

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT

In the matter of an
Application for Permit by:

DER File No. PSD-FL-212
Alachua County

Mr. Michael L. Kurtz
General Manager for Utilities
Gainesville Region Utilities
Post Office Box 147117-Station A-134
Gainesville, Florida 32614-7117

Enclosed is Permit Number PSD-FL-212. This permit authorizes the construction of a 74 MW simple cycle combustion turbine (SCCT) in Gainesville, Alachua County, Florida, pursuant to Section(s) 403, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the 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, FL 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 4-11-95 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.


(Clerk)

4-11-95
(Date)

Copies furnished to:
C. Kirts, NE District
D. Roberts, HGS&S
J. Harper, EPA
J. Bunyak, NPS
B. Oven, PPS, DEP
D. Graziani, P.E., FWI

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

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

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
 Michael L. Kurtz Gen. Mgr.
 Gainesville Regional Utilities
 P. O. BOX 147117-station
 Gainesville, FL A-134
 32614-7117

4a. Article Number
 Z 311 902 936

4b. Service Type

Registered Insured

Certified COD

Express Mail Return Receipt for Merchandise

7. Date of Delivery
 APR 13 1995

5. Signature (Addressee)

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

6. Signature (Agent)
[Signature]

PS Form 3811, December 1991 U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Z 311 902 936



Receipt for Certified Mail
 No Insurance Coverage Provided
 Do not use for International Mail
 (See Reverse)

PS Form 3800, March 1993

To: <i>Michael Kurtz</i>	
Street and No. <i>GRU</i>	
Rt., State and ZIP Code <i>Gainesville, FL</i>	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	<i>PSD-FI-212 4-11-95</i>

FINAL DETERMINATION

Gainesville Regional Utilities
PSD-FL-212
Alachua County

Gainesville Regional Utilities' application for a permit to construct a 74 MW simple cycle combustion turbine (SCCT) at their facility in Gainesville, Alachua County, Florida has been reviewed by the Bureau of Air Regulation in Tallahassee. The Technical Evaluation and Preliminary Determination for the permit to construct a 74 MW SCCT in Gainesville Florida, was distributed on December 19, 1994. The Notice of Intent was published in the Gainesville Sun on December 24, 1994. Copies of the evaluation were available for inspection at the Department's offices in Gainesville, Jacksonville and Tallahassee.

No adverse comments were submitted by either the U.S. Department of Interior or the U.S. Environmental Protection Agency.

Comments regarding the Technical Evaluation and Preliminary Determination and Specific Conditions of the proposed permit were submitted by Ms. Yolanta Yonynas, Environmental Manager of Gainesville Regional Utilities, in her letter of January 23, 1995. The Bureau has considered Ms. Yonynas' comments and agreed to the changes proposed for the material covered by the "Technical Evaluation and Preliminary Determination."

The requested revisions of the specific conditions of the permit are discussed and the Department's response and any changes agreed to are as follows:

DEP PERMIT NUMBER PSD- FL-212 and SITE CERTIFICATION NO. PA74-04

A. SPECIFIC CONDITION #3

GRU'S COMMENTS:

Correct "operation of fuel oil" to "operation on fuel oil"

DEPARTMENT'S RESPONSE:

This sentence will be corrected in the final permit.

B. SPECIFIC CONDITION #6

GRU'S COMMENTS:

GRU requested that emissions during fuel switching and load change be addressed by revising line 6 as follows:

a) ".....malfunction, load change and fuel switching pursuant to Rule 62-210.700, F.A.C.;"

b) GRU requested that the footnote of this condition be changed to reflect NOx emission rates only.

The footnote shall be revised for clarification as follows: "For purpose of demonstrating compliance, these values will be calculated using F-factors".

c) GRU requested that visible emissions during fuel oil operation be permitted at 20% considering: 1) the limited number of hours allowed on fuel oil; 2) similar projects that have recently been permitted at 20%; and, 3) the manufacturer's indication that the lower limit may not be achievable consistently at partial loads.

d) The table indicates that compliance with the PM₁₀, SO₂ and H₂SO₄ mist mass emission rates will be demonstrated through fuel sulfur analysis. It is GRU's understanding that compliance with the percent sulfur in the fuel will be deemed compliance with the mass emission rates.

DEPARTMENT'S RESPONSE:

a) This condition will not be changed as requested. The load change and fuel switching allowance was intended for fossil fuel steam generators not for combustion turbines.

b) The footnote of this condition will be revised, as requested, in the final permit.

c) This condition will not be changed as requested. Recent permits issued by the Department have included a 10% opacity limit when burning oil. This opacity standard is a specific limitation set in the BACT determination and will be used for enforcement if a violation is detected.

d) The Department's intent regarding this issue is to assume that compliance for PM and H₂SO₄ mist as long as the 0.05% sulfur content, by weight, in the fuel oil will not be exceeded. However, this doesn't mean that it is a direct relation with the mass emission rates for these pollutants. The Department, pursuant to Rule 62-297.340(2), F.A.C., may request a compliance test, when after investigation (such as complaints, increased visible emissions, or questionable maintenance of control equipment), there is reason to believe that any applicable emissions standard is being violated.

C. SPECIFIC CONDITION #7

GRU'S REQUEST:

GRU requested that this condition be revised as follows: "Visible emissions shall not exceed 10% opacity when firing natural gas or 20% opacity when firing No. 2 fuel oil.

Final Determination
GRU
Page Three

DEPARTMENT'S RESPONSE:

This condition will not be changed. Recent permits issued by the Department have included a 10% opacity limit when burning oil. This opacity standard is a limit set in the BACT determination.

D. SPECIFIC CONDITION #8

GRU'S COMMENTS

The annual emission rate (TPY) indicated in this table are not consistent with the data provided in Table 2-1 and Table 2-5 of the PSD permit applications for the ISO conditions specified. The correct values are as follows:

VOC: 8.66

Inorganic Arsenic: 0.004854

Mercury: 0.0009

Pb: 0.05746

Be: 0.00032

b) In footnote "***" insert the word condition after ISO on the third line.

DEPARTMENT'S RESPONSE:

The potential emissions table of Specific Condition #8 will be changed, as requested. The column labeled PSD SIGNIFICANT EMISSION RATE (TPY) should show "any" instead of "0" under Arsenic to be consistent with EPA recommendations for significance levels for arsenic published in the 1990 draft NSR Workshop Manual page A.21. The control technology for arsenic is to fire clean, low Arsenic fuels to limit arsenic emissions. Since the permit already restricts the fuels to natural gas or distillate fuel oils, there are no further restrictions needed to minimize arsenic emissions.

E. SPECIFIC CONDITION #9

GRU'S REQUEST:

GRU requested that the following be inserted in the "Note" paragraph such that use of alternate EPA/DEP reference methods does not require approval from the Secretary.

"Note: No other method may be used for compliance testing unless prior DEP approval is received in writing. DEP approval to use other reference methods shall not constitute an alternate test method or procedure under Rule 297.620 F.A.C. The DEP..."

DEPARTMENT RESPONSE:

Pursuant to Rule 62-297.620, F.A.C., this condition will not be changed. The intent of the Rule 62-297.620, F.A.C., is to require Approval of Alternate Standard Procedures and Requirements in the following situations:

1. The substitution of a method or procedure that has not been adopted by the Department for one that has.
2. The use of a reference method for a purpose other than for which it was originally intended (substitution of EPA Method 25A for EPA Method 25).
3. The modification of an adopted procedure.

F. SPECIFIC CONDITION #10

GRU'S COMMENTS:

This condition allows natural gas supplier data to be used for demonstrating the sulfur content of the natural gas. GRU requests that fuel oil data also be allowed as an alternative consistent with 40 CFR 60.335(e) by revising line 12 as follows:

"natural gas and fuel oil supplier data for sulfur content may be submitted"

DEPARTMENT'S RESPONSE:

This condition will be changed as requested.

It should be noted that GRU must assume responsibility for any error by the supplier. Supplier errors will not be a defense if the Department samples the oil and finds that the sulfur content of the oil exceeds the allowable limit.

G. SPECIFIC CONDITION #12

GRU'S COMMENTS:

This condition specifies initial and annual testing requirements for the combustion turbine and states that "the combustion turbine shall operate between 95% and 100% of maximum capacity..." The permit is silent with respect to testing at less than this capacity. GRU requests that the proposed language, stated in bold, (consistent with Chapter 62-297.310(2) F.A.C.) be included to address this contingency:

FROM:

12. An initial test for CO, concurrent with each NO_x test, is required to confirm that annual potential emissions will not exceed 100 TPY. The NO_x and initial CO test results shall be the average of three valid one-hour runs. The DEP's Northeast District office shall be notified, in writing, at least 30 days prior to the initial compliance tests and at least 15 days before annual compliance test(s). The combustion turbine shall operate between 95% and 100% of maximum capacity for the ambient conditions experienced during compliance test(s). The turbine manufacturer's heat input rates (based on the high heating value of the fuel) vs. ambient temperature curve shall be included with the compliance test results. The fuel feed rates and the high heating value of the fuels shall be established during the initial and annual compliance tests. Compliance test results shall be submitted to the DEP's Northeast District office no later than 45 days after completion of the last test run.

TO:

12. An initial test for CO, concurrent with each NO_x test, is required to confirm that annual potential emissions will not exceed 100 TPY. The NO_x and initial CO test results shall be the average of three valid one-hour runs. The DEP's Northeast District office shall be notified, in writing, at least 30 days prior to the initial compliance tests and at least 15 days before annual compliance test(s). "Testing of emissions shall be conducted with the combustion turbine operating at permitted capacity. Permitted capacity is defined as 95-100 percent of the maximum heat input rate allowed by the permit, corrected for the average ambient air temperature during the test (with 100 percent represented by a curve depicting heat input v. ambient temperature). If it is impracticable to test at permitted capacity, the source may be tested at less than permitted capacity. In this case subsequent operation is limited by adjusting the entire heat input v. ambient temperature curve downward by an increment equal to the difference between the maximum permitted heat input (corrected for ambient temperature) and 105 percent of the value reached during the test until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity." Compliance test results shall be submitted to the DEP's Northeast District office no later than 45 days after completion of the last test run.

Final Determination
GRU
Page Six

DEPARTMENT'S RESPONSE:

This condition is acceptable as proposed. Specific Condition #12 is changed as requested.

H. SPECIFIC CONDITION #13

This condition addresses excess NOx emissions, which may occur due to temporary and unavoidable combustion instability under certain operating conditions (e.g. startup, load change, fuel switching, etc.) Excess visible emissions may also result under these conditions. Therefore, GRU requests that these be addressed in the same manner as NOx emissions as follows:

Excess NOx and visible emissions from this turbine resulting from startup, shutdown,..."

DEPARTMENT'S RESPONSE:

This condition will not be changed. To use load change and fuel switching as a valid excess emissions conditions is not acceptable. The allowance referenced in Rule 62-210.700, F.A.C., was intended for fossil fuel steam generators.

I. SPECIFIC CONDITION #14

GRU'S COMMENTS:

Condition 14c states that notification and recordkeeping shall be in accordance with 40 CFR 60.7. Subsection (c) states that records shall be maintained for a period of five (5) years. This is inconsistent with 40 CFR 60.7(f), which specifies a two years retention time. GRU requests that this condition be revised as follows:

"c. All measurements...shall be retained for at least two years period."

DEPARTMENT'S RESPONSE:

This condition will not be changed. Although it is true that section 40 CFR 60.7(e) specifies two (2) years retention period, Rule 62-4.160(14)(b), F.A.C., requires the permittee to retain, all records for at least three years period. This is a General Condition of every Department permit (General Condition 14b). To be consistent with Title V regulations we are now requiring records to be maintained for a period of five (5) years pursuant to Rule 213.440(1)(b)2.b., F.A.C.

J. SPECIFIC CONDITION #15

GRU'S COMMENTS:

a) This condition defines excess emissions as one-hour periods when NOx emissions are above the BACT standards. GRU requests that this period be revised, as indicated below, to reflect the agreement reached at the September 2, 1994 meeting between GRU and the Department.

" Twenty-four hour block average (midnight to midnight) periods."

b) Correct typographical error : Rule 62-297.520 F.A.C.

DEPARTMENT'S RESPONSE:

This condition will not be changed.

One-hour periods shall be as specified in 40 CFR 60.334(1). The previous agreement was made under the assumption the applicant would use a CEM to determine compliance. The current permit allows the applicant to use the CEM in place of the water/fuel monitoring required in 40 CFR 60.334 for assessment of excess emissions. In addition, NOx compliance in Subpart GG is by EPA Method 20, which requires three 1-hour runs.

The typographical error was corrected.

K. SPECIFIC CONDITION #17

GRU'S REQUEST:

GRU requests this condition be revised, as indicated below, to conform to the monitoring and recordkeeping specified 40 CFR 60.334(b) and 40 CFR 60.7 (e), respectively.

~~"...will be recognized as enforceable provisions-of-the-permit provided-that-the-holder-of-this-permit-demonstrates-that-the provisions-of-the-schedule-will-be-adequate-to-assure-continuous compliance. The records...shall be kept by the company permittee for a five two-year period for regulatory agency inspection purposes."~~

Also, DEP approval of a custom monitoring schedule should be indicative of the Department's satisfaction that it is adequate for compliance purposes.

Final Determination
GRU
Page Eight

DEPARTMENT'S RESPONSE:

This condition is changed pursuant to 40 CFR 60.334(b). The five (5) year period is consistent with Rule 213.440(1)(2)2.b., F.A.C.

FROM:

17. The sulfur content of the fuel oil being fired in the combustion turbine shall be determined in accordance with 40 CFR 60.334(b) (1993 version). Any request for a future custom monitoring schedule shall be made in writing and directed to the DEP's Bureau of Air Regulation office. Any custom schedule approved by the DEP pursuant to 40 CFR 60.334(b) (1993 version) will be recognized as enforceable provisions of the permit, provided that the holder of this permit demonstrates that the provisions of the schedule will be adequate to assure continuous compliance. The records of natural gas and No. 2 fuel oil usage shall be kept by the company for a five-year period for regulatory agency inspection purposes.

TO:

17. The sulfur content of the fuel oil being fired in the combustion turbine shall be determined in accordance with 40 CFR 60.334(b) (1993 version). Any request for a future custom schedule shall be made in writing and directed to the EPA's office in Atlanta and the DEP's Bureau of Air Regulation office. Any custom schedule approved by EPA and DEP pursuant to 40 CFR 60.334 (b) (1993 version) will be recognized as enforceable provisions of the permit. The records of natural gas and No. 2 fuel oil usage shall be kept by the company for a five (5) years period for regulatory agency inspection purposes.

L. SPECIFIC CONDITION #18

GRU'S COMMENTS:

This condition states that the unit will be in compliance with all applicable provisions of Chapter 62-296, F.A.C., which includes the New Source Performance Standards for Combustion Turbines (Subpart GG). Certain permit conditions, however, provide alternatives to these provisions. For example, Specific Condition 15 requires continuous monitoring of NOx emissions in lieu of monitoring the water to fuel ratio and fuel-bound nitrogen as required by Subpart GG. Therefore, GRU requests that this condition acknowledge any alternate provisions contained in this permit as follows:

The emission unit shall be in compliance with...F.A.C., except as otherwise specified herein."

DEPARTMENT'S RESPONSE:

This condition is modified as proposed:

FROM:

18. The emission unit shall be in compliance with all applicable provisions of Chapter 403, F.S., and Chapters 62-4, 210, 212, 275, 296 and 297, F.A.C.

TO:

18. The emission unit shall be in compliance with all applicable provisions of Chapter 403, F.S., and Chapters 62-4, 210, 212, 275, 296 and 297, F.A.C., **except as otherwise specified herein.**

M. SPECIFIC CONDITION #19:

GRU'S COMMENTS:

This condition requires compliance with all applicable requirements of Subpart GG. For the reason stated above, GRU requests that this condition be revised as follows:

FROM:

19. The emission unit shall be in compliance with all applicable requirements of 40 CFR 60, Subpart A, Appendix A and Appendix B (1993 version), Subpart GG - Standards of Performance for Stationary Gas Turbines (1993 version), and Rule 62-296.800(2)(a), F.A.C. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s). All notifications and reports required by this specific condition shall be submitted to the DEP's Northeast District office.

TO:

19. The emission unit shall be in compliance with all applicable requirements of 40 CFR 60, Subpart A, Appendix A and Appendix B (1993 version), Subpart GG - Standards of Performance for Stationary Gas Turbines (1993 version), and Rule 62-296.800(2)(a), F.A.C., **except as otherwise specified herein.** The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s). All notifications and reports required by this specific condition shall be submitted to the DEP's Northeast District office.

Final Determination
GRU
Page Ten

DEPARTMENT'S RESPONSE:

This condition is changed as requested.

N. SPECIFIC CONDITION #21

GRU'S REQUEST:

As proposed in Specific Condition #19, above, is requested similar revision of this condition as follows:
"Except as otherwise specified herein, the emission unit...(NSPS)

FROM:

21. The emission unit shall be in compliance with all applicable provisions of Rule 62-210.650, F.A.C.: Circumvention; Rule 62-210.700, F.A.C.: Excess Emissions; Rule 62-296.800, F.A.C.: Standards of Performance for New Stationary Sources (NSPS); Chapter 62-297, F.A.C.: Stationary Sources - Emissions Monitoring; and, Rule 62-4.130, F.A.C.: Plant Operation - Problems.

TO:

21. Except as otherwise specified herein, the emission unit shall be in compliance with all applicable provisions of Rule 62-210.650, F.A.C.: Circumvention; Rule 62-210.700, F.A.C.: Excess Emissions; Rule 62-296.800, F.A.C.: Standards of Performance for New Stationary Sources (NSPS); Chapter 62-297, F.A.C.: Stationary Sources - Emissions Monitoring; and, Rule 62-4.130, F.A.C.: Plant Operation - Problems.

DEPARTMENT'S RESPONSE:

This condition is modified as requested.

O. SPECIFIC CONDITION #27

GRU'S REQUEST:

This condition states than an application for an operation permit must be submitted at least 90 days prior to expiration of the construction permit. This unit is being permitted as a modification to an existing Site Certification pursuant to the Florida Power Plant Siting Act. Therefore, an operating permit under Chapter 62-210, F.A.C., is not required. The new unit, however, will be a Title V source subject to the permitting requirements of Rule 62-213.420, F.A.C. Pursuant to Rule 62-213.420(1)(a)(2), F.A.C., an

Final Determination
GRU
Page Eleven

application for an operation permit (which is to be issued by Tallahassee, not the District) is to be filed no later than 180 days after commencing operation. Therefore, GRU requests that this condition be revised accordingly as follows:

FROM:

27. An application for an operation permit must be submitted to the Northeast District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the permittee 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 (Rules 62-4.055 and 62-4.220, F.A.C.).

TO:

27. An application for a Title V operation permit must be submitted to the Tallahassee office no later than 180 days after commencing operation. The permittee shall submit a timely and complete permit application in compliance with the requirements of Rule 62-213.420, F.A.C. To properly apply for an operation permit, the permittee 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 (Rules 62-4.055 and 62-4.220, F.A.C.).

DEPARTMENT'S RESPONSE:

This condition is modified as requested.

BACT DETERMINATION

GRU also requested that the Department reconsider Power Augmentation and Fuel Bound Nitrogen (issues).

DEPARTMENT'S RESPONSE:

Power Augmentation:

The power augmentation (PA) mode will allow the firing of additional natural gas, while inject water into the turbine, to produce more megawatts during peak-demand periods. NOx emissions will increase up to 30 ppmvd during PA operation. GRU states that PA is not the preferred mode of operation due to the increased wear

and tear on the machine and resultant increase in maintenance costs. The Department has reconsidered this issue but maintains its previous position. The Department does not have the authority to permit the violation of a BACT determination (BACT limit shall not exceed 15 ppmvd). In life threatening situations (severe cold, hurricane, etc.), sources have been granted an emergency order allowing a temporary violation of the air permit standards by the Department's Secretary. This has been done on a case by case basis.

Fuel Bound Nitrogen:

An allowance of 12 ppm (above the 42 ppm BACT standard) was requested by GRU because water injection, the control technology utilized during fuel oil combustion, controls thermal NOx but does not control organic NOx associated with nitrogen in the fuel oil. Therefore, if the fuel oil contained significant levels of nitrogen (above 0.015%), the water injection to the unit would have to be increased beyond the manufacturer's recommended levels in order to meet the NOx limit. This would not only significantly increase water consumption, but result in increased wear and tear on the unit and additional maintenance costs.

The Department has reconsidered this issue and maintains its previous position. No allowance will be granted for fuel bound nitrogen. Similar facilities have been permitted at 15 ppmvd at 15% O₂ and have demonstrated compliance with the standard.

Conclusion:

The final action of the Department is to issue the federal construction permit, PSD-FL-212, with the changes noted above.

ATTACHMENTS AVAILABLE UPON REQUEST



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:

Gainesville Regional Utilities
P. O. Box 147117, Station A-134
Gainesville, FL 32614-7117

Permit Number: PSD-FL-212
Expiration Date: June 30, 1996
County: Alachua
Latitude/Longitude: 29°45'32"N
82°23'26"W

Project: A 74 MW Simple Cycle
Combustion Turbine
(DHCT3)

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.); Chapters 62-210 through 62-297 and 62-4, Florida Administrative Code (F.A.C.); and, 40 CFR 52.21 and 60. 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 or on file with the Department of Environmental Protection (Department) and specifically described as follows:

Construction of a 74 MW simple cycle combustion turbine designed to burn natural gas and No. 2 fuel oil. Deerhaven combustion turbine (DHCT3) will be constructed/installed at the Gainesville Regional Utilities (GRU)'s existing facility that is located near U.S. 441/SR20/SR25. The UTM coordinates are Zone 17, 365.5 km East and 3292.7 km North.

The emissions unit 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. GRU's letter received October 20, 1993.
2. GRU's letter received December 29, 1993.
3. Construction Permit application received March 22, 1994.
4. Department's letter dated April 22, 1994.
5. GRU's letter with attachments received April 25, 1994.
6. GRU's letter with attachments received August 12, 1994.
7. GRU's letter with attachments received September 21, 1994.
8. Technical Evaluation and Preliminary Determination dated December 16, 1994.
9. GRU's letter with attachments dated May 5, 1994.

PERMITTEE:

Gainesville Regional Utilities

Permit Number: PSD-FL-212

Expiration Date: June 30, 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, 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.

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

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

GENERAL CONDITIONS:

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.

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-30.300, F.A.C., as applicable.

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

GENERAL CONDITIONS:

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.
- 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.

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

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

GENERAL CONDITIONS:

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:

General Operating Requirements

1. The maximum heat input rates, based on high heating values of each fuel, to the DHCT3 and at ISO conditions (i.e., 59° F, 60% relative humidity and 101.3 kilopascals pressure), shall not exceed 971.1 MMBTU/hr, while firing natural gas, nor 990.6 MMBTU/hr, while firing fuel oil. Heat input will vary depending on ambient conditions and the DHCT3 characteristics. Manufacturer's curves or equations for correction to other ambient conditions shall be provided to the Department of Environmental Protection (DEP) at least 90 days before initial compliance testing.
2. The DHCT3 is allowed to operate up to 3900 hours per year, but not to exceed 2000 hours while firing fuel oil.
3. Only natural gas (NG) or No. 2 fuel oil shall be fired in the combustion turbine. The maximum sulfur content of the fuel oil shall not exceed 0.05 percent, by weight. GRU has established that there is approximately 55 hours of full load operation of fuel oil, which contains nominally 0.25% sulfur content, by weight, remaining in the fuel storage tank. GRU will be allowed to deplete this reserve by firing the fuel oil in the DHCT3. However, all future deliveries of fuel oil for the DHCT3 shall meet the BACT requirement, which limits the fuel oil sulfur content to no more than 0.05%, by weight. Fuel sulfur content shall be determined and recorded each time fuel is transferred into the bulk storage tank(s).
4. During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques, such as covering and/or application of water or chemicals to the affected areas pursuant to Rule 62-296.310(3), F.A.C. - Unconfined Emissions of Particulate Matter.
5. Any change in the method of operation, equipment or operating hours, pursuant to Rule 62-212.200, F.A.C., Definitions - Modifications, shall be submitted in writing and/or on an application to the DEP's Bureau of Air Regulation office and Northeast District office.

PERMITTEE: Gainesville Regional Utilities Permit Number: PSD-FL-212
 Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

Emission Limits

6. The maximum allowable emissions from the DHCT3, when firing natural gas or No. 2 fuel oil, in accordance with the BACT determination, and at 95 - 100% percent load based on the manufacturer's curves submitted to the DEP, shall not exceed the following limits except during periods of start up, shutdown, and malfunction load change and fuel switching pursuant to Rule 62-210.700, F.A.C.:

MAXIMUM ALLOWABLE EMISSION LIMITS

<u>POLLUTANT</u>	<u>FUEL</u>	<u>BACT STANDARD</u>	<u>LBS/HR</u>	<u>TPY</u>
NO _x *	Gas	15 ppmvd @ 15% Oxygen	58	113(a)
	Oil	42 ppmvd @ 15% Oxygen	184	184(b)
			Combined(c)	239
PM ₁₀	Gas	Good combustion; visible emissions shall not exceed 10% opacity	7(d)	14(a)(d)
	Oil	Good combustion of low sulfur oil; visible emissions shall not to exceed 10% opacity	15(d) Combined(c)	15(b)(d) 22
SO ₂	Gas	Good combustion	29(d)	57(a)(d)
	Oil	Good combustion of low sulfur fuel oil: max. 0.05% sulfur content, by weight	53(d) Combined(c)	53(b)(d) 81
	Oil	Good combustion, limited quantity: max. 0.25% sulfur content, by weight		
H ₂ SO ₄ Mist	Gas	Good combustion	3(d)	6(a)(d)
	Oil	Good combustion of low sulfur fuel oil: max. 0.05% sulfur content, by weight	6(d) Combined(c)	6(b)(d) 9
	Oil	Good combustion, limited quantity: max. 0.25% sulfur content, by weight		

*These values will be calculated using F factors.

(a) Based on a maximum of 3900 hours of operation with natural gas firing.

(b) Based on a maximum of 2000 hours of operation with fuel oil firing.

(c) Based on 1900 hours natural gas firing and 2000 hours of operation with fuel oil firing.

(d) Compliance shall be demonstrated through fuel sulfur analysis.

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

7. Visible emissions shall not exceed 10% opacity when firing natural gas or No. 2 fuel oil.

8. The potential emissions projected from the DHCT3 are:

ESTIMATED POTENTIAL EMISSIONS

<u>Pollutant</u>	<u>Method of Control</u>	<u>TPY **</u>
CO	Good combustion, proper use of water injection system	95.4
VOC	Good combustion	8.66
Inorganic Arsenic	Natural Gas/No. 2 Fuel Oil	0.004854
Mercury	Natural Gas/No. 2 Fuel Oil	0.0009
Pb	Natural Gas/No. 2 Fuel Oil	0.05746
Be	Natural Gas/No. 2 Fuel Oil	0.00032

** TPY values are for annual operation reports (AOR) and PSD applicability determinations. These values are based on the DHCT3 operating at full load at ISO conditions for a total of 3900 hours per year, with up to 2000 hours of No. 2 fuel oil-fired operation.

Compliance Determination

9. Compliance with the allowable emission limiting standards shall be determined within 60 days after achieving the maximum production rate at which this unit will be operated, but not later than 180 days of initial operation at the maximum capability of the unit and annually thereafter, by using the following reference methods as described in 40 CFR 60, Appendix A (1993 version), and adopted by reference in Chapter 62-297, F.A.C.

Initial (I) compliance tests shall be performed on the DHCT3 while firing each fuel (gas, oil). Annual (A) compliance tests shall be performed during every federal fiscal year (October 1 - September 30) pursuant to Rule 62-297.340, F.A.C., on the DHCT3 with the fuel(s) used for more than 400 hours in the preceding 12-month period.

- Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources (I,A)

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

- Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources (I)
- Method 20 Determination of Nitrogen Oxides and Diluent Emissions from Stationary Gas Turbines (I,A)

Note: No other methods may be used for compliance testing unless prior DEP approval is received in writing. The DEP may request a special compliance test pursuant to Rule 62-297.340(2), F.A.C., when, after investigation (such as complaints, increased visible emissions, or questionable maintenance of control equipment), there is reason to believe that any applicable emission standard is being violated.

10. Notwithstanding the requirements of Rule 62-297.340, F.A.C., the exclusive use of fuel oil with a maximum sulfur content limit of 0.05% or less, by weight, is the method for determining compliance for SO₂, H₂SO₄ mist, and PM₁₀. There is no suitable method for the testing of PM₁₀ from this type of emissions unit, and the SO₂ and H₂SO₄ emissions are clearly limited by the sulfur content of the fuel. Compliance with the SO₂ and sulfuric acid mist emission limits shall be determined by fuel oil analysis using ASTM D2880-71 or D4294 (or equivalent) for the sulfur content of liquid fuels and D1072-80, D3031-81, D4084-82 or D3246-81 (or equivalent) for sulfur content of gaseous fuel. Alternatively, natural gas and fuel oil supplier data for sulfur content may be submitted. However, the applicant is responsible for ensuring that the procedures above are used for determination of fuel sulfur content. Analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency pursuant to 40 CFR 60.335(e) (1993 version).

11. Pursuant to Rule 62-212.410, F.A.C., the permittee shall install a dry low-NO_x combustor on the DHCT3 for NO_x control when firing natural gas. Control of NO_x when firing No. 2 fuel oil shall be accomplished by water injection.

12. An initial test for CO, concurrent with each NO_x test, is required to confirm that annual potential emissions will not exceed 100 TPY. The NO_x and initial CO test results shall be the average of three valid one-hour runs. The DEP's Northeast District office shall be notified, in writing, at least 30 days prior to the initial compliance tests and at least 15 days before annual compliance test(s). Testing of emissions shall be conducted with the combustion turbine operating at permitted capacity. Permitted capacity is defined as 95-100 percent of the maximum heat input rate allowed by the permit, corrected for the average ambient air

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

temperature during the test (with 100 percent represented by a curve depicting heat input v. ambient temperature). If it is impracticable to test at permitted capacity, the source may be tested at less than permitted capacity. In this case subsequent operation is limited by adjusting the entire heat input v. ambient temperature curve downward by an increment equal to the difference between the maximum permitted heat input (corrected for ambient temperature) and 105 percent of the value reached during the test until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity. Compliance test results shall be submitted to the DEP's Northeast District office no later than 45 days after completion of the last test run.

13. Excess NO_x emissions from this turbine resulting from startup, shutdown, malfunction, fuel switching or load change, shall be acceptable providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the DEP's Bureau of Air Regulation or the Northeast District office for a longer duration. Best operating practices shall be documented in writing and a copy submitted to the DEP's Northeast District office along with the initial compliance test data. The document may be updated as needed with all updates submitted to the DEP's Northeast District office within thirty (30) days of implementation and shall include time limitations on excess emissions caused by turbine startup.

Notification, Reporting and Recordkeeping

14. Notification and recordkeeping shall be in accordance with 40 CFR 60.7 (1993 version). The following protocols shall be submitted to the DEP's Northeast District office for approval:

- a. CEMS - If applicable, the Federal Acid Rain Program requirements of 40 CFR 75 shall apply when those requirements become effective in Florida.
- b. Performance Test Protocol - At least 30 days prior to conducting the initial performance tests required by this permit, the permittee shall submit to the DEP's Northeast District office for their review and approval: a protocol outlining the procedures to be followed; the test methods; and, any differences between the reference methods and the test methods proposed to be used to verify compliance with the conditions of this permit.

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

- c. All measurements, records, and other data required to be maintained by GRU shall be retained for at least five (5) years following the date on which such measurements, records, or data are recorded. These data shall be made available to the DEP representatives.

Monitoring Requirements

15. The permittee shall install, calibrate, maintain, and operate a continuous emission monitor in the stack to measure and record the nitrogen oxides emissions from this source. One-hour periods when NO_x emissions (ppmvd @ 15% oxygen) are above the BACT standards (15/42 gas/oil) shall be reported as excess emissions following the format of 40 CFR 60.7 (1993 version). The continuous emission monitor must comply with Rule 62-297.520, F.A.C.; 40 CFR 60, Appendix F, Quality Assurance Procedures (1993 version) (or other DEP approved QA plan); 40 CFR 60, Appendix B, Performance Specification 2 (1993 version); or, if applicable, 40 CFR 75, Appendix A and Appendix B. Periods of startup, shutdown, fuel switching, malfunction, and load change shall be monitored and recorded. The NO_x CEMS will be used in lieu of the water/fuel monitoring system and fuel bound nitrogen (FBN) monitoring, which are required in accordance with 40 CFR 60, Subpart GG (1993 version), and are used as indicators of compliance with the NO_x standard specified in the subpart. Since the NO_x emission standard from Subpart GG is more than twice the BACT standard, monitoring for emissions in excess of the BACT limits using the NO_x CEMS is more stringent. FBN levels are not required for excess emission reports when excess emissions are reported and based on the stack monitoring system. The calibration of the water/fuel monitoring device required in 40 CFR 60.335(c)(2) (1993 version) will be replaced by certification tests of the NO_x CEMS.

16. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions and shall be prohibited pursuant to Rule 62-210.700, F.A.C.

17. The sulfur content of the fuel oil being fired in the combustion turbine shall be determined in accordance with 40 CFR 60.334(b) (1993 version). Any request for a future custom schedule shall be made in writing and directed to the EPA's office in Atlanta and the DEP's Bureau of Air Regulation office. Any custom schedule approved by EPA and DEP pursuant to 40 CFR 60.334 (b) (1993 version) will be recognized as enforceable provisions of the

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:

permit. The records of natural gas and No. 2 fuel oil usage shall be kept by the company for a five (5) years period for regulatory agency inspection purposes.

Rule Requirements

18. The emission unit shall be in compliance with all applicable provisions of Chapter 403, F.S., and Chapters 62-4, 210, 212, 275, 296 and 297, F.A.C., except as otherwise specified herein.
19. The emission unit shall be in compliance with all applicable requirements of 40 CFR 60, Subpart A, Appendix A and Appendix B (1993 version), Subpart GG - Standards of Performance for Stationary Gas Turbines (1993 version), and Rule 62-296.800(2)(a), F.A.C., except as otherwise specified herein. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s). All notifications and reports required by this specific condition shall be submitted to the DEP's Northeast District office.
20. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (Rule 62-210.300(1), F.A.C.).
21. Except as otherwise specified herein, the emission unit shall be in compliance with all applicable provisions of Rule 62-210.650, F.A.C.: Circumvention; Rule 62-210.700, F.A.C.: Excess Emissions; Rule 62-296.800, F.A.C.: Standards of Performance for New Stationary Sources (NSPS); Chapter 62-297, F.A.C.: Stationary Sources - Emissions Monitoring; and, Rule 62-4.130, F.A.C.: Plant Operation - Problems.
22. If construction does not commence within 18 months of issuance of this permit, the permittee shall obtain from the DEP's Bureau of Air Regulation a review and, if necessary, a modification of the BACT determination and allowable emissions for the unit(s) on which construction has not commenced (40 CFR 52.21(r)(2) (1993 version)).
23. Quarterly excess emission reports, in accordance with 40 CFR 60.7 and 60.334 (1993 version), shall be submitted to the DEP's Northeast District office.
24. Pursuant to Rule 62-210.370(2), F.A.C., Annual 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:

PERMITTEE: Permit Number: PSD-FL-212
Gainesville Regional Utilities Expiration Date: June 30, 1996

SPECIFIC CONDITIONS:


sulfur content of the fuel being fired, fuel usage, hours of operation, air emissions limits, etc. Annual operating reports shall be sent to the DEP's Northeast District office by March 1st of each calendar year.

25. Stack sampling facilities shall be installed in accordance with Rule 62-297.345, F.A.C.

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

27. An application for a Title V operation permit must be submitted to the Tallahassee office no later than 180 days after commencing operation. The permittee shall submit a timely and complete permit application in compliance with the requirements of Rule 62-213.420, F.A.C. To properly apply for an operation permit, the permittee 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 (Rules 62-4.055 and 62-4.220, F.A.C.).

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


Virginia B. Wetherell
Secretary

Best Available Control Technology (BACT) Determination
Gainesville Regional Utilities
Alachua County

PSD-FL-212

Gainesville Regional Utilities (GRU) proposes to construct a 74 MW (nominal) simple cycle combustion turbine (CT) at the existing Deerhaven site approximately seven miles north of Gainesville in Alachua County. The selected CT, designated as DHCT3, is a GE Model MS 7001 EA with dry low-NO_x combustors and will also use water injection for NO_x control when firing fuel oil.

The applicant requested approval to operate the emission unit for 3900 hours per year, as indicated in the table below. The No. 2 fuel oil will have a maximum limit of 0.05 percent sulfur content, by weight. The applicant has indicated the maximum annual tonnage of regulated air pollutants emitted from the combustion turbine at 100 percent load, at 15% O₂ and ISO conditions (59°F, 60% relative humidity, and 101.3 kilopascals pressure), for each type of fuel fired, to be as follows:

Pollutant	Emissions (TPY)			Total	PSD Significant Emission Rate (TPY)
	Gas	Gas w/PA *	Oil		
	1510 Hrs	390 Hrs	2000 Hrs		
NO _x	40	23	213	276	40
SO ₂	20	6	48	74	40
PM/PM ₁₀	5	1	15	21	25/15
CO	24	8	65	97	100
VOC	2	1	6	9	40
H ₂ SO ₄ mist	2	1	5	8	7
Be			0.00032	0.00032	0.0004
Hg			0.0009	0.0009	0.1
Pb			0.05746	0.05740	0.6
As			0.004854	0.004854	Any

* with power augmentation

Rule 62-212.400(2)(f)(1), Florida Administrative Code (F.A.C.), requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the table above. Therefore, BACT is required for NO_x, SO₂, PM₁₀, and H₂SO₄ mist.

Date of Receipt of a BACT Application

March 25, 1994

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Proposed Limits</u>
NO _x	15 ppmvd @ 15% O ₂ (natural gas firing) 54 ppmvd @ 15% O ₂ (for No. 2 fuel oil firing), maximum based on fuel bound nitrogen 30 ppmvd @ 15% O ₂ (natural gas firing-power augmentation mode). Dry low-NO _x combustor when firing natural gas and water injection when firing distillate oil and during power augmentation mode.
PM ₁₀	Pre-filtering of the combustion air, good combustion practices, and use of natural gas as the primary fuel with limited annual fuel oil firing.
SO ₂	0.05% sulfur content by weight (fuel oil firing); also, an equivalent of up to 55 hours of full load operation at ISO conditions using a fuel oil with a maximum of 0.25% sulfur content, by weight.
H ₂ SO ₄ Mist	0.05% sulfur by weight (fuel oil firing), also, an equivalent of up to 55 hours of full load operation at ISO conditions using a fuel oil with a maximum of 0.25% sulfur content, by weight.

BACT Determination Procedure

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (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 BACT 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 determination 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 unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically infeasible for the emission unit 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 simple cycle combustion turbines can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulate matter). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., carbon monoxide). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., nitrogen oxides). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject 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., particulate matter, sulfur dioxide, fluorides, 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.

ACID GASES

Nitrogen Oxides (NO_x)

The emissions of nitrogen oxides represent a significant portion of the total emissions generated by this project, and need to be controlled as deemed appropriate. As such, the applicant presented an extensive analysis of the different available technologies for NO_x control.

The applicant stated that BACT for nitrogen oxides will be met by using dry low-NO_x combustor design to limit emissions to 15 ppmvd (corrected to 15% O₂), when burning natural gas; and, by water injection to limit emissions to the applicant's proposed BACT level of up to 54 ppmvd (corrected to 15% O₂), when burning fuel oil.

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 selective catalytic reduction (SCR) system on two 25 MW combustion turbines located in Kern County, California.

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 through the catalyst bed. The SCR process can achieve up to 90% reduction of NO_x with a new catalyst. As the catalyst ages, the maximum NO_x reduction efficiency (while holding ammonia slip emissions constant) 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°F.

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.

The exhaust temperatures of the proposed simple cycle CT for this site will range from 955°F to 1,100°F. At temperatures of 1,100°F and above, the zeolite catalyst (reported to operate to a maximum temperature of 1,050°F) will be irreparably damaged.

Based on the GE data sheets for the proposed DHCT3 provided by the applicant, exhaust temperatures will range from 955°F to 1,100°F, depending upon the fuel fired, ambient temperature and load. Since the zeolite catalysts were reported to operate in this temperature range, ENSERCH Environmental investigated the technical feasibility of using such a system. Because the zeolite catalysts are new, only one vendor (Norton Chemical Process Products Corporation, P.O.

Box 350, Akron, Ohio 44309-0350) was capable of providing a cost estimate. A second vendor was contacted and a cost estimate was requested, but no response was received. This cost estimate noted that the current zeolite catalyst is limited to a maximum upper temperature of 1,050°F and, without an air injection system to cool the exhaust gases at the zeolite catalyst, its use would be infeasible. Review of the GE data sheets for the Deerhaven CT confirmed the vendor's exhaust gas temperature findings. ENSERCH Environmental requested that the vendor revise the initial cost estimate and include the cost of an air injection system.

Based on the information obtained from the vendor, the use of a SCR system equipped with a zeolite catalyst and an air injection system was deemed to be only potentially technically feasible based upon its limited usage on simple cycle CTs. In addition, although the concept of an air injection system is easily visualized, its use commercially has been documented only once in the clearinghouse as a commercially available response to the temperature limitations of SCR. Although only potentially technically feasible, ENSERCH Environmental evaluated the impacts of a SCR system equipped with a high temperature zeolite catalyst and an air injection system as the available post-combustion control technology needed to meet the most stringent emission limitations.

For the simple cycle combustion turbine and based on the information supplied by the applicant, it is estimated that the maximum annual NO_x emissions using a low-NO_x combustor will be 276.42 tons/year. Assuming that SCR would reduce the NO_x emissions by approximately 80%, about 58.22 tons of NO_x would be emitted annually. When this reduction is taken into consideration alone with the total levelized annual operating cost of \$1,455,957.33, the incremental cost effectiveness (\$/ton) of controlling NO_x is \$6,672.58 for this project. These calculated costs are higher than costs previously approved as BACT.

Sulfur Dioxide (SO₂) and Sulfuric Acid Mist (H₂SO₄)

The applicant stated that the sulfur dioxide (SO₂) and sulfuric acid (H₂SO₄) mist emissions, when firing No. 2 fuel oil, will be controlled by using fuel oil with a maximum sulfur content limit of 0.05%, by weight. This will result in an annual emission rate of 81 tons SO₂ per year and 9 tons H₂SO₄ mist per year (with no power augmentation, operating at 1900 hours per year on natural gas, and operating 2000 hours per year on No. 2 fuel oil with a maximum limit of 0.05% sulfur content, by weight).

In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent SO₂ emissions. These include the use of a lower sulfur content fuel oil or the use of wet lime or limestone-based scrubbers, otherwise known as flue gas desulfurization (FGD).

In developing the NSPS for stationary gas turbines, EPA recognized that FGD technology was inappropriate to apply to these combustion units. EPA acknowledged in the preamble of the proposed NSPS that "Due to the high volumes of exhaust gases, the cost of flue gas desulfurization (FGD) to control SO₂ emission from stationary gas turbines is considered unreasonable." EPA reinforced this point when, later in the preamble, they stated that "FGD...would cost about two to three times as much as the gas turbine." The economic impact of applying FGD today is no different.

Furthermore, the application of FGD would have negative environmental and energy impacts. Sludge would be generated that would have to be disposed of properly and there would be increased utility (electricity and water) costs associated with the operation of a FGD system. Finally, there is no information in the literature to indicate that FGD has ever been applied to stationary gas turbines burning distillate oil.

The elimination of flue gas control as a BACT option leaves the use of low sulfur fuel oil as the next option to be investigated. Gainesville Regional Utilities, as stated above, has proposed the use of No. 2 fuel oil with no more than 0.05% sulfur content, by weight, as BACT for this project.

Particulate Matter (PM) Emissions

Particulate matter (PM) emissions from combustion turbines are related to the combustion air, fuel quality and combustion efficiency. Review of the BACT/LAER Clearinghouse indicates that most combustion turbines meet the BACT requirement through filtering the combustion air, good combustion practices, use of clean burning natural gas and limited fuel oil firing. Currently, post combustion controls (i.e., baghouse) are not being used on combustion turbines. This is due mostly to the characteristics of the exhaust gases (high temperatures and velocities) and the low emissions rates for PM when good combustion of low sulfur fuels is employed.

PM₁₀ (PM less than 10 microns in diameter) emissions result from noncombustibles in the fuels, PM₁₀ in the ambient air used as combustion air, dissolved solids in the water used for wet injection, and incomplete combustion. Since solids can damage the combustion turbine, considerable efforts are made to limit their entry and/or formation. Based on this need and review of the BACT/LAER Clearinghouse data, the applicant proposes prefiltering of the combustion air, good combustion practices, and use of natural gas as the primary fuel and limited annual fuel oil firing as BACT.

BACT Determination by the Department

NO_x Control

The information that the applicant presented and Department calculations indicate that the cost per ton of controlling NO_x for this turbine [\$6,672.58 per ton] is high compared with other BACT determinations, which required 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.

It is the Department's understanding that General Electric is developing controls 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. Several prior CT projects have already been permitted at 15 ppmvd @ 15% O₂ (natural gas) and 42 ppmvd @ 15% O₂ (No. 2 fuel oil). In these BACT determinations, no allowance has been made for fuel bound nitrogen or for operation with power augmentation. The Department has determined that BACT for this project is 15 ppmvd @ 15% O₂ using natural gas and 42 ppmvd @ 15% O₂ when firing No. 2 fuel oil. Measured NO_x concentrations shall not be corrected to ISO conditions to determine compliance with these BACT standards. Based on emission rates at the worst case design ambient conditions (20°F) supplied by GE, NO_x emissions will also be limited to 58 lbs/hr for natural gas firing and 184 lbs/hr for fuel oil firing.

SO₂ and H₂SO₄ Mist Control

The Department accepts the applicant's proposal as BACT for sulfur dioxide and H₂SO₄ mist, which is the burning of either natural gas or No. 2 fuel oil with a maximum limit of 0.05% sulfur content, by weight. Fuel oil usage will be limited to no more than 2000 hours per year. GRU has estimated that there is approximately 55 hours of full load operation of fuel oil at 0.25% sulfur content, by weight, remaining in the fuel oil storage tank. GRU will be allowed to deplete this reserve of fuel oil. However, all future deliveries of fuel oil shall meet the BACT requirements, which is a maximum limit of 0.05% sulfur content, by weight.

PM₁₀ Control

The Department accepts the applicant's proposed BACT for this emission unit. PM₁₀ emissions from fuel burning are related to the sulfur content of the fuel and combustion practices. PM₁₀ emissions will be controlled by good combustion practices and firing natural gas; or, firing No. 2 fuel oil for no more than 2000 hours per year. The No. 2 fuel oil shall be limited to no more than 0.05% sulfur content, by weight. In addition, visible emissions shall not exceed 10% opacity when firing natural gas or fuel oil.

BACT Standards

The BACT emission limits for the Gainesville Regional Utilities project, a DHCT3, are established as follows:

MAXIMUM ALLOWABLE EMISSION LIMITS

<u>POLLUTANT</u>	<u>FUEL</u>	<u>BACT STANDARD</u>	<u>LBS/HR</u>	<u>TPY</u>
NO _x *	Gas	15 ppmvd @ 15% Oxygen	58	113(a)
	Oil	42 ppmvd @ 15% Oxygen	184	184(b)
			Combined(c)	239
PM ₁₀	Gas	Good combustion; visible emissions shall not exceed 10% opacity	7(d)	14(a)(d)
	Oil	Good combustion of low sulfur oil; visible emissions shall not to exceed 10% opacity	15(d) Combined(c)	15(b)(d) 22
SO ₂	Gas	Good combustion	29(d)	57(a)(d)
	Oil	Good combustion of low sulfur fuel oil: max. 0.05% sulfur content, by weight	53(d) Combined(c)	53(b)(d) 81
	Oil	Good combustion, limited quantity: max. 0.25% sulfur content, by weight		
H ₂ SO ₄ Mist	Gas	Good combustion	3(d)	6(a)(d)
	Oil	Good combustion of low sulfur fuel oil: max. 0.05% sulfur content, by weight	6(d) Combined(c)	6(b)(d) 9
	Oil	Good combustion, limited quantity: max. 0.25% sulfur content, by weight		

*These values will be calculated using F factors.

(a) Based on a maximum of 3900 hours of operation with natural gas firing.

(b) Based on a maximum of 2000 hours of operation with fuel oil firing.

(c) Based on 1900 hours natural gas firing and 2000 hours of operation with fuel oil firing.

(d) Compliance shall be demonstrated through fuel sulfur analysis.

Monitoring

The BACT emission limitations for NO_x are one-hour averages. Compliance with these standards will be verified by a stack test and excess emissions will be monitored by a stack continuous emissions monitoring system (CEMS) for NO_x and oxygen. The NO_x CEMS will be

used in lieu of the water/fuel monitoring system and fuel bound nitrogen (FBN) monitoring which are required in 40 CFR 60, Subpart GG, and which are used as indicators of compliance with the NO_x standard specified in the subpart. Since the NO_x emission standard from Subpart GG is more than twice the BACT standard, monitoring for emissions in excess of the BACT limits using the NO_x CEMS is more stringent. FBN monitoring is not required for excess emission reports when excess emissions are reported based on the stack monitoring system. The calibration of the water/fuel monitoring device required in 40 CFR 60.335(c)(2) will be replaced by certification tests of the NO_x and oxygen CEMS.

Details of the Analysis May be Obtained by Contacting:

Al Linero, P.E., BACT Coordinator
Department of Environmental Protection
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

Virginia B. Wetherell
Virginia B. Wetherell, Secretary
Dept. of Environmental Protection

march 29, 1995
Date

April 11th, 1995
Date

Memorandum

Florida Department of
Environmental Protection

To: Virginia B. Wetherell, Secretary

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

Subj: Approval of Construction Permit PSD-Fl-212
Gainesville Regional Authority (GRU)

Date: March 28, 1995

Attached for your approval and signature is a permit prepared by the Bureau of Air Regulation for the above mentioned company to construct a 74MW simple cycle combustion turbine designed to burn natural gas and No. 2 fuel oil.

The control measures consist of dry low NOx burners and water injection for control of nitrogen dioxide emissions. Sulfur dioxide emissions will be controlled by the use of No. 2 fuel oil with a 0.05% sulfur content by weight.

The original intent to issue was published in the Gainesville Sun on December 24, 1994. Some modifications were made in response to comments by GRU.

This permit is not controversial. I recommend your approval and signature.

HLR/th/t

Attachment