125

INCREMENTAL COST EFFECTIVENESS, \$/TON

Workbook: Orange LM6000PD BACT Worksheet: PD Retrofit BACT

Appendix 10.1.5 PSD Appendix G



GE Industrial AeroDerivative
Gas Turbines

GE Power Systems.
One Neumann Way, S158
Cincinnati, OH. 45215-1988
Phone: (513) 552-5925
Fax: (513) 552-5059

June 25, 1999

Mr. Wade Smith
Orange Cogeneration Limited Partnership
Lakeland, FL

Dear Mr. Smith

The purpose of this letter is to clarify GE's position with respect to contractual agreement and emissions permit levels at the Orange Cogeneration facility at Bartow.

According to the settlement agreement executed between GE and OCLP on 3-11-97 GE is contractually obligated to "correct the engines" or "implement alternate technology" to meet air permit requirements of 15ppmvd (15% O2). As you know, GE has been working in good faith to honor this obligation.

However, during two meetings that GE has participated in with CSW and the Florida Department of Environmental Protection (FL-DEP), the FL-DEP has suggested that, in the event SCRs are required to meet permit requirements that the state reserves the right to impose even tighter restrictions on NOx concentrations on the Bartow plant.

GE views such tighter restrictions as requirements above and beyond the contractual agreement between OCLP and GE. As such, we are requesting that any SCR system suppliers provide separate quotes for incremental costs which reflect exhaust treatment beyond GE's 15 ppm obligation. Before proceeding with any system modifications, GE and OCLP will need a formal agreement whereby OCLP clearly has responsibility for incremental costs stemming from changes in permit level which drive exhaust emissions permit levels to less than 15 ppm.

Regards,

RB Hook

Mgr, LM6000 Technical Programs

cc: B. Kaye, R. Felini

MEMORANDUM

SUBJECT: New Source Review Program

FROM: John S. Seitz, Director

Office of Air Quality Planning and Standards (MD-10)

TO: See Addressees

The purpose of this memorandum is to alert you to some concerns we have regarding part of the New Source Review (NSR) program, i.e., the Prevention of Significant Deterioration (PSD) program, and to ask your assistance in determining the true extent of any problem. The concern focuses on whether or not the PSD program is being implemented appropriately in all areas of the country. The PSD program is an important part of our air quality management program, and is one on which we plan to rely heavily as we move toward implementing the new ozone standard in transitional areas. We will need your support in gathering additional data that will allow us to better assess this situation. If this further study confirms that the PSD program is not being implemented appropriately, corrective action will be required.

Our concerns grow out of conversations with personnel from the Office of Enforcement and Compliance Assurance (OECA), the letter to Administrator Carol Browner from Peter Hamlin, Chief of the Iowa Air Quality Bureau, and a review of information submitted to my staff by the National Park Service (NPS). Based on these, I am concerned that a number of problems related to program implementation may exist, as we discussed at our meeting in Las Vegas. Given the importance of the PSD program to managing our national air quality program, it is critical for us to take steps to gather additional information on this issue. In addition, I believe that there are several steps we should take to better monitor the PSD program as we implement it over the next year, and to address the kinds of issues that have been raised.

First, I am asking each Regional Office to review and comment on the specific permits described in the NPS memorandum which was sent to your staff in early January (see attached). By May 7, 1999, I ask that you respond with a memorandum describing whether you agree or disagree with the conclusions reached in the NPS memorandum as it relates to the permits issued by States in your Region. If problems are identified, your memorandum should also recommend any specific actions that you believe should be taken.

USEPA:OAQPS:ITPID:IIG:KBlanchard:ybthorpe:x5503:NCMU:MD-12:04/02/99

FILENAME: A:\prgrev.wpd

FILE: REG 149 A

Coordinated with: Region VII, OECA (C. Holmes), OGC (did not respond)

Second, I ask that you obtain for review the preliminary and final determinations for all PSD permits issued by the States in your Region or those currently undergoing review within the Region since January 1, 1997. We are aware that this request may require obtaining a copy of the documents from a State or local agency in those cases where copies have not already been provided to the Region. Given the concerns expressed about the resources such a review would entail, we are willing to provide on-site assistance to each Region to assist in the compilation of these data. In order to schedule such assistance, you should have these determinations available for review by June 1, 1999. Once the determinations are collected, we intend to extract the following information:

- 1. facility name, permit ID, source type, location and Standard Industrial Classification (SIC) code(s);
- 2. project description (boiler, dryer, etc.), emission unit number, operating limit/units, size or capacity/units, fuel type;
- 3. the control technology selected as Best Available Control Technology (BACT);
- 4. whether the cost analysis followed EPA guidance and whether the documentation was adequate;
- 5. the pollutants emitted;
- 6. the permitted emission rates;
- 7. the distance to the Class I area and whether the Federal Land Manager (FLM) was notified appropriately;
- 8. whether the Regional Office commented on the permit and, if so, whether the permitting authority incorporated the Regional Office comments;
- 9. whether the BACT determination is more stringent than the applicable New Source Performance Standards (NSPS) and, if so, the number of tons per year of emissions that were prevented;
- 10. where there was no applicable NSPS, whether BACT was more stringent than the applicable State Implementation Plan (SIP) limit; the number of tons per year of emissions which was prevented by applying BACT; [This step will require that a copy of each State/local SIP rule be available.]
- 11. the monitoring, record keeping and reporting requirements that were applied, such as continuous emission monitoring, averaging times, etc.

If you do not require assistance in developing this information, we will provide you with a common format spreadsheet on which the data should be entered. In those cases where we assist in the compilation, we will provide you with a copy of your Region's data for your review.

Though the PSD program is the primary focus of this effort, we are also interested in gathering some data on the nonattainment NSR program. Due to the resource constraints we all have, I recommend we do this prospectively by conducting a closer review of NSR permit applications, preliminary determinations, final determinations and tracking the permits that finally are issued for applications received since January 1, 1999. For nonattainment NSR permits, the information needs are somewhat different. Since the Class I area and FLM status are not applicable, and the Lowest Achievable Emission Rate (LAER) is needed in lieu of BACT for the nonattainment NSR permits please substitute the following information for items 3, 4, 7, 9, and 10 above:

- 3a. the emission limit and control technology selected as LAER;
- 4a. whether cost (or other factors) was an issue in determining what technology was selected as LAER;
- 7a. whether the offsets were appropriately obtained and documented;
- 9a. whether the LAER determination was more stringent than the applicable NSPS level of control and, if so, the estimate of the additional tons of emissions reductions that were obtained;
- 10a. where there is no applicable NSPS, whether LAER was more stringent than the applicable SIP limit; if so, the number of additional tons per year prevented from entering the environment.

In addition to the information gathering steps described above, some additional work will be necessary including activities that could require reprogramming of resources. First, for the FY 2000-01 program guidance, we are requiring more reporting from the Regional Offices for PSD and nonattainment NSR permits which will be reviewed during the upcoming years. Second, we are coordinating closely with OECA in their enforcement initiative relating to the PSD and nonattainment NSR programs. Finally, we are also considering re-instituting the annual conference among Headquarters, Regional Office, and State and local agency staff for training purposes, and to help promote national consistency in matters pertaining to these programs.

I expect to be communicating with our colleagues from the State and local agencies about this matter in the near future. In developing this plan, we have worked closely with Region VII, the sub-lead region for permits. I look forward to hearing from you, and urge your cooperation in making this a high priority. If you have any questions, please contact Karen Blanchard at (919) 541-5503.

Attachment

Addressees:

Director, Office of Ecosystem Protection, Region I

Director, Division of Environmental Planning and Protection, Region II

Acting Director, Air Protection Division, Region III

Director, Air, Pesticides and Toxics Management Division, Region IV

Director, Air and Radiation Division, Region V

Director, Multimedia Planning and Permitting Division, Region VI

Director, Air, RCRA and Toxics Division, Region VII

Assistant Regional Administrator, Office of Pollution Prevention, State and Tribal Programs, Region VIII

Director, Air Division, Region IX

Director, Office of Air Quality, Region X

bcc: NSR Team

RO NSR Contacts

Excerpt from NPS Memo: December 1998, Don Shepherd to John Notar

<u>Orange Cogeneration—Bartow (CHAS/FL)</u>-- Orange Cogen (Orange) received a permit from FDEP for installation of a two new 41 MW Combined Cycle Turbines (CCT) with NO_x to be controlled to 15 ppm by Dry Lox-NO_x (DLN) combustors. However, Orange has experienced difficulties in meeting that limit and has requested until 1/1/2000 to do so.

Although FDEP does not have the authority to revisit BACT in this case, it is my understanding that EPA policy demands that any revision and/or extension of a PSD permit must consider possible changes in BACT subsequent to the issuance of the original permit. In this case, Orange should be required to perform a new BACT analysis, with particular attention to the feasibility of installing Selective Catalytic Reduction (SCR) on this CCT. FDEP implied that EPA intervention would be given serious consideration.

DRAFT

July 15, 1999

CERTIFIED MAIL - Return Receipt Requested

Mr. Wade Smith, General Manager Orange Cogeneration Limited Partnership 1125 US Highway 98 South, Suite #100 Lakeland, FL 33801

Re: Orange Cogeneration Facility, ARMS ID No. 1050231 Re-Evaluation of Best Available Control Technology (BACT) for NOx

Dear Mr. Smith:

On June 28, 1999, the Department received your request for a determination on the economic feasibility of installing Selective Catalytic Reduction (SCR) on the existing General Electric Model No. LM6000 combined cycle combustion turbines. Summarizing, your letter requested the Department's determination based on the following information:

- The existing units are not able to achieve the BACT emissions standard of 15 ppmvd @ 15% oxygen with dry low-NOx (DLN) technology alone.
- NOx control by XONONTM technology was rejected as not commercially available. (The Department confirmed that General Electric and Catalytica have no plans for applying the XONONTM controls to the line of aeroderivative gas turbines. However, plans are under way to evaluate this technology on GE Frame 7EA and 7FA units.)
- SCONOxTM technology was rejected as not being demonstrated for this size gas turbine and having limited commercial availability.
- Replacement of the LM6000 units with derated LM6000PD units would not be economically feasible.
- Economic analyses were presented based on three different levels of NOx control with SCR: 3.5, 6.0, and 15.0 ppmvd @ 15% oxygen.

Based on the information provided, the Department does not believe the cost effectiveness for SCR to be prohibitive to the applicant considering that the manufacturer (General Electric) has agreed to pay control costs to achieve the original guarantee of 15 ppmvd @ 15% oxygen. The Department is also aware that other companies have found SCR to be cost-effective and installed this technology on LM6000 units¹. Further, the

Mr. Wade Smith Page 2 July 15, 1999

Department believes a NOx limit of 9 ppmvd @ 15% oxygen is representative of the higher acceptable range for current BACT limits for combined cycle gas turbines.

Therefore, the Department recommends that you proceed with the bid process for the installation of an appropriately designed SCR control system with ammonia injection. The design must include provisions to periodically monitor and maintain ammonia slip below 5 ppm. A modification of the current PSD construction permit to will be required to specify the new control system, establish new NOx emissions standards, and provide adequate testing and monitoring requirements. Because this modification would reduce maximum permitted NOx emissions, additional modeling should not be necessary. The Department would consider a request for a limited extension of the current permit if accompanied by a formal compliance plan with a proposed construction schedule to complete installation of the additional control equipment. The Department may revise this determination based on any additional information provided, such as the ongoing vendor inspection reports regarding the HRSG capabilities for incorporating SCR.

If you have any additional questions, please contact me at 850/488-0114. Sincerely,

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

cc: Gregg Worley, EPA
 Don Shepherd, NPS
 C. St. Cin, Foster Wheeler Environmental Corporation
 R.B. Hook, GE AeroDerivative
 D. Oehring – CSWE Operations Orange Cogeneration

Texas Permit No. 37984 for Lubbock Power & Light, two LM6000PC units with a NOx limit of 9 ppmvd @ 15% oxygen controlled with SCR, and the following article from the November 1998 issue of Power Engineering: "LP&L Begins the LM6000 Sprint"

INTEROFFICE MEMORANDUM

Date:

15-Jul-1999 02:20pm

From:

Hook, Rick

GEAE)

Rick.Hook@ae.ge.com

Dept: Tel No:

To:

'Linero A@DEP.STATE.FL.US'

CC:

Leonard, Gary (GEAE)

CC:

'Wade Smith, CSW'

(Linero_A@dep.state.fl.us)
(Gary.Leonard@ae.ge.com)

(WSmith@csw.com)

Subject: Orange Cogeneration

Dear Al -

Gary Leonard mentioned the conversation that you and he had yesterday regarding the permit situation at Orange Cogeneration. Over the last couple of months, we have made some measurements at Orange Cogen with a simulated Sprint on that engine and have been encouraged by the emissions/ power improvement that we attained with this rather crude simulation.

Based on this, we believe it may be possible to configure a modified Sprint system to achieve the 15 ppm site permit and are working timing / cost estimates to demonstrate such a system. I'd anticipate a technology demo in 1st half of 2000.

This idea is rather new and I've discussed it briefly with Wade Smith of CSW. He is open to exploring this option.

I would like to discuss this and its potential for impacting any near term decisions regarding the OrangeCo permit with you. Please let me know when is convenient for you.

Best regards,

RB (Rick) Hook LM6000 Technical Programs Mgr. GE Industrial Aeroderivative Gas Turbines (513) 552-5925

Permit # Permi	1 3	Location	J		Numk	per	MW
_			(City, County)		of Un	nits	Unit
@15%O2;Method			(
	•		F7FA				
36889 04/01/98	Houston Industries Power	Orange, Orange	F6B	2	4 4	6;SCR+CO	Cat
	Generating, Inc.						
37227 894 In Review	Air Liquide America Corp	La Porte, Harris	F7EA	3	95	5-9;SCR	
N005							
37283 915 In Review	Calpine Corp.	Pasadena, Harris	W501F	1	160	12;SCR	
N015							
37302 895 08/17/98	Edinburg Energy	Edinburg, Hidalgo	ABB GT-24	4	180	15;D	
37391 897 07/29/98	Tenaska Frontier Partners	Shiro, Grimes	F7FA	3	170	15;D	
37613 900 07/31/98	Frontera Generating L.P.	Mission, Hidalgo	F7FA	2	165	15:D	
735B 06/26/98	BASF	Freeport, Brazoria	F7EA	1	83	15:D	
(Amended existing boi	ler permit to add cogen)						
37894 In Review	Lubbock Power & Light	Lubbock, Lubbock	LM6000PC	2	42	9;SCR	
38183 907 In Review	City Public Service	Elmendorf, Bexar	F7FA	2	170	9;SCR	
38191 906 In Review	Venus Energy Ltd.	Midlothian, Ellis	ABB GT24 OTC	4	175	5;SCR	
38284 909 In Review	Calpine Magic Valley	Edinburg, Hidalgo	W501G	2	230	12;SCR	
38326 916 In Review	Panda Paris, LLC	Paris, Lamar	F7FA	4	170	15;D	
38484 911 In Review	Air Products, Inc	La Porte, Harris	W501F	1	168	7:SCR	
N013				•			
38599 914 In Review	Duke Energy Hidalgo, LP	Edinburg, Hidalgo .	F7FA	2	170	15;D	
38659 In Review	Panda Guadalupe Power	New Braunfels, Guadalupe	F7FA/W501F	4	170/160	15;D	



GE Power Systems. One Neumann Way, S158 Cincinnati, OH 45215-1988 Phone: (513) 552-5925 Fax: (513) 552-5059

October 7, 1999

Orange Cogeneration Limited Partnership 1125 US 98 South, Suite 100 Lakeland, FL 33801

Attn: Wade Smith

I have been intimately involved in the development of the Dry Low Emissions (DLE) Combustion Technology for the GE LM engines in the past 9 years. I have published 3 peer-reviewed papers describing this technology and have about 15 patents.

I have reviewed the attached technical approach of utilizing inlet water injection (SPRINT) as well as the limited injection of water or steam in the pilot dome to achieve lower NOx emissions. This is a logical approach in that the flame temperature is reduced by both of these approaches. It is well known in the industry that reduction of the combustor flame temperature will lead to reduced NOX emissions. The concept will need to be developed beyond a simple demonstration to ensure that a sufficient margin exists between the demonstrated capability and emissions regulations. Combustor dynamics and operating maps will have to be generated and validated.

The plan calls for demonstration of NOx reduction by injection of water in the pilot dome using a well-developed and characterized single cup/module test rig. Once an acceptable NOx reduction has been demonstrated the decision to proceed with an engine test can be taken. The engine test will help generate operating parameters, and maps for the enhancement of the DLE technology.

In summary, the approach to NOx reduction is practical. The development program, laid out by the team, is logical and has a reasonable potential for success.

Sincerely,

Narendra Joshi, PhD.

Product Development Program Mgr

GE Industrial Aeroderivative Gas Turbines



GE Industrial Aerodervative Gas Turbines

Orange Cogeneration 15 PPM Emissions Attainment Program

RB Hook GE-IAD Technical Program Mgr. Eric Kress GE-IAD Systems Engineer

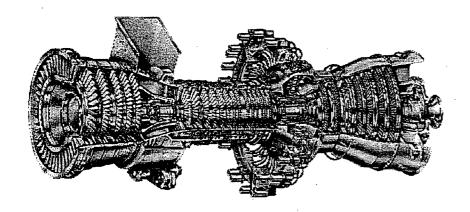
9/2/99

Agenda

- Review of LM6000 System.
- Results of SPRINT™ Feasibility Testing at Bartow
- Selective Water Injection Concept Damp Low Emissions
- Program Plan
- Conclusion

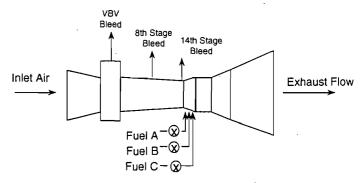
GE Proprietary Information

LM6000 Dry Low Emissions Systems



GE - IAD Approach to Dry Low Emissions

- Combination of fuel and air staging: Required for premix operation from start to full power
- Triple annular combustor: Compact, minimal cooling air required, and facilitates fuel staging

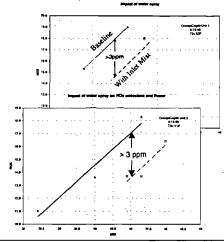


Sprint Testing Conducted on Bartow Units

Inlet water injection testing

- 3ppm reduction @ constant power
- 15.5 ppm @ Orangeco guarantee level
- 0.9-1.3 MW power increase @ constant NOx

Water wash injection system known to produce nonuniform spray



SPRINT™ test reduced NOx 3ppm on Orange Cogen engines -Demonstrated 15 PPM / 16 PPM at rated power

GE Proprietary Information

GE Aircraft Engines

GE Aircraft Engines

SPRINT™ Testing - Conclusions

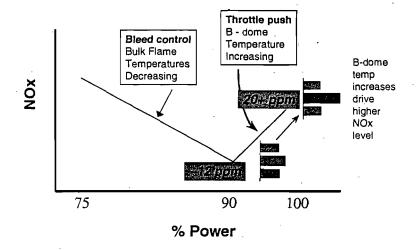
- Testing nearly achieved 15 ppm at rated power
- Improvements can be anticipated with production SPRINT[™] system
 - Spray distribution
 - Atomization
- · Margin for deterioration an issue

Job ID/date/6

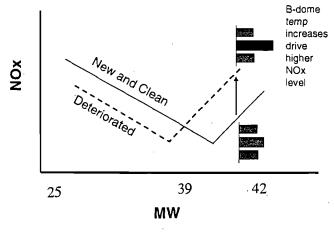
GE Proprietary Information

GE Aircraft Engines

NOx Characteristics of Triple Annular Combustor



Deterioration and NOx emissions



GE Proprietary information

GE Aircraft Engines

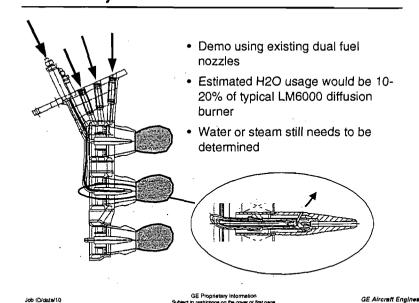
Selective Injection - Strategy & Objectives

- "Manage" B dome temperatures
- Achieve entitlement level on NOx
- Offset deterioration

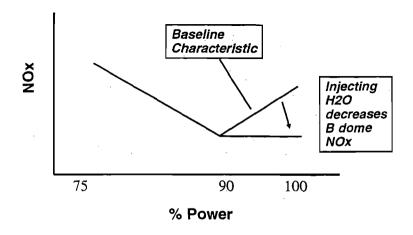
Job ID/date/9

GE Proprietary Information Subject to restrictions on the cover or first pa GE Aircraft Engines

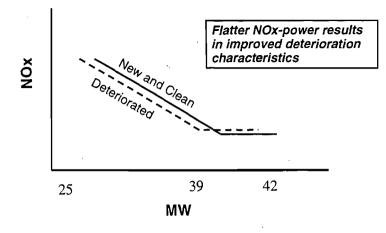
Selective Injection



NOx Characteristics of Triple Annular Combustor with selective H₂O injection



Deterioration and NOx with Selective H₂O Injection

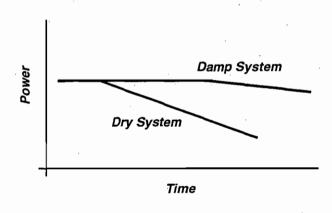


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GE Proprietary Information ject to restrictions on the cover or first page GE Aircraft Engines

E Aircraft Engines

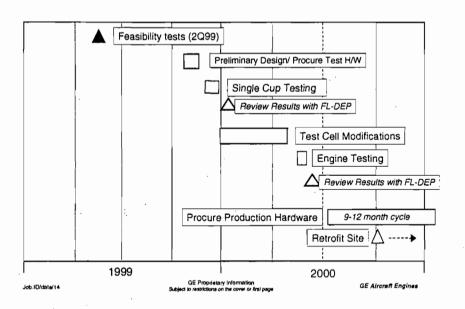
Deterioration of Power vs Time



lob ID/dete/13

GE Proprietary Information subject to restrictions on the cover or first pag GE Aircraft Engines

Water Injection Program Schedule



Summary

SPRINT Feasibility demonstrated near attainment of permit level 15-16 PPM Demonstrated

Selective H2O injection will

· further reduce NOx

Potential for 12-13 ppm

Need engine test to confirm

Offset deterioration

Combination of these two concepts will achieve emissions objectives for Bartow Plant

Proposal

- GE proposes to invest in damp technology to meet permit limits at Bartow
 - Avoids SCR solution and increased operating costs for CSW
 - Avoids issues of ammonia slip at site
 - Leads to better control technology in aeroderivative gas turbine
- · Confidence that this will lead to a successful solution
- · Will involve FL- DEP in technical status reviews
- · At time of engine test a go-no go determination will be made
 - If required, we are poised to initiate PO for SCR retrofit at that time



Department of Environmental Protection

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

David B. Struhs Secretary

March 3, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: Permit Modification No. 1050231-001-AV and 1050231-004-AV Orange Cogeneration Facility, Extension of NO_X Compliance Date

Dear Mr. Smith:

The Department has reviewed the modification requested in your letter dated September 25, 1998. The referenced permit is hereby modified as follows:

SPECIFIC CONDITION A.6

The compliance date is hereby changed to <u>January 1, 2000</u> in the table for NOx for this specific condition.

APPENDIX S, TABLE 1-1

The compliance date is hereby changed to January 1, 2000 in the table for NOx.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit revision is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit revision) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Sincerely,

Howard L. Rhodes, Director

Division of Air Resources

Management

HLR/aal

Mr. Allan Wade Smith Page Two March 3, 1999

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 3-5-99 to the person(s) listed:

Mr. Allan Wade Smith* Bill Thomas, SWD

Clerk Stamp

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

Clerk)

(Date)

Florida Department of **Environmental Protection**

TO:

Howard L. Rhodes

THRU:

Clair Fancy

Al Linero 💯 🕊

FROM:

Susan DeVore-Fillmore

DATE:

February 18, 1999

SUBJECT: Orange Cogeneration Facility, Extension of NOx Compliance Date,

Permit Modification Nos. 1050231-001-AV and 1050231-004-AV

Attached for approval and signature is Permit Modification Nos. 1050231-001-AV and 1050231-004-AV for extension of the NOx compliance date. The construction permit (PSD permit revision) number 1050231-003-AC / PSD-FL-206C for the Orange Cogen combined cycle combustion turbine allowed an additional year for their General Electric LM6000PB with dry low NOx technology to maintain a consistent level of NOx at 15 ppmvd @ 15% O₂. This Title V Permit Revision updates the NOx compliance date.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boiler. The applicable nitrogen oxides (NOx) emission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant requested an extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This allows General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida

I recommend your approval and signature.

Attachments

/sdf

Z 333 612 577

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provi

Service for Intern	ational Maria
Sent to Oliva	ational Mail (See reverse)
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- 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.

 Altach this form to the front of the mailpiece, or on the back if space does not permit.
- permit.

 White "Return Receipt Requested" on the mailpiece below the article number.
- ■The Return Receipt will show to whom the article was delivered and the date

I also wish to receive the following services (for an extra fee):

- 1. Addressee's Address
- 2.

 Restricted Delivery

Consult postmaster for fee.

delivered.	
3. Article Addressed to: Wade Snith	4a. Article
M. allan wide orner	123
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	☐ Expres
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Article Number 2333	612	577
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- Certified ☐ Insured

Thank you for using Return Receipt Service.

- Receipt for Merchandise

 COD
- Delivery

2.28.98

see's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)

PS Form 3811, December 1994

102595-97-B-0179 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?



Department of Environmental Protection

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

Virginia B. Wetherell Secretary

December 18, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith, General Manager Orange Cogeneration LP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: DEP File No. 1050231-003-AC (PSD-FL-206C)
Combined Cycle Cogeneration Plant
Dry Low NO_X Technology Compliance Date Extension

The Department has reviewed the modification requested in your letter dated September 25, 1998 to extend the date of compliance with the nitrogen oxide emission limit at Orange Cogeneration's combined cycle unit located in Bartow, Polka County. The referenced permit is hereby modified as follows:

SPECIFIC CONDITION 10

Prior to January 1, $\frac{1999}{2000}$, the maximum NO_X concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen (25 ppinvd @ 15% O₂), as determined by the procedures in Specific Conditions Nos. 16, 17 and 18.

SPECIFIC CONDITION 11

After December 31, 1998 1999, the maximum NO_X concentration, 1-hour average, from each CT/HSRG unit, shall not exceed 15 ppmvd @ 15% O_2 , as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_X emission standard. The Department may revise the limit based on the capabilities of alternative equipment installed.

SPECIFIC CONDITION 15

Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review by January 1, 1999 2000. Until new curves are approved by the Department or the combustion turbines meet the NOx emission standard of 15 ppmvd @ 15% (whichever occurs first), the stack, operator, and emission data for the proposed combustion turbines in Table 2-4 (October 28, 1993) will be used. The data will be used to determine compliance with the maximum allowable emission rates of the regulated air pollutants at different air inlet temperatures for these turbines.

Orange Cogeneration LP, Inc. DEP File No. 1050231-003-AC (PSD-FL-206C) Page 2 of 2

TABLE 1

The compliance date is hereby changed to $\frac{1/1/00}{2}$ as is the date in Note (d).

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Howard L. Rhodes, Director Division of Air Resources

Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT MODIFICATION (including the FINAL permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12-22-96 to the person(s) listed:

Allan Wade Smith, Orange Cogen LP *
Gregg Worley, EPA
John Bunyak, NPS
Bill Thomas, DEP SWD
Joe King, Polk County

Clerk Stamp

FILING AND ACKNOWLEDGMENT

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

(Clerk)

(Date)

FINAL DETERMINATION

DEP File No. 1050231-003-AC (PSD-FL-206C)

Orange Cogeneration L.P., Inc. Bartow, Polk County

An Intent to Issue an air construction permit modification for the Orange Cogeneration L.P., Inc. combined cycle cogeneration plant located at 1901 Clear Springs Mine Road, Bartow, Polk County, Florida was distributed on November 5, 1998.

The application was for an extension until January 1, 2000 to reduce nitrogen oxides emissions from 25 to 15 parts per million by volume (dry @15% O_2) using Dry Low NO_X technology (DLN). This will allow General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

The Public Notice of Intent to Issue Air Construction Permit Modification was published in The Polk County Democrat on November 9, 1998. Comments were received only from the U.S. Fish and Wildlife Service, Air Quality Branch. The main comment is as follows:

"Although FDEP does not have the authority to revisit BACT in this case, it is (the Park Service's) understanding that any revision and/or extension of a PSD permit must consider possible changes in BACT subsequent to the issuance of the original permit. In this case, Orange should be required to perform a new BACT analysis, with particular attention to the feasibility of installing Selective Catalytic Reduction (SCR) on this CCT."

Over the next year, General Electric and Orange Cogeneration will develop a number of options to meet the lower emission limit by DLN. Department approval is already required for any air pollution control equipment needed to achieve the emission standards. The Department will revise the permit to indicate that emission limits may be adjusted to reflect the reduction achievable by the option implemented.

The final action of the Department is to issue the permit modification as noticed, but with language indicating that the limits may be revised in accordance with the final technology chosen.



09:12

U.S.FISH&WILDLIFE SERVICE AIR QUALITY BRANCH

P.O. BOX 25287, Denver, CO 80225-0287

FACSIMILE COVER SHEET

Date: December 8, 1998

The State of the S Telephone: (303) 969-2617

Fax: (303) 969-2822

To: Al Linero

Subject: Orange Cogen—Bartow—BACT Analysis

Best Available Control Technology Review

Orange Cogen (Orange) received a permit from FDEP for installation of a two new 41 MW Combined Cycle Turbines (CCT) with NO, to be controlled to 15 ppm by Dry Lox-NO, (DLN) combustors. However, Orange has experienced difficulties in meeting that limit and has requested until 1/1/2000 to do so.

Although FDEP does not have the authority to revisit BACT in this case, it is my understanding that EPA policy demands that any revision and/or extension of a PSD permit must consider possible changes in BACT subsequent to the issuance of the original permit. In this case, Orange should be required to perform a new BACT analysis, with particular attention to the feasibility of installing Selective Catalytic Reduction (SCR) on this CCT.

Number of Pages: 1

(Including this cover sheet)

Florida Department of **Environmental Protection**

TO:

Howard L. Rhodes

THRU:

Clair Fancy

Al Linero

FROM:

Susan DeVore-Fillmore

DATE:

December 17, 1998

SUBJECT: Orange Cogeneration Facility, Extension of NOx Compliance Date,

1050231-003-AC (PSD-FL-206C)

Attached for approval and signature is construction permit number 1050231-003-AC / PSD-FL-206C for extension of NOx compliance date. This construction permit (PSD permit revision) for the Orange Cogen combined cycle combustion turbine allows an additional year for their General Electric LM6000PB with dry low NOx technology to maintain a consistent level of NOx at 15 ppmvd @ 15% O₂.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boiler. The applicable nitrogen oxides (NOx) emission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant has requested an extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This will allow General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

I recommend your approval and signature.

Attachments

/sdf

BUREAU OF AIR REGULATION



November 13, 1998

Mr. Al Linero, P.E. Administrator, New Source Review Section Division of Air Resources Management Florida Department of Environmental Protection Twin Towers Office Building 2600 Blair Stone Road Tallahassee, Florida 32399-2400

RECEIVED

NOV 16 1998

BUREAU OF AIR REGULATION

Re:

Orange Cogeneration Facility

1050231-003-AC, 1050231-004-AV, PSD-FL-206C

Dear Mr. Linero:

I have enclosed an affidavit from The Polk County Democrat showing that the PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION AND TITLE V PERMIT MODIFICATIONS for the Orange Cogeneration Facility located near Bartow, Florida was published in their paper on November 9, 1998.

If you have any questions please call me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

by Orange Cogeneration GP, Inc.

its general partner

Allan Wade Smith

General Manager

CC: 5. Devore-Jellmore - BAR, NSR 5. Sheplak, BAR TV 5WD

AFFIDAVIT OF PUBLICATION

The Polk County Democrat

Published Semi-Weekly Bartow, Polk County, Florida

RIDA DLK
ersigned authority personally appeared, who on oath says that (s)he is asurer of The Polk County Democrat, a newspaper
Polk County, Florida; that the attached copy of advertisement, in the ent to Issue Air Construction and Title V
Court, was published in said newspaper in the issues 1998
d Polk County, Florida, each Monday and Thursday, and has been a matter at the post office in Bartow, in said Polk County, Florida, for a set preceeding the first publication of the attached copy of advertisemer says that he has neither paid nor promised any person, firm, or unt, rebate, commission, or refund for the purpose of securing this blication in said newspaper. Signed May J. Justica. Abscribed before me this 11th day of Nov., 19 98,
Mary G. Frisbie
(Signature of Notary Public) C. Joanne Ethington (Printed or typed name of Notary Public) Notary Public

My Commission Expires:



PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUC-TION AND TITLE V PERMIT MODIFICATIONS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP FIIE Nos.
1050231-003-AC and.
1050231-004-AV,
PSD-FL-206C

Orange Cogeneration Facility Polk County

The Department of Environment al Protection (Department) gives notice of its intent to issue air construction and Title V permit modifications to Orange Cogeneration for its facility located in Bartow, Polk County. This permitting action will also ultimately revise Title V permit number 1050231-001-AV. A Best Available Control Technology (BACT) determination was not required for this modification pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterloration (PSD). The applicant's name and address are: Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100, Lakeland, Florida 33801.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boller. The applicable nitrogen oxides (NOx) emmission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant has requested and extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This will allow General Electric additional time to incorporate design dhanges based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

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

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

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

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

A person whose substantial Interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice under section 120.60(3) of Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to the applicant at the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.269 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 filling of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency affected and each agency's file or identification number, if known: (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and

an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency

or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief, and (f) A demand for relief.

A petition that does not

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

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

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at: Dept. of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida 32301 Telephone: 850/488-0114 Fax: 850/922-6979 Dept. of Environmental Protection Southwest District Office 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100 Fax: 813/744-6084 Polk County Public Works Dept. Natural Resources & Drainage Div. 4189 Ben Durrance Road Bartow, Florida 33830 Telephone: 941/534-7377 Fax: 941/534-7374

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

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Department of Environmental Protection

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

Virginia B. Wetherell Secretary

November 3, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith, General Manager Orange Cogeneration L.P., Inc. 1125 US Hwy. 98 South, Suite 100 Lakeland, Florida 33801

Re: DEP File Nos. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C Bartow Facility Combined Cycle Combustion Turbine Extension of Nitrogen Oxides Emissions Compliance Date

Dear Mr. Smith:

Enclosed is one copy of the Draft Air Construction and Title V Permit Modifications for the combined cycle combustion turbine located in Bartow, Polk County. The Department's Intent to Issue Air Construction and Title V Permit Modifications and the "Public Notice of Intent to Issue Air Construction and Title V Permit Modifications" are also included.

The "Public Notice of Intent To Issue Air Construction and Title V Permit Modifications" must be published in the legal section of a newspaper of general circulation in Polk County. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modifications.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Mr. Linero at 850/921-9523.

Sincerely,

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

CHF/aal

Enclosures

In the Matter of an Application for Permit Modifications by:

Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801 DEP File Nos. 1050231-003-AC 1050231-004-AV PSD-FL-206C Orange Cogeneration Facility Polk County

INTENT TO ISSUE AIR CONSTRUCTION AND TITLE V PERMIT MODIFICATIONS

The Department of Environmental Protection (Department) gives notice of its intent to issue air construction and Title V permit modifications (copy of draft air construction and Title V permit modifications attached) for the proposed action, as detailed in the application specified above, for the reasons stated below. This permitting action will also ultimately modify Title V permit number 1050231-001-AV.

The applicant, Orange Cogeneration L.P., Inc. applied on September 29, 1998, to the Department for air construction and Title V permit modifications to extend the final nitrogen oxides emissions compliance date for its combined cycle combustion turbine located in Bartow, Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above action is not exempt from permitting procedures. The Department has determined that air construction and Title V permit modifications are required to extend the final date until January 1, 2000 to comply with the lower nitrogen oxides emission standard (15 ppm).

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

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

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

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

Orange Cogeneration L.P., Inc.
DEP File No. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C
Page 2 of 3

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

Open State of

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

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

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

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

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

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

Orange Cogeneration L.P., Inc.
DEP File No. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C
Page 3 of 3

the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

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

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

Executed in Tallahassee, Florida.

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

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction and Title V Permit Modifications (including the Public Notice, and Draft permit modifications) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 11-5-96 to the person(s) listed:

Allan Wade Smith, Orange Cogeneration L.P., Inc. *
Doug Neeley, EPA
Gracy Danois, EPA
John Bunyak, NPS
Bill Thomas, SWD

Clerk Stamp

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

(Clerk)

Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION AND TITLE V PERMIT MODIFICATIONS

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File Nos. 1050231-003-AC and 1050231-004-AV, PSD-FL-206C Orange Cogeneration Facility Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue air construction and Title V permit modifications to Orange Cogeneration for its facility located in Bartow, Polk County. This permitting action will also ultimately revise Title V permit number 1050231-001-AV. A Best Available Control Technology (BACT) determination was not required for this modification pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's name and address are: Orange Cogeneration GP, Inc., 1125 US Highway 98 South, Suite 100, Lakeland, Florida 33801.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boiler. The applicable nitrogen oxides (NOx) emission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant has requested an extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This will allow General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

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

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

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

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties

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

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

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

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

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

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

Fax: 850/922-6979

Dept. of Environmental Protection Southwest District Office 3804 Coconut Palm Drive Tampa, Florida 33619-8218 Telephone: 813/744-6100

Fax: 813/744-6084

Polk County Public Works Dept.
Natural Resources & Drainage Div.
4189 Ben Durrance Road
Bartow, Florida 33830
Telephone: 941/534-7377

Fax: 941/534-7374

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

December xx, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: Permit Modification No. 1050231-003-AC (PSD-FL-206C)

Orange Cogeneration Facility, Extension of NOx Compliance Date

Dear Mr. Smith: &

The Department has reviewed the modification requested in your letter dated September 25, 1998. The referenced permit is hereby modified as follows:

SPECIFIC CONDITION 10

Prior to January 1, $\frac{1999}{2000}$, the maximum NOx concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen (25 ppmvd @ 15% O_2), as determined by the procedures in Specific Conditions Nos. 16, 17 and 18.

SPECIFIC CONDITION 11

After December 31, $\frac{1998}{1999}$, the maximum NOx concentration, 1-hour average, from each CT/HSRG unit, shall not exceed 15 ppmvd @ 15% O_2 , as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NOx emission standard.

SPECIFIC CONDITION 15

Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review by January 1, 1999 2000. Until new curves are approved by the Department or the combustion turbines meet the NOx emission standard of 15 ppmvd @ 15% (whichever occurs first), the stack, operator, and emission data for the proposed combustion turbines in Table 2-4 (October 28, 1993) will be used. The data will be used to determine compliance with the maximum allowable emission rates of the regulated air pollutants at different air inlet temperatures for these turbines.

Mr. Allan Wade Smith Page 2 of 2 December xx, 1998

TABLE 1

The compliance date is hereby changed to 1/1/00 as is the date in Note (d).

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Sincerely,

Howard L. Rhodes, Director Division of Air Resources Management

HLR/aal

December xx, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Re: Permit Modification No. 1050231-001-AV and 1050231-004-AV Orange Cogeneration Facility, Extension of NO_X Compliance Date

Dear Mr. Smith: &

The Department has reviewed the modification requested in your letter dated September 25, 1998. The referenced permit is hereby modified as follows:

SPECIFIC CONDITION A.6

The compliance date is hereby changed to <u>January 1, 2000</u> in the table for NOx for this specific condition.

APPENDIX S, TABLE 1-1

The compliance date is hereby changed to January 1, 2000 in the table for NOx.

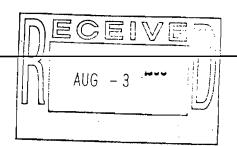
A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit revision is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit revision) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of a Notice of Appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Sincerely,

Howard L. Rhodes, Director Division of Air Resources Management

HLR/aal





GE Industrial AeroDerivative Gas Turbines

GE Power Systems One Neumann Way, S156 Cincinnati, OH 45215-1988 Phone: (513) 552-2295 Fax: (513) 552-5722

July 27, 1998

Mr. Wade Smith General Manager Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Dear Mr. Smith,

GE is committed to reducing the NOx emissions of our LM6000 Dry Low Emissions (DLE) gas turbines. We have an aggressive, active program to reduce NOx emissions to levels less than 15ppm when running on gas fuel.

The main focus of this program has been to achieve 15ppm levels at the Orange Cogen site by 12/31/98. During the past year we have conducted several tests on the gas turbines at your site and on gas turbines at our factory in Evendale, Ohio. While these tests yielded emissions improvements, these improvements have been offset by increasing emissions caused by gas turbine deterioration. As a result, this program needs approximately one more year to define additional changes and testing to achieve the 15ppm goal.

We believe the technology to reduce NOx emissions on this product to a 15ppm level is available. Unfortunately, maintaining a 15ppm level has proven challenging since emissions levels increase as the gas turbine deteriorates and firing temperatures increase with operating time. GE IAD recommends Orange Cogen request a one year extension of the current 25ppm NOx permit. This will give us the time to develop and test changes to reduce NOx emissions to consistent, sustainable levels of less than 15ppm.

Sincerely,

James N. Reinhold, P.E.

Technical Programs Manager

GE Industrial AeroDerivative Gas Turbines

JAMES N. X
REINHOLD 50591

**CONSTERED ON THE PROPERTY OF THE

Mail James

Florida Department of **Environmental Protection**

TO:

Clair Fancy

THRU:

Al Linero

FROM:

Susan DeVore-Fillmore

DATE:

November 3, 1998

SUBJECT: Orange Cogeneration GP Inc.

PSD-FL-206C

Extension of Compliance Date for 15 ppm NOx Limit

Attached is the intent to issue for two letters modifying the construction and Title V permits for the Orange Cogen combined cycle combustion turbine to allow an additional year for their General Electric LM6000PB with dry low NOx technology to maintain a consistent level of NOx at 15 ppmvd @ 15% O₂.

This existing facility consists of two 41 megawatt General Electric LM6000PB gas-fired combustion turbines with heat recovery steam generators and an auxiliary boiler. The applicable nitrogen oxides (NOx) emission limit is 25 parts per million (ppm). By January 1999 the combustion turbines must comply with a limit of 15 ppm. The applicant has requested an extension until January 1, 2000 to meet the lower limit using Dry Low NOx technology (DLN). This will allow General Electric additional time to incorporate design changes based on recent testing conducted in Ohio and Florida. A similar developmental program by General Electric resulted in emissions well below 15 ppm by DLN from its larger 7EA gas combustion turbines at Cane Island, Mulberry and Gainesville.

I recommend your approval and signature.

old at line over top of envelope to on the reverse side? 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 I also wish to receive the following services (for an extra fee): 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. Receipt Service 1. Addressee's Address 2. A Restricted Delivery Consult postmaster for fee. 3. Article Addressed to: 4a. Article Number Mr. allan Dru 4b. Service Type ☐ Registered Is your RETURN ADDRESS ☐ Insured ☐ Express Mail ☐ Return Receipt for Merchandise ☐ COD 7. Date of Delivery Thank you 10-2-9 5. Received By 8. Addressee's Address (Only if requested and fee is paid) 6. Signature: (Addressee or Agent) Domestic Return Receipt PS Form 3811, December 1994 102595-97-B-0179

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Department of **Environmental Protection**

Lawton Chiles Governor Twin Towers Office Building 2600 Blair Stone Road Tallahassee. Florida 32399-2400

Virginia B. Wetherell Secretary

September 30, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration 1125 U.S. Highway 98 South - Suite 100 Lakeland, Florida 33801

Re: Orange Cogeneration Facility
Permit No.: 1050231-001-AV

Dear Mr. Smith:

We received your letter of September 25 requesting a modification for the above mentioned permit. Since the facility currently holds a Title V permit issued by the Department, and this is a non-PSD permit, no permit fee is required pursuant to FDEP Rule 62-4.050(4)(a)2. Therefore, enclosed herewith is the check, (No. 1255 for \$250) you submitted with your request.

If you have any questions regarding this matter, please call me at (850)921-9523.

Sincerely,

A. A. Linero, P.E.

Administrator

New Source Review Section

AAL/kt

Original TV is 1030231-001-40



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Ti P

new TV Proj# is 1050231 -004-ALRECEIVED PSD-FL-206 C

SEP 29 1998

BUREAU OF AIR REGULATION

September 25, 1998

Mr. Al Linero, P.E. Administrator, New Source Review Section Division of Air Resources Management Florida Department of Environmental Protection Twin Towers Office Building 2600 Blair Stone Road Tallahassee, Florida 32339-2400

Re:

Orange Cogeneration Facility

Permit No.: 1050231-001-AV

1050231-003-AC

Dear Mr. Linero:

This correspondence is submitted on behalf of Orange Cogeneration Limited Partnership ("OCLP") to request that specific condition A.6. and Appendix S, Table 1-1 be modified to require compliance with a maximum NO_x emissions level, 1-hour average, of 15 ppmvd @ 15% O₂ by January 1, 2000 instead of January 1, 1999. OCLP also request that common condition C.2. be modified from "... in no case exceed two hours in any 24 hour period..." to "... in no case exceed four hours in any 24 hour period..."

The Orange Cogeneration Facility utilizes a dry low-NO_x technology developed by General Electric Company ("GE") to control NO_x and CO emissions. During the development of the Orange Cogeneration Facility, GE advised OCLP to seek an air permit NO_x limit of 15 ppm effective December 31, 1997. GE believed that their DLE combustion system would be able to sustain NO₂ levels below 15 ppm by that time. However, technical difficulties delayed their program and a request to extend the compliance date to January 1, 1999 was granted to OCLP by the FDEP.

GE has continued to work toward their goal of reaching a sustainable NO_x emission of 15 ppm. During the past year they have conducted several test at the Orange Cogeneration Facility and at their facility in Evendale, Ohio. The results of these tests have been encouraging, but they need an additional year to reach their goal of sustained operation at 15 ppm NO_x

GE has recommended that OCLP request a one-year extension of the current 25 ppm NO_x emissions level so that they can continue to improve their DLE combustion system. They believe that they will be able to reach that goal by the end of 1999.

I have enclosed a letter from GE Industrial AeroDerivative Gas Turbines to OCLP and a copy of the presentation given to the FDEP during the meeting on July 9, 1998. These enclosures address the DLE program status and explain GE's plans and commitment for achieving a 15 ppm NO_x emissions level by the end of 1999. The letter was prepared by the GE team responsible for the development of the DLE combustion system and it was signed by two Professional Engineers, one of which is registered in Florida.

The request to modify the common condition is at the request of the FDEP southwest district office. As you are aware, the Orange Cogeneration Facility starts-up and shuts-down daily. The highly efficient, DLE equipped combustion turbines at the facility operate with unstable flames at low loads. This characteristic is inherent in the DLE technology. During the transition through the low load conditions during start-up and shutdown, the facility could emit CO levels in excess of the permitted amount. Changing the allowable time for start-ups and shutdowns gives the facility the flexibility it needs to operate. Following discussion with the FDEP in Tampa and Mr. Martin Costello of your office, OCLP decided to make this request.

I have also enclosed a check for \$250.00 for the permit modification fee.

If you have any questions please call me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

By Orange Cogeneration GP, Inc.

Its general partner

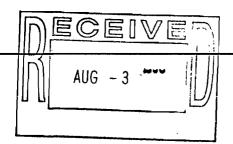
Allan Wade Smith

General Manager

Enclosures

Mr. Dennis Oehring – CSWE Operations 9+1-533-9073 – 941-534-1141 Cc:





GE Industrial AeroDerivative Gas Turbines

GE Power Systems
One Neumann Way, S156
Cincinnati, OH 45215-1988
Phone: (513) 552-2295
Fax: (513) 552-5722

July 27, 1998

Mr. Wade Smith General Manager Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Florida 33801

Dear Mr. Smith,

GE is committed to reducing the NOx emissions of our LM6000 Dry Low Emissions (DLE) gas turbines. We have an aggressive, active program to reduce NOx emissions to levels less than 15ppm when running on gas fuel.

The main focus of this program has been to achieve 15ppm levels at the Orange Cogen site by 12/31/98. During the past year we have conducted several tests on the gas turbines at your site and on gas turbines at our factory in Evendale, Ohio. While these tests yielded emissions improvements, these improvements have been offset by increasing emissions caused by gas turbine deterioration. As a result, this program needs approximately one more year to define additional changes and testing to achieve the 15ppm goal.

We believe the technology to reduce NOx emissions on this product to a 15ppm level is available. Unfortunately, maintaining a 15ppm level has proven challenging since emissions levels increase as the gas turbine deteriorates and firing temperatures increase with operating time. GE IAD recommends Orange Cogen request a one year extension of the current 25ppm NOx permit. This will give us the time to develop and test changes to reduce NOx emissions to consistent, sustainable levels of less than 15ppm.

Sincerely,

James N. Reinhold, P.E.

Technical Programs Manager

GE Industrial AeroDerivative Gas Turbines

JAMES N. X REINHOLD 50591





LM6000 DLE Program Status

Presented To The Florida Department Of Environmental Protection July 9, 1998

By Jim Reinhold Technical Programs Manager



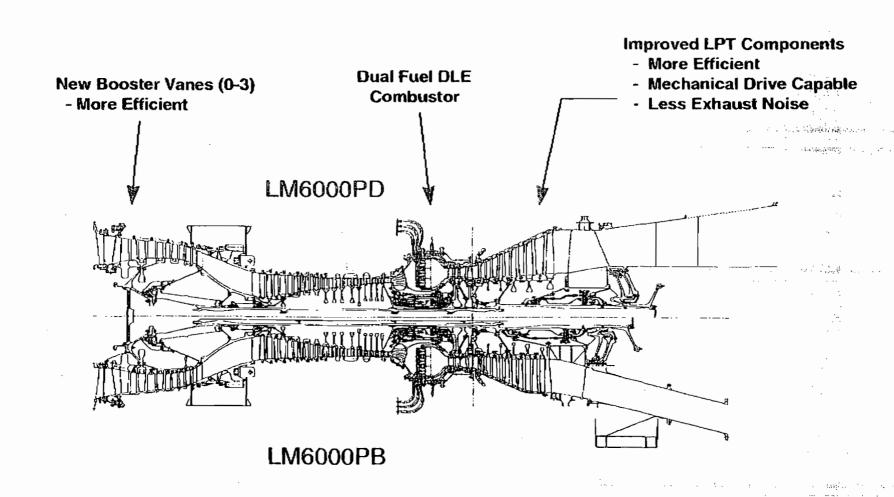


Agenda

- Engine Cross Section
- Fleet status
- Current product capabilities
- Factory emissions trend
- Program history
- Recent progress
- Future plans
- Summary



LM6000 Cross Section Comparison





LM6000 DLE Fleet Status

- 33 PB/PD model gas turbines shipped to date
- 16 operating
 - 11 PB models
 - 5 PD models
 - First dual fuel PD model start up 7/98
- 120,000 hours of experience



Current GE LM6000 DLE NOx Capability

(75-100% Power - except where noted)

Fuel System	Engine Delivery	Gas*	Liquid*
Gas Only	3Q94	25 ppm	N/A
Dual Fuel	1Q98	25 ppm	?

^{*} Assumes fuel has no fuel bound nitrogen



Current GE LM6000 DLE CO, THC, NMHC And Particulate Capability (75-100% Power)

CO	25 ppm
THC	15
NMHC .	6
Particulates*	3 lbs/hr

^{*} Particulate capability has been established at the field proven limit of detectability, the DLE system itself is not expected to produce measureable quantities of particulates



Program History

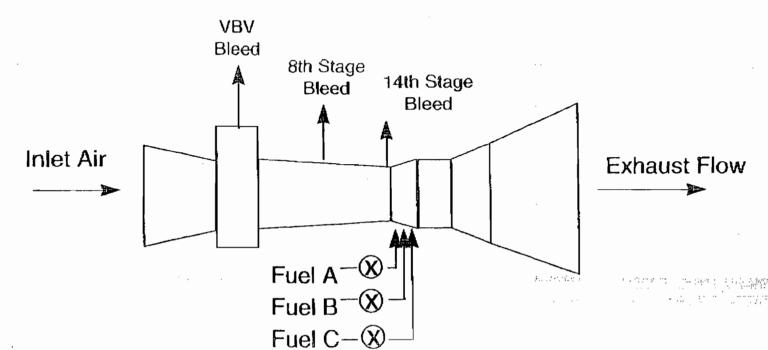
- Basic DLE (premixed) technology developed during 1970s and 1980s
- GE M&I program launched in 1990
- First Commercial Availability Gas Only Systems

Product	Date	NOx	CO
LM6000	1994	<25 ppm	<25 ppm
LM2500	1995	<25 ppm	<25 ppm
LM1600	1996	<25 ppm	<25 ppm



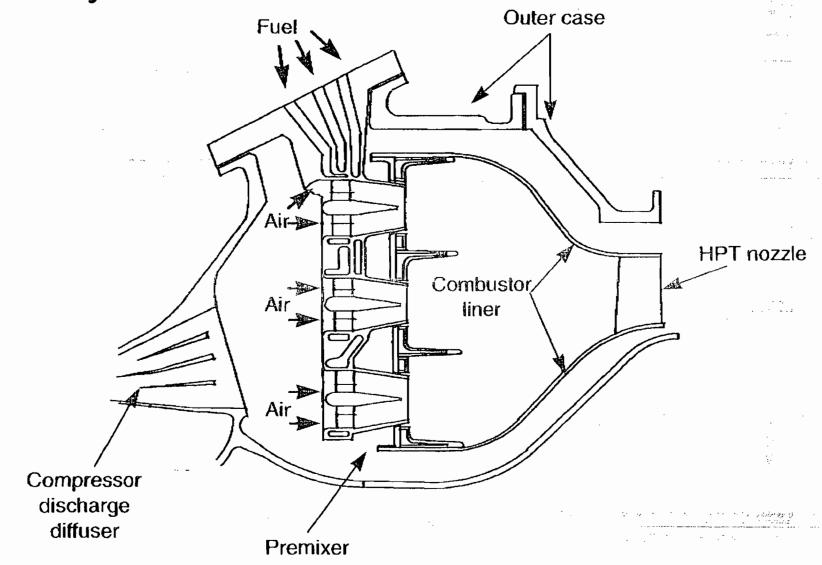
GE M&I Approach to DLE

- Combination of fuel and air staging: Required for premix operation from start to full power
- Triple annular combustor: Compact, minimal cooling air required, and facilitates fuel staging





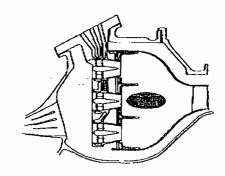
Primary Air and Fuel Flow



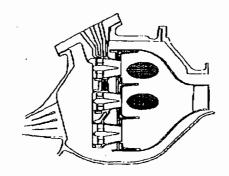


LM6000 DLE Burner Modes

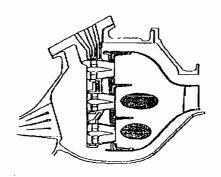
Starting configuration B reaction zone



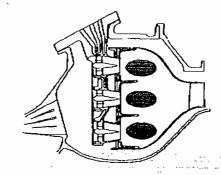
25 - 50% load AB reaction zone



5 - 25% load BC reaction zone

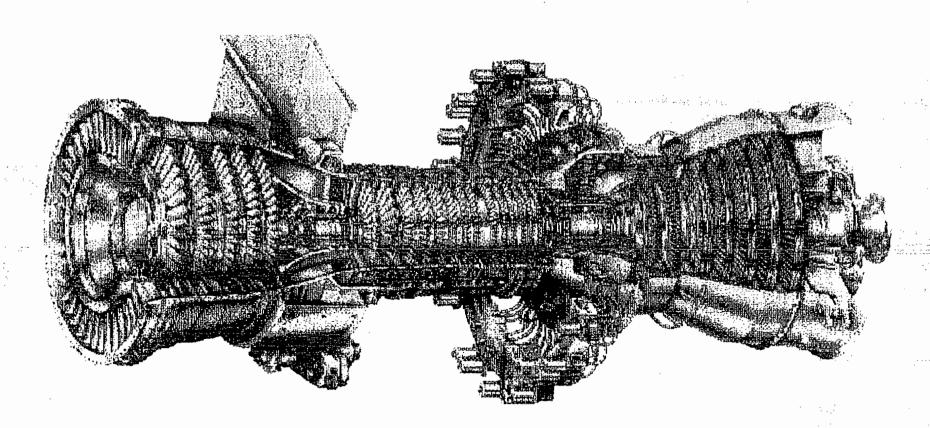


50% to full load ABC reaction zone



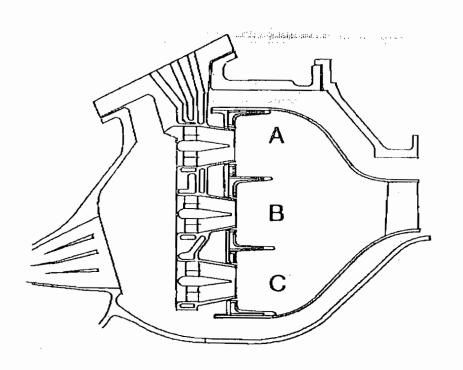


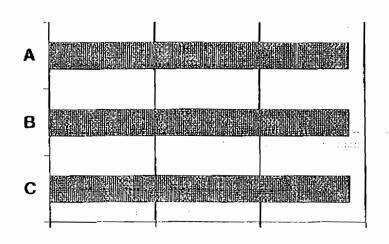
LM6000 DLE Gas Turbine





DLE Background - 1993



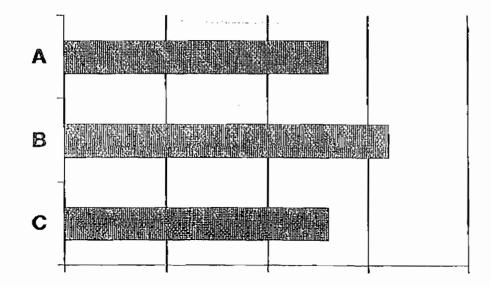


Flame Temperature (F)

- With equal ring temperatures we were confident 12 +- 2 ppm Nox was achievable
- First (only) 15 ppm NOx guarantee was made for Orange Cogen / Dec 1997 effectivity



DLE Background - 1994



Flame Temperature (F)

- First engine test demonstrated that equal ring flame temperature operation was not possible
- Discovered upper limit
 on A & C ring temperatures
- Higher B dome temperature
- Higher NOx resulted, 16 +-2 ppm
- Reduced B dome combustor life
- 1994 focus on adding independent ring temperature control, reducing combustion dynamics and improving B ring dome life

DLE Background - 1994/5

- Increased B ring cooling flow to achieve acceptable cyclic combustor life
- Added "B ELBO" circuit to reduce combustion dynamics to acceptable levels at high power
- Average NOx was about 17 ppm
- Dual fuel DLE program officially launched in 1995
 - NOx goal of: 15ppm gas, 42ppm liquid
 - gas to liquid, liquid to gas fuel transfer capability

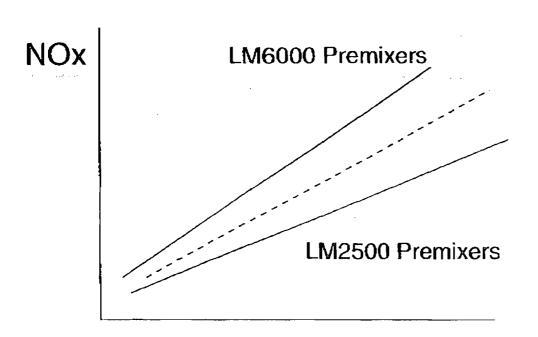


DLE Background - 1996

- Increased A & C ring cooling flow to achieve acceptable combustor oxidation life
- Added "A ELBO" circuit to reduce combustion dynamics at low power to acceptable levels
- Average NOx (on natural gas) now about 18 ppm
- Dual fuel DLE premixer development continued with component testing
 - Early testing with existing premixer swirler showed flashback (on liquid)
 - Swirler package redesigned flashback eliminated
 - Liquid emissions promising (< 42 ppm) gas emissions unchanged
 - Engine testing planned to evaluate operability
- Launched program to develop NOx optimizer system
 - Joint program with GE Corporate Research & Development
 - Automated adjustments to maintain emissions within compliance limits
 - Uses optimizing techniques and measured emissions data to find minimum NOx emissions



DLE Background - 1996 (continued)



Flame Temperature

- LM6000 gas premixers were redesigned to approach LM2500 premixer performance
 - Expected a 3 ppm NOx reduction
 - Reduced dome temperatures
- First unit tested at Orange
 Cogen results were
 disappointing no apparent
 reduction in NOx



1997 Activities

- Second redesign of gas premixers tested at Orange Cogen in March
 - New premixer design incorporates increased air flow
 - Anticipate a reduction in NOx of 4 ppm
- 4 ppm reduction in NOx measured, but baseline level had increased to 21 ppm
 - Impact of engine degradation investigated
 - Testing proposed to investigate further increases in airflow
- Demonstrated prototype NOx optimizer system @ Orange Cogen
 - Manual inputs Algorithm found settings to minimize NOx
- First dual fuel DLE engine test conducted in June/July
 - Liquid NOx levels less than 42 ppm
 - Acoustics/operability problems on gas Gas NOx greater than 25 ppm
- Dual fuel premixer swirler changed back to gas only configuration
 - Liquid injector modified to prevent flashback
 - Engine testing conducted in October/November

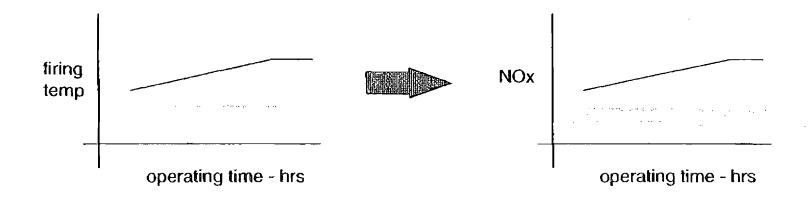


Late 97/Early 98 Activities

- Impact of engine degradation on NOx emissions evaluated
 - As engine degrades, firing temperature at constant power increases causing increased NOx
 - Level of degradation at Orange Cogen consistent with expected levels
 - Testing performed at Orange Cogen to explore whether further increases in airflow would reduce NOx
 - Increasing airflow can reduce NOx, but rapid increases in CO are possible
 - Testing performed on LM6000PD engines to evaluate emissions levels at various power levels
 - · Engine testing of redesigned dual fuel premixer conducted
 - Gas emissions levels same as gas only premixer
 - Liquid emissions levels disappointing



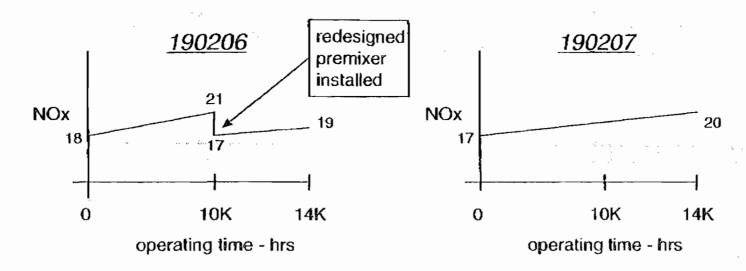
Impact of Engine Degradation (@ Constant Power)



- As engine degrades, firing temperature (fuel flow) increases to maintain same power output
 - Increased firing temperatures drive increased NOx
- Restoring performance (hot section refurbishment) should reduce NOx to initial levels



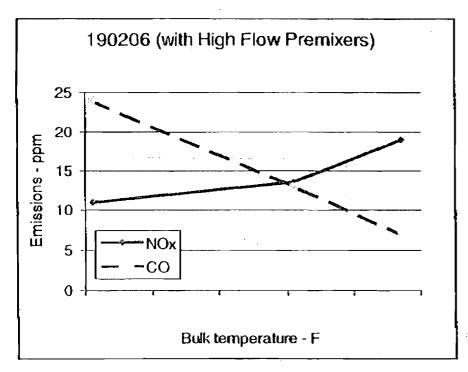
NOx Degradation at Orange Cogen

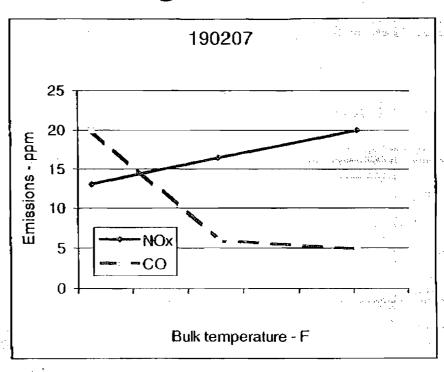


- · Nox levels increasing with engine operating time
 - level of increase consistent with degradation studies
- Redesigned premixer reduced NOx by expected amount
- Additional testing performed to determine if further increases in airflow would reduce NOx



Increased Premixer Airflow Testing

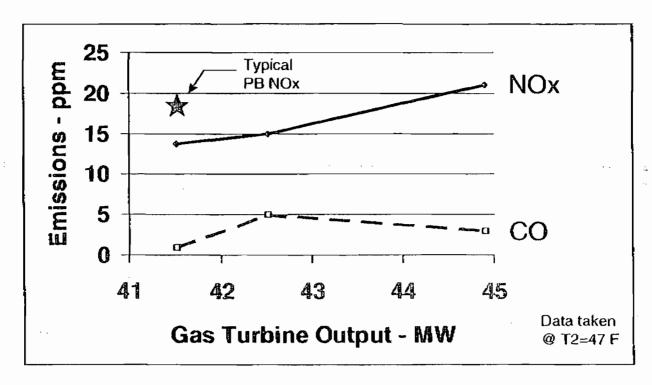




- Testing conducted to simulate increasing premixer airflow
- Some increase in airflow will further reduce NOx, but rapid CO increases possible
 - rapidly changing CO indicates potential operability problems



LM6000PD Emissions Levels



- Testing conducted on production engine using existing premixer design
- NOx emissions levels on PD lower than PB for comparable power
 - Differences are booster stator vanes and low pressure turbine module
- Testing to determine impact of increased flow premixers on PD scheduled for Fall '98



Summary

- The LM6000 achieves its high level of efficiency by a combination of aerodynamically efficient components, high cycle pressure ratio (30) and high firing temperature (2300 F)
- Within the class of high efficiency medium sized gas turbines the LM6000 has the lowest available emission when operating on gas,
 ppm today: working to 15 ppm
- The LM6000 engine should be the first gas turbine with an all dry dual fuel system to achieve 25/65 ppm NOx levels 12/98
- The LM6000 engine should be the first gas turbine with an all dry dual fuel system to achieve 15/42 ppm NOx levels
- GE is committed to the development of DLE systems and will continue to improve these systems to achieve:
 - reduced emissions
 - increased durability & reliability
 - lower life cycle costs



Meeting the Emissions Objectives at Orange Cogeneration

Meeting with FL-DEP 5-11-99

RB Hook Mgr - LM6000 Technical Programs





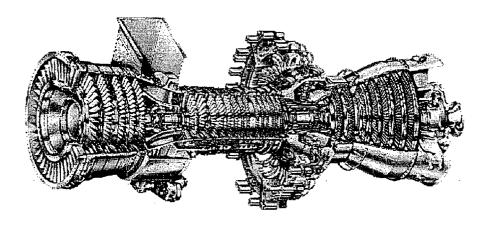
GE Industrial AeroDerlvative Gas Turbines

Agenda'

- Review LM6000 DLE and July 9, 1998 meeting actions
- GE efforts to improve LM6000 Dry Low Emissions
- · Current Status of LM6000 Emissions Capability
- Mass Emissions: Efficiency and Duty Cycle Considerations
- · Evaluation of Alternatives
- Conclusion



LM6000 Dry Low Emissions Systems

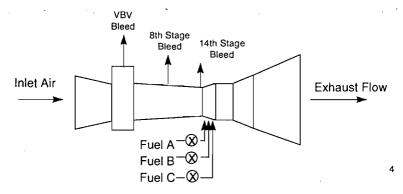


3

GE Industrial AeroDerivative Gas Turbines

GE - IAD Approach to Dry Low Emissions

- Combination of fuel and air staging: Required for premix operation from start to full power
- Triple annular combustor: Compact, minimal cooling air required, and facilitates fuel staging



Primary Fuel and Air Flow

Outer case

Compressor discharge

Premixer

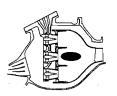


GE Industrial AeroDerivative Gas Turbines

Burner Modes

diffuser

Starting configuration B reaction zone



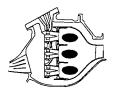
25 - 50% load AB reaction zone



5 - 25% load BC reaction zone



50% to full load ABC reaction zone



6



LM6000 Fleet Experience

Mode

	PA	PB	PC*	PD	Totals
Engines Produced	140**	20	49	24	233
Engines in Operation ***	103	15	12	7	137
Hours of Operation ***	1,696,495	230,790	31,011	21,926	1,980,222
High Time Engine (hours) ***	48,984	32,572	8,666	7,580	
•	٠.	∱		 	

LM6000 DLE: 44 engines shipped to date with 250000 hrs operating experience

7



GE Industrial AeroDerivative

LM6000 DLE Product Emissions Ratings

Fuel System	Engine Delivery	Gas*	Liquid*
Gas Only	3Q94	25 ppm	N/A
Dual Fuel	1Q98	25 ppm	75+ppm

^{*} Assumes fuel has no fuel bound nitrogen



Action Items from 7-9-98 Meeting with DEP

☐ LM6000 PD testing to evaluate premixers on LM6000 DLE emi	
☐ Continue NOx optimizer progra	m
☐ Evaluate alternate technologies	;
☐ Evaluate "Lbs NOx per MW-hr	energy produced"



GE industrial AeroDerivative Gas Turbines

Progress Summary

LM6000 PD Testing

- High flow premixers provided 1-4 points benefit
- At 44.5 MW; NOx \sim 23 ppm, 19 ppm with hi-flo
- At 41.4 MW ; NOx \sim 13 ppm, 12 ppm with hi-flo

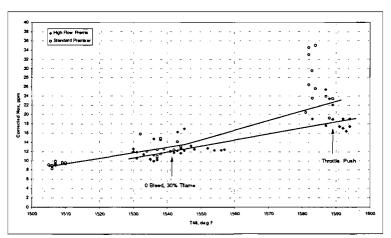
NOx optimizer demonstrator

- Reduces variability, not fundamental performance
- Finds boundaries
- Finds lowest NOx
- Demonstrated technology in Evendale Test Cell 8/98

10



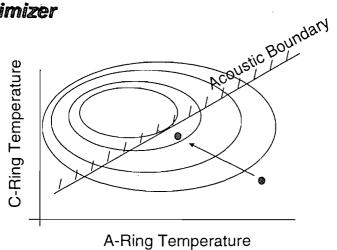
High Flow Premixer Testing 12-98



 $\label{thm:low-premixers-provided 1-4-ppm improvement depending on operating power level} \\$ 11 GE COMPANY PROPRIETARY

GE Industrial AeroDerivative Gas Turbines

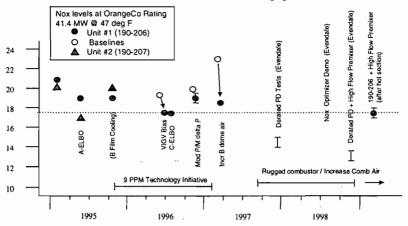
Optimizer



Optimizer seeks minimum NOx subject to constraints on acoustic

12

Overview of GE Efforts on 15 ppm



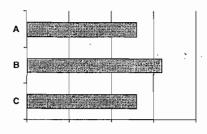
Approx 4 ppm reductions achieved; Lowest new and clean levels ~18ppm

13



GE Industrial AeroDerivative Gas Turbines

Technology Barrier - Acoustics



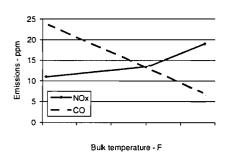
Flame Temperature (F)

- •First engine test demonstrated that equal ring flame temperature operation was not possible
- Discovered upper limit on A & C ring temperatures
- · Higher B dome temperature
- Higher NOx resulted, 16 +- 2 ppm
- Reduced B dome combustor life
- 1994 focus on adding independent ring temperature control, reducing combustion dynamics and improving B ring dome life



Technology Barrier - CO

190206 (with High Flow Premixers)



190207

25
20
15
10
5
NOx
0
Bulk temperature - F

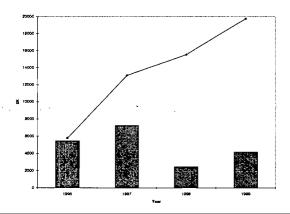
- Testing conducted to simulate increasing premixer airflow
- Some increase in airflow will further reduce NOx, but rapid CO increases possible
 - rapidly changing CO indicates potential operability problems

15



GE Industrial AeroDerivative Gas Turbines

GE - IAD Investment in DLE Technology



GE-IAD's continued investment in dry low emissions technology totals nearly \$20MM in period 1996-1999 (i.e. after OrangeCo's startup)



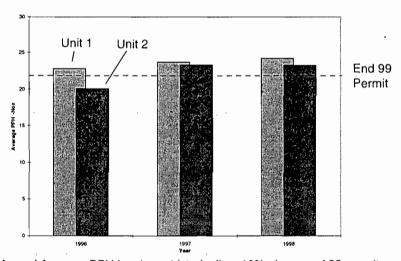
Review of historical plant emissions data

17



GE Industrial AeroDerlvative Gas Turbines

History of Emissions - Annual average pph

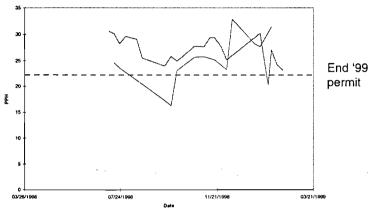


Annual Average PPH has been historically < 10% above end 99 permit 18



History of Emissions - Daily variations in PPH





Daily variations in pph during peak hours are higher than average and end '99 permit levels

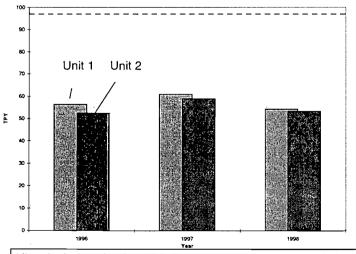
19



GE Industrial AeroDerivative Gas Turbines

> End 99 Permit

Site History of Emissions - TPY



Historical operation is well below end 99 - tons per year limits

20

Comparison of LM6000 Emissions with End 1999 Permit Levels

A MAN WAR WAR TO THE

Figure Age Carlothing

	Permit	1998	1998
		Actual	Projected
	_		for 8760 hrs
PPM	15	19-25	19-25
lb/hr	22	Averaged	Average
per engine		23.7	23.7
Total Ton/yr	194	108	208

Scaled to 8760 hours OrangeCo would have exceeded new limit by 14 T (7.2%)

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GE Industrial AeroDerivative Gas Turbines

Summary - Current Situation

- GE-IAD has invested \$20MM in dry low emissions technology since OrangeCogen's commissioning
- · Investment continues
- Lowest NOx levels achieved new and clean are
 - 17-18 ppm on LM6000PB
 - No clear path to meet 15 ppm on these engines
- Operational experience at OrangeCo site during 1998
 - Hourly average ppm ranged from 19 -25 ppm
 - Mass emissions (pph) averaged < 10% higher than end 1999 limits
 - Mass emissions (TPY) less than end 1999 limits
 - Using 1998 data, continuous operation would result in 7.2% above new annual ton/year limits

22



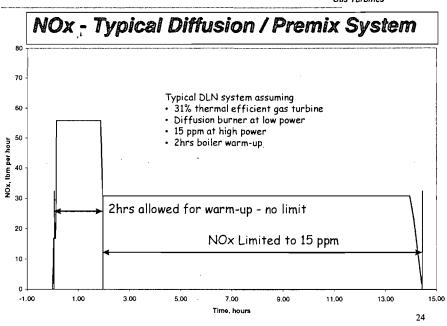
Mass Emissions of LM6000

- •Comparison with lower pressure ratio cycle
- •Advantage of "premix" across operating range

23

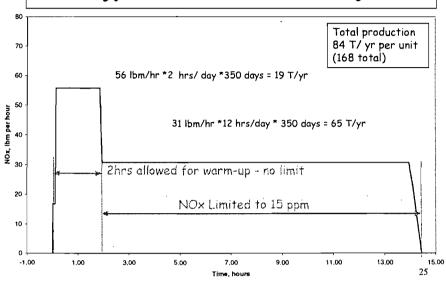


G5 Industrial AeroDerivative





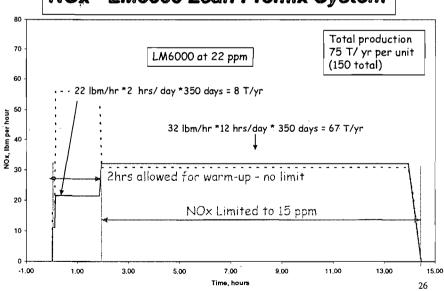






GE Industrial AeroDerivative Gas Turbines

NOx - LM6000 Lean Premix System



Comparison of LM6000 Emissions with Typical Industrial

	Typical Industrial @ 15 ppm	LM6000 @ 22 ppm
During Warmup	38	16
At Baseload	130	134
Total TPY	168	150
lb/MW-hr	0.72	0.65

For Orange Cogeneration's duty cycle, LM6000 @ 22ppm has lower emissions than Typical Industrial @ 15ppm

27



GE Industrial AeroDerivative Gas Turbines

Evaluation of Alternatives

- SCR
- Derated LM6000 PD
- ◆ SCONOX

Not mature

<u>+XONON</u> ←

Not commercially available

And the state of the state of the state of



W 10 15 14

Exhaust Treatments - SCR

- · High installed cost
- Ongoing operating expeditures for ammonia, catalyst and upkeep
- · Ammonia emissions to environment
- · Fine particle emissions to environment
- Risks associated with handling hazardous materials (ammonia, catalyst)
- · Creation of hazardous waste
- · Lost revenue during retrofit

Net negative impact to environment at higher cost

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GE Industrial AeroDerivative

Alternate Technology - Derated LM6000 PD

- Reduces NOx by reduced firing temperature/ higher efficiency
- Net plant power is reduced by approx 2 MW (loss of exhaust energy)
- Lost revenue (14400 MW-HRS)
 - Installation / retrofit outage (1 month per engine including fuel system)
 - High capital cost

High cost with net plant power reduction

Florida Department of Environmental Protection

Meeting Sign-In Sheet

Re: ORange Cogeneration

Date: July 9, 98

		/ ///
Name	Representing	Telephone
Teresatteron	DEP-NSR	850/921-9529
SYED ARIF	DEP-NSR	850 921-8968
BRUCE CURATOLA	EL PASO ENERGY INT'L (50% owner of)	713-420-5937
Wade Smith	Orange Cogeneration Umited Partnersh	p 941-682-6338
DENNIS DELRING	CSW ENERGY OPERATION, ORANGE	l*
Paul Zembroat	GE - Insustrial AERO Derivation	
Jim Reinhold	GE. Industrial Aero Derivatives	
al Livers	DEP-NSR	850/921-9523
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April	Return Receipt Showing to Whom, Date, & Addressee's Address			
PS Form 3800 , April 1995	TOTAL Postage & Fees	\$		
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For	1020921-00	3-AC		
P.	Postmark or Date 1050231- co psp-F1-20	60		
		-	_	

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. Consult postmaster for feed		e (for an ee's Address d Delivery	celpt Service.		
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s vour RETURN	6. Signature: (Addressee or Agent) X X X X X X X X X X X X X	8. Addresse and fee is	Del Del	_	Thank
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Department of Environmental Protection

Jæ Fahn

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

Virginia B. Wetherell Secretary

NOTICE OF FINAL PERMIT

In the Matter of an Application for Permit by:

Mr. Allan W. Smith General Manager Orange Cogeneration Limited Partnership 1125 US 98 South, Suite 100 Lakeland, FL 33801 FINAL Permit No.: 1050231-001-AV
Orange Cogeneration Facility

Enclosed is FINAL Permit Number 1050231-001-AV for the operation of the Orange Cogeneration Facility located at 1901 Clear Springs Mine Road, Bartow, Polk County, issued pursuant to Chapter 403, Florida Statutes (F.S.).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the permitting authority in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the permitting authority.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

FINAL Permit No.: 1050231-001-AV

Page 2 of 2

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 12 30 9 to the person(s) listed or as otherwise noted:

Mr. Allan W. Smith, Orange Cogeneration *

Mr. Dennis Oehring, Orange Cogeneration *

Mr. Kennard F. Kosky, P.E., Golder Associates

Mr. Bill Thomas, P.E., Southwest District, DEP

Ms. Carla E. Pierce, USEPA, Region 4 (INTERNET E-mail Memorandum)

Ms. Yolanda Adams, USEPA, Region 4 (INTERNET E-mail Memorandum)

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency Clerk, receipt of which is hereby acknowledged.

(Clerk)

(Date)

FINAL PERMIT DETERMINATION

FINAL Permit No.: 1050231-001-AV

Page 1 of 1

I. Comments.

No comments were received from Orange Cogeneration on the PROPOSED permit. No comments were received from USEPA during their 45 day review period of the PROPOSED permit.

II. Title V Permitting Formats.

A. CHANGES TO TITLE V PERMITS ISSUED PRIOR TO 12/02/97

Title V permitting formats were updated due to recent rule changes and after considering comments received from the electric utilities. This permit reflects these changes. A brief summary of the changes is below.

- 1. Recent rule changes changed "exempt activities" to "insignificant activities." Rules 62-213.430(6), F.A.C. and 62-210, F.A.C., reflecting this change went into effect November 13, 1997.
- a. The department inserted a condition in Appendix TV-1 clarifying that a Title V source can add an "insignificant activity" at its facility in accordance with the criteria under Rule 62-213.430(6), F.A.C., and include it in the Title V permit's list of "insignificant activities" at the next renewal, in accordance with Rule 62-213.430(6), F.A.C. See condition number 40.
- **b.** Appendix E-1 has been changed to Appendix I-1, and the language of this appendix was revised to refer to insignificant emissions units where appropriate.
- c. Appendix U-1 has been revised to refer to insignificant emissions units instead of exempt emissions units.
- 2. Several changes were made to Appendix TV-1 to reflect the rule changes discussed above, and to properly identify conditions that are not federally enforceable.
- a. The following additional rules have been marked as "not federally enforceable":

62-4.030, F.A.C., General Prohibition, (see condition number 1.)

62-4.220, F.A.C., Operation Permit for New Sources, (see condition number 14.)

62-210.300(5), F.A.C., Notification of Startup, (see condition number 19.)

b. Appendix TV-1, now carries a version date of "12/02/97".

III. Conclusion.

In conclusion, the changes that have been made are insignificant in nature and do not impose additional noticing requirements. The permitting authority hereby issues the FINAL Title V permit, with any changes noted above.



Department of **Environmental Protection**

Lawton Chiles Governor

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

Virginia B. Wetherell Secretary

Permittee:

Orange Cogeneration Limited Partnership 1901 Clear Springs Mine Road Bartow, FL 33830

FINAL Permit No.: 1050231-001-AV

Facility ID No.: 1050231 SIC Nos.: 49, 4911

Project: Initial Title V Air Operation Permit

This permit is for the operation of the Orange Cogeneration Facility. This facility is located at 1901 Clear Springs Mine Road, Bartow, Polk County; UTM Coordinates: Zone 17, 418.7 km East and 3083.0 km North; Latitude: 27° 52' 15" North and Longitude: 81° 49' 31" West.

STATEMENT OF BASIS: This Title V air operation permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213, and 62-214. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Referenced attachments made a part of this permit:

Appendix U-1, List of Unregulated Emissions Units and/or Activities

Appendix I-1, List of Insignificant Emissions Units and/or Activities

Appendix TV-1, Title V Conditions (version dated 12/02/97)

Appendix SS-1, Stack Sampling Facilities (version dated 10/07/96)

Appendix M, Custom Fuel Monitoring Schedule for Natural Gas

Table 297.310-1, Calibration Schedule (version dated 10/07/96)

Figure 1 - Summary Report-Gaseous And Opacity Excess Emission And Monitoring System Performance Report (version dated 7/96)

Phase II Acid Rain Application/Compliance Plan received 1/2/96

Approval of Custom Fuel Monitoring Schedule Dated October 28, 1997

Effective Date: January 1, 1998

Renewal Application Due Date: July 5, 2002

Expiration Date: December 31, 2002

Howard L. Rhodes, Director Division of Air Resources

Management

HLR/sms/jk

Orange Cogeneration Limited Partnership
Orange Cogeneration Facility
Facility ID No.: 1050231
Polk County

Initial Title V Air Operation Permit FINAL Permit No.: 1050231-001-AV

Permitting Authority:

State of Florida

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
Title V Section

Mail Station #5505 2600 Blair Stone Road Tallahassee, Florida 32399-2400

Telephone: 850/488-1344 Fax: 850/922-6979

Initial Title V Air Operation Permit FINAL Permit No.: 1050231-001-AV

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B. Summary of Emissions Unit ID No(s). and Brief Description(s).	
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Attachments	end

Orange Cogeneration Limited Partnership Orange Cogeneration Facility Page 2 of 24 FINAL Permit No.: 1050231-001-AV

Section I. Facility Information.

Subsection A. Facility Description.

This facility consists of two combustion turbines (CT) that each exhaust through a heat recovery steam generator (HRSG) and associated stack. The CTs are natural gas and biogas fired. The facility also includes an auxiliary boiler fired with natural gas and biogas, with a separate stack. Neither HRSG is auxiliary fuel fired or equipped with duct burners.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and/or activities.

Based on the initial Title V permit application received June 17, 1996, this facility is not a major source of hazardous air pollutants (HAPs).

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

E.U. ID	
No.	Brief Description
001	Combustion Turbine (CT) with HRSG, Unit 1
002	Combustion Turbine (CT) with HRSG, Unit 2
003	Auxiliary Boiler

Unregula	Unregulated Emissions Units and/or Activities		
004	Storage of Lube Oil, Waste Oil and Diesel Fuel		
005	Lube Oil Vapor Extractor, Lube Oil Air/Oil Separator, Steam Turbine Drain Flash Tank		

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:
Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers
Appendix H-1, Permit History/ID Number Changes
Table 1-1, Summary of Air Pollutant Standards and Terms
Table 2-1, Summary of Compliance Requirements

These documents are on file with the permitting authority:
Initial Title V Permit Application received June 17, 1996
Additional Information Letter received June 16, 1997
Letter dated June 6, 1997 changing the Facility Contact
Letter dated January 15, 1997 changing the Designated Representative

Orange Cogeneration Limited Partnership FINAL Permit No.: 1050231-001-AV Orange Cogeneration Facility
Page 3 of 24

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

- 1. APPENDIX TV-1, TITLE V CONDITIONS, is a part of this permit. {Permitting note: APPENDIX TV-1, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided a copy when requested or otherwise appropriate.}
- 2. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. The permittee shall not cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320(2), F.A.C., PSD-FL-204B]
- 3. General Particulate Emission Limiting Standards. General Visible Emissions Standard. Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.
 [Rule 62-296.320(4)(b)1. & 4, F.A.C.]
- 4. <u>Prevention of Accidental Releases (Section 112(r) of CAA)</u>. If required by 40 CFR 68, the permittee shall submit to the implementing agency:
- a. a risk management plan (RMP) when, and if, such requirement becomes applicable; and
 b. certification forms and/or RMPs according to the promulgated rule schedule.
 [40 CFR 68]
- 5. <u>Unregulated Emissions Units and/or Activities.</u> Appendix U-1, List of Unregulated Emissions Units and/or Activities, is a part of this permit. [Rule 62-213.440(1), F.A.C.]
- 6. <u>Insignificant Emissions Units and/or Activities.</u> Appendix I-1, List of Insignificant Emissions Units and/or Activities, is a part of this permit. [Rules 62-213.440(1), 62-213.430(6), and 62-4.040(1)(b), F.A.C.]
- 7. Not Federally Enforceable. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. The owner or operator shall:
 - a. Tightly cover or close all VOC or OS containers when they are not in use.
 - b. Tightly cover all open tanks which contain VOC or OS when they are not in use.

Orange Cogeneration Limited Partnership
Orange Cogeneration Facility

FINAL Permit No.: 1050231-001-AV

Page 4 of 24

c. Maintain all pipes, valves, fittings, etc., which handle VOC or OS in good operating condition.

d. Immediately confine and clean up VOC or OS spills and make sure wastes are placed in closed containers for reuse, recycling or proper disposal.

[Rule 62-296.320(1)(a), F.A.C.]

- 8. Not Federally Enforceable. No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity without taking reasonable precautions to prevent such emissions. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include:
 - a. Maintenance of paved areas as needed.
 - b. Regular mowing of grass and care of vegetation.
 - c. Limiting access to plant property by unnecessary vehicles.
 - d. Bagged chemical products are stored in weather-tight buildings until they are used.
 - e. Spills of powdered chemical products are cleaned up as soon as practicable.

[Rule 62-296.320(4)(c)2., F.A.C.; Items a, b, and c were proposed by the applicant in the initial Title V permit application received June 17, 1996]

- 9. When appropriate, any recording, monitoring or reporting requirements that are time-specific shall be in accordance with the effective date of this permit, which defines day one. [Rule 62-213.440, F.A.C.]
- 10. The permittee shall submit all compliance related notifications and reports required of this permit to the Department's Southwest District office:

Department of Environmental Protection Southwest District Office 3804 Coconut Palm Drive Tampa, FL 33619-8218 Telephone: 813/744-6100

Fax: 813/744-6458

Any reports, data, notifications, certifications and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency Region 4 Air, Pesticides & Toxics Management Division Operating Permits Section 61 Forsyth Street Atlanta, GA 30303 Phone: 404/562-9099

Fax: 404/562-9095

11. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3), F.A.C., shall be submitted within 60 (sixty) days after the end of the calendar year. {See condition No. 52., Appendix TV-1, Title V Conditions} [Rule 62-214.420(11), F.A.C.]

FINAL Permit No.: 1050231-001-AV

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions units.

001	Combined cycle gas turbine, Unit 1, a GE LM 6000 DLE unit, rated at 41.4 MW at 47°F, with an associated heat recovery steam generator that services (with Unit 2's HRSG) an electric steam generator rated at 37 MW. Typically, the steam produced by the HRSG is delivered to the steam turbine. Steam is then extracted from the steam turbine and delivered to a juice processing facility. The HRSG is not fired with auxiliary fuel. The turbine's heat input is 368.3 mmBtu/hr for natural gas or biogas, and is capable of burning only natural gas or biogas, and is capable of burning only natural gas or biogas, with emissions exhausted through a 100 ft. stack.
002	Combined cycle gas turbine, Unit 2, a GE LM 6000 DLE unit, rated at 41.4 MW at 47°F, with an associated heat recovery steam generator that services (with Unit 1's HRSG) an electric steam generator rated at 37 MW. Typically, the steam produced by the HRSG is delivered to the steam turbine. Steam is then extracted from the steam turbine and delivered to a juice processing facility. The HRSG is not fired with auxiliary fuel. The turbine's heat input is 368.3 mmBtu/hr for natural gas or biogas, and is capable of burning only natural gas or biogas, and is capable of burning only natural gas or biogas, with emissions exhausted through a 100 ft. stack.

{Permitting notes: These emissions units are regulated under Acid Rain, Phase II* and Rule 62-210.300, F.A.C., Permits Required and are subject to 40 CFR 60, Subpart GG, Standards of Performance for New Stationary Gas Turbines. The affected facilities to which this subpart applies are the combined cycle gas turbines, Units 1 and 2. Each unit underwent a revised BACT Determination dated March 7, 1995. BACT Limits were incorporated into the subsequent PSD permits including AC53-233851B (PSD-FL-206B), which superseded previous construction permits. The requirements of construction permit 1050231-002-AC, which extends the date that lower NOx limits are imposed, has been incorporated into this permit. Exhaust is vented through the heat recovery steam generator that is not equipped with duct burners and then through a 100 ft. stack. Emissions are controlled by dry low-NOx combustors. The turbines began commercial operation in 1995.}

* The permittee has requested EPA exempt these units from regulation under Title IV as acid rain units. Upon written confirmation that these units are not regulated under Title IV, the acid rain section of this permit (Section IV) shall no longer apply. The remainder of this permit shall remain in effect.

The following specific conditions apply to the emissions units listed above:

Essential Potential to Emit (PTE) Parameters

A.1. Permitted Capacity. The maximum operation heat input rates are as follows:

Unit No.	mmBtu/hr Heat Input	Fuel Type
001	368.3*	Natural Gas or Biogas
002	368.3*	Natural Gas or Biogas

- * Maximum heat input at 47°F and lower heating value of the fuel.
 [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C., and AC53-233851B (PSD-FL-206B)]
- **A.2.** Emissions Units Operating Rate Limitation After Testing. See specific condition **A.9.** [Rule 62-297.310(2), F.A.C.]
- **A.3.** <u>Methods of Operation Fuels</u>. Any combination of natural gas and biogas shall be fired in the combustion turbine.

{Note: The limitations of specific conditions A.3 and A.5 are more stringent than the NSPS sulfur dioxide limitation and thus assure compliance with 40 CFR 60.333 and 60.334.}
[Rule 62-213.410, F.A.C.]

Emission Limitations and Standards

- A.4. <u>Visible Emissions</u> Visible emissions shall not exceed 10% opacity. [AC53-233851B (PSD-FL-206B)]
- A.5. Sulfur Dioxide Sulfur Content. The natural gas and biogas sulfur content shall not exceed 1 grain per hundred cubic feet (standard conditions). See specific condition A.12. {Note: The limitations of specific conditions A.3 and A.5 are more stringent than the NSPS sulfur dioxide limitation and thus assure compliance with 40 CFR 60.333 and 60.334. The sulfur limitation on natural gas and biogas have been added to assure compliance with 40 CFR 60.333.} [Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233851B (PSD-FL-206B)]
- **A.6.** Emission Limits. The maximum allowable emissions from each unit shall not exceed the emission limitations listed below.

	Emi			
Pollutant	Natural Gas or Biogas	lb/hr	Tons/Year	Basis
NOx	25 ppmvd at 15% oxygen, prior to January 1, 1999	37.0	161.9	BACT
NOx	15 ppmvd at 15% oxygen, January 1, 1999 and thereafter	22.1	97.0	BACT
CO	30 ppmvd	27.8	127.0	BACT
PM/PM ₁₀ *		5	21.9	BACT
VOC	10 ppmvd	4	17.4	BACT

^{*} All PM is assumed to be PM₁₀.

{Note: The limitations of specific condition A.6 are more stringent than the NSPS nitrogen oxides limitation and thus ensure compliance with 40 CFR 60.332 and 60.334.} [AC53-233851B (PSD-FL-206B) and 1050231-002-AC]

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Test Methods and Procedures

A.7. Annual Compliance Tests. Emission testing for visible emissions and nitrogen oxides shall be performed annually, no later than March 31st of each year, in accordance with specific condition A.9, with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests shall be conducted using the following EPA reference methods in accordance with 40 CFR 60, Appendix A:

- a. Method 9 for VE;
- b. Method 20 for NOx.

If the unit is not operating because of scheduled maintenance outages and emergency repairs, it shall be tested within thirty days of returning to service.

[Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233851B (PSD-FL-206B)]

A.8. Testing for PM, CO, VOC. Emission testing for emissions of particulate matter, carbon monoxide and VOC shall be performed in the year prior to renewal of this permit, in accordance with specific condition A.9. Particulate matter tests shall be conducted using EPA test methods 5 or 17. Method 17 may be used if the stack flue gas temperature is less than 320°F. Carbon monoxide tests shall be conducted using EPA test method 10. VOC tests shall be conducted using EPA test methods 18 or 25A.

[Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233851B (PSD-FL-206B)]

A.9. Additional Test Requirements. Test results shall be the average of three valid runs. Testing of emissions shall be conducted with the emissions unit operating at permitted capacity, which is defined as 95-100 percent of the maximum heat input rate allowed by this permit, achievable for the average inlet air temperature during the test. If it is impracticable to test at permitted capacity, the emissions unit may be tested at less than permitted capacity. In such cases, subsequent operation is limited by adjusting downward the entire heat input vs. inlet temperature curve by the increment equal to the difference between the maximum permitted heat input value and 105 percent of the value reached during the test. Once the emissions unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. Data, curves, and calculations necessary to demonstrate the heat input rate correction at both design and test conditions shall be submitted to the Department with the compliance test report.

Tests shall be conducted on both natural gas and biogas fuels (provided biogas fuels become available) unless previous test results or fuel analysis documents that emissions are independent of fuel fired, in which case tests may be conducted on either fuel.

[AC53-233851B (PSD-FL-206B) and 1050231-002-AC; this condition is intended to simplify the requirements of specific condition 16 of AC53-233851B]

Monitoring of Operations

A.10. Continuous Monitoring Required. A continuous monitoring system shall be maintained to record fuel consumption. A continuous monitoring system shall be maintained to record oxygen

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content and emissions of nitrogen oxides in accordance with the requirements of 40 CFR 75. NOx emissions shall be reported in terms of ppmvd corrected to 15% oxygen. [Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233851B (PSD-FL-206B)]

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A.11. Excess Emissions by CEMS. The CEMS for NOx shall be used to determine periods of excess emissions. Excess emissions are defined for this emissions unit as any 60-minute period during which the average emissions exceed the emission limits of specific condition A.6 of this permit. Periods of startup, shutdown, malfunction shall be monitored, recorded and reported with excess emissions following the format and requirements of 40 CFR 60.7. {Note: The requirements of specific condition A.11 are more stringent than the NSPS monitoring provisions and thus assure compliance with 40 CFR 60.334 and 60.335.} [Rules 62-4.070(3) and 62-213.440, F.A.C.]

Record Keeping and Reporting Requirements

A.12. Fuel Sulfur Content Records Required. The owner or operator shall monitor and maintain records of sulfur content of natural gas (and biogas fuel, whenever such fuel becomes available and is burned) pursuant to the custom fuel monitoring schedule attached as Appendix M. the records shall report total sulfur content in terms of grains of sulfur per hundred cubic feet (standard conditions).

[Rules 62-4.070(3) and 62-213.440, F.A.C., 40 CFR 60.334(b)(2)]

A.13. <u>Additional Reports Required</u>. The owner or operator shall report the following with the Air Operating Report (AOR): sulfur content and lower heating value of the fuel being fired, annual fuel consumption of natural gas and biogas, and hours of operation per fuel usage.

The owner or operator shall provide the Department quarterly reports regarding the progress toward attaining the allowable NOx emission limit of 15 ppmvd at 15% oxygen until such emission limit is attained. Reports shall be submitted to the Southwest District Air Section with a copy to the Department's Bureau of Air Regulation.

[Rule 62-210.370(3), F.A.C., AC53-233851B (PSD-FL-206B) and 1050231-002-AC]

NSPS Conditions

{Permitting Notes: The emissions units above are subject to the following conditions from 40 CFR 60 Subpart A, General Provisions. The affected facilities to which this subpart applies are the combined cycle gas turbines, Units 1 and 2. To the extent allowed by law, the "Administrator" shall mean the "Department".}

The following conditions apply to the NSPS emissions units listed above:

- **A.14.** Pursuant to 40 CFR 60.7 Notification And Record Keeping.
- (a) Any owner or operator subject to the provisions of this part shall furnish the Administrator written notification as follows:
- (4) A notification of <u>any physical or operational change</u> to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be

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postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.

- (b) The owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
- (c) The owner or operator required to install a continuous monitoring system (CMS) or monitoring device shall submit an excess emissions and monitoring systems performance report (excess emissions are defined in applicable subparts) and/or a summary report form (see 40 CFR 60.7(d)) to the Administrator semiannually, except when: more frequent reporting is specifically required by an applicable subpart; or the CMS data are to be used directly for compliance determination, in which case quarterly reports shall be submitted; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. All reports shall be postmarked by the 30th day following the end of each calendar half (or quarter, as appropriate). Written reports of excess emissions shall include the following information:
- (1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period.
- (2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
- (3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
- (4) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- (d) The summary report form shall contain the information and be in the format shown in Figure 1 unless otherwise specified by the Administrator. One summary report form shall be submitted for each pollutant monitored at each affected facility.
- (1) If the total duration of excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and CMS downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, only the summary report form shall be submitted and the excess emission report described in 40 CFR 60.7(c) need not be submitted unless requested by the Administrator.
- (2) If the total duration of excess emissions for the reporting period is 1 percent or greater of the total operating time for the reporting period or the total CMS downtime for the reporting period is 5 percent or greater of the total operating time for the reporting period, the summary report form and the excess emission report described in 40 CFR 60.7(c) shall both be submitted.

[See Attached Figure 1-Summary Report-Gaseous and Opacity Excess Emission and Monitoring System Performance]

(e)(1) Notwithstanding the frequency of reporting requirements specified in paragraph (c) of this section, an owner or operator who is required by an applicable subpart to submit excess

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emissions and monitoring systems performance reports (and summary reports) on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual if the following conditions are met:

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- (i) For one full year (e.g., four quarterly or twelve monthly reporting periods) the affected facility's excess emissions and monitoring systems reports submitted to comply with a standard under this part continually demonstrate that the facility is in compliance with the applicable standard;
- (ii) The owner or operator continues to comply with all recordkeeping and monitoring requirements specified in this subpart and the applicable standard; and
- (iii) The Administrator does not object to reduced frequency of reporting for the affected facility, as provided in paragraph (e)(2) of this section.
- (2) The frequency of reporting of excess emissions and monitoring systems performance (and summary) reports may be reduced only after the owner or operator notifies the Administrator in writing of his or her intention to make such a change and the Administrator does not object to the intended change. In deciding whether to approve a reduced frequency of reporting, the Administrator may review information concerning the source's entire previous performance history during the required recordkeeping period prior to the intended change, including performance test results, monitoring data, and evaluations of an owner or operator's conformance with operation and maintenance requirements. Such information may be used by the Administrator to make a judgment about the source's potential for noncompliance in the future. If the Administrator disapproves the owner or operator's request to reduce the frequency of reporting, the Administrator will notify the owner or operator in writing within 45 days after receiving notice of the owner or operator's intention. The notification from the Administrator to the owner or operator will specify the grounds on which the disapproval is based. In the absence of a notice of disapproval within 45 days, approval is automatically granted.
- (3) As soon as monitoring data indicate that the affected facility is not in compliance with any emission limitation or operating parameter specified in the applicable standard, the frequency of reporting shall revert to the frequency specified in the applicable standard, and the owner or operator shall submit an excess emissions and monitoring systems performance report (and summary report, if required) at the next appropriate reporting period following the noncomplying event. After demonstrating compliance with the applicable standard for another full year, the owner or operator may again request approval from the Administrator to reduce the frequency of reporting for that standard as provided for in paragraphs (e)(1) and (e)(2) of this section.
- (f) The owner or operator subject to the provisions of this part shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least <u>five</u> years following the date of such measurements, maintenance, reports, and records.

 [40 CFR 60.7 and Rule 62-213.440(1)(b)2.b., F.A.C.]

A.15. Pursuant to 40 CFR 60.8 Performance Tests.

(b) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subpart, except as otherwise authorized by an approved alternative method.

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- (c) Performance tests shall be conducted under such conditions as the Administrator shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Administrator such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.
- (f) Unless otherwise specified in the applicable subpart, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Administrator's approval, be determined using the arithmetic mean of the results of the two other runs.

 [40 CFR 60.8]

A.16. Pursuant to 40 CFR 60.11 Compliance With Standards And Maintenance Requirements.

- (a) Compliance with standards in this part, other than opacity standards, shall be determined only by performance tests established by 40 CFR 60.8, unless otherwise specified in the applicable standard.
- (b) Compliance with opacity standards in this part shal! be determined by conducting observations in accordance with Reference Method 9 in appendix A of this part, any alternative method that is approved by the Administrator, or as provided in 40 CFR 60.11(e)(5). For purposes of determining initial compliance, the minimum total time of observations shall be 3 hours (30 6-minute averages) for the performance test or other set of observations (meaning those fugitive-type emission sources subject only to an opacity standard).
- (c) The opacity standards set forth in this part shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.
- (d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
- (e)(5) The owner or operator of an affected facility subject to an opacity standard may submit, for compliance purposes, continuous opacity monitoring system (COMS) data results produced during any performance test required under 40 CFR 60.8 in lieu of Method 9 observation data. If an owner or operator elects to submit COMS data for compliance with the opacity standard, he shall notify the Administrator of that decision, in writing, at least 30 days before any performance test required under 40 CFR 60.8 is conducted. Once the owner or operator of an affected facility has notified the Administrator to that effect, the COMS data results will be used to determine opacity compliance during subsequent tests required under 40 CFR 60.8 until the owner or operator notifies the Administrator, in writing, to the contrary. For the purpose of

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determining compliance with the opacity standard during a performance test required under 40 CFR 60.8 using COMS data, the minimum total time of COMS data collection shall be averages of all 6-minute continuous periods within the duration of the mass emission performance test. Results of the COMS opacity determinations shall be submitted along with the results of the performance test required under 60.8. The owner or operator of an affected facility using a COMS for compliance purposes is responsible for demonstrating that the COMS meets the requirements specified in 40 CFR 60.13(c), that the COMS has been properly maintained and operated, and that the resulting data have not been altered in any way. If COMS data results are submitted for compliance with the opacity standard for a period of time during which Method 9 data indicates noncompliance, the Method 9 data will be used to determine opacity compliance. [40 CFR 60.11]

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A.17. Pursuant to 40 CFR 60.12 Circumvention.

No owner or operator subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[40 CFR 60.12]

A.18. Pursuant to 40 CFR 60.13 Monitoring Requirements.

- (a) For the purposes of this section, all continuous monitoring systems required under applicable subparts shall be subject to the provisions of this section upon promulgation of performance specifications for continuous monitoring systems under appendix B of 40 CFR 60 and, if the continuous monitoring system is used to demonstrate compliance with emission limits on a continuous basis, appendix F to 40 CFR 60, unless otherwise specified in an applicable subpart or by the Administrator. Appendix F is applicable December 4, 1987.
- (c) If the owner or operator of an affected facility elects to submit continuous opacity monitoring system (COMS) data for compliance with the opacity standard as provided under 40 CFR 60.11(e)(5), he/she shall conduct a performance evaluation of the COMS as specified in Performance Specification 1, appendix B, of 40 CFR 60 before the performance test required under 40 CFR 60.8 is conducted. Otherwise, the owner or operator of an affected facility shall conduct a performance evaluation of the COMS or continuous emission monitoring system (CEMS) during any performance test required under 40 CFR 60.8 or within 30 days thereafter in accordance with the applicable performance specification in appendix B of 40 CFR 60. The owner or operator of an affected facility shall conduct COMS or CEMS performance evaluations at such other times as may be required by the Administrator under section 114 of the Act.
- (1) The owner or operator of an affected facility using a COMS to determine opacity compliance during any performance test required under 40 CFR 60.8 and as described in 40 CFR 60.11(e)(5), shall furnish the Administrator two or, upon request, more copies of a written report of the results of the COMS performance evaluation described in 40 CFR 60.13(c) at least 10 days before the performance test required under 40 CFR 60.8 is conducted.
- (2) Except as provided in 40 CFR 60.13(c)(1), the owner or operator of an affected facility shall furnish the Administrator within 60 days of completion two or, upon request, more copies of a written report of the results of the performance evaluation.

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(d)(1) Owners and operators of all continuous emission monitoring systems installed in accordance with the provisions of this part shall check the zero (or low-level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily in accordance with a written procedure. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds two times the limits of the applicable performance specifications in appendix B. The system must allow the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified, whenever specified. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments except that for systems using automatic zero adjustments. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity.

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- (2) Unless otherwise approved by the Administrator, the following procedures shall be followed for continuous monitoring systems measuring opacity of emissions. Minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photo detector assembly.
- (e) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under 40 CFR 60.13(d), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:
- (1) All continuous monitoring systems referenced by 40 CFR 60.13(c) for measuring opacity of emissions shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.
- (2) All continuous monitoring systems referenced by 40 CFR 60.13(c) for measuring emissions, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.
- (f) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of appendix B of 40 CFR 60 shall be used.
- (g) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install an applicable continuous monitoring system on each separate effluent unless the installation of fewer systems is approved by the Administrator. When more than one continuous monitoring system is used to measure the emissions from one affected facility (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required from each continuous monitoring system.
- (h) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to 6-minute averages and for continuous monitoring systems other than opacity to 1-hour averages for time periods as defined in 40 CFR 60.2. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each 6-minute period. For

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continuous monitoring systems other than opacity, 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period. Data recorder during periods of continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. An arithmetic or integrated average of all data may be used. The data may be recorded in reduced or non reduced form (e.g., ppm pollutant and percent O2 or ng/J of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subparts. After conversion into units of the standard, the data may be rounded to the same number of significant digits as used in the applicable subparts to specify the emission limit (e.g., rounded to the nearest 1 percent opacity).

[40 CFR 60.13]

A.19. Pursuant to 40 CFR 60.17 Incorporations by Reference.

The materials listed below are incorporated by reference in the corresponding sections noted. [Note: The remainder of this section has not been reproduced in this permit for brevity. See 40 CFR 60.17 for materials incorporated by reference.]
[40 CFR 60.17]

Other Conditions

A.20. These emissions units are also subject to conditions C.1 through C.13 contained in Subsection C. Common Conditions.

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Subsection B. This section addresses the following emissions unit(s).

003	This emissions unit consists of an auxiliary boiler, a two drum bent tube boiler,
	manufactured by Zurn Nepco, with a maximum heat input of 100 mmBtu/hr for
	natural gas or biogas, capable of burning either natural gas or biogas.

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{Permitting notes: This emissions unit is regulated under Acid Rain, Phase II* and Rule 62-210.300, F.A.C., Permits Required. This emissions unit is subject to only the record keeping requirements of 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, because it combusts only natural gas or biogas. This unit underwent a revised BACT Determination dated March 7, 1995. BACT Limits were incorporated into the subsequent PSD permits including AC53-233852A (PSD-FL-206B), which superseded previous construction permits. Exhaust is vented through a 65 ft. stack. Emissions are controlled with low NOx burners. The boiler began commercial operation in 1995.}

* The permittee included this unit in the Phase II acid rain application. The permittee has requested EPA exempt this unit from regulation under Title IV as an acid rain unit. Upon written confirmation that this unit is not regulated under Title IV, the acid rain section of this permit (Section IV) shall no longer apply. The remainder of this permit shall remain in effect.

The following specific conditions apply to the emissions units listed above:

Essential Potential to Emit (PTE) Parameters

B.1. Permitted Capacity. The maximum operation heat input rates are as follows:

Unit No.	mmBtu/hr Heat Input	Fuel Type	
003	100*	Natural Gas or Biogas	

- * Based on the higher heating value of the fuel. [Rules 62-4.160(2) and 62-210.200(PTE), F.A.C., and AC53-233852A (PSD-FL-206B)]
- **B.2.** Emissions Unit Operating Rate Limitation After Testing. See specific condition **B.9.** [Rule 62-297.310(2), F.A.C.]
- **B.3.** Methods of Operation Fuels. The auxiliary boiler shall be fired with any combination of natural gas and biogas.

 [Rule 62-213.410, F.A.C., and AC53-233852A (PSD-FL-206B)]

Emission Limitations and Standards

- 'B.4. <u>Visible Emissions</u> Visible emissions shall not exceed 15% opacity. [AC53-233852A (PSD-FL-206B)]
- **B.5.** Sulfur Dioxide Sulfur Content. The natural gas and biogas sulfur content shall not exceed 1 grain per hundred cubic feet (standard conditions). See specific condition **B.10**. [Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233852A (PSD-FL-206B)]

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B.6. Emission Limits. The maximum allowable emissions from each unit shall not exceed the emission limitations listed below.

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	Emission Limits			
Pollutant	Natural Gas or	lb/hr	Tons/Year	
	Biogas			
NOx	0.13 lb/mmBtu	13.0	56.9	
CO	0.10 lb/mmBtu	10.0	43.8	
VOC	0.04 lb/mmBtu	4.3	18.8	
PM/PM ₁₀ *	0.01 lb/mmBtu	1.0	4.4	
SO ₂ **	0.003 lb/mmBtu	0.3	1.3	

- * All PM is assumed to be PM₁₀; the PM limitation shall be considered to be met if visible emissions are not greater than 15% opacity.
- ** The sulfur diexide limitation shall be considered to be met if the total sulfur content of the natural gas and biogas fuels does not exceed 1 grain per hundred cubic feet (standard conditions).

[AC53-233851B (PSD-FL-206B)]

Test Methods and Procedures

- **B.7.** Annual Compliance Tests. Emission testing for visible emissions and nitrogen oxides shall be performed annually, no later than March 31st of each year, in accordance with specific condition **B.9**, with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests shall be conducted using the following EPA reference methods in accordance with 40 CFR 60, Appendix A:
 - a. Method 9 for VE;
 - b. Method 7E for NOx.

If the unit is not operating because of scheduled maintenance outages and emergency repairs, it shall be tested within thirty days of returning to service.

[Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233852A (PSD-FL-206B)]

- **B.8.** Testing for PM. CO, VOC. Emission testing for emissions of particulate matter, carbon monoxide and VOC shall be performed in the year prior to renewal of this permit, in accordance with specific condition **B.9.** Particulate matter tests shall be conducted using EPA test methods 5 or 17. Method 17 may be used if the stack flue gas temperature is less than 320°F. Testing for particulate matter is not required if visible emissions are not greater than 15% opacity. Carbon monoxide tests shall be conducted using EPA test method 10. VOC tests shall be conducted using EPA test methods 18 or 25A.
- [Rules 62-4.070(3) and 62-213.440, F.A.C., and AC53-233852A (PSD-FL-206B)]
- **B.9.** Additional Test Requirements. Test results shall be the average of three valid runs. Testing of emissions shall be conducted with the emissions unit operating at permitted capacity, which is defined as 90-100 percent of the maximum heat input rate allowed by this permit. If it is impracticable to test at permitted capacity, the emissions unit may be tested at less than permitted capacity. In such cases, subsequent operation is limited to 110 percent of the test load until a new test is conducted. Once the emissions unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional

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notification to the Department.

compliance testing to regain the authority to operate at the permitted capacity, with prior

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Tests shall be conducted on both natural gas and biogas fuels (provided biogas fuels become available) unless previous test results or fuel analysis documents that emissions are independent of fuel fired, in which case tests may be conducted on either fuel. [Rules 62-297.310(2) & (2)(b), F.A.C., and AC53-233852A (PSD-FL-206B)]

Record Keeping and Reporting Requirements

B.10. Fuel Sulfur Content Records Required. The owner or operator shall monitor and maintain records of sulfur content of natural gas (and biogas fuel whenever such fuel becomes available and is burned), as measured by ASTM method D1072-80, ASTM D3031-81, ASTM D3246-81, ASTM D4084-82 or other applicable ASTM test methods, at minimum once each calendar quarter. The records shall report total sulfur content in terms of grains of sulfur per hundred cubic feet (standard conditions). The owner or operator may comply with this requirement by receiving such records provided by the natural gas supplier, and, if applicable, the supplier of the biogas fuel (when available).

[Rules 62-4.070(3) and 62-213.440, F.A.C.]

- **B.11.** Fuel Usage Records Required. The owner or operator shall record and maintain records of the amounts of each fuel combusted during each day. The owner or operator shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurements, maintenance, reports, and records. [40 CFR 60.7 and 60.48c(g), and Rule 62-213.440(1)(b)2.b., F.A.C.]
- **B.12.** Additional Reports Required. The owner or operator shall report the following with the Air Operating Report (AOR): sulfur content and higher heating value of the fuel being fired, annual fuel consumption of natural gas and biogas, and hours of operation per fuel usage. [Rule 62-210.370(3), F.A.C., and AC53-233852A (PSD-FL-206B)]

Other Conditions

B.13. These emissions units are also subject to conditions **C.1** through **C.13** contained in Subsection **C.** Common Conditions.

Subsection C. Common Conditions.

E.U. ID	
No.	Brief Description
001	Combined cycle gas turbine, Unit 1
002	Combined cycle gas turbine, Unit 2
003	Auxiliary boiler

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

Essential Potential to Emit (PTE) Parameters

C.1. <u>Hours of Operation</u>. The emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200(PTE), F.A.C.]

Emission Limitations and Standards

{Permitting note: Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

Excess Emissions

- c.2. Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]
- C.3. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited.

 [Rule 62-210.700(4), F.A.C.]

Monitoring of Operations

C.4. Determination of Process Variables.

- (a) <u>Required Equipment</u>. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- (b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

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

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C.5. <u>Frequency of Compliance Tests</u>. The following provisions apply only to those emissions units that are subject to an emissions limiting standard for which compliance testing is required.

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- (a) General Compliance Testing.
 - 3. The owner or operator of an emissions unit that is subject to any emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining a renewed operation permit. Emissions units that are required to conduct an annual compliance test may submit the most recent annual compliance test to satisfy the requirements of this provision. In renewing an air operation permit pursuant to Rule 62-210.300(2)(a)3.b., c., or d., F.A.C., the Department shall not require submission of emission compliance test results for any emissions unit that, during the year prior to renewal:
 - a. Did not operate; or
 - b. In the case of a fuel burning emissions unit, burned liquid fuel for a total of no more than 400 hours.
 - 4. During each federal fiscal year (October 1 -- September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for:
 - a. Visible emissions, if there is an applicable standard;
 - b. Each of the following pollutants, if there is an applicable standard, and if the emissions unit emits or has the potential to emit: 5 tons per year or more of lead or lead compounds measured as elemental lead; 30 tons per year or more of acrylonitrile; or 100 tons per year or more of any other regulated air pollutant; and
 - 5. An annual compliance test for particulate matter emissions shall not be required for any fuel burning emissions unit that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.
 - 8. Any combustion turbine that does not operate for more than 400 hours per year shall conduct a visible emissions compliance test once per each five-year period, coinciding with the term of its air operation permit.
 - 9. The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator.
- (b) <u>Special Compliance Tests</u>. When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it may require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.
- (c) Waiver of Compliance Test Requirements. If the owner or operator of an emissions unit that is subject to a compliance test requirement demonstrates to the Department, pursuant to the procedure established in Rule 62-297.620, F.A.C., that the compliance of the emissions unit with an applicable weight emission limiting standard can be adequately determined by means other than the designated test procedure, such as specifying a surrogate standard of no visible emissions for particulate matter sources equipped with a bag house or specifying a fuel analysis for sulfur dioxide emissions, the Department shall waive the compliance test requirements for

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such emissions units and order that the alternate means of determining compliance be used, provided, however, the provisions of Rule 62-297.310(7)(b), F.A.C., shall apply. [Rule 62-297.310(7), F.A.C., SIP approved]

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Test Methods and Procedures

{Permitting Note: The attached Table 2-1, Summary of Compliance Requirements, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

C.6. <u>Visible Emissions</u>. The test method for visible emissions shall be EPA Method 9, adopted and incorporated by reference in Rule 62-204.800, F.A.C., and referenced in Chapter 62-297, F.A.C.

[Rules 62-204.800 and 62-297.401, F.A.C.]

C.7. Required Number of Test Runs. For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five day period allowed for the test, the Secretary or his or her designee may accept the results of the two complete runs as proof of compliance, provided that the arithmetic mean of the results of the two complete runs is at least 20 percent below the allowable emission limiting standards.

[Rule 62-297.310(1), F.A.C.]

C.8. Calculation of Emission Rate. The indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]

C.9. Applicable Test Procedures.

- (a) Required Sampling Time.
 - 1. Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes.
 - 2. Opacity Compliance Tests. When either EPA Method 9 or DEP Method 9 is specified as the applicable opacity test method, the required minimum period of observation for a compliance test shall be sixty (60) minutes for emissions units which emit or have the potential to emit 100 tons per year or more of particulate matter, and thirty (30) minutes for emissions units which have potential emissions less than 100 tons per year of particulate matter and are not subject to a multiple-valued opacity standard. The opacity test

observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur. Exceptions to these requirements are as follows:

c. The minimum observation period for opacity tests conducted by employees or agents of the Department to verify the day-to-day continuing compliance of a unit or activity with an applicable opacity standard shall be twelve minutes.

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- (b) Minimum Sample Volume. Unless otherwise specified in the applicable rule, the minimum sample volume per run shall be 25 dry standard cubic feet.
- (c) Required Flow Rate Range. For EPA Method 5 particulate sampling, acid mist/sulfur dioxide, and fluoride sampling which uses Greenburg Smith type impingers, the sampling nozzle and sampling time shall be selected such that the average sampling rate will be between 0.5 and 1.0 actual cubic feet per minute, and the required minimum sampling volume will be obtained.
- (d) <u>Calibration of Sampling Equipment</u>. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1.
- (e) Allowed Modification to EPA Method 5. When EPA Method 5 is required, the following modification is allowed: the heated filter may be separated from the impingers by a flexible tube. [Rule 62-297.310(4), F.A.C.]
- C.10. Required Stack Sampling Facilities. When a mass emissions stack test is required, the permittee shall comply with the requirements contained in Appendix SS-1, Stack Sampling Facilities, attached to this permit. [Rule 62-297.310(6), F.A.C.]

Record Keeping and Reporting Requirements

- C.11. Malfunctions Notification. In the case of excess emissions resulting from malfunctions, each owner or operator shall notify the Southwest District Air Section in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Southwest District Air Section.

 [Rule 62-210.700(6), F.A.C.]
- C.12. Excess Emissions Report. Submit to the Southwest District Air Section a written report of emissions in excess of emission limiting standards as set forth in this permit, for each calendar quarter. The nature and cause of the excess emissions shall be explained. This report does not relieve the owner or operator of the legal liability for violations.

 [Rule 62-213.440, F.A.C.]

C.13. Test Reports.

- (a) The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Southwest District Air Section on the results of each such test.
- (b) The required test report shall be filed with the Southwest District Air Section as soon as practical but no later than 45 days after the last sampling run of each test is completed.
- (c) The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Southwest District Air Section to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:
 - 1. The type, location, and designation of the emissions unit tested.
 - 2. The facility at which the emissions unit is located.
 - 3. The owner or operator of the emissions unit.

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4. The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.

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

[Rules 62-213.440 and 62-297.310(8), F.A.C.]

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Section IV. This section is the Acid Rain Part.

Operated by:

Orange Cogeneration Facility

ORIS code:

54365

Subsection A. This subsection addresses Acid Rain, Phase II.

The emissions units listed below are regulated under Acid Rain, Phase II.

E.U. ID	
No.	Brief Description
001	Combined cycle gas turbine, Unit 1
002	Combined cycle gas turbine, Unit 2
003	Auxiliary boiler

A.1. The Phase II permit application(s) submitted for this facility, as approved by the Department, are a part of this permit. The owners and operators of these Phase II acid rain unit(s) must comply with the standard requirements and special provisions set forth in the application(s) listed below:

a. DEP Form No. 62-210.900(1)(a), dated 7/1/95 [Chapter 62-213, F.A.C. and Rule 62-214.320, F.A.C.]

A.2. Sulfur dioxide (SO₂) allowance allocations for each Acid Rain unit is as follows:

E.U. ID					•
No.	EPA ID	Year	2000	2001	2002
001	01	SO2	0*	0*	0*
002	02	allowances,	0*	0*	0*
003	03	under Table	0*	0*	0*
		2 or 3 of 40			
		CFR Part 73			

- * The number of allowances held by an Acid Rain source in a unit account may differ from the number allocated by the USEPA under Table 2 or 3 of 40 CFR 73.
- A.3. Emission Allowances. Emissions from sources subject to the Federal Acid Rain Program (Title IV) shall not exceed any allowances that the source lawfully holds under the Federal Acid Rain Program. Allowances shall not be used to demonstrate compliance with a non-Title IV applicable requirement of the Act.
 - 1. No permit revision shall be required for increase in emissions that are authorized by allowances acquired pursuant to the Federal Acid Rain Program, provided that such increases do not require a permit revision pursuant to Rule 62-213.400(3), F.A.C.
 - 2. No limit shall be placed on the number of allowances held by the source under the Federal Acid Rain Program.
- 3. Allowances shall be accounted for under the Federal Acid Rain Program. [Rule 62-213.440(1)(c), F.A.C.]

Orange Cogeneration Limited Partnership Orange Cogeneration Facility Page 24 of 24 **FINAL Permit No.:** 1050231-001-AV

A.4. Comments, notes, and justifications: The permittee has requested, in a letter dated October 24, 1995, EPA exempt these units from regulation under Title IV as acid rain units. Upon written confirmation that these units are not regulated under Title IV, this section of this permit shall no longer apply. The remainder of this permit shall remain in effect.

;

Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers (version dated 02/05/97)

Abbreviations and Acronyms:

°F: Degrees Fahrenheit

BACT: Best Available Control Technology

CFR: Code of Federal Regulations

DEP: State of Florida, Department of Environmental Protection

DARM: Division of Air Resource Management

EPA: United States Environmental Protection Agency

F.A.C.: Florida Administrative Code

F.S.: Florida Statute

ISO: International Standards Organization

LAT: Latitude LONG: Longitude

MMBtu: million British thermal units

MW: Megawatt

ORIS: Office of Regulatory Information Systems

SOA: Specific Operating Agreement UTM: Universal Transverse Mercator

Citations:

The following examples illustrate the methods used in this permit to abbreviate and cite the references of rules, regulations, guidance memorandums, permit numbers, and ID numbers.

Code of Federal Regulations:

Example: [40 CFR 60.334]

Where: 40 reference to Title 40

CFR reference to Code of Federal Regulations

60 reference to Part 60

60.334 reference to Regulation 60.334

Florida Administrative Code (F.A.C.) Rules:

Example: [Rule 62-213, F.A.C.]

Where: 62 reference to Title 62

62-213 reference to Chapter 62-213

62-213.205 reference to Rule 62-213.205, F.A.C.

ISO: International Standards Organization refers to those conditions at 288 degrees K, 60 percent relative humidity, and 101.3 kilopascals pressure.

Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers (continued)

Identification Numbers:

Facility Identification (ID) Number:

Example: Facility ID No.: 1050221

Where:

105 = 3-digit number code identifying the facility is located in Polk County

0221 = 4-digit number assigned by state database.

Permit Numbers:

Example: 1050221-002-AV, or

1050221-001-AC

Where:

AC = Air Construction Permit

AV = Air Operation Permit (Title V Source)

105 = 3-digit number code identifying the facility is located in Polk County

0221 = 4-digit number assigned by permit tracking database

001 or 002 = 3-digit sequential project number assigned by permit tracking

database

Example: PSD-FL-185

PA95-01 AC53-208321

Where:

PSD= Prevention of Significant Deterioration Permit

PA = Power Plant Siting Act Permit

AC = old Air Construction Permit numbering

Facility ID No.: 1050231

Appendix I-1, List of Insignificant Emissions Units and/or Activities

The facilities, emissions units, or pollutant-emitting activities listed in Rule 62-210.300(3)(a), F.A.C., Categorical Exemptions, are exempt from the permitting requirements of Chapters 62-210 and 62-4, F.A.C.; provided, however, that exempt emissions units shall be subject to any applicable emission limiting standards and the emissions from exempt emissions units or activities shall be considered in determining the potential emissions of the facility containing such emissions units. Emissions units and pollutant-emitting activities exempt from permitting under Rule 62-210.300(3)(a), F.A.C., shall not be exempt from the permitting requirements of Chapter 62-213, F.A.C., if they are contained within a Title V source; however, such emissions units and activities shall be considered insignificant for Title V purposes provided they also meet the criteria of Rule 62-213.430(6)(b), F.A.C. No emissions unit shall be entitled to an exemption from permitting under Rule 62.210.300(3)(a), F.A.C., if its emissions, in combination with the emissions of other units and activities at the facility, would cause the facility to emit or have the potential to emit any pollutant in such amount as to make the facility a Title V source.

The below listed emissions units and/or activities are considered insignificant pursuant to Rule 62-213.430(6), F.A.C.

Brief Description of Emissions Units and/or Activities

- 1. Sandblasting at plant maintenance area
- 2. 165 Hp diesel engine at fire pumphouse
- 3. Cooling towers

Facility ID No.: 1050231

Appendix H-1, Permit History/ID Number Changes

Permit History (for tracking purposes):

E.U.			Issue	Expiration	Extended	Revised
ID No.	Description	Permit No.	Date	Date	Date ^{1, 2}	Date(s)
001	42 MW Combustion	AC 53-233851B/	03/07/95	04/01/98		*
	Turbine	PSD-FL-206B				
002	42 MW Combustion	AC 53-233851B/	03/07/95	04/01/98		*
	Turbine	PSD-FL-206B				
003	100 MMBtu Auxiliary	AC 53-233852A/	03/07/95	04/01/96		
	Boiler	PSD-FL-206B				

Note: Permits AC53-233851B/PSD-FL-206B and AC53-233852A/PSD-FL-206B superseded permits AC53-233851/PSD-FL-206 and AC53-233852/PSD-FL-206, respectively.

ID Number Changes (for tracking purposes):

From: Facility ID No.: 40TPA530231

To: Facility ID No.: 1050231

Notes:

- 1 AO permit(s) automatic extension(s) in Rule 62-210.300(2)(a)3.a., F.A.C., effective 03/21/96.
- 2 AC permit(s) automatic extension(s) in Rule 62-213.420(1)(a)4., F.A.C., effective 03/20/96. {Rule 62-213.420(1)(b)2., F.A.C., effective 03/20/96, allows Title V Sources to operate under existing valid permits}

^{*} Construction permit 1050231-002-AC extends the date that lower NOx limits are imposed on the turbines. The intent to issue that permit was issued by the Department on June 23, 1997. The requirements of that permit have been incorporated into this permit.

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Appendix U-1, List of Unregulated Emissions Units and/or Activities

<u>Unregulated Emissions Units and/or Activities</u>. An emissions unit which emits no "emissions-limited pollutant" and which is subject to no unit-specific work practice standard, though it may be subject to regulations applied on a facility-wide basis (e.g., unconfined emissions, odor, general opacity) or to regulations that require only that it be able to prove exemption from unit-specific emissions or work practice standards.

The below listed emissions units and/or activities are neither 'regulated emissions units' nor 'insignificant emissions units'.

E.U. ID	
No.	Brief Description of Emissions Units and/or Activity
004	Storage of Lube Oil, Waste Oil and Diesel Fuel
005	Lube Oil Vapor Extractor, Lube Oil Air/Oil Separator, Steam Turbine Drain Flash Tank

Facility ID No.: 1050231

Appendix S Permit Summary Tables

Table 1-1, Summary of Air Pollutant Emission Standards

This table summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

Emissions Unit	Brief Description
001	Combined cycle gas turbine, Unit 1
002	Combined cycle gas turbine, Unit 2

			Allowable Emissions (Each U	nit)		Equivalent Emissions ¹		
Pollutant	Fuel(s)	Hours	Standard(s)	lb/hour	TPY	lb/hour TPY	Regulatory	See Permit
		per Year					Citations	Condition(s)
VE	Natural Gas or Biogas	8760	10% opacity, 6 minute average				BACT	A.4
NOx	i i	8760	25 ppmvd at 15% oxygen, prior to January 1, 1999	37.0	161.9		BACT	A:6
NOx	11	8760	15 ppmvd at 15% oxygen, January 1, 1999 and thereafter	22.1	97.0		BACT	A.6
CO	11	8760	30 ppmvd	27.8	127.0		BACT	A.6
PM/PM ₁₀ *	It	8760		5	21.9		BACT	A.6
VOC	"	8760	10 ppmvd	3.98	17.4		BACT	A.6
SO ₂	11	8760	1 grain S per 100 cubic feet of gas			1.11 4.87	BACT	A.5

^{*} All PM is assumed to be PM₁₀.

Facility ID No.: 1050231

Appendix S Permit Summary Tables

Table 1-1, Continued

Emissions Unit	Brief Description	
003	Auxiliary boiler	

			Allowable Emissions			Equivalent Emissions ¹		•
Pollutant	Fuel(s)	Hours	Standard(s)	lb/hour	TPY	lb/hour TPY	Regulatory	See Permit
	·	per Year					Citations	Condition(s)
VE	Natural	8760	15% opacity				BACT	B.4
	Gas or							
	Biogas							
NOx	"	8760	0.13 lb/mmBtu	13.0	56.9		BACT	B.6
CO	"	8760	0.10 lb/mmBtu	10.0	43.8		BACT	B.6
VOC	"	8760	0.04 lb/mmBtu	4.3	18.8		BACT	B.6
PM/PM ₁₀ *	11	8760	0.01 lb/mmBtu	1.0	4.4		BACT	B.6
SO ₂ **	"	8760	0.003 lb/mmBtu	0.30	1.3	4.50	BACT	B.5, B.6

^{*} All PM is assumed to be PM₁₀; the PM limitation shall be considered to be met if visible emissions are not greater than 15% opacity.

Notes:

^{**} The sulfur dioxide limitation shall be considered to be met if the total sulfur content of the natural gas and biogas fuels does not exceed 1 grain per hundred cubic feet (standard conditions).

¹ The "Equivalent Emissions" listed are for informational purposes only.

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Appendix S **Permit Summary Tables**

Table 2-1, Summary of Compliance Requirements

This table summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.

Emissions Unit	Brief Description
001	Combined cycle gas turbine, Unit 1
002	Combined cycle gas turbine, Unit 2

Pollutant or	Fuel(s)	Compliance	Testing	Frequency	Minimum	CMS ²	See Permit
Parameter		Method	Frequency	Base Date	Compliance Test		Condition(s)
		·		,	Duration		
VE	Natural	EPA Method 9	Annual	March 31	30 minutes	No	A.7, A.9
	Gas or						
	Biogas						
NOx	"	EPA Method 20	Annual	March 31	3 hours	Yes*	A.7, A.9, A.10
PM	11	EPA Methods 5 or 17	Prior to		3 hours	No	A.8, A.9
			renewal				
CO	11	EPA Method 10	Prior to		3 hours	No	A.8, A.9
			renewal				
VOC	"	EPA Methods 18 or 25A	Prior to		3 hours	No	A.8, A.9
			renewal				
Fuel Sulfur	11	Analysis and record keeping	As fired			Yes**	A.10, A.12

^{*} NOx and oxygen CMS required.

** Fuel consumption monitoring required.

Facility ID No.: 1050231

Appendix S Permit Summary Tables

Table 2-1, Continued

Emissions Unit	Brief Description	
003	Auxiliary boiler	

Pollutant or	Fuel(s)	Compliance	Testing	Frequency	Minimum	CMS ²	See Permit
Parameter		Method	Frequency	Base Date ¹	Compliance Test		Condition(s)
					Duration		
VE	Natural	EPA Method 9	Annual	March 31	30 minutes	No	B.7, B.9
	Gas or						
	Biogas						
NOx	11	EPA Method 7E	Annual	March 31	3 hours	No	B.7, B.9
PM	11	EPA Methods 5 or 17	Prior to		3 hours	No	B.8, B.9
			renewal				
CO	11	EPA Method 10	Prior to		3 hours	No	B.8, B.9
			renewal				
VOC	11	EPA Methods 18 or 25A	Prior to		3 hours	No	B.8, B.9
			renewal				
Fuel Sulfar	11	Analysis and record keeping	As fired		·	No	B.10

Notes:

¹ Frequency base date established for planning purposes only; see Rule 62-297.310, F.A.C. ² CMS = continuous monitoring system

Orange Cogeneration Limited Partnership
Orange Cogeneration Facility

FINAL Permit No.: 1050231-001-AV

Appendix M, Custom Fuel Monitoring Schedule for Natural Gas

Pursuant to 40 CFR 60.334(b)(2), a custom fuel monitoring schedule shall be followed for the natural gas fired at this facility and shall be as follows:

1. Monitoring of fuel nitrogen content shall not be required when natural gas is the only fuel being fired in the turbines.

2. Sulfur Monitoring

- a. Analysis for fuel sulfur content of the natural gas fired at this facility shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternate method. The reference methods are ASTM D1072-80, ASTM D3031-81, ASTM D3246-81 and ASTM D4084-82, as referenced in 40 CFR 60.335(b)(2).
- b. This custom fuel monitoring schedule shall become effective on the date this permit is effective. Effective the date of this custom schedule, sulfur monitoring of natural gas fired at the facility shall be conducted twice monthly for six months. If this monitoring shows little variability in the fuel sulfur content and indicates consistent compliance with the sulfur limits of 40 CFR 60.333, then sulfur monitoring shall be conducted once per quarter for six quarters.
- c. If, after monitoring required in item 2.b. above, the sulfur content shows little variability and, calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified under 40 CFR 60.333, and the fuel sulfur limits of this permit, sample analysis shall be conducted twice per year. This monitoring shall be conducted during the first and third quarters of each calendar year.
- d. Should any sulfur analysis, as required in items 2.b. or 2.c. above indicate noncompliance with the sulfur limits of 40 CFR 60.333 or this permit, the owner or operator shall notify the Department of such excess emissions and the custom schedule shall be re-examined by the Environmental Protection Agency (EPA). Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.
- 3. If there is a change in fuel supply, the owner or operator shall notify the Department and EPA of such change for re-examination of this custom schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.
- Records of sample analysis and fuel supply pertinent to this custom fuel monitoring schedule for natural gas shall be retained for a period of five years, and shall be available at the facility for inspection by personnel of the Department or EPA.

Appendix TV-1, the Title V Core Conditions, has been provided only to the applicant. The most recent version of these conditions may be obtained from the Department's Internet Web site at:

http://www.dep.state.fl.us/air/

If you do not have access to the Internet and would like a copy of Appendix TV, please contact Joseph Kahn, P.E., Department of Environmental Protection, Division of Air Resources Management, Bureau of Air Regulation, Mail Station 5505, 2600 Blair Stone Road, Tallahassee, FL 32399-2400, 850/488-1344.

An electronic version of this permit is also available from the Department's Internet Web site above.

Phase II Permit Application

Page 1

For more information, see instructions and refer to 40 CFR 72.30 and 72.31 and Chapter 62-214, F.A.C.

This submission is: Mew

☐ Revised

Compliance

Yes

Yes

Yes

Yes

Yes

STEP 1 Identify the source by plant name, State, and ORIS code from NADB Plant Name Orange Cogeneration Facility State FL ORIS Code 54365

STEP 2
Enter the boiler ID#
from NADB for each
affected unit, and
indicate whether a
repowering plan is
being submitted for
the unit by entering
"yes" or "no" at
column c. For new
units, enter the requested information
in columns d and e

Plan С Boiler ID# Repowering **New Units** Unit Will New Units Hold Allow-Plan ances in Accordance with 40 CFR 72.9(c)(1) Commence Monitor Operation Date Certification Deadline 01 No 1/1/96 Yes 6/16/95 02 No 1/1/96 Yes 6/16/95 03 No 1/1/96 6/16/95 Yes

STEP 3 Check the box if the response in column c of Step 2 is "Yes" for any unit For each unit that will be repowered, the Repowering Extension Plan form is included and the Repowering Technology Petition form has been submitted or will be submitted by June 1, 1997.

DEP Form No. 62-210.900(1)(a) - Form

Effective: 7-1-95

Plant Name (from Step 1) Orange Cogeneration Facility

STEP 4 Read the standard requirements and certification, enter the name of the designated representative, and sign and date

Standard Requirements

Permit Requirements.

- (1) The designated representative of each Acid Rain source and each Acid Rain unit at the source shall: (i) Submit a complete Acid Rain part application (including a compliance plan) under 40 CFR part 72, Rules 62-214.320 and 330, F.A.C. in accordance with the deadlines specified in Rule 62-214.320, F.A.C.; and
 - (ii) Submit in a timely manner any supplemental information that the permitting authority determines is
- necessary in order to review an Acid Rain part application and issue or deny an Acid Rain permit; (2) The owners and operators of each Acid Rain source and each Acid Rain unit at the source shall: (i) Operate the unit in compliance with a complete Acid Rain part application or a superseding Acid Rain part issued by the permitting authority; and (ii) Have an Acid Rain Part.

Monitoring Requirements.

- (1) The owners and operators and, to the extent applicable, designated representative of each Acid Rain source and each Acid Rain unit at the source shall comply with the monitoring requirements as provided in 40 CFR part 75, and Rule 62-214.420, F.A.C.
- (2) The emissions measurements recorded and reported in accordance with 40 CFR part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.
- (3) The requirements of 40 CFR part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Sulfur Dioxide Requirements.

- (1) The owners and operators of each source and each Acid Rain unit at the source shall: (i) Hold allowances, as of the allowance transfer deadline, in the unit's compliance subaccount (after deductions under 40 CFR 73.34(c)) not less than the total annual emissions of sulfur dioxide for the previous calendar year from the unit; and
- (ii) Comply with the applicable Acid Rain emissions limitations for sulfur dioxide. (2) Each ton of sulfur dioxide emitted in excess of the Acid Rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Act.
- (3) An Acid Rain unit shall be subject to the requirements under paragraph (1) of the sulfur dioxide requirements as follows:

 - (i) Starting January 1, 2000, an Acid Rain unit under 40 CFR 72.6(a)(2); or (ii) Starting on the later of January 1, 2000 or the deadline for monitor certification under 40 CFR part 75, an Acid Rain unit under 40 CFR 72.6(a)(3).
- (4) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System
- accounts in accordance with the Acid Rain Program.

 (5) An allowance shall not be deducted in order to comply with the requirements under paragraph (1)(i) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.

 (6) An allowance allocated by the Administrator under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the Acid Rain permit application, the Acid Rain permit, or the written exemption under 40 CFR 72.7 and 72.8 and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.
- (7) An allowance allocated by the Administrator under the Acid Rain Program does not constitute a property right.

Nitrogen Oxides Requirements. The owners and operators of the source and each Acid Rain unit at the source shall comply with the applicable Acid Rain emissions limitation for nitrogen oxides.

Excess Emissions Requirements.

- (1) The designated representative of an Acid Rain unit that has excess emissions in any calendar year shall submit a proposed offset plan, as required under 40 CFR part 77.
- (2) The owners and operators of an Acid Rain unit that has excess emissions in any calendar year shall: (i) Pay without demand the penalty required, and pay upon demand the interest on that penalty, as required by 40 CFR part 77; and
 - (ii) Comply with the terms of an approved offset plan, as required by 40 CFR part 77.

Recordkeeping and Reporting Requirements.

- (1) Unless otherwise provided, the owners and operators of the source and each Acid Rain unit at the source shall keep on site at the source each of the following documents for a period of 5 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 5 years, in writing by the Administrator or permitting authority:
 - (i) The certificate of representation for the designated representative for the source and each Acid Rain unit at the source and all documents that demonstrate the truth of the statements in the certificate of representation, in accordance with Rule 62-214.350, F.A.C.; provided that the certificate and documents shall be retained on site at the source beyond such 5-year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;
 - (ii) All emissions monitoring information, in accordance with 40 CFR part 75;
 - (iii) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,

Plant Name (from Step 1)
Orange Cogeneration Facility

Recordkeeping and Reporting Requirements (cont.)

- (iv) Copies of all documents used to complete an Acid Rain part application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.
- (2) The designated representative of an Acid Rain source and each Acid Rain unit at the source shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR part 72 subpart I and 40 CFR part 75.

Liability.

- (1) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, a complete Acio Rain part application, an Acid Rain part, or a written exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement pursuant to section 113(c) or the Act.
- (2) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to section 113(c) of the Act and 18 U.S.C. 1001.
- (3) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.
- (4) Each Acid Rain source and each Acid Rain unit shall meet the requirements of the Acid Rain Program. (5) Any provision of the Acid Rain Program that applies to an Acid Rain source (including a provision
- applicable to the designated representative of an Acid Rain source) shall also apply to the owners and operators of such source and of the Acid Rain units at the source.
- (6) Any provision of the Acid Rain Program that applies to an Acid Rain unit (including a provision applicable to the designated representative of an Acid Rain unit) shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR part 75 (including 40 CFR 75.16, 75.17, and 75.18), the owners and operators and the designated representative of one Acid Rain unit shall not be liable for any violation by any other Acid Rain unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.

 (7) Each violation of a provision of 40 CFR parts 72, 73, 75, 77, and 78 by an Acid Rain source or Acid
- (7) Each violation of a provision of 40 CFR parts 72, 73, 75, 77, and 78 by an Acid Rain source or Acid Rain unit, or by an owner or operator or designated representative of such source or unit, shall be a separate violation of the Act.

Effect on Other Authorities. No provision of the Acid Rain Program, an Acid Rain part application, an Acid Rain part, or a written exemption under 40 CFR 72.7 or 72.8 shall be construed as:

- (1) Except as expressly provided in title IV of the Act, exempting or excluding the owners and operators and, to the extent applicable, the designated representative of an Acid Rain source or Acid Rain unit from compliance with any other provision of the Act, including the provisions of title I of the Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;
- (2) Limiting the number of allowances a unit can hold; provided, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Act;
- (3) Requiring a change of any kind in any State law regulating electric utility rates and charges, affecting any State law regarding such State regulation, or limiting such State regulation, including any prudence review requirements under such State law;
 (4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory
- (4) Modifying the Federal Power Act or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,
- (5) Interfering with or impairing any program for competitive bidding for power supply in a State in which such program is established.

Certification

I am authorized to make this submission on behalf of the owners and operators of the Acid Rain source or Acid Rain units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Name John Paul Jones	
Signature John Paul Jone	Date 12/27/95

DEP Form No. 62-210.900(1)(a) - Form

Effective: 7-1-95

Phase II Permit-Page 4

STEP 5 (optional) Enter the source AIRS and FINDS identification numbers, if known

AIRS		
FINDS		

DEP Form No. 62-210.900(1)(a) - Form

Effective: 7-1-95



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

OCT 2 8 1997

RECEIVED

NGV 03 1997

BUREAU OF AIR REGULATION

4APT-ARB

Mr. Joseph Kahn. P.E.
Permit Engineer
Title V Section
Air Resources Management Division
Florida Department of Environmental
Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJECT: Custom Fuel Monitoring Schedule Proposed for

Stationary Gas Turbines at Orange Cogeneration

Dear Mr. Kahn:

This letter is in response to your September 3, 1997, request for a determination regarding a custom fuel monitoring schedule proposed for combustion turbines at the referenced cogeneration plant. The natural gas fired turbines at this plant are subject to 40 C.F.R. Part 60, Subpart GG (Standards of Performance for Stationary Gas Turbines), and Region 4 has concluded that the proposed custom fuel monitoring schedule is acceptable because it is consistent with guidance that the U.S. Environmental Protection Agency (EPA) previously issued regarding such schedules.

According to 40 C.F.R. §60.334(b)(2), owners and operators of stationary gas turbines subject to Subpart GG are required to monitor fuel nitrogen and sulfur content on a daily basis if a company does not have intermediate bulk storage for its fuel. 40 C.F.R. §60.334(b)(2) also contains provisions allowing owners and operators of turbines that do not have intermediate bulk storage for their fuel to request approval of custom fuel monitoring schedules that require less frequent monitoring of fuel nitrogen and sulfur content. In a memorandum dated August 14, 1987, the EPA Compliance Monitoring Branch provided guidance regarding acceptable custom fuel monitoring provisions for natural gas fired turbines, and this memorandum also gave EPA regional offices the authority to approve custom fuel monitoring schedules for Subpart GG turbines.

Under the EPA guidance issued in 1987, the requirement to monitor the nitrogen content of pipeline quality natural gas was waived entirely since the Agency determined that this type of

fuel does not contain any fuel-bound nitrogen that can cause NO, emissions. As an alternative to daily sulfur monitoring, the 1987 policy describes a three stage process under which owners and operators of natural gas fired turbines can obtain approval to conduct sampling on a semiannual basis. In the first step of this process, the sulfur content of the fuel must be monitored twice a month for at least six months. If the results of this bimonthly monitoring verify compliance with the applicable sulfur limit and indicate little variability in the sulfur content of the fuel, the fuel sampling and analysis frequency can be reduced from a bimonthly to a quarterly basis. If six quarters of fuel monitoring data verify compliance with the applicable sulfur standard and indicate little variability in the sulfur content of the fuel, the sampling and analysis frequency can be reduced to a semiannual basis. Since the custom fuel monitoring approach proposed by Orange Cogeneration for the natural gas fired turbines at its Polk County plant is identical to that outlined in the 1987 custom fuel monitoring guidance issued by EPA, Region 4 has no objections to approval of the proposed alternative schedule.

If you have any questions about the determination provided in this letter, please contact Mr. David McNeal of my staff at 404/562-9102.

Sincerely yours,

houghers Mulliy

R. Douglas Neeley

Chief

Air and Radiation Technology

Branch

Air. Pesticides and Toxics Management Division



July 17, 1997

Mr. Al Linero, P.E.
Administrator, New Source Review Section
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re:

Orange Cogeneration Facility AC53-233851B, PSD-FL-206B

RECEIVED
JUL 18 1997

BUREAU OF AIR REGULATION

Dear Mr. Linero:

I have enclosed an affidavit from The Polk County Democrat showing that the <u>PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION</u> for the Orange Cogeneration Facility located near Bartow, Florida was published in their paper on Thursday July 10, 1997.

Since we did not receive the affidavit until today, I am sending a copy of the affidavit and the public notice via facsimile to your office and sending the original via overnight carrier.

If you have any questions please call me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

by Orange Cogeneration GP, Inc.

Allan Wade Smith

its general partner

General Manager

enclosures

AFFIDAVIT OF PUBLICATION

The Polk County Democrat

Published Semi-Weekly Bartow, Polk County, Florida

Case No.					
STATE OF FLORIDA					
COUNTY OF POLK					
Before the undersigned authority personally appeared					
Mary G. Frisbie, who on oath says that (s)he is Treasurer of The Polk County Democrat, a newspaper					
Treasurer of The Polk County Democrat, a newspaper					
published at Bartow, Polk County, Florida; that the attached copy of advertisement, being a Public Notice in the					
matter of Intent to Issue Air Construction Permit Modification					
#1050231-002-AC					
in the Court, was published in said newspaper in the issues of July 10, 1997					
of					
Affiant further says that The Polk County Democrat is a newspaper published at Bartow, in said Polk County, Florida, and that said newspaper has heretofore been continuously published in said Polk County, Florida, each Monday and Thursday, and has been entered as second class matter at the post office in Bartow, 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 said newspaper. Signed Mary H. Justice Sworn to and subscribed before me this 9th day of July, 19 97,					
by Mary G. Frisbie,					
who is personally known to me. (Signature of Notary Public) C. Joanne Ethington (Printed or typed name of Notary Public) Notary Public					

My Commission Expires:



PUBLIC NOTICE
OF INTENT TO ISSUE
AIR CONSTRUCTION
PERMIT MODIFICATION
STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL
PROTECTION
DRAFT Permit
Modification No.:
1050231-002-AC,
PSD-FL-206B
Bartow Facility
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification to Orange Cogeneration Limited Partner-ship, for their facility located in Bartow, Polk County. A Best Available Control Technology (BACT) determination was not required for this modification purusant to Rule 62-212.400, . A. C. and 40 CFR 52.21, Prevention of Significant Deter-ioration (PSD). The applicant's name and address are: Orange Cogeneration Limited Partnership by Orange Cogeneration GP, Inc., its general partner, 1125 US Hwy 98 South, Suite 100, Lakeland, Florida 33801.

The applicant has requested a one year extension on the date to comply with a lower emission limit (15 ppm) for nitrogen oxides (NOx) for the combined cycle combustion turbine which is primarily fired by pipeline quality natural gas. This extension is needed to allow time for the vendor to complete development of the dry low NOx control system. The emission limit will be 25 ppm until the proposed new deadline of January 1, 1999. This amendment also clarifles which fuels are to be fired during annual emission tests.

An air quality impact analysis was not conducted. Emissions from the facility will not consume PSD increment and will not significantly contribute to or cause a violation of any state or federal ambient air quality standards.

The Department will issue

ine FINAL Permit Modification, in accordance with the conditions of the DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification Issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Written comments should be provided to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Mall 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 Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modification with the conditions of the DRAFT Permit Modification unless a timely petition for an administrative hearing is filled pursuant to Sections 120.569 and 120.57, F. S., or a party requests mediation as an alternative remedy under Section 120.573, F. S., before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

requesting mediation.

A person whose substantial Interests are affected by the Department's proposed permitting decision may peti-tion 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, Fiorida 32399-3000, tele-phone: 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 (or a request for mediation, as discussed below) 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 filling 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

the 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 or proposed 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. In the proceeding, in accordance with the requirements set forth above.

A person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by illing with the Department a request for mediation and the witten agreement of all such parties to mediate the dispute. The request and agreement must be filled in (received by) the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Fiorida 32399-3000, by the same deadline as set forth above for the filing of a petition.

above for the filing of a petition.
A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and, (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the

mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the

costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and, (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573, F. S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57, F. S., for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agree-

ment. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.559 and 120.57 F. S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at: Department of Environmental Protection, Bureau of Air Regulation, 111 S. Magnolia Drive, Suite 4, Taliahassee, Florida, 32301, Telephone: 904/488-1344, Fax: 904/922-6979: Department of Environmental Protection, Southwest District Office, 3804 Coconut Palm Drive, Tampa, FL 33619, Telephone: (8 1 3) 7 4 4 - 6 1 0 0. Fax: (8 1 3) 744-6084.

The complete project file includes the Draft Permit Modification, the application, 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.

) July 10, 1997-1910



Department of **Environmental Protection**

Lawton Chiles Governor

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

Virginia B. Wetherell Secretary

June 18, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Hwy 98 South, Suite 100 Lakeland, Florida 33801

Re: DRAFT Permit Modification No. 1050231-002-AC, PSD-FL-206B Bartow Facility / Combined Cycle Combustion Turbine Extension of Nitrogen Oxides Emissions Compliance Date

Dear Mr. Smith:

Enclosed is one copy of the Draft Air Construction Permit Modification for the combined cycle combustion turbine located in Bartow, Polk County. The Department's Intent to Issue Air Construction Permit Modification and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" are also included.

The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION" must be published within 30 (thirty) days of receipt of this letter. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the

allotted time may result in the denial of the permit modification.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Mr. Marty Costello or Mr. Linero at 904/488-1344.

Sincerely,

C. H. Fancy, P.E., Chief,

Bureau of Air Regulation

CHF/mc

Enclosures

In the Matter of an Application for Permit Modification by:

Orange Cogeneration L.P., Inc. 1125 US Hwy 98 South, Suite 100 Lakeland, Florida 33801 DRAFT Permit Amendment No.:1050231-002-AC PSD-FL-206B Bartow Facility Polk County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification (copy of DRAFT Permit modification attached) for the proposed project, as detailed in the application specified above, for the reasons stated below.

The applicant, Orange Cogeneration L.P, Inc. applied on June 10, 1997, to the Department for an air construction permit modification to extend the final nitrogen oxides emissions compliance date for its combined cycle combustion turbine located in Bartow, Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit modification is required to extend the final date until January 1, 1999 to comply with the lower nitrogen oxides emission standard (15 ppm).

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

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION". The notice shall be published one time only within 30 (thirty) days in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 904/488-1344; Fax 904/ 922-6979) within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit modification pursuant to Rule 62-103.150 (6), F.A.C.

The Department will issue the FINAL Permit Modification, in accordance with the conditions of the enclosed DRAFT Permit Modification unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION." Written comments 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 Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

Draft Permit Modification No.: 1050231-002-AC, PSD-FL-206B

Page 2 of 4

The Department will issue the perinit modification with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., or a party requests mediation as an alternative remedy under Section 120.573 F.S. before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

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: 904/488-9730, 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 (or a request for mediation, as discussed below) 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 or proposed 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 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 person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any; (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and

Draft Permit Modification No.: 1050231-002-AC, PSD-FL-206B Page 3 of 4

documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

proposition of the same

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

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

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

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

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

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief Bureau of Air Regulation Draft Permit Modification No.: 1050231-002-AC, PSD-FL-206B Page 4 of 4

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION (including the PUBLIC NOTICE, and DRAFT permit modification) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 6/23/97 to the person(s) listed:

Mr. Allan Wade Smith, Orange Cogeneration L.P., Inc. *

Mr. Brain Beals, EPA

Mr. Bill Thomas, SWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Charlatte Hayes 6/23/97 (Clerk) (Date)

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT MODIFICATION

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DRAFT Permit Modification No.: 1050231-002-AC, PSD-FL-206B Bartow Facility Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit modification to Orange Cogeneration L.P., Inc., for their facility located in Bartow, Polk County. A Best Available Control Technology (BACT) determination was not required for this modification pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The applicant's name and address are: Orange Cogeneration GP, Inc. 1125 US Hwy 98 South, Suite 100, Lakeland, Florida 33801.

The applicant has requested a one year extension on the date to comply with a lower emission limit (15 ppm) for nitrogen oxides (NO_X) for the combined cycle combustion turbine which is primarily fired by pipeline quality natural gas. This extension is needed to allow time for the vendor to complete development of the dry low NO_X control system. The emission limit will be 25 ppm until the proposed new deadline of January 1, 1999. This amendment also clarifies which fuels are to be fired during annual emission tests.

An air quality impact analysis was not conducted. Emissions from the facility will not consume PSD increment and will not significantly contribute to or cause a violation of any state or federal ambient air quality standards.

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

The Department will accept written comments concerning the proposed DRAFT Permit Modification issuance action for a period of 30 (thirty) days from the date of publication of this Notice. Written comments 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 Modification, the Department shall issue a Revised DRAFT Permit Modification and require, if applicable, another Public Notice.

The Department will issue FINAL Permit Modification with the conditions of the DRAFT Permit Modification unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S. or a party requests mediation as an alternative remedy under Section 120.573 before the deadline for filing a petition. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning for a hearing are set forth below, followed by the procedures for requesting mediation.

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 (or a request for mediation, as discussed below) 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

HOTICE TO BE PUBLISHED IN THE NEWSPAPER

reversal or modification of the Department's action or proposed 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 person whose substantial interests are affected by the Department's proposed permitting decision, may elect to pursue mediation by asking all parties to the proceeding to agree to such mediation and by filing with the Department a request for mediation and the written agreement of all such parties to mediate the dispute. The request and agreement must be filed in (received by) the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000, by the same deadline as set forth above for the filing of a petition.

A request for mediation must contain the following information: (a) The name, address, and telephone number of the person requesting mediation and that person's representative, if any, (b) A statement of the preliminary agency action; (c) A statement of the relief sought; and (d) Either an explanation of how the requester's substantial interests will be affected by the action or proposed action addressed in this notice of intent or a statement clearly identifying the petition for hearing that the requester has already filed, and incorporating it by reference.

The agreement to mediate must include the following: (a) The names, addresses, and telephone numbers of any persons who may attend the mediation; (b) The name, address, and telephone number of the mediator selected by the parties, or a provision for selecting a mediator within a specified time; (c) The agreed allocation of the costs and fees associated with the mediation; (d) The agreement of the parties on the confidentiality of discussions and documents introduced during mediation; (e) The date, time, and place of the first mediation session, or a deadline for holding the first session, if no mediator has yet been chosen; (f) The name of each party's representative who shall have authority to settle or recommend settlement; and (g) The signatures of all parties or their authorized representatives.

As provided in Section 120.573 F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57 F.S. for requesting and holding an administrative hearing. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons whose substantial interests will be affected by such modified final decision of the Department have a right to petition for a hearing only in accordance with the requirements for such petitions set forth above. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57 F.S. remain available for disposition of the dispute, and the notice will specify the deadlines that then will apply for challenging the agency action and electing remedies under those two statutes.

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

Department of Environmental Protection Bureau of Air Regulation 111 S. Magnolia Drive, Suite 4 Tallahassee, Florida, 32301 Telephone: 904/488-1344 Fax: 904/922-6979 Department of Environmental Protection Southwest District Office 3804 Coconut Palm Drive Tampa, FL 33619 Telephone:(813) 744-6100 Fax: :(813) 744-6084

The complete project file includes the Draft Permit Modification, the application, 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.



July xx, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Allan Wade Smith General Manager Orange Cogeneration L.P., Inc. 1125 US Hwy 98 South, Suite 100 Lakeland, Florida 33801

Re: Permit Modification No. 1050231-002-AC, PSD-FL-206B Bartow Facility

Dear Mr. Smith:

The Department has reviewed the modification requested in your June 6, 1997 letter and the permit is hereby modified as follows:

Specific Condition 10

FROM:

Prior to January 1, 1998, the maximum NO_x concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen (25 ppmvd @ 15% O_2), as determined by the procedures in Specific Conditions Nos. 16, 17 and 18.

TO:

<u>Prior to January 1, 1999</u>, the maximum NO_x concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen (25 ppmvd @ 15% O_2), as determined by the procedures in Specific Conditions Nos. 16, 17 and 18.

Specific Condition 11

FROM:

After December 31, 1997, the maximum NO_x concentration, 1-hour average, from each CT/HSRG unit, shall not exceed 15 ppmvd @ 15% O_2 , as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. Should the NO_x standard of 15 ppmvd @ 15% O_2 not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_x emission standard.

Mr. Smith Page 2 of 3 June XX, 1997



TO:

After December 31, 1998, the maximum NO_x concentration, 1-hour average, from each CT/HSRG unit, shall not exceed 15 ppmvd @ 15% O₂, as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. Should the NO_x standard of 15 ppmvd @ 15% O₂ not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_x emission standard.

Specific Condition 15

FROM:

Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review by January 1, 1998. Until new curves are approved by the Department or the combustion turbines meet the NO_x emission standard of 15 ppmvd @ 15% (whichever occurs first), the stack, operator, and emission data for the proposed combustion turbines in Table 2-4 (October 28, 1993) will be used. The data will be used to determine compliance with the maximum allowable emission rates of the regulated air pollutants at different air inlet temperatures for these turbines.

TO:

Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP <u>for review by January 1, 1999</u>. Until new curves are approved by the Department or the combustion turbines meet the NO_x emission standard of 15 ppmvd @ 15% (whichever occurs first), the stack, operator, and emission data for the proposed combustion turbines in Table 2-4 (October 28, 1993) will be used. The data will be used to determine compliance with the maximum allowable emission rates of the regulated air pollutants at different air inlet temperatures for these turbines.

Specific Condition 16

FROM:

Testing of emissions shall be conducted at 95-100% of the manufacturer's rated heat input based on the average air inlet temperature for the CT during the test. Compliance for NO_x emission limits shall be determined by calculating the concentration of NO_x (ppmvd at 15% O_2) and using the turbine manufacturer's thermal throughput rating for the average air inlet temperature by multiplying the permitted emission limit by the ratio of the tested heat input to the maximum heat input (MMBtu/hr) at this temperature. Compliance with the visible emissions, NO_x , SO_2 , CO, PM/PM_{10} , and VOC emission standards shall be determined annually thereafter. Tests shall be conducted on both natural gas and biogas fuels. If the initial tests or fuel analyses show the emissions of air pollutants from the combustion turbines are independent of the fuel (natural gas or biogas fuel), then annual compliance tests can be conducted while the combustion turbines are burning either fuel.

Mr. Smith Page 3 of 3 June XX, 1997



TO:

Testing of emissions shall be conducted at 95-100% of the manufacturer's rated heat input based on the average air inlet temperature for the CT during the test. Compliance for NO_x emission limits shall be determined by calculating the concentration of NO_x (ppmvd at 15% O₂) and using the turbine manufacturer's thermal throughput rating for the average air inlet temperature by multiplying the permitted emission limit by the ratio of the tested heat input to the maximum heat input (MMBtu/hr) at this temperature. Compliance with the visible emissions, NO_x, SO₂, CO, PM/PM₁₀, and VOC emission standards shall be determined annually thereafter. Tests shall be conducted on both natural gas and biogas fuels, **provided biogas gas fuels become available**. If the initial tests or fuel analyses show the emissions of air pollutants from the combustion turbines are independent of the fuel (natural gas or biogas fuel), then annual compliance tests can be conducted while the combustion turbines are burning either fuel.

Specific Condition 19

FROM:

Prior to January 1, 1998, the permittee shall provide a report showing how the allowable NO_x emissions of 15 ppmvd @ 15% O_2 is achieved by the CT's.

TO:

The permittee shall provide quarterly reports regarding the progress toward attaining the allowable NO_x emissions of 15 ppmvd @ 15% O_2 until such emission level is attained.

Table 1

The compliance date is hereby changed to 1/1/99 as is the date in Note (d).

A copy of this letter shall be filed with the referenced permit and shall become part of the permit.

Sincerely,

Howard L. Rhodes, Director Division of Air Resources Management

HLR/mc

Enclosures

Florida Department of **Environmental Protection**

Memorandum

TO:

Clair Fancy

THRU:

Al Linero

agre 6/13

FROM

Marty Costello MC

DATE:

June 18, 1997

SUBJECT: Orange Cogeneration GP Inc.

PSD-FL-206B

Extension of Compliance Date for 15 ppm NO_x Limit

Attached is a letter modifying a construction permit for the Orange Cogen combined cycle combustion turbine to allow an additional year for their General Electric LM6000 with dry low NO_x technology to maintain a consistent level of NO_x at 15 ppmvd @ 15% O₂. This action is consistent with those taken for KUA, Auburndale Power Partners, and DESTEC/Tiger Bay.

In addition, they also request clarification of Specific Condition 16 that tests shall be conducted on both natural gas and biogas fuels, provided biogas fuels become available.

I recommend your approval and signature.

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PS	F	60-F1-206B

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rse side?	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.		I also wish to receive the following services (for an extra fee):	_
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RECEIVED 1997 AIR REGULATION

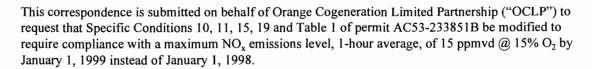
June 6, 1997

Mr. Al Linero, P.E.
Administrator, New Source Review Section
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re:

Orange Cogeneration Facility AC53-233851B, PSD-FL-206B

Dear Mr. Linero:



The Orange Cogeneration Facility utilizes a dry low-NO_x technology ("DLE") developed by General Electric Company ("GE") to control NO_x and CO emissions. During the development of the Orange Cogeneration Facility, GE advised OCLP to seek an air permit NO_x limit of 15 ppm effective December 31, 1997. GE believed that their DLE combustion system would be able to sustain NO_x levels below 15 ppm by the end of 1997. However, technical difficulties have delayed their program by approximately one year.

GE has been working towards their commitment to OCLP to achieve 15 ppm NO_x by December 31, 1997. GE has conducted a number of tests to reduce NO_x emissions and they plan to continue their design, research and testing efforts to reach the 15 ppm NO_x emissions level. They are currently testing a newly designed premixer which was installed in one of the combustion turbines at the facility in March. The NO_x emissions levels from the facility currently range from 18-21 ppm. GE believes that they may be able to reduce the NO_x emissions to 15 ppm by the end of this year, but they are not confident that the 15 ppm level will be sustainable.

GE has recommended that OCLP request a one-year extension of the current 25 ppm NO_x emissions level so that they can continue to improve their DLE combustion system. They are confident that they will be able to consistently demonstrate a NO_x emissions level of 15 ppm or less by the end of 1998.

I have enclosed a letter from GE Marine and Industrial Engines to OCLP and a copy of a presentation given to the Florida Department of Environmental Protection by GE on January 13, 1997. These enclosures address the DLE program status and explain GE's plans and commitment for achieving 15 ppm NO_x levels by the end of 1998. The letter was prepared by the GE team responsible for the development of the DLE combustion system and it was signed by a Professional Engineer. In addition I have enclosed a letter from a Professional Engineer registered in Florida supporting the letter from GE Marine and Industrial Engines.

OCLP request that the air permit be modified as follows in response to the recommendations of GE:

Under Specific Condition

#10 Change the compliance date from "Prior to January 1, 1998," to "Prior to January 1, 1999,".

1125 US Highway 98 South • Suite 100 • Lakeland, Florida 33801 (941) 682-6338 • FAX (941) 683-8257

- #11 Change compliance date to "After December 31, 1998," instead of "After December 31, 1997,". Strike the second sentence, "Should the NO_x ... this standard."
- #15 Change review date from "...review by January 1, 1998." to "...review by January 1, 1999."
- Table 1 Change the compliance date in the body of the table and in note (d) to "1/1/99" instead of "1/1/98".
- #19 Change to read "The permittee shall provide periodic reports regarding the progress toward attaining the allowable NO_x emissions of 15 ppmvd @ 15% O₂ until such emissions level is attained."

In addition to the changes associated with extending the compliance date for allowable NO_x emissions of 15 ppmvd @ 15% O_2 by one year, OCLP would also like to clarify in the fifth sentence of Specific Condition #16 that tests shall be conducted on both natural gas and biogas fuels, provided biogas fuels become available.

As you requested during our meeting earlier this year, copies of this letter and all of the enclosures are being furnished to Mr. Brian Beals, Mr. Bill Thomas and Mr. John Bunyak so that they can provide any comments to you.

I have also enclosed a check for \$250.00 for the permit modification fee.

If you have any questions please call me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

by Orange Cogeneration GP, Inc.

its general partner

Allan Wade Smith

General Manager

enclosures

cc: Mr. Brian Beals, EPA

Mr. Bill Thomas - FDEP

Mr. John Bunyak - NPS

Mr. Dennis Oehring - CSWE Operations





Charles Blankenship, Jr. Manager, LM5000/LM6000 Projects One Neumann Way, MDS122 Cincinnati, OH 45215-6301 (513) 552-5320 Fx: (513) 552-5009

11 MAR 97

Mr. Wade Smith General Manager Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland Florida 33801

Dear Mr. Smith,

GE is committed to reducing the NOx emissions levels of our LM6000 DLE engines. We have an aggressive, active program to reduce NOx emissions from our current level of approximately 18ppm to a level less than 15ppm.

The initial focus of this program has been on achieving 15ppm levels at the Orange Cogen site by 12/31/97. As you know, several tests have been conducted on these engines in the last 2 years as a part of this program. While these changes yielded emissions improvements, other changes were also needed to improve acoustics and durability problems. As a result, our program is approximately one year behind our original schedule.

As we mentioned, work on the program is ongoing. A test of a new premixer design is scheduled to occur before June of this year on an Orange Cogen engine. We expect this premixer to reduce NOx emissions to just below 15ppm, but changes in engine operating characteristics could cause emissions levels just above 15ppm. Design studies are also ongoing at our Evendale plant near Cincinnati. As these studies are complete, additional testing will be scheduled.

We believe the technology to reduce NOx emissions to 15ppm on this product is available and understood. Unfortunately, unforeseen durability problems on this new product have delayed our schedule by nearly a year. GE recommends the Orange Cogen site request a one year extension of the current 25ppm permit. This will give us the time to develop and test changes to reduce NOx emissions to consistent, sustainable levels of less than 15ppm.

Sincerely,

James N. Reinhold, P.E.

Staff Engineer

GE M&I Engine Systems

Richard B. Hook

LM6000 Engineering Leader

GE M&I Engine Systems

Charles P. Blankenship, Jr., Ph.D., P.E.

BCG, L.

LM6000 Project Manager

GE M&I

CHARLES P. BLANKENSHIP, JR. A
NO. 26642
NO. 26642





Alan P. Johnson, P.E. Manager - Commercial Programs MAY 3 0 1997

General Electric Company
7650 Courtney Campbell Causeway
Suite 900
Tampa, Fl. 33607
(813) 286-4839
E-Mail: Johnsoa2@schrmt2.sch.ge.com

May 28, 1997

Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Fl. 33801

Attn:

Mr. Wade Smith

General Manager

Subject:

NOx Emissions Reduction Program

Dear Wade:

The subject program for reduction of NOx levels on our LM6000 DLE engines is continuing. The status of that program was described in a letter dated March 11, 1997 from the Project Manager, Mr. Charles Blankenship, Jr. of our Marine & Industrial Engine Group in Cincinnati, Ohio.

As stated in that letter, the program is approximately one year behind schedule. We therefore recommend that you request a one year extension of your currently permitted NOx levels.

Please feel free to call if you have any questions concerning this issue.

Very truly yours,

Mail F. Johnson, F.E.

License, No. 31806

Lotages Locateboses reserved



June 6, 1997

Mr. Al Linero, P.E.
Administrator, New Source Review Section
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re:

Orange Cogeneration Facility AC53-233851B, PSD-FL-206B

Dear Mr. Linero:

This correspondence is submitted on behalf of Orange Cogeneration Limited Partnership ("OCLP") to request that Specific Conditions 10, 11, 15, 19 and Table 1 of permit AC53-233851B be modified to require compliance with a maximum NO_x emissions level, 1-hour average, of 15 ppmvd @ 15% O₂ by January 1, 1999 instead of January 1, 1998.

The Orange Cogeneration Facility utilizes a dry low-NO_x technology ("DLE") developed by General Electric Company ("GE") to control NO_x and CO emissions. During the development of the Orange Cogeneration Facility, GE advised OCLP to seek an air permit NO_x limit of 15 ppm effective December 31, 1997. GE believed that their DLE combustion system would be able to sustain NO_x levels below 15 ppm by the end of 1997. However, technical difficulties have delayed their program by approximately one year.

GE has been working towards their commitment to OCLP to achieve 15 ppm NO_x by December 31, 1997. GE has conducted a number of tests to reduce NO_x emissions and they plan to continue their design, research and testing efforts to reach the 15 ppm NO_x emissions level. They are currently testing a newly designed premixer which was installed in one of the combustion turbines at the facility in March. The NO_x emissions levels from the facility currently range from 18-21 ppm. GE believes that they may be able to reduce the NO_x emissions to 15 ppm by the end of this year, but they are not confident that the 15 ppm level will be sustainable.

GE has recommended that OCLP request a one-year extension of the current 25 ppm NO_x emissions level so that they can continue to improve their DLE combustion system. They are confident that they will be able to consistently demonstrate a NO_x emissions level of 15 ppm or less by the end of 1998.

I have enclosed a letter from GE Marine and Industrial Engines to OCLP and a copy of a presentation given to the Florida Department of Environmental Protection by GE on January 13, 1997. These enclosures address the DLE program status and explain GE's plans and commitment for achieving 15 ppm NO_x levels by the end of 1998. The letter was prepared by the GE team responsible for the development of the DLE combustion system and it was signed by a Professional Engineer. In addition I have enclosed a letter from a Professional Engineer registered in Florida supporting the letter from GE Marine and Industrial Engines.

OCLP request that the air permit be modified as follows in response to the recommendations of GE:

Under Specific Condition

#10 Change the compliance date from "Prior to January 1, 1998," to "Prior to January 1, 1999,".

- #11 Change compliance date to "After December 31, 1998," instead of "After December 31, 1997,". Strike the second sentence, "Should the NO, ... this standard."
- #15 Change review date from "...review by January 1, 1998." to "...review by January 1, 1999."
- Table 1 Change the compliance date in the body of the table and in note (d) to "1/1/99" instead of "1/1/98".
- "19 Change to read "The permittee shall provide periodic reports regarding the progress toward attaining the allowable NO_x emissions of 15 ppmvd @ 15% O₂ until such emissions level is attained."

In addition to the changes associated with extending the compliance date for allowable NO_x emissions of 15 ppmvd @ 15% O_2 by one year, OCLP would also like to clarify in the fifth sentence of Specific Condition #16 that tests shall be conducted on both natural gas and biogas fuels, provided biogas fuels become available.

As you requested during our meeting earlier this year, copies of this letter and all of the enclosures are being furnished to Mr. Brian Beals, Mr. Bill Thomas and Mr. John Bunyak so that they can provide any comments to you.

I have also enclosed a check for \$250.00 for the permit modification fee.

If you have any questions please call me at 941-682-6338.

Sincerely,

Orange Cogeneration Limited Partnership

by Orange Cogeneration GP, Inc.

its general partner

Allan Wade Smith

General Manager

enclosures

cc: Mr. Brian Beals, EPA

Mr. Bill Thomas - FDEP

Mr. John Bunyak - NPS

Mr. Dennis Oehring - CSWE Operations



Charles Blankenship, Jr. Manager, LM5000/LM6000 Projects

One Neumann Way, MDS122 Cincinnati, OH 45215-6301 (513) 552-5320 Fx: (513) 552-5009

11 MAR 97

Mr. Wade Smith General Manager Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland Florida 33801

Dear Mr. Smith,

GE is committed to reducing the NOx emissions levels of our LM6000 DLE engines. We have an aggressive, active program to reduce NOx emissions from our current level of approximately 18ppm to a level less than 15ppm.

The initial focus of this program has been on achieving 15ppm levels at the Orange Cogen site by 12/31/97. As you know, several tests have been conducted on these engines in the last 2 years as a part of this program. While these changes yielded emissions improvements, other changes were also needed to improve acoustics and durability problems. As a result, our program is approximately one year behind our original schedule.

As we mentioned, work on the program is ongoing. A test of a new premixer design is scheduled to occur before June of this year on an Orange Cogen engine. We expect this premixer to reduce NOx emissions to just below 15ppm, but changes in engine operating characteristics could cause emissions levels just above 15ppm. Design studies are also ongoing at our Evendale plant near Cincinnati. As these studies are complete, additional testing will be scheduled.

We believe the technology to reduce NOx emissions to 15ppm on this product is available and understood. Unfortunately, unforeseen durability problems on this new product have delayed our schedule by nearly a year. GE recommends the Orange Cogen site request a one year extension of the current 25ppm permit. This will give us the time to develop and test changes to reduce NOx emissions to consistent, sustainable levels of less than 15ppm.

Sincerely,

James N. Reinhold, P.E.

Staff Engineer

GE M&I Engine Systems

Richard B. Hook

LM6000 Engineering Leader

GE M&I Engine Systems

Charles P. Blankenship, Jr., Ph.D., P.E.

LG J. A.

LM6000 Project Manager

GE M&I

O CHARLES P. BLAMMENSHIP, JR. >
NO. 26642

NO. 26642



Alan P. Johnson, P.E. Manager - Commercial Programs MAY 3 0 1997

General Electric Company MII 7650 Courtney Campbell Causeway Suite 900 Tampa, F1. 33607 (813) 286-4839

E-Mail: Johnsoa2@schrm12.sch.ga.com

May 28, 1997

Orange Cogeneration GP, Inc. 1125 US Highway 98 South, Suite 100 Lakeland, Fl. 33801

Attn:

Mr. Wade Smith

General Manager

Subject:

NOx Emissions Reduction Program

Dear Wade:

The subject program for reduction of NOx levels on our LM6000 DLE engines is continuing. The status of that program was described in a letter dated March 11, 1997 from the Project Manager, Mr. Charles Blankenship, Jr. of our Marine & Industrial Engine Group in Cincinnati, Ohio.

As stated in that letter, the program is approximately one year behind schedule. We therefore recommend that you request a one year extension of your currently permitted NOx levels.

Please feel free to call if you have any questions concerning this issue.

Very truly yours,

Alan P. Johnson, P.E.

License No. 31806

1183

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION TWIN TOWERS OFFICE BUILDING 2600 BLAIR STONE ROAD TALLAHASSEE, FL 32399-2400

PERMIT NO. AC53-233851B,PSP-FL-206B \$250.00

1183

ORANGE COGENERATION, LP

1125 US HWY 98 SOUTH, SUITE 100 LAKELAND, FLORIDA 33801 (941) 682-6338

CITRUS & CHEMICAL BANK LAKELAND, FLORIDA



TWO HUNDRED FIFTY DOLLARS AND NO/100-

DATE

AMOUNT

PAY TO THE ORDER

OF

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION 6/6/97 \$250,00

TWIN TOWERS OFFICE BUILDING 2600 BLAIR STONE ROAD

TALLAHASSEE, FL 32399-2400

Unit 1 - Orange Cogeneration Facility

			Heat Input		
Date	Hour	MW	klbs/hr	CO ppm	CO lb/hr
07/21/97	0900	11.6	6.9	98	28.3
	1900	22.0	9.7	77	30.5
	2000	29.2	13.0	54	37.2
07/27/97	1000	20.9	10.0	83	33.3
	1900	40.3	16.8	16	13.1
	2000	40.5	16.8	17	13.4
08/13/97	0800	9.9	5.4	94	13.9
	0900	35.6	15.2	32	23.9
	1900	19.1	8.8	72	26.0
08/26/97	0900	10.1	5.7	94	23.9
	1000	37.3	15.9	33	24.7
	1800	30.4	13.7	59	41.4
08/31/97	0900	6.0	3.6	129	14.4
	1000	30.0	13.6	69	47.5
	2200	37.8	16.1	34	26.2
09/01/97	0900	4.9	3.1	119	12.3
	1000	7.2	3.9	91	11.6
	1100	2.2	2.4	213	20.4
	2200	37.7	16.1	34	26.2
09/03/97	0900	4.3	3.0	171 [.]	17.9
	1000	30.1	13.5	61	41.6
	2100	39.9	16.8	73	57.5
	2200	35.8	15.5	72	54.2
09/06/97	0900	5.5	3.4	117	12.5
00/00/07	1000	29.9	13.5	53	36.0
	1100	40.3	16.8	32	25.9
	1800	40.3	16.9	34	27.2
09/12/97	0800	0.3	3.5	197	40.6
30,12,01	0900	2.2	3.6	234	49.6
	1000	6.1	5.4	266	77.6
	2200	38.0	16.2	31	23.6
09/13/97	0700	0.3	1.7	246	18.3
03/10/3/	0800	0.3	3.8	233	75.3
	0900	0.9	4.2	184	62.0
	1000	3.4	5.1	136	51.5
00/14/07					
09/14/97	0700	0.3	1.8	176	14.3
	0800	0.3	2.4	222	22.1
	0900	0.9	4.1	223	74.4
00/00/07	1000	35.8	15.3	51	37.6
09/23/97	0900	2.9	2.6	176	17.5
	1000	29.5	13.4	74	51.0
	2200	38.2	16.3	32	25.0
09/28/97	0100	0.3	1.8	171	13.5
	0800	3.5	3.4	67	7.6
	0900	27.2	12.6	56	35.7

Unit 1 - Orange Cogeneration Facility

10/03/97	1600	6.3	5.1	102	25.0
	1700	13.4	8.4	72	34.0
	1800	6.6	4.0	88	10.2
10/09/97	0900	9.6	7.0	96	42.9
	1000	31.2	14.1	42	30.5
	2200	35.1	15.3	48	35.9
10/10/97	0900	5.2	3.2	96	9.9
	1000	31.9	14.0	51	36.3
	2200	36.4	15.5	41	31.6
10/21/97	0900	5.9	3.6	72	8.1
	1000	34.1	15.0	39	28.7
	2200	35.0	15.4	68	52.1
10/24/97	0900	3.0	3.2	103	12.7
	1000	28.7	13.1	49	34.0
	2200	38.3	16.3	33	26.0
10/25/97	0900	7.0	5.8	101	42.1
	1000	29.9	13.5	56 ·	40.1
	2200	34.7	15.1	. 47	34.7
10/27/97	0900	5.3	3.3	73	7.4
	1000	30.5	13.8	43	30.3
	2200	32.0	14.1	51	37.6
10/28/97	0900	3.2	2.9	125	13.8
	1000	23.8	10.8	44	18.5
	2200	32.4	14.2	43	30.8
11/03/97	0600	4.5	3.0	75	8.0
	0800	36.9	15.7	125	96.6
	2100	36.5	15.7	41	31.8
11/18/97	0500	3.0	2.5	69	6.6
	0600	26.3	12.2	41	27.0
	2100	37.2	15.8	37	28.2
12/20/97	0500	5.5	3.3	64	6.7
	0600	20.5	10.5	63	35.9
	0700	5.1	3.5	84	10.4
	0800	22.9	11.0	49	28.8
	0900	7.9	5.1	118	17.9
	1000	23.3	11.2	54	32.0
	1100	23.9	11.3	32	18.8
	1200	8.0	4.2	56	7.3
	1400	17.9	8.1	60	21.7

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF REVISED PERMITS

In the matter of an Application for Revised Permits by:

H. - F.

DEP File Nos. AC 53-233852A AC 53-233851B PSD-FL-206A&B Polk County

Mr. William R. Malenius Director of Project Development Orange Cogeneration Limited Partnership 23046 Avendia De La Carlota Laguna Hills, CA 92653

Enclosed are revised permits, Nos. AC 53-233852A & AC 53-233851B and PSD-FL-206B, and the revised Best Available Control Technology (BACT) determination for two gas combustion turbines and one auxiliary boiler to be located in Bartow, Polk County, Florida. These revised permits and BACT determination change the nitrogen oxides emission standard concentration from 15 parts per million by volume dry corrected to 15 percent oxygen and ISO ambient standard conditions (15 ppmvd @ 15% O2 @ ISO) to the observed concentration of 15 ppmvd @ 15% O2. These revised permits and BACT determination are issued pursuant to Section 403, Florida Statutes.

Any party to this Order (revised permits) has the right to seek judicial review of the revised permits pursuant to Section 120.68, Florida Statutes, by filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 14 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

2600 Blair Stone Road Tallahassee, Florida 32399-2400 904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF REVISED PERMITS and all copies were mailed by certified mail before the close of business on 3-7-95 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to \$120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged. /

ben

Copies furnished to:

B. Thomas, SWD J. Harper, EPA J. Bunyak, NPS L. Novak, PCESD K. Kosky, P.E., KBN

T. Donovan, OCLP

FINAL DETERMINATION

Orange Cogeneration L.P.

AC 53-233852A & AC 53-233851B PSD-FL-206B

An Intent to Issue Revised Permits for Orange Cogeneration Limited Partnership proposed combustion turbines and auxiliary boiler to be located in Bartow, Polk County, Florida, was distributed on December 29, 1994. The Notice of Intent to Issue Revised Permits was published in the Polk County Democrat on January 5, 1995.

Orange Cogeneration Limited Partnership submitted a comment in a letter dated January 26, 1995. It was noted that the nitrogen oxides emission standard in Specific Condition No. 19 had the ISO condition listed and not been revised, which was the purpose of the request. The Department agrees with this comment and has corrected the condition.

The final action of the Department will be to issue the revised permits and BACT as proposed in the Intent to Issue Revised Permits, except for the change noted above.



Department of **Environmental Protection**

Lawton Chiles Governor

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

Virginia B. Wetherell Secretary

PERMITTEE:

Orange Cogeneration Limited Partnership 23046 Avenida De La Carlota Suite 400 Laguna Hills, CA 92653

AC53-233851B Permit Number:

PSD-FL-206B

Expiration Date: April 1, 1998

County: Polk

27°52'15"N Latitude/Longitude:

81°49'31"W

Project: Two Combustion Turbines

This revised permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto and specifically described as follows:

Installation of two natural gas/biogas fired GE LM 6000 equivalent) combustion turbines (CT), two heat recovery steam generators and one steam turbine. An auxiliary boiler (AC53-233852) is being permitted separately. The CTs will be equipped with a staged combustion technology dry low-NO $_{\rm X}$ system to control nitrogen oxides (NO $_{\rm X}$) emissions. Each CT will be equipped with a 100 ft. high, 11 ft. diameter stack that will handle approximately 300,000 actual cubic feet per minute of flue gas at 230°F. cogeneration facility will be located on Clear Springs Road, Bartow, Polk County, Florida.

The UTM coordinates of this facility are Zone 17, 418.75 km East and 3083.0 km North.

The emissions unit(s)/sources shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

- 1. Application received July 1, 1993.
- Department's July 22, 1993 letter. KBN's August 5, 1993 letter.
- KBN's August 29, 1993 letter.
- 5. Tables 1 and 2, Allowable Emission Rates.
- KBN's October 28, 1993 letter. KBN's October 29, 1993 letter.
- 8. Department's February 18, 1994 letter.
- KBN's March 11, 1994 letter.
- 10. Department's March 29, 1994 letter.
- 11. KBN's June 22, 1994 letter.
- 12. KBN's October 10, 1994 letter.

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851B (PSD-FL-206B)

Expiration Date: April 1, 1998

GENERAL CONDITIONS:

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

- 2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- 3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- 4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- 5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of F.S. and Department rules, unless specifically authorized by an order from the Department.
- 6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851B (PSD-FL-206B)

Expiration Date: April 1, 1998

GENERAL CONDITIONS:

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

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

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

- 8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. a description of and cause of non-compliance; and,
 - b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

- 9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the F.S. or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- 10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by F.S. or Department rules.

Permit Number: AC53-233851B (PSD-FL-206B)
Expiration Date: April 1, 1998

GENERAL CONDITIONS:

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

- 12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
- 13. This permit also constitutes:

 - (x) Determination of Prevention of Significant Deterioration (PSD)
 - (x) Compliance with New Source Performance Standards (NSPS)
- 14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the dates analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and,
 - the results of such analyses.

Permit Number: AC53-233851B (PSD-FL-206B)
Expiration Date: April 1, 1998

GENERAL CONDITIONS:

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

SPECIFIC CONDITIONS:

This permit replaces permit No. AC53-233851/PSD-FL-206 and amended construction permit No. AC53-233851A/PSD-FL-206A.

Construction Requirements

- 1. Dry $low-NO_X$ combustion technology systems shall be installed and operated on each combustion turbine (CT).
- 2. A system to continuously monitor the fuel consumption, nitrogen oxides emissions, and oxygen content of the flue gas shall be installed on each CT.
- 3. The heat recovery steam generator (HRSG) installed on each CT shall not be equipped with an auxiliary/duct burner.
- 4. Each CT stack shall be equipped with stack sampling facilities (sample ports, work platforms, access, and electrical power) that meet the specifications given in Rule 62-297.345, F.A.C.

Operation Limitations

- 5. The CTs shall comply with all requirements of 40 CFR 60, Subpart GG (July, 1993), Standard of Performance for Stationary Gas Turbines, which is adopted by reference in Rule 62-296.800(2)(a), F.A.C.
- 6. The facility is allowed to operate continuously, 8760 hours per year.
- 7. Only natural gas/biogas fuel shall be used for fuel at this facility.
- 8. Each CT shall have a maximum heat input of 368.3 MMBtu/hr, when using dry low NO_X technology to control NO_X emissions.
- 9. The operation of this facility shall not create a nuisance or discharge air pollutants that cause or contribute to objectionable odors pursuant to Rule 62-296.320(2), F.A.C.

ORANGE COGENERATION LIMITED PARTNERSHIP AC53-233851B (PSD-FL-206B) 42 MW COMBINED CYCLE GAS TURBINES

Table 1 - Allowable Emission Rates for each Combustion Turbine Allowable Emissions Standards/Limitations Compl. Maximum Corrected Basis for Pollutanta Controle Concentration Date lbs/hr TPY Limit DLN 25 ppmvd initial 37.0 161.9 BACT NOx at 15% 02d DLN 15 ppmvd 1/1/98 22.1 97.0 BACT at 15% 02d GCf CO 30 ppmvd 27.8 127.0 BACT GC^f PM/PM10 5 21.9 BACT GC^f VOC 10 ppmvd 3.98 17.4 BACT

a Pollutant emissions are based on 8,760 hours per year operation firing natural gas or biogas.

b Allowable emissions, lbs/hr, at different inlet temperatures shall not exceed the rates given in the manufacturer's data required by specific condition No. 15.

c Maximum emission rates not to be exceeded.

d The NO_{X} maximum concentration will be lowered to 15 ppmvd at 15% O_2 by 1/1/98 using appropriate combustion technology improvements. Should this level of control not be achieved when the initial compliance demonstration stack tests are performed, the permittee must provide the Department with a plan and schedule to meet this standard. NO_{X} emission concentrations are to be corrected to 15 percent oxygen to demonstrate compliance with the NO_{X} emissions standard.

e Dry Low-NOx (DLN) combustors.

f Good Combustion.

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851B (PSD-FL-206B)

Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

Emission Limitation

10. Prior to January 1, 1998, the maximum NO_X concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 25 parts per million by volume dry corrected to 15 percent oxygen (25 ppmvd @ 15% O_2), as determined by the procedures in Specific Conditions Nos. 16, 17 and 18.

- 11. After December 31, 1997, the maximum NO_X concentration, 1-hour average, from each CT/HRSG unit, shall not exceed 15 ppmvd @ 15% O_2 , as determined by the procedures in Specific Conditions Nos. 16, 17 and 18. Should the NO_X standard of 15 ppmvd @ 15% O_2 not be achieved during the initial compliance tests, the permittee will provide the Department with a plan and schedule to meet this standard. The permittee shall obtain prior approval from the Department for any air pollution control equipment not addressed in this permit that is needed to meet the NO_X emission standard.
- 12. The maximum emission rates for particulate matter (PM/PM₁₀), volatile organic compounds (VOC), NO_X , and carbon monoxide (CO) shall not exceed any of the rates listed in Table 1, Allowable Emission Rates.
- 13. Visible emissions shall not exceed 10 percent opacity, 6 minute average.
- 14. The emission rates for sulfur dioxide (SO_2) and sulfuric acid (H_2SO_4) mist, listed in the following table, shall be used for inventory purposes only.

Maximum Emission Rates for Each Combustion Turbine For Inventory and PSD Tracking Purposes Only

Pollutant	Combustion Turbine <u>Dry Low NO_x Combustion</u> lb/hr TPY		
	lb/hr	TPY	
so ₂	1.11	4.87	
SO ₂ H ₂ SO ₄ mist	0.085	0.37	

15. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review by January 1, 1998. Until new curves are approved by the Department or the combustion turbines meet the NO_X emission standard of 15 ppmvd @ 15% (whichever occurs first), the stack, operator, and emission data for the proposed combustion turbines in

PERMITTEE:
Orange Cogeneration Limited

Permit Number: AC53-233851B

(PSD-FL-206B)

Partnership Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

Table 2-4 (October 28, 1993) will be used. The data will be used to determine compliance with the maximum allowable emission rates of the regulated air pollutants at different air inlet temperatures for these turbines.

Compliance Determination

16. Testing of emissions shall be conducted at 95-100% of the manufacturer's rated heat input based on the average air inlet temperature for the CT during the test. Compliance for NO_X emission limits shall be determined by calculating 'the concentration of NO_X (ppmvd at 15% O_2) and using the turbine manufacturer's thermal throughput rating for the average air inlet temperature by multiplying the permitted emission limit by the ratio of the tested heat input to the maximum heat input (MMBtu/hr) at this temperature. Compliance with the visible emissions, NO_X , SO_2 , CO, PM/PM_{10} , and VOC emission standards shall be determined within 60 days of achieving maximum production but not later than 180 days after initial firing of each CT (40 CFR 60.8). Compliance with the visible emissions limitation and the NO_X and SO_2 emission standards shall be determined annually thereafter. Tests shall be conducted on both natural gas and biogas fuels. If the initial tests or fuel analyses show the emissions of air pollutants from the combustion turbines are independent of the fuel (natural gas or biogas fuel), then annual compliance tests can be conducted while the combustion turbines are burning either fuel.

17. Compliance shall be determined by the following test methods listed in 40 CFR 60, Appendix A (July, 1993).

Pollutant	EPA Method
PM/PM ₁₀ *	5 or 17**
NOX	20
CO	10
VOC	18 or 25A
Visible Emissions	9

NOTE: No other test methods may be used for compliance testing unless prior Department written approval has been received.

* Assumption is that all PM is PM₁₀.

^{**} Stack flue gas temperature must be less than 320°F to use Method 17.

PERMITTEE:
Orange Cogeneration Limited

Permit Number: AC53-233851B

(PSD-FL-206B)

Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

Partnership

Monitoring

18. NO_X and oxygen monitoring to meet the requirements of 40 CFR 60, Subpart GG, shall be accomplished using a continuous emission monitoring (CEM) system. The CEM system shall meet the requirements of 40 CFR 60, Appendix B. The requirements of 40 CFR 75, Appendices A and B, can be substituted for those of 40 CFR 60 provided the minimum criteria of 40 CFR 60 are met. NO_X monitoring to indicate compliance with the BACT limit shall be based on one hour average emissions determined on ppmvd @ 15% O_2 .

Administrative Requirement

- 19. Prior to January 1, 1998, the permittee shall provide a report showing how the allowable NO_X emissions of 15 ppmvd @ 15% O_2 is achieved by the CTs.
- 20. The permittee shall provide the Southwest District office with the following notifications required by 40 CFR 60.7:
 - When construction commenced within 30 days of commencement of construction
 - Anticipated date of initial starting 30 to 60 days prior to startup
 - Actual date of startup up within 15 days after the starting
 - Notification of the date of the compliance tests not less than 30 days prior to the test
- 21. Pursuant to Rule 62-210.370(2), F.A.C., Air Operating Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur content and the lower heating value of the fuel being fired, fuel usage, hours of operation, and air emissions. Annual reports shall be sent to the Department's Southwest District office by March 1 of each calendar year.
- 22. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the **Department's** Bureau of Air Regulation prior to 60 days before the expiration of the permit (Rule 62-4.090, F.A.C.).
- 23. An application for an operation permit must be submitted to the **Department's** Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the

PERMITTEE:
Orange Cogeneration Limited
Partnership

Permit Number: AC53-233851B

(PSD-FL-206B)

Expiration Date: April 1, 1998

SPECIFIC CONDITIONS:

construction permit, and compliance test reports as required by this permit (Rules 62-4.055 and 62-4.220, F.A.C.).

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell, Secretary

Post-it® Fax Note 7671	Date 7-7-99 #of pages ≥ 2
To Darryl Grazianni	From Jeff Kaerner
Co./Dept. Air Pollytion	Co. NEP
Phone # 5C 273-3136	Phone # SC 894-7268
Fax# 561-355-2442	Fax# 850/972-6979

FOSTER WHEELER ENVIRONMENTAL CORPORATION EXCEL 5.0 CALCULATION SHEET

By: RB Hook Date: 3/31/99 Ckd. By: Date: Rev. By:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

Description: Incremental and total cost analysis for the SCR System. Cost factors and references listed. Capital costs estimate for the SCR was supplied by a vendor. SCR-BACT to 3.5 ppm, Quote F

BACT ANALYSIS

CAPITAL COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST ITEM	COST FACTOR	REFERENCE	COST (\$1999)	
DIRECT COSTS (DC)				
PURCHASED EQUIPMENT COSTS (PEC)				•
SCR & AUXILIARY EQUIPMENT	AS ESTIMATED, A	VENDOR QUOTE	\$1,510,000.00	
INSTRUMENTATION	0.05 X A	(EPA, 1990d)	\$75,500.00	
STATE SALES TAXES	0.06 X A	State Sales Tax	\$90,600.00	
FREIGHT	0.05 X A	(EPA, 1990d)	\$0.00	included
PEC SUBTOTAL	1.16 X A = B		\$1,676,100.00	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0.08 X B	(ULRICH, 1984)	\$134,088.00	
LA80R	.0.14 X B	(EPA, 1990d)	\$234,654.00	
ELECTRICAL	0.04 X B	(EPA, 1990d)	\$67,044,00	
PIPING .	N/A	VENDOR QUOTE	•	
INSULATION	N/A	VENDOR QUOTE		
PAINTING	0.01 X B	(EPA, 1990d)	\$16,761.00	
DIC SUBTOTAL	0.27 X B	(EPA, 1990d)	\$452,547.00	
SITE PREPARATION	N/A			
BUILDINGS	N/A	-		
TOTAL DC	1.27 X B	-	\$2,128,647.00	
INDIRECT COSTS (IDC)				
ENGINEERING	0.10 X B	(EPA, 1990d)	\$167,610.00	
CONSTRUCTION OVERHEAD	0.05 X B	(EPA, 1990d)	\$83,805.00	
CONTRACTOR FEES	0.10 X B	(EPA, 1990d)	\$167,610.00	
CONTINGENCIES	0.03 X B	(EPA, 1990d)	\$50,283.00	
START-UP	0.02 X B	(EPA, 1990d)	\$28,522.00	5 days of support included in quote
PERFORMANCE TESTING	0.01 X B	(EPA, 1990d)	\$16,761.00	,
TOTAL IDC	0.53 X B	-	\$514,591.00	
TOTAL CAPITAL INVESTMENT (TCI)	1.84 X B		\$2,643,238.00	

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 3.5 PPM - FWEC

FOSTER WHEELER ENVIRONMENTAL CORPORATION **EXCEL 5.0 CALCULATION SHEET**

By: RB Hook Date: 3/31/99

Ckd. By: Date: Rev. By: Date:

OFS No.:

File: COTBACT.XLS Sheet:: SCR-BACT

OPERATING COST FACTORS FOR SELECT CATALYTIC REDUCTION

COST DATA
CHEMICAL ENGINEERING PLANT COST INDEX

1990 1993 357.6 359.2

Jun-99

392.3

estimate

CAPITAL RECOVERY FACTOR (CRF) @j=10%,n=20:

0.1175

cost of money 10%

CAPITAL RECOVERT FACTOR (CRF) @1-10%,11-20:	0.1175	cost of money 10%		
0.4	1			
20	0		1999	
DIRECT ANNUAL COSTS, \$/YR	FACTOR	REFERENCE	COSTS, \$/YR	l l
OPERATING LABOR	\$27.82/HR @ 1HR/12H	R(COT & EPA 1993b)	\$20,309	
SUPERVISORY LABOR	15 % OF OPERATING	. (EPA, 1993b)	\$3,046	
MAINTENANCE LABOR AND MATERIALS	1,250 (MW) + 25,800	(EPA, 1993b)	\$137,392	
CATALYST REPLACEMENT (CR)	N/A	Vendor Estimate	\$189,200	Scaled
CATALYST DISPOSAL	\$15/CF	(EPA, 1993b)	\$23,220	Scaled
AQUEOUS AMMONIA	\$378/ton	(EPA, 1993b)	\$668,498	Scaled
DILUTION SYSTEM	N/A	(EPA, 1993b)		
ELECTRICITY	N/A	(EPA, 1993b)		
PERFORMANCE LOSS	0.50%	(EPA, 1993b)	\$19,320	
BLOWER	· N/A	(EPA, 1993b)	-	
PRODUCTION LOSS	N/A	(EPA, 1993b)		
			\$1,060,985	
INDIRECT ANNUAL COSTS, \$/YR				
OVERHEAD	60% OF ALL LABOR M	(EPA, 1990d)	\$96,448	
INSURANCE & ADMINISTRATION	2.5%OF TCI	(EPA, 1990d)	\$66,081	
CAPITAL RECOVERY	CRF X (TCI - CR)	N/A	\$272,634	
			\$435,163	
TOTAL ANNUAL COSTS, \$/YR			\$1,496,148	
TOTAL NET NOx REDUCTIONS (TPY)				
Oil Firing			0	
Gas Firing			269	
Total		•	269	
INCREMENTAL COST EFFECTIVENESS, \$/TON			\$5,562	

Workbook: Orange SCR BACT r2

Worksheet: SCR-BACT for 3.5 PPM - FWEC

Appendix 10.1.5 PSD Appendix G

Page 2 of 2

FDEP

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FOST	ER WHEELER THE	RONIME ITAL C	ORPORATION	
, -1.	EXCEL 5. CA			
By; R9 Hook			OFS	Na -
Date: 3/31/99	:			COTBACT.XLS
Ckd. Bv:	3			:: SCR-BACT
Date:	į.		SIRE	
Rev. By:	•			
Deta:				
Description: Incremental and total cost enalysis: for the SCR was supplied by a version,	to the SCR System (2) it last SCR-BACT to 5 pcm,	lom, and no rences tist Clooks F	led. Capital costs estimate	
BACT ANALYSIS				
Capital cost factors for selec	FICATALYTIC RESELECT	CI I		
•				
COST ITEM	COST FACTO	HEFERE - SE	COST (\$1999)	
PIREOT COSTS (DC)	Section 14	U TURE . DE	444 (41330)	
PURCHASED EQUIPMENT COSTS (PEC)				•
SCR & AUXILIARY ECHIPMENT		(400 at . 1 a sádama	21 542 444 54	
	发表的现在的 。到1774	VEI+D I GUOTE	31,510,000.00	
INSTRUMENTATION	0.05 X	(EP:: 1930d)	\$75,500,00	
STATE SALES TAXES	0.08 X .	State ales Tex	\$90,600,00	
FREIGHT	0.05 X	(EP' 1990d)	\$0.00 includ	ed '
PEC SUBTOTAL	1.16XA - :	• • • • • • • • • • • • • • • • • • • •	71,876,100.00	
DIRECT INSTALLATION COSTS (DIC)				
FOUNDATIONS & SUPPORTS	0.08 X. (# 1 # 11 # # * * * * * * * * * * * * * *	****	
LABOR		(L/LF H. 1984)	\$134,088.00 < \$	~~
S.ECTRICAL	0.14X 1	(EP 1880d)	\$234,654.00	
PIPING		(基 1990d)	\$67,044.00	
INSULATION	A)/A	VENE ROUOTE	-	
PAINTING	N'A	VEH C 4 QUOTE		
	0,01 X :I	(\$90d)	\$16,761.00	
DIC GUSTOTAL	0.21 % 3	1£ 1600d)	F-152,547.00	
SITE PREPARATION	NIA.			
IVILDINGS	N/A		-	
	F47P	-	•	
TOTAL DC	1.27): 3		\$2,128,647.00	
NOMECT COSTS (DC)				
ENGINEERING	A40.5 A	- 4444		
	0.10 7 #	(E) .1980d)	\$187,610.00	
CONSTRUCTION OVERHEAD	0.05 > 2	(⊞ 0427. ⋅ ₩	\$83,605.00	
CONTRACTOR FEES	0.10 ⊅ ≘	(章) ,1\$ 90d)	\$167,610,00	. 1
CONTINGENCIES	0.00 > 1	(EF /s, 1090d)	\$50,263,00 - C.5	~
START-UP	0.02 > ≥	(⊞ ,1990d)		of support included in quote
PERFORMANCE TESTING	0.01 > 6	(tage=1,1390d)	\$16.761.00 CSW	
TOTAL IOC	0.5 3 / =	-	\$514,581.00	
OTAL CAPITAL INVESTMENT (TCI)	1.84 > 5		\$2,\$49,238,00	
			CJ KAN 573 MA	

TC1 CSW -> 201,132 TC1 GE -> 2,643,238-201,132 -> 2,442,106

Worksheet: SER-BACT for 3.5 PPM - FWRC

Delin: 1 of 2

Appendix 10.1.5 PSD Appendix G

FOSTER WHEELER EN FRONMENT L CORPORATION EXCEL 5.0 CALCULATIO SHEET 073 No.: By: RB Hook File: COTBACT.XLS Data: 3/31/89 Sheet: SCR-BACT Ckd, By: Date: Ref. By: Deta: OPERATING COST PACTORS FOR SELECT CATALYTIC REDUCTION COST DATA CHEMICAL ENGINEERING PLANT COST INDEX 357.6 1990 359.2 1993 Jun-99 392.3 CAPITAL RECOVERY FACTOR (CRF) @=10%,==10; D, 1175 does (i hone) D% AMPERE :E COSTS, SYR FACTOR DIRECT ANNUAL COSTS, SYR \$27.828482@ (HIR) \$ 18.7007 IL EPA 100%) \$20,300 OPERATING LABOR SUPERVISORY LABOR (c. 40° A° E) 15 % OF OPERATION \$3,046 \$137,392 1,280 (MW) + 25,6.7 MAINTENANCE LABOR AND MATERIALS CATALYST REPLACEMENT (CR) NA Vaindon Es lates \$189,200 Scaled (EPA 19 5) CATALYST DISPOSAL \$134CF \$23,220 icated Scaled \$668,498 \$378/ton ACHEOUS AMMONIA (EPA 18 DILUTION SYSTEM NA N/A 0.50% (#PA 19 BLECTRICITY PERFORMANCE LOSS (#PA 19 ;i) (#PA 18 ;i) \$19.320 (E#A 18 BLOWER - N/A PRODUCTION LOSS (部本語 3) \$1,080,985 INDIRECT ANNUAL COSTS, SYM OVERHEAD 60% OF ALL LARC: 111 th of Asian \$96,448 180,682 INSURANCE & ADMINISTRATION (62A 19 d) 2.5% OF TC! → 0,1175 x 201,132=23,633 CAPITAL RECOVERY CREX (TOL-CR) ti/A 186,160 **b** 6247,145 TOTAL ANNUAL COSTS SYR \$6,400,148 TOTAL NET NOX REDUCTIONS (TPY) Onlivial Inc. 0 Gas Firing 268 269 += 4636 \$/Ton incremental cost effectiveness, alton Zett

Workspeek Orange SCR BACT 12 Worksheet SCR-BACT for 3.5 PPM - FWEC

Page 2 of 2

P.S. Appendix G PSO Appendix G E & E & E

ton phw

CR, NH3, + disposal costs

The 15 + 6 ppm cases
may have lower
\$ from. Big costs are

2.4 million doller

Darrel.

Z0.9

