STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Air Permit by:

Ms. Karen Alford
Gainesville Regional Utilities
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Air Permit No. 0010006-005-AC
Deerhaven Generating Station
Alachua County

Enclosed is the Final Permit which authorizes the installation of selective catalytic reduction, circulating dry scrubber and baghouse systems. The proposed work will be conducted on the existing Unit 2 at the Deerhaven Generating Station, which is located in Alachua County at 10001 NW 13th Street in Gainesville, Florida. As noted in the attached Final Determination, changes and revisions were made to the draft permit. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68 of the Florida Statutes by filing a notice of appeal pursuant to Rule 9.110, 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 30 days after this order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Permit and Final determination) and all copies were sent by electronic mail with received receipt requested before the close of business on 8/13/01 to the persons listed below:

Karen Alford, GRU (alfordkc@gru.com)
Yolanta E. Jonynas, GRU (jonynasye@gru.com)
Jim Little, EPA (little.james@epa.gov)
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Michael Halpin, OSC (michael.halpin@dep.state.fl.us)

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.

Barbara J. Friday 8/13/01
(Clerk) (Date)

Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative:
Ms. Karen Alford, Interim Assistant General Manager
Energy Supply

Permit No.:	0010006-005-AC
Facility ID No.:	0010006
Project:	Installation of Air Quality Control Systems
Expires:	September 30, 2011

PROJECT AND LOCATION

This permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The Deerhaven Generating Station is an existing electrical generating plant (SIC No. 4911) located at 10001 NW 13th Street in Gainesville, Alachua County, Florida. The UTM coordinates are: Zone 17; 365.7 km E; 3292.6 km N.

STATEMENT OF BASIS

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation except as needed to comply with the New Source Performance Standards (NSPS) in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). However, the addition of hydrated lime to the flue gas is required when burning compliance coal (approximately up to 0.8 weight percent sulfur) and when the CDS is not fully operational to ensure there is no Prevention of Significant Deterioration (PSD) significant emission increase of sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the CFR. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

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Executed in Tallahassee, Florida

Trina L Vielhauer for — 8/13/07

Joseph Kahn, Director
Division of Air Resource Management

(Date)

FACILITY DESCRIPTION

The City of Gainesville, GRU operates an existing electrical generating plant at the Deerhaven Generating Station (DGS). This plant consists of two steam boilers (Unit Nos. 1 and 2) and associated steam turbines; a simple cycle combustion turbine (CT No. 3); two unregulated simple cycle combustion turbines (CT Nos. 1 and 2); a recirculating cooling water system; storage and handling facilities for coal; brine salt; fly ash and bottom ash; fuel oil storage tanks; water treatment facilities; a railcar maintenance facility and ancillary equipments. Boiler No. 2 has a nominal nameplate rating of 251 megawatts (MW), electric. Emission control equipment currently installed on Boiler No. 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

PROJECT DESCRIPTION

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation, except as needed to comply with the NSPS in 40 CFR 60, Subpart D.

Installation of the SCR system will result in collateral generation of SAM as particulate matter (PM/PM_{10}). There is a potential increase in emissions if the permittee elects not to fully operate the CDS (i.e., with water injection and ash recirculation), a situation that is only likely to occur when burning low sulfur coal (approximately up to 0.8 weight percent sulfur). The potential increase of SAM generation is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) and the subsequent reaction of SO_3 and water to form SAM. In the absence of hydrated lime injection when burning low-sulfur coal, there is a potential for increased emissions of SAM if the CDS and baghouse are not in operation. The permit requires the injection of hydrated lime to the flue gas when burning low-sulfur coal and when the CDS is not fully operational to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will react with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

REGULATORY CLASSIFICATION

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

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

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

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

NSPS: The existing facility operates units subject to the New Source Performance Standards of 40 CFR 60.

RELEVANT DOCUMENTS

The permit request and additional information received to make it complete are not a part of this permit; however, the information is listed in the technical evaluation which is issued concurrently with this permit.

SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: All documents related to applications for permits regarding construction and operation shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be sent to the Department's Northeast District Office.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to Northeast District Office.

3. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C.; and Title 40, Part 60 of the CFR, adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

   {Note: The capacities and specifications stated in the application are based on preliminary design and the final design could include minor changes from the capacities and specification listed in the original application.}

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

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

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

7. Source Obligation: At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by increasing its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction has not yet commenced on the source or modification. [Rule 62-212.400(12)(c), F.A.C.]

The specific conditions listed in this section apply to the following emission unit:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
005	Steam Boiler - Unit 2

Unit 2 is a fossil fuel-fired steam generator with a nominal nameplate rating of 251 MW. Authorized fuels include pulverized coal, natural gas and/or distillate fuel oils (Nos. 1 or 2) with emissions exhausted through a 350 feet stack. The maximum heat input to Unit 2 is 2,428 MMBtu/hour. Unit 2 is a dry bottom, wall-fired boiler with a hot-side electrostatic precipitator to control particulate matter. Unit 2 began commercial operation in 1981. Opacity, nitrogen oxides (NOx) and SO_2 emissions are continuously monitored.

PREVIOUS APPLICABLE REQUIREMENTS

1. Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

AUTHORIZED WORK

2. SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: urea to ammonia conversion system; ammonia flow control unit; ammonia injection grid; two active layers of catalyst with space provided for a future layer; SCR reactor chamber; and other ancillary equipment, including a system to add calcium to the fuel for catalyst preservation. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
3. CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. In general, the system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. SO_2 will be measured at the inlet of the CDS reactor; outlet SO_2 will be measured at the stack. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
4. Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. The design outlet grain loading is 0.01 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]
5. Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR and CDS is not required by this permit. As necessary, the permittee shall operate the hydrated lime addition system and baghouse for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (49 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

PERFORMANCE REQUIREMENTS

6. Annual SAM Emissions Projections: The permittee projected that the increase in actual annual emissions of SAM due to the project would not exceed the PSD significance level (i.e., 7 tons/year). The permittee

shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

{Permitting Note: The baseline actual emission of SAM is 49 tons/year.}

7. Hydrated Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed 7 tons per year above the baseline actual emissions of 49 tons per year. The permittee shall add hydrated lime at a frequency and injection rate for SAM control to satisfy this requirement. The permittee will adjust the hydrated lime flow rate for the given set of operating conditions based on the most recent correlation curves in a performance test. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

8. Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv) as demonstrated by an annual test. [Design; and Rule 62-4.070(3), F.A.C.]

EMISSIONS PERFORMANCE TESTING

9. Baseline Performance Test – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct a baseline performance test at permitted capacity to evaluate SAM emissions. A baseline performance test shall be conducted using current coal (0.8 weight percent sulfur). The baseline performance test shall be conducted prior to the installation of the AQCS. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to the test and shall submit a test report summarizing the emission test and results within 45 days of the completion of the performance test.

   [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

10. Post- AQCS Construction Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions and demonstrate that there is no PSD-significant emissions increase of SAM as a result of the installation of the AQCS. Post- AQCS construction tests shall evaluate both current (up to 0.8 weight percent) and higher sulfur (up to 2.5 weight percent) coals.

    a. No later than November 30, 2008, the permittee shall submit to the Department for review and approval a SAM Evaluation and Testing Plan which shall include as a minimum the following:

       - Evaluation of factors affecting SAM generation (e.g., fuel type, emission control devices, operating conditions, etc.)
       - Determination of the SO_2 to SO_3 conversion rates across the SCR.
       - Evaluation of the hydrated lime injection rates required to mitigate SAM emissions.
       - Testing protocol (e.g., methods, number of runs, operating scenarios, annual tests, etc.)

    b. Testing shall be conducted no later than 180 days after the first flue gas flow through the entire AQCS.

    c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

    d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

    e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing operating conditions

and providing details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

11. Annual Tests – Hydrated Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection rates as necessary. The Department may re-evaluate this requirement based on the results of the initial testing. The protocol for the performance tests shall be submitted to the Department no later than November 30, 2008. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

12. Test Notification: The permittee shall notify the Compliance Authority in writing at least 15 days prior to any required tests. [Rule 62-297.310(7)(a)9, F.A.C.]

13. Test Methods: Required tests shall be performed in accordance with the following reference methods or other Department approved methods upon request by permittee:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the sulfuric acid mist emissions can also be determined with the National Council for Air and Stream Improvement (NCASI) Method 8A. Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

14. Startup, Shutdown and Malfunction: 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.

[Rule 40 CFR 60.8(c)]

{Permitting Note: Boiler startup or shutdown may exceed two hours due to operational constraints of the control equipment, which include:

a. During boiler startup or shutdown, the SCR system is fully functional once the boiler flue gas temperature at the SCR reactor inlet stabilizes to 613^{0}F or greater.

b. During boiler startup and shutdown, the CDS system is fully functional once the following sequential criteria are met:

- The flue gas flow rate at the outlet of the baghouse stabilizes at approximately 1.5 million pounds per hour or greater for a minimum of 6 hours;
- The boiler flue gas temperature at the CDS inlet stabilizes at 230^{0}F or greater; and
- Water has been injected into the reactor for a minimum of 2 hours.}

15. Emissions: The permittee at all times, including periods of startup, shutdown, and malfunction 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 Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility. [Rule 40 CFR 60.11(d)]

NOTIFICATIONS, RECORDS AND REPORTS

16. Test Reports: The permittee shall prepare and submit reports for all required tests in accordance with the requirements specified in Rule 62-297.310, F.A.C. For each sulfuric acid mist test run, the report shall also indicate the lime injection rate for SAM emissions control, unit load, and unit heat input rate. [Rule 62-297.310(8), F.A.C.]

17. Operational Data: The permittee shall monitor and record the hydrated lime consumption rate for SAM emissions control when the unit is combusting compliance coal (approximately up to 0.8 weight percent sulfur) and the CDS is not fully operational. [Rule 62-4.070(3), F.A.C.]

18. Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

    a. The permittee shall evaluate the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years following resumption of regular operations after completing construction on the unit's emission control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

    b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

        a. Name, address and telephone number of the owner or operator of the major stationary source;

        b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

        c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

        d. Any other information that the owner or operator wishes to include in the report.

    c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

    [Rule 62-212.300(1)(e), F.A.C.]

19. SAM Emissions Computation and Reporting: The permittee shall compute SAM emissions in accordance with the following requirements.

    a. For each year of reporting required, emissions shall be computed based on the controlled and uncontrolled emissions factors determined during the required annual emissions test. The owner or operator shall not compute emissions by converting an emission factor to pounds per hour and then multiplying by hours of operation, unless the owner or operator demonstrates that such computation is the most accurate method available.

    b. With appropriate supporting test data, multiple emission factors may be used as necessary to account for variations in emission rate associated with variations in the emissions unit's operating rate or operating conditions during the period over which emissions are computed.

c. The permittee shall compute emissions by multiplying the appropriate controlled or uncontrolled emission factor by the annual heat input rate for the period over which the emissions are computed. The uncontrolled emissions factor shall be used if the minimum lime injection rate established for the latest test is not met.

d. The permittee shall retain a copy of all records used to compute emissions pursuant to this rule for a period of five years from the date on which such emissions information is submitted to the Department or Compliance Authority for any regulatory purpose.

[Rule 62-210.370, F.A.C.]

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

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 Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

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

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

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120, 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:
    ( ) Determination of Best Available Control Technology (BACT)
    ( ) Determination of Prevention of Significant Deterioration (PSD)
    ( ) 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 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.

REVISED
TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

City of Gainesville

Gainesville Regional Utilities

Deerhaven Generating Station
Unit 2, Installation of Air Quality Control Systems
Alachua County, Florida

DEP File Number
0010006-005-AC

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation

August 6, 2007

1. APPLICATION INFORMATION

APPLICANT

City of Gainesville
Gainesville Regional Utilities (GRU)
P.O. Box 147117 (A132)
Gainesville, Florida 32614-7117

Authorized Representative: Ms. Karen Alford, Assistant General Manager – Energy Supply

FACILITY LOCATION

The applicant's facility, Deerhaven Generating Station (DGS) is located at 10001 NW 13th Street, Gainesville, Alachua County, Florida. UTM coordinates of the site are: Zone 17, 367.70 km E and 3292.60 km N. This location is approximately 80 km from the nearest Class I area, the Okefenokee Wilderness Area.

The facility consists of two steam boilers (Units No. 1 and 2) and associated steam turbines, a simple cycle combustion turbine (CT No. 3), two unregulated simple cycle combustion turbines (CT Nos. 1 and 2), a recirculating cooling water system, storage and handling facilities for coal, brine salt, fly ash and bottom ash, fuel oil storage tanks, water treatment facilities, a railcar maintenance facility and ancillary support equipment.

Emission control equipment presently installed on Unit 2 consists of a hot-side electrostatic precipitator for control of particulate matter.

The standard industrial classification (SIC) code for the power plant is Major Group No. 49, Industry Group No. 4911.

REGULATORY CLASSIFICATION

Because potential emissions of at least one regulated pollutant exceed 100 tons per year, the existing facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.). Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC).

The existing facility is major source of hazardous air pollutants (HAP).

The facility operates emissions units subject to the acid rain provisions of the Clean Air Act.

The facility is considered a "fossil fuel fired steam electric plant of more than 250 million BTU per hour of heat input". This facility is one of the 28 source categories with the lower applicability threshold of 100 tons per year with respect to the Rule 62-210.200, F.A.C. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a Prevention of Significant Deterioration (PSD)-major source.

Unit 2 and CT No. 3 were certified pursuant to Electrical Power Plant Siting in accordance with Chapter 62-17, F.A.C. and Chapter 403, Part II, Florida Statutes (F.S.).

MODIFICATION REQUEST

GRU submitted an application for a minor source air construction permit to retrofit DGS Unit 2 with air quality control systems (AQCS) as one means of complying with the requirements of EPA's Clean

Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) as implemented by the Department in Rules 62-296.470 and 62-296.480, F.A.C., respectively. The AQCS planned for DGS Unit 2 includes the following:

- Selective catalytic reduction (SCR) system to reduce NOx emissions.
- A circulating dry scrubber (CDS) to reduce SO_2 emissions.
- Baghouse (fabric filter) to reduce PM emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime and CDS by-product) handling and storage.

These emission control systems will also have the co-benefit of controlling mercury (Hg), hydrogen chloride (HCl), hydrogen fluoride (HF) and sulfuric acid mist (SAM) emissions. Provisions have been made in the design of the AQCS for activated carbon injection in the future if needed for additional Hg control. The primary purpose of the project is to reduce emissions of SO_2, NOx, particulate matter and Hg (through co-benefits) to assist with CAIR and CAMR. While the addition of SCR and the CDS will substantially decrease emissions of NOx and SO_2, there is the potential for collateral increases in the generation of particulate matter (PM) and SAM under certain operating conditions. The potential increase of SAM emissions is a result of the oxidation of SO_2 to sulfur trioxide (SO_3) that is emitted as SAM when burning low-sulfur coal if the CDS system and baghouse are not in operation. SAM generation will also increase as a result of the proposed higher sulfur coals. Potential increases in SAM emissions will be minimized through the injection of alkaline reagent (lime) to react with SO_3 prior to the baghouse. The reactants, primarily particulate calcium compounds, will be collected in the fabric filter. The potential increase in PM from the reaction of lime and SO_3 will be collected in the fabric filter. There will be no emissions increase over the PSD significant emission rates from the installation of SCR and CDS.

Concurrent with the AQCS project, the Unit 2 steam turbine may be refurbished by replacing the high- and intermediate-pressure rotor along with the associated stationary elements. The steam turbine refurbishment will increase the efficiency of the steam turbine in order to recover power lost due to the parasitic load associated with the operation of the new AQCS. DGS Unit 2 is currently fired with low sulfur eastern bituminous coal. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

Following installation and operation of the AQCS, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 percent sulfur), and still comply with the New Source Performance Standards (NSPS) Subpart D of 40 CFR 60.

REVIEWING AND PROCESS SCHEDULE

02-23-2007: Date of Receipt of Application
03-12-2007: Department of Environmental Protection's (DEP's) 1st Completeness Request
03-30-2007: Applicant's response to DEP's 1st Completeness Request
04-23-2007: DEP's 2nd Completeness Request
05-15-2007: Applicant's response to DEP's 2nd Completeness Request
06-14-2007: DEP's 3rd Completeness Request
06-22-2007: Applicant's response to DEP's 3rd Completeness Request. Application complete

AQCS DESCRIPTION

Selective Catalytic Reactor

SCR is a process that uses catalyst to promote the conversion of NOx to nitrogen and water in the flue gas. The conversion occurs between the boiler economizer and the air heaters in a specially designed ductwork section called the SCR Reactor, which contains the catalyst. Ammonia vapor is injected into the flue gas upstream of the catalyst and is thoroughly mixed with the flue gas prior to the catalyst. As the flue gas passes over the catalyst, the nitrogen monoxide and nitrogen dioxide combine with the ammonia to form nitrogen and water.

Unit 2 will have two SCR reactors. The SCR system will tie into the ductwork at the outlet of the existing hot-side electrostatic precipitator which is expected to remain in-service after installation of the AQCS. Ammonia mixer plates and patented Delta Wing mixers will be located within the inlet duct to the two SCR reactors. The SCR outlet duct will connect to the existing air heaters.

The SCR system is designed so that flue gas flows through it whenever the Unit 2 is operating i.e., there are no bypasses. The SCR system contains instrumentation to measure flue gas pressures, temperatures and NOx concentrations at various locations in the ductwork and reactors. NOx control is initiated when the temperature at the outlet of the reactor reaches the minimum short-term operating temperature of 613°F and ammonia flow is started through the injection nozzles.

Unit 2 flue gas will flow through the two layers (space is provided for one future layer) of honeycomb catalyst. This SCR design provides sufficient space with margin to accommodate plate or honeycomb type catalyst and meet the performance requirements without using the spare catalyst level. The catalyst handling system will consist of a catalyst-rotating device, catalyst module lift device (supplied by the catalyst vendor), electric and manual hoists, and a catalyst cart and rail system. Provisions have been made in the catalyst design for removable test samples of catalyst material that can be used to monitor and predict catalyst activity during the catalyst life. The design life of the catalyst is 24,000 hours.

Gaseous arsenic is one of the predominant catalyst deactivation mechanisms in coal-fired SCR applications. Introducing calcium oxide (CaO) to the fuel reduces the gaseous arsenic in the flue gas and decreases its harmful effect on the catalyst. For the DGS Unit 2 SCR system, an addition rate of up to 0.51 weight percent CaO per unit weight of coal is expected to reduce the concentration of arsenic in the flue gas to within acceptable limits, subsequently ensuring the catalyst for a minimum 24,000 hours of operation. The CaO addition will be provided by introducing calcium to the coal conveyor belt after the primary coal crusher. Currently, this is proposed to be accomplished by 1) taking off a slipstream of pebble lime from the main pebble lime feed system between the pebble lime silo and day bins, 2) routing it to a small day tank and 3) feeding it from the day tank onto the coal conveyor belt.

A permanent sampling grid will be provided above and below the catalyst layers as well as between layers. These grids will allow sampling of the gas stream from outside the SCR while the unit is operating. A moveable NO_x probe will be provided in each SCR reactor inlet and outlet. A sampling/NO_x analyzer system will be connected to each probe to measure the inlet and outlet NO_x and provide a process control signal for the ammonia injection system.

A urea-based ammonia system will be provided to supply ammonia for the SCR catalyst to remove NO_x. The system is sized to produce ammonia for two SCR reactors at full boiler load. The urea to ammonia system will use urea that is dissolved into water and the solution will be injected into heated in-line hydrolysers (one operating and one spare) at a controlled rate and under conditions to provide, on demand, the required amount of ammonia. The process will produce a gaseous mixture of ammonia, carbon dioxide and water vapor, which will be mixed into the flue gas stream.

The Unit 2 SCR control system is designed to achieve a target outlet NO_x emission rate of 0.07 pounds per million British thermal units (lb/MMBtu) with an ammonia slip concentration of no more than 5.0 parts per million at 3% oxygen (O_2). The target SCR controlled NO_x emission is ten times lower than the current NSPS Subpart D limit of 0.7 lb/MMBtu.

Circulating Dry SO_2 Scrubber

The CDS will be installed down stream of the existing Unit 2 induced draft (ID) fans. This dry flue gas desulfurization (FGD) system will remove the acidic constituents of the flue gas, primarily SO_2 and SO_3 and to a lesser extent HCl and HF, by reaction with hydrated lime. The system includes the CDS vessel, hydrated lime preparation and injection, water injection, product recycle injection and a flue gas recycle system. To assure a high level of SO_2 removal, a portion of the solid products exiting the CDS vessel (i.e., primarily reaction products such as calcium sulfite ($CaSO_3$), calcium sulfate ($CaSO_4$), calcium carbonate ($CaCO_3$), calcium chloride ($CaCl_2$), calcium fluoride (CaF_2) and inerts) will be separated from the flue gas in the baghouse and recycled back into the CDS to maintain the fluidized bed, while the excess material will be pneumatically transported out of the system to a storage silo. The amount of solids recycled is dependent upon the differential pressure within the CDS and the volumetric flue gas flow rate.

In order to ensure that the CDS is constantly fluidized, a portion of the flue gas stream downstream of the two booster fans will be recirculated to the inlet duct of the CDS during Unit 2 boiler operation at reduced loads. The amount of flue gas recirculated is accomplished through the position of one recirculation damper.

The CDS is designed so that flue gas flows through it whenever Unit 2 is operating (i.e., there are no bypasses). It contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork.

Unit 2 flue gas will first pass through a group of venturi nozzles. The venturi nozzles serve to accelerate the flue gas just prior to the injection of high-pressure water, recycled solids, and adsorbent (i.e., hydrated lime). The reactor acts as a fluidized bed, assuring maximum contact between the pollutants in the flue gas and the adsorbent solids. The reactor is characterized by high turbulences and optimal chemical and physical heat and mass transfer rates. Water is added to bring the flue gas closer to the saturation temperature where the SO_2 absorption is most effective. The high dust load leaving the reactor is captured in the baghouse (fabric filter).

Inlet SO_2 will be measured at the Turbosorp inlet duct before the entrance of the recirculation air; outlet SO_2 will be measured at the stack. These measurements will be used to vary the quantity of fresh hydrated lime that is introduced into the reactor. The final residue of the CDS process is a wetted product which may be landfilled or potentially re-utilized.

Hydrated lime, $Ca(OH)_2$, is the adsorbent used in the CDS process. Pebble lime will be delivered to the DGS via truck or rail and subsequently hydrated to increase its reactivity before injection in the CDS. Within the hydrator, the pebble lime is mixed with water and agitated until the hydration reaction is complete. The quantity of fresh hydrated lime that is introduced into the CDS is controlled by inlet and outlet SO_2 concentrations.

SAM generation can also be controlled by injecting hydrated lime into the CDS reactor without water injection and with no ash recirculating provided the baghouse is in-service. The hydrated lime reacts with SO_3 (and condensed H_2SO_4) to form calcium sulfate salts in the CDS reactor. These will be collected as particulate calcium compounds by the downstream fabric filter. To evaluate potential changes in SAM emissions, GRU proposes to conduct both baseline (prior to installation of the AQCS) and post-AQCS stack testing to demonstrate that there will be no PSD-significant increase in SAM emissions. Prior to conducting the baseline and post – AQCS testing GRU will submit for the

Department's review and approval a proposed SAM Evaluation and Testing Plan. Baseline stack testing would be conducted using compliance coal while the post-AQCS testing will evaluate both compliance and higher sulfur coals.

The DGS Unit 2 CDS control system is designed to achieve a target outlet SO_2 emission rate of 0.12 lb/MMBtu. The target CDS controlled SO_2 emission is ten times lower than the current NSPS Subpart D limit of 1.2 lb/MMBtu.

Baghouse

For particulate removal, one pulse-jet baghouse containing ten (10) compartments will be installed between the outlet of the CDS and inlet of the booster fans at DGS Unit 2. The fabric filter is designed so that flue gas flows through it whenever the DGS Unit 2 is operating (i.e., there are no bypasses).

Particulate contained in the raw flue gas as well as reaction products from the CDS are captured in the pulsejet fabric filter. The pulsejet fabric filter is multi-compartmented, consisting of two parallel trains with centrally located inlet and outlet plenums. Each parallel train of compartments is served by an air slide utilizing heated air. The air slide conveys a significant portion of the collected particulate back to the CDS to maintain a high solids environment and improve overall reagent utilization. The balance of the collected particulate goes to surge bins (one per air slide) from which it is pneumatically conveyed to a common CDS product silo equipped with redundant pug mills. The CDS product can then be loaded into trucks.

Each compartment will generally contain one cylindrical bag bundle with 984 filter bags per bundle. This equates to a total of approximately 9,840 bags installed; provisions have been made for startup spares. The design outlet grain loading for the baghouse is 0.01 grains per dry standard cubic foot (gr/dscf) at 3 percent oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1 or less with one compartment off-line for maintenance.

The pulsejet fabric filter utilizes bags fabricated from felted PPS fabric that is appropriate for this application. During operation the incoming particulate laden flue gas passes from outside of each bag creating a filter cake. With the passage of time, this cake thickens and tends to increase pressure drop. An automatic cleaning system is utilized to dislodge this filter cake, thus maintaining the desired overall pressure drop. The motive force for cleaning is pressurized air that is introduced at the top of the bags, just above the tubesheet. This flow of pressurized air travels counter to the normal flow of flue gas, thus dislodging the accumulated filter cake and assisting its downward drop into the collecting hoppers below. Redundant low-pressure positive displacement blowers provide the pressurized air.

Two 50 percent booster fans are provided for the DGS Unit 2 AQCS. The fans serve two functions. They provide the additional motive force to overcome the additional pressure drop imposed on the system by the addition of the SCRs, the CDS, and the baghouse. They also allow the CDS to operate at reduced Unit 2 loads by recycling a portion of flue gas from the baghouse outlet to the CDS vessel inlet, thereby keeping the solids bed in the vessel fluidized. The discharge of the booster fans ties into the ductwork upstream of the stack.

The DGS Unit 2 fabric filter control system is designed to achieve a target outlet filterable PM emission rate of 0.015 lb/MMBtu. The target fabric filter controlled PM emission is 6.7 times lower than the current NSPS Subpart D limit of 0.1 lb/MMBtu.

Urea, Lime and CDS By-Product Handling and Storage

Reagents associated with the DGS Unit 2 AQCS include urea for the SCR NO_x control system and lime for the SO_2 CDS control system. Solid materials generated by the DGS Unit 2 AQCS consist of

the reaction products (primarily calcium sulfate, calcium sulfite, unreacted lime and inerts) from the SO_2 CDS control system. A discussion of the handling and storage of the AQCS reagents and by-product are provided in the following sections.

Urea

Granular or prilled urea will be delivered by truck and transferred pneumatically directly to the urea to ammonia dissolver tank where the urea is dissolved in water and then transferred to a storage tank. The urea/water solution will then be injected into a heated in-line reactor at controlled rates to produce the appropriate amounts of gaseous ammonia and water vapor. The gaseous ammonia and water vapor stream will then be injected into the SCR control system. Accordingly, there will be no emissions associated with the unloading and processing of urea.

Lime

The pebble lime unloading and storage system includes equipment for the pneumatic unloading of pebble lime from railcars or trucks, transport to a storage silo, and transport from the storage silo into two pebble lime day bins.

Pebble lime will be received in 100 ton railcars that have bottom hopper outlets. Pebble lime may also be received in 25 ton maximum capacity trucks that have self-unloading blower systems. A roofed enclosure with partial walls parallel to the track for wind and rain protection is provided to protect the unloading operation from weather exposure.

For railcar unloading, unloading pans are provided that are clamped to each of three hopper outlet flanges, and a vacuum conveying system removes pebble lime from the railcar hopper, one hopper section at a time, into a filter receiver. From the filter receiver, pebble lime is fed through an airlock, into an airlock hopper, which discharges through another airlock into a positive pressure pneumatic conveyor. The vacuum and pressure conveying systems each have two blowers, one blower is spare.

The vacuum conveyor system is also designed to unload two positive pressure pneumatic trucks by having the truck discharge line connect to the vacuum conveyor line. The unloading building also provides for one or two self-unloading pressure differential trucks to unload. Two independent conveying pipes and hoses are provided so both trucks can unload at the same time.

The positive pressure lime conveyor discharges into the pebble lime storage silo. The silo has a vibrating bin outlet, to assure continuous flow from the silo and has a bin vent to exhaust filtered air from the silo. From the vibrating bin discharger, pebble lime discharges through a diverter gate to either of two airlock hoppers. Each hopper feeds an independent positive pressure conveyor that transports pebble lime into either of two pebble lime day bins, selected by a diverter in the conveying line. Three 50% blowers are provided.

Both day bins are provided with a bin vent filter. Two conveying pipes with hoses to connect to self-unloading pressure differential trucks are also provided to use as emergency sources of pebble lime for the day bins.

Pebble lime from the day bins is conveyed to hydrators that vent into the CDS. The hydrators convert the pebble lime to hydrated lime with approximately 1 to 2 percent moisture. Hydrated lime is then conveyed by a positive pressure pneumatic conveyor into the hydrated lime silo. A bin vent filter is provided for the silo to vent filtered conveying air from the silo. Hydrated lime discharges from the silo through an airlock, and then into a feeder hopper, which discharges through another airlock into the conveying line. A positive pressure conveyor transports hydrated lime to the turbo reactor. The conveyor has two blowers with one acting as a spare.

PM emission sources associated with the lime handling and storage system consist of: (1) railcar unloading filter receiver, (2) pebble lime storage silo, (3) two pebble lime day bin silos, and (4) a

hydrated lime storage silo. The railcar unloading filter receiver and each of the storage silos will be equipped with bin vent fabric filters designed to achieve an outlet PM concentration of 0.01 gr/dscf.

CDS Byproduct

A portion of the CDS byproducts will be collected by the CDS fabric filter and pneumatically transferred to a CDS byproduct storage silo which will be equipped with a bin vent fabric filter designed to achieve an outlet PM concentration of 0.01 gr/dscf.

CDS byproduct will then be transferred into two pin paddle mixers where it will be mixed with water prior to being loaded into trucks. There are no significant PM emissions associated with the wet pin mixer operation.

Calcium Oxide Addition System for Fuel Conditioning

Calcium oxide in the form of lime or limestone may be added to the coal conveying system, as needed, to condition the fuel and enhance the life of the SCR catalyst.

2. PROJECT EMISSIONS

The existing DGS is located in an attainment area and is classified as a *major facility*. A modification to an existing major facility located an attainment area which has a net emissions increase equal to or exceeding the significant emission rates listed in Rule 62-210.200(277), F.A.C., will be subject to PSD review.

For changes to existing emission units, such as the Unit 2 AQCS, the determination of a net emission increase is based on a comparison of actual-to-projected actual emission rates. A significant emissions increase of a PSD pollutant will occur if the difference between the *baseline actual emissions* and *projected actual emissions* equals or exceeds the significant emissions rate for that pollutant. As defined by Rule 62-210.200(36), F.A.C., baseline actual emissions for an existing electric utility steam generating unit means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the date a complete permit application is received by the Department. Baseline actual emissions include fugitive emissions, to the extent quantifiable, as well as emissions associated with startups and shutdowns.

Projected actual emissions, as defined by Rule 62-210.200(248), F.A.C., means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. Emissions that the unit could have accommodated during the 24-month baseline period and that are unrelated to the modification are excluded. As noted previously, there will be no changes to the existing Unit 2 electrical steam generator and no increase in maximum heat input to the boiler or steam flow capability of the turbine. Since Unit 2 is a base load unit, there will also be no change in Unit 2 utilization (i.e., capacity factor) due to the AQCS project. Accordingly, the applicable period for determining projected actual emissions for the Unit 2 AQCS project is the 5 years following installation of the additional emission controls.

The Unit 2 AQCS project will result in substantial reductions in actual emissions of NOx, SO_2, PM/PM_{10}, HF and SAM. The Department has reasonable assurance that PM/PM_{10} emissions will not increase due to the existing electrostatic precipitator as well as additional particulate control with the

baghouse system. No changes are planned to the Unit 2 combustion process. Accordingly, no change in actual emissions of combustion related pollutants (i.e., CO and VOC) will result due to the AQCS project. Baseline actual emissions, projected actual emissions and net change in emissions are listed in the following tables:

TABLE 1 – PAST ACTUAL EMISSIONS & 2-YEAR AVERAGES

Year	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
2002	7,147.4	3,315.9	270.6	181.3	41.7	27.0	0.051
2003	7,678.8	3,666.3	308.3	206.5	41.5	29.0	0.044
2004	6,951.7	3,322.8	116.9	78.3	40.2	25.3	0.038
2005	8,042.9	3,932.5	96.9	64.9	51.6	33.0	0.025
2006	8,119.3	3691.9	151.0	101.2	46.7	29.9	0.045
02-03 Average	N/A	N/A	289.4	193.9	N/A	N/A	N/A
05-06 Average	8,081.1	3812.2	N/A	N/A	49.2	31.4	0.035

TABLE 2 – PROJECTED ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Projected Emissions	942.6	549.9	117.8	108.4	15.4	3.1	0.0070
AQCS Material Handling	N/A	N/A	6.0	6.0	N/A	N/A	N/A
AQCS By-Product Truck Traffic	N/A	N/A	Neg.	Neg.	N/A	N/A	N/A
Totals	942.6	549.9	123.8	114.4	15.4	3.1	0.0070

TABLE 3 – ESTIMATED NET CHANGE IN ACTUAL EMISSIONS

	SO_2 (tons/yr)	NOx (tons/yr)	PM (tons/yr)	PM_{10} (tons/yr)	H_2SO_4 (tons/yr)	HF (tons/yr)	Hg (tons/yr)
Net Change	-7,138.5	-3,262.3	-165.6	-79.5	-33.8	-28.3	-0.028

3. STARTUP, SHUTDOWN, AND MALFUNCTION EMISSIONS

Unit 2 is subject to the SO_2, NOx and PM standards in 40 CFR 60, Subpart D. According to 40 CFR 60.8(c), operations during periods of startup, shutdown, and malfunction do not constitute representative conditions for performance testing, and emissions in excess of an applicable standard during such periods are not considered to be violations unless otherwise specified in the standard. Since Subpart D does not contain language indicating that the emissions standards apply at all times,

emissions in excess of the Subpart D emissions standards during startup, shutdown, and malfunction periods are not considered violations pursuant to 40 CFR 60.8(c). Due to the operational constraints of the proposed emission control equipment, startup and shutdown of the boiler could exceed two hours.

Since the facility is proposing to use higher sulfur coals, startup emissions will be higher compared to startup emissions presently. The Department considered requiring the facility to use lower sulfur coal for startup, but storage pile space constraints, segregation of different grades of coal, logistical handling issues for multiple types of coal negated that approach.

Even though the emission limits in Subpart D does not apply during startup, shutdown, and malfunction, the reporting provisions in 40 CFR 60.7(c) requires owners and operators to report emissions in excess of the standards, including startup, shutdown and malfunction. In addition, 40 CFR 60.11(d) requires that owners and operators maintain and operate affected facilities in a manner to minimize emissions at all times. Because of this requirement, excess emission reports are reviewed in order to determine whether source owners and operators have taken adequate steps to minimize emissions during startup, shutdown, and malfunction.

4. RULE APPLICABILITY

Prevention of Significant Deterioration

New Source Review under PSD regulations is not applicable to the proposed project as the net increase in emissions due to this modification is less than the PSD significant emission rates listed in Rule 62-210.200, F.A.C. The net increase in emissions is determined based on the difference between the projected future actual emissions and the baseline actual emissions.

Federal and State Emission Standards

The proposed project is subject to the applicable provisions of Chapter 403, F.S., Chapters 62-4, 62-210, 62-212 and 62-296, F.A.C. The facility is located in an area designated attainment or maintenance for all criteria pollutants in accordance with F.A.C. Rule 62-204.340, F.A.C. The project is subject to the monitoring, record keeping and reporting requirements of Rule 62-212.300(1)(e), F.A.C. The draft permit authorizes the construction of the AQCS for Unit 2 and establishes specific monitoring conditions to determine whether the project resulted in significant net emissions increases.

The emission units are regulated under Acid Rain, Phase II and Phase I; NSPS – 40 CFR 60 Subpart D, Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After August 17, 1971, adopted and incorporated by reference in Rule 62.204-800, F.A.C.

5. AIR QUALITY ANALYSIS

According to the application and our review, the proposed project does not require an air quality analysis because there will be no net significant emissions increases.

6. CONCLUSION

Based on the foregoing technical evaluation of the application and information submitted by GRU, the Department has made a preliminary determination that the proposed project will comply with all applicable federal and state air pollution regulations.

PERMITTEE

City of Gainesville
Gainesville Regional Utilities (GRU)
Post Office Box 147117 (A132)
Gainesville, FL 32614-7117

PERMITTING AUTHORITY

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

PROJECT

Permit No. 0010006-005-AC
Deerhaven Generating Station (DGS)

GRU proposes to retrofit DGS Unit No. 2 with air quality control systems (AQCS) as one means of complying with the requirements of EPA's Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR) as implemented by the Department in Rules 62-296.470 and 62-296.480, Florida Administrative Code (F.A.C.), respectively. The AQCS planned for DGS Unit 2 includes the following:

- Selective catalytic reduction (SCR) system to reduce NOx emissions.
- A circulating dry scrubber (CDS) to reduce SO_2 emissions.
- Baghouse (fabric filter) to reduce PM emissions. The baghouse is an integral part of the CDS.
- Ancillary support equipment including new material (urea, lime and CDS by-product) handling and storage.

NOTICE AND PUBLICATION

The Department distributed an Intent to Issue Air Permit package on June 29, 2007. The applicant published the Public Notice of Intent to Issue Air Permit in the Gainesville Sun on July 6, 2007. The permittee submitted on July 12, 2007, a request for extension of time until August 27, 2007, to file a petition for an administrative hearing. The Department granted an extension of time to file a petition for an administrative hearing on July 27, 2007. The permittee withdrew this request on August 10, 2007. The Department received the proof of publication on July 16, 2007. The proof of publication was resubmitted again on July 30, 2007, as there was a discrepancy on dates on the original proof of publication.

COMMENTS

No comments on the Draft Permit were received from the public, the Department's Northeast District, the EPA Region 4 Office or the National Park Service.

Comments were submitted by the applicant on the Draft Permit as well as the Technical Evaluation and Preliminary Determination on July 20, 2007. The following summarizes their comments on the Draft Permit and the Department's response:

1. Change in Authorized Representative.

The Department required the applicant to submit a new responsible official form signed by the current designated representative. The Department received the new form on July 20, 2007, and accordingly the name of the primary authorized representative on the cover page of the permit will be changed to read:

Authorized Representative:
~~Mr. George K. Allen~~ Ms. Karen Alford, Interim Assistant General Manager

2. Clarification in the Statement of Basis.

The applicant wanted to make clear in the Statement of Basis that the addition of hydrated lime to the flue gas will be required when burning compliance coal as the Circulating Dry Scrubber (CDS) will not be operational since there will be no need to reduce SO_2 emissions. The CDS will be in full operation when burning higher sulfur coals as the emission unit will need to comply with the New Source Performance Standards in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). The Statement of Basis will be changed to read as follows:

The applicant elects to install the SCR, CDS and baghouse systems to provide full flexibility in implementing the federal cap and trade program under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of ~~SCR~~ this equipment nor its operation except as needed to comply with the New Source Performance Standards (NSPS) in Title 40, Part 60, Subpart D of the Code of Federal Regulations (CFR). However, ~~installation and operation of additional~~ the addition of hydrated lime ~~injection system~~ to the flue gas is required when burning compliance coal (approximately up to 0.8 weight percent sulfur) and when the CDS is not fully operational to ~~reduce~~ ensure there is no Prevention of Significant Deterioration (PSD) significant emission increase of sulfuric acid mist (SAM). This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Part 60 of the CFR ~~Code of Federal Regulations (CFR)~~. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

3. Clarification of Project Description in Section 1.

The applicant suggested revising the language in the Project Description section to make it clearer when the CDS system will be operational and when the hydrated lime injection will be required in the flue gas. The applicant also noted that empirical data indicates that a baghouse alone can provide up to 90 percent control of SAM. The Department will make the necessary changes and the Project Description section will be changed to read:

This permit authorizes the installation of Air Quality Control Systems (AQCS) on DGS Unit 2 which includes the SCR, CDS and baghouse systems. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation, except as needed to comply with the NSPS in 40 CFR 60, Subpart D.

Installation of the SCR system will result in collateral ~~increases in emissions~~ generation of SAM ~~and~~ as particulate matter (PM/PM_{10}). There is a potential increase in emissions if the permittee elects not to fully operate the CDS (i.e., with water injection and ash recirculation), a situation that is only likely to occur when burning low-sulfur coal (approximately up to 0.8 weight percent sulfur). The potential increase of SAM ~~emissions~~ generation is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) ~~that~~

~~is emitted as SAM after the CDS system~~ and the subsequent reaction of SO_3 and water to form SAM. In the absence of hydrated lime injection when burning low-sulfur coal, there is a potential for increased emissions of SAM if the CDS and baghouse are not in operation. The permit requires the injection of hydrated lime to the flue gas ~~in the CDS~~ when burning low-sulfur coal and when the CDS is not fully operational ~~to reduce SAM emissions~~ to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will reacts with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter (FF). With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Unit 2 steam turbine may be refurbished by replacing the high- and intermediate- pressure rotor along with the associated stationary elements. Unit 2 is currently fired with low sulfur eastern bituminous coal. Following installation and operation of the new controls, Unit 2 will be capable of firing a variety of eastern bituminous coal blend, including medium sulfur coal (up to 2.5 weight percent sulfur), and still comply with the New Source Performance Standards in 40 CFR 60, Subpart D. There will be no changes to the existing electrical generator (i.e., no expansion in steam generating capability) and no increase in maximum heat input to the boiler or steam flow capability of the turbine.

4. Condition 3 of Section 2, Administrative Requirements needs clarification for preliminary design.

The applicant wanted to have some language to account for minor changes that may be made in the final design that differ from the capacities and specification stated in the original application which was based on preliminary design. The Department will add a note at the end to indicate that the design is preliminary and that the final design could differ in the capacities and specification listed in the original application. The Department will also make some minor changes in the text for style purposes. Item 3 of Section 2 will read as follows:

Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S. ~~of the Florida Statutes (F.S.)~~; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. ~~of the Florida Administrative Code (F.A.C.)~~; and Title 40, Part 60 of the CFR ~~Code of Federal Regulations (CFR)~~, adopted by reference in Rule 62-204.800, F.A.C. The terms used in this permit have specific meanings as defined in the applicable chapters of the F.A.C. ~~Florida Administrative Code.~~ The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

{Note: The capacities and specifications stated in the application are based on preliminary design and the final design could include minor changes from the capacities and specification listed in the original application.}

5. Emission Unit description in Section 3.

The applicant wanted the pollutant SO_2 spelled out in the emission unit description. The Department has already identified in the permit earlier that SO_2 implies sulfur dioxide and does not see the need to spell out the pollutant again.

6. Specific Condition 1 of Section 3.

The Department will rephrase the language used in the condition to make it clearer the intent of the condition. The condition will now read:

Permit Determination: This permit authorizes the installation of SCR, CDS and baghouse systems for Unit 2. Unless otherwise specified, these conditions are in addition to all existing applicable permit conditions and regulatory requirements. ~~The facility remains subject to all of the requirements~~ specified in the current Title V Operation Permit (No. 0010006-003-AV). [Rule 62-4.070(3), F.A.C.]

7. Specific Condition 2 of Section 3.

The applicant wanted to elaborate on the equipment classified for the SCR system. One of them will be the urea to ammonia conversion system. They also noted that the SCR system will have two layers of catalyst and a space for a future layer of catalyst will be provided. There will also be a system to add calcium to the fuel to preserve the life of the SCR catalyst. The calcium will be added to the coal conveyor belt after the primary coal crusher. The Department will make the necessary changes and the condition will read:

SCR System: The permittee is authorized to construct, tune, operate and maintain a new SCR system for Unit 2 to reduce emissions of nitrogen oxides (NO_X) as described in the application. In general, the SCR system will include the following equipment: ~~ammonia storage~~ urea to ammonia conversion system; ammonia flow control unit; ammonia injection grid; ~~three~~ two active layers of catalyst with space provided for a future layer ~~(two active and one future layer) of honeycomb catalyst~~; ~~an~~ SCR reactor chamber; and other ancillary equipment, including a system to add calcium to the fuel for catalyst preservation. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

8. Specific Condition 3 of Section 3.

The applicant commented on the level of detail included in the condition and indicated that the level of detail may unnecessarily constrain minor design changes from the preliminary design given in the application. The Department agrees with the applicant and will make the necessary changes to remove that restriction. The condition will read:

CDS System: The permittee is authorized to install a new CDS system for Unit 2 to reduce emissions of SO_2 and SO_3. The new system will be installed downstream of the existing Unit 2 induced draft fan. In general, t~~T~~he system includes the CDS vessel, adsorbent preparation and injection, water injection; product recycle injection and a flue gas recycle system. ~~The system contains instrumentation to measure flue gas pressures, temperatures and SO_2 concentrations at various locations in the ductwork~~. SO_2 will be measured at the inlet of the CDS reactor; ~~and~~ outlet SO_2 will be measured ~~of the CDS reactor~~ at the stack. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

9. Specific Condition 4 of Section 3.

The applicant commented on the level of detail included in the condition and indicated that the level of detail may unnecessarily constrain minor design changes from the preliminary design given in the application. The Department asked the applicant to provide information regarding the outlet grain loading in grains per dry standard cubic feet as well as the design gas flow rate in dry standard cubic feet per minute for the fabric filter. The Department will remove the detailed description of the baghouse and will replace it with the other information requested from the applicant. The condition will read:

Baghouse System: The permittee is authorized to install one pulse-jet baghouse containing ten compartments. The baghouse will be installed between the outlet of the CDS and inlet of the booster fans. ~~Design Information: Each compartment will contain one cylindrical bag bundle with 984 filter bags per bundle. A total of 9,840 bags will be installed, with an additional 2 percent included as startup spares. The filter bags are fabricated from heavy weight 18 oz/yd nominal weight polyphenyl sulfide fabric~~. The design outlet grain loading is 0.01 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. The design gas flow rate through the baghouse is 554,250 dscf/min. The design air-to-cloth ratio is 4:1. An automatic cleaning system is utilized to dislodge the filter cake. [Application; Rules 62-296.470(CAIR) and 62-210.200(PTE), F.A.C.]

10. Specific Condition 5 of Section 3.

The applicant wanted to clarify the condition in terms of which control equipments are not required to operate by the permit and which control equipments should operate for emissions control. The applicant identified an error in the SAM baseline emissions. The reduction in emissions due to condensation across the air pre-heater was not taken into account when developing the baseline emissions. The Department concurs with the applicant and the condition will be changed to read:

Circumvention: No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Operation of the SCR and CDS is not required by this permit. As necessary, the permittee shall operate the hydrated lime ~~injection~~ addition system and baghouse for SAM emissions control to ensure the project does not result in a PSD-significant emissions increase (7 tons/year) of sulfuric acid mist emissions above baseline actual emissions (~~98~~ 49 tons/year). [Rules 62-210.650 and 62-212.400(12), F.A.C.]

11. Specific Condition 6 of Section 3.

The applicant wanted to rephrase the condition in terms of PSD significances level for SAM emissions, rather than in terms of baseline actual emissions of SAM. The Department will make the change and add a permitting note to quantify the baseline actual emissions of SAM. The condition will read:

Annual SAM Emissions Projections: ~~For this project,~~ Tthe permittee projected that the increase in actual annual emissions of SAM due to the project would not exceed the ~~baseline actual emissions of SAM~~ PSD significance level (i.e., ~~98~~ 7 tons/year). The permittee shall demonstrate this by compiling and submitting the reports required by this permit. [Application; and Rules 62-212.300 and 62-210.370, F.A.C.]

{Permitting Note: The baseline actual emission of SAM is 49 tons/year.}

12. Specific Condition 7 of Section 3.

The applicant wanted to rephrase the condition to reflect hydrated lime is being added instead of lime and wanted to remove the automatic control system for lime addition. The applicant commented that lime is added to a tank where it is hydrated and then added to the flue gas for SAM control. The amount of hydrated lime added is not measured but can be deduced from the amount of lime added to the tank. The Department was interested in the adjustment of the flow rate for hydrated lime for a given set of operating conditions. The condition will read:

Hydrated Lime Injection for SAM Emissions Control: On an annual basis, the permittee must demonstrate that SAM emissions as a result of this project do not exceed ~~98~~ 7 tons per year above the baseline actual emissions of 49 tons per year. The permittee shall ~~install and operate the~~ add hydrated lime ~~injection system~~ at a frequency and injection rate for SAM control to satisfy this requirement. The permittee will

~~An automated control system will be used to~~ adjust the hydrated lime flow rate for the given set of operating conditions based on the most recent correlation curves in a ~~based on~~ performance test~~ing~~. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

13. Specific Condition 8 of Section 3.

The applicant wanted the condition to be consistent with prior Department requirements. The Department will change the condition to reflect that, and the condition will read:

Ammonia Slip: Ammonia slip measured at the stack downstream of all emission control systems shall not exceed 5 parts per million by volume (ppmv) as demonstrated by an a~~A~~nnual test~~ing of ammonia shall be conducted and corrective measures taken if measured values exceed 2 ppmv~~. [Design; and Rule 62-4.070(3), F.A.C.]

14. Specific Condition 9 of Section 3.

The applicant expressed concerns of conducting baseline emissions test while injecting lime directly into the boiler due to its potential impact on the fly ash characteristics and Electro Static Precipitator (ESP). The third baseline test will be included in the post construction testing. The Department concurs with the applicant and the condition will read:

Baseline Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct a baseline performance tests at permitted capacity to evaluate ~~potential changes in~~ SAM emissions. A b~~B~~aseline performance tests shall be conducted using current coal (0.8 weight percent sulfur). ~~Three baseline performance tests shall be conducted~~. The ~~first~~ baseline performance test shall be conducted prior to the installation of the AQCS ~~with no lime injection~~. ~~The second baseline performance test shall be conducted prior to installation of AQCS with lime injection into the boiler. The third baseline performance test shall be done within 45 days of completing AQCS construction with lime injection into the CDS reactor~~. The permittee shall submit a test notification to the appropriate authorities at least 15 days prior to ~~each~~ the test and shall submit a test report summarizing the emission tests and results within 45 days of the completion of the ~~each~~ performance test.

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

15. Specific Condition 10 of Section 3.

The applicant expressed concerns of having precise requirements of conducting post Air Quality Control Systems (AQCS) performance tests. Due to complexity of the system, the applicant believes it is more appropriate to defer the details of the SAM evaluation and testing protocols to a later date to allow sufficient time to work with the technology provider to develop testing procedures and conditions as appropriate for the project. The applicant has proposed to submit a testing protocol by November 30, 2008, which shall include testing for the process variables that the Department was interested in. The applicant also proposed to change the requirement of conducting performance test to no later than 180 days after the first flue gas flows through the entire AQCS, instead of within 120 days of completing construction of Unit 2 AQCS. The Department concurs with the applicant and will also include language to conduct the test required in Specific Condition 9, which the applicant wanted to defer to this condition. The condition will read:

Post- AQCS Construction Performance Tests – Hydrated Lime Injection for SAM Emissions Control: The permittee shall conduct post-AQCS performance tests to evaluate potential changes in SAM emissions and demonstrate that there is no PSD-significant emissions increase of SAM as a result of the installation of

the AQCS. Post- AQCS construction tests shall evaluate both current (up to 0.8 weight percent) and higher sulfur (up to 2.5 weight percent) coals~~, alternate lime injection locations, and various boiler/AQCS operating configurations. Within 120 days of completing construction of Unit 2 AQCS systems, the permittee shall conduct a series of performance tests on Unit 2 to determine the SAM emissions rate under a variety of operating scenarios that documents the impact of lime injection on reducing SAM emissions and results in the development of correlation curves based on injection rates, operating conditions and emissions.~~

~~a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1 hour test run to determine SAM emissions. At least nine such test runs shall be conducted to evaluate the effect of SAM emissions on such parameters as the SO_3 emission rate prior to the SCR catalyst (and CDS system), the unit load, the flue gas flow rate, the ammonia injection rate and the current catalyst oxidation rate.~~

a. ~~b Tests shall be conducted under a variety of fuel blends and load rates that are representative of the actual operating conditions intended for Unit 2. Sufficient tests shall be conducted to establish the SAM emissions rates for the following scenarios: SCR reactor in service without lime injection in the CDS, and SCR reactor in service under varying operating conditions and levels of lime injection in the CDS.~~ No later than November 30, 2008, the permittee shall submit to the Department for review and approval a SAM Evaluation and Testing Plan which shall include as a minimum the following:

- Evaluation of factors affecting SAM generation (e.g., fuel type, emission control devices, operating conditions, etc.).
- Determination of the SO_2 to SO_3 conversion rates across the SCR.
- Evaluation of the hydrated lime injection rates required to mitigate SAM emissions.
- Testing protocol (e.g., methods, number of runs, operating scenarios, annual tests, etc.).

b. Testing shall be conducted no later than 180 days after the first flue gas flow through the entire AQCS.

c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

e. Within 45 days following the submittal of the emissions test report and no later than 90 days following the last test run conducted, the permittee shall submit a project report summarizing operating conditions ~~the following: identify each set of operating conditions evaluated, identify each operating parameter evaluated, identify the relative influence of each operating parameter, describe how the adjustment to the lime injection rate be made based on the selected parameters,~~ and provideing details for calculating and estimating the SAM emissions rate based on the level of lime injection and operating conditions. ~~The test results shall be used to adjust the lime injection system and estimate SAM emissions.~~

[Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

16. Specific Condition 11 of Section 3.

The applicant wanted to remove the details specified in the specific condition for conducting annual tests for the same reasons as specified in Item 15 and have it included in the SAM Evaluation and Testing Plan required by Specific Condition 10. The applicant commented that the Department can consider requiring the annual test to be converted to a test every five years based on the results of the initial tests. The Department concurs and the condition will read:

Annual Tests – Hydrated Lime Injection for SAM Emissions Control: During each federal fiscal year, the permittee shall conduct performance tests to determine the SAM emission rates and adjust the lime injection rates ~~correlation curves~~ as necessary. The Department may re-evaluate this requirement based on the results of the initial testing. The protocol for the performance tests shall be submitted to the Department no later than November 30, 2008. ~~At least six representative 1-hour test runs shall be conducted on Unit 2. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests conducted, the results of the tests, the catalyst oxidation rate, and the updated series of related lime injection correlation curves~~. [Rules 62-4.070(3) and 62-212.300(1)(e), F.A.C.]

17. Specific Condition 13 of Section 3.

The applicant wanted to add a different method for measuring SAM. The proposed method is a National Council for Air and Stream Improvement (NCASI) Method 8A. This method eliminates the potential for interference from SO_2. EPA approved the use of Method 8A in December 1996. The Department will add the NCASI Method 8A as an alternate for measuring SAM emissions. The condition will read:

Test Methods: Required tests shall be performed in accordance with the following reference methods or other Department approved methods upon request by permittee:

EPA Method	Description of Method and Comments
1-4	Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content
8	Determination of Sulfuric Acid Mist Emissions
19	Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxides Emission Rates (Optional F-factor method may be used to determine flow rate and gas analysis to calculate mass emissions in lieu of Methods 1-4.)

Compliance with the sulfuric acid mist emissions can also be determined with the National Council for Air and Stream Improvement (NCASI) Method 8A. Compliance with the ammonia slip limit shall be determined annually using EPA conditional test method (CTM-027), EPA method 320, or other methods approved by the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

18. Specific Condition 14 of Section 3.

The Department will add a permitting note at the end of the condition to explain that the control equipment will not be fully functional during startup and shutdown until certain operational constraints is met. Once the control equipment is fully functional the boiler shall be able to comply with the emission limits. The applicant agreed with the Department's position that the State excess emissions rule (62-210.700, F.A.C.) cannot be used to vary the requirements of the federal NSPS requirements of 40 CFR 60, Subpart D. The condition will read:

Startup, Shutdown and Malfunction: 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.

[Rule 40 CFR 60.8(c)]

{Permitting Note: Boiler startup or shutdown may exceed two hours due to operational constraints of the control equipment, which include:

a. During boiler startup and shutdown, the SCR system is fully functional once the boiler flue gas temperature at the SCR reactor inlet stabilizes to 613° F or greater.

b. During boiler startup and shutdown, the CDS system is fully functional once the following sequential criteria are met:

- The flue gas flow rate at the outlet of the baghouse stabilizes at approximately 1.5 million pounds per hour or greater for a minimum of 6 hours;
- The boiler flue gas temperature at the CDS inlet stabilizes at 230° F or greater; and
- Water has been injected into the reactor for a minimum of 2 hours.}

19. Specific Condition 17 of Section 3.

The applicant noted that the CDS system will be fully operational when higher sulfur coals are being burned and the lime injection rates will be determined by the inlet and outlet SO_2 concentrations. The lime injection rates for SAM control will be significantly lower than required for SO_2 control. Continuous lime addition may not be required for SAM control because of the large amount of lime that will be in the system at any given time. Therefore, lime consumption rather than continuous monitoring of the lime injection rate may be more appropriate. The Department concurs with the applicant and the condition will read:

Operational Data: The permittee shall ~~continuously~~ monitor and record the hydrated lime ~~injection~~ consumption rate for SAM emissions control when the unit is combusting compliance coal (approximately up to 0.8 weight percent sulfur) and the CDS is not fully operational . [Rule 62-4.070(3), F.A.C.]

20. Specific Condition 18 of Section 3.

The applicant wanted to change the language to be consistent with the language used in previous conditions and wanted to add a condition of retaining records for a period of 5 years. The Department will not add the condition for retaining records for 5 years as it is already part of Specific Condition 19, but will change the word monitor to evaluate for consistency. The Department will also add some language to be consistent with the stated rule requirements. The condition will read:

Annual SAM Emissions Reports: In accordance with Rule 62-212.300(1)(e), F.A.C., the permittee shall comply with the following monitoring, reporting and recordkeeping provisions:

a. The permittee shall ~~monitor~~ evaluate the SAM emissions using the most reliable information available. On a calendar year basis, the permittee shall calculate and maintain a record of the annual emissions (tons per year) for a period of 5 years following resumption of regular operations after completing construction on the unit's emission control system. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C.

b. Within 60 days after each calendar year following completion of construction, the permittee shall report to the Compliance Authority the annual emissions for the unit for the preceding calendar year. The report shall contain the following:

a. Name, address and telephone number of the owner or operator of the major stationary source;

b. Annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;

c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

d. Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained shall be submitted to the Compliance Authority, where it will be available for review to the general public.

[Rule 62-212.300(1)(e), F.A.C.]

21. Specific Condition 19 of Section 3.

The applicant wanted to delete the requirements for computing SAM emissions. The Department will leave the condition as is as all the requirements listed in the condition are based on Rule 62-210.370, F.A.C.

22. Extension of the Expiration Date.

The applicant requested to extend the expiration date of the construction permit to September 30, 2011 from September 30, 2009 per Rule 62-4.210(2) and (3), F.A.C. The Department will extend the date to provide the necessary time for GRU to conduct the testing and finish the turbine efficiency improvement project.

23. Technical Evaluation and Preliminary Determination.

The applicant submitted changes to the technical evaluation and preliminary determination to comply with the changes proposed in the permit. The Department will make those changes and issue a revised technical evaluation and preliminary determination concurrently with the final permit.

CONCLUSION

The final action of the Department is to issue the Final Permit with the revisions, corrections, and clarifications as described above.

Memorandum

Florida Department of
Environmental Protection

TO: Joseph Kahn

THRU: Trina Vielhauer

Jeff Koerner

FROM: Syed Arif

DATE: August 13, 2007

SUBJECT: Air Permit No. 0010006-005-AC
Gainesville Regional Utilities
Deerhaven Generating Station – Unit 2

Attached for your approval and signature is the Final Permit for Gainesville Regional Utilities, Deerhaven Generating Station located in Gainesville, Alachua County.

The Final permit authorizes the installation of selective catalytic reduction (SCR), circulating dry scrubber (CDS) and baghouse systems on existing Unit 2 at the Deerhaven Generating Station. The permittee elects to install these controls as part of its plan to comply with the Clean Air Interstate Rule (Rule 62-296.470(CAIR), F.A.C.) and the Clean Air Mercury Rule (Rule 62-296.480(CAMR), F.A.C.). Installation of the SCR system will result in collateral generation of SAM as particulate matter. The potential increase of SAM generation is a result of the oxidation of sulfur dioxide to sulfur trioxide (SO_3) and the subsequent reaction of SO_3 and water to form SAM. The permit requires the injection of hydrated lime in the CDS when burning low-sulfur coal to reduce SAM emissions to ensure there will be no PSD-significant emissions increase of SAM due to installation of the SCR system on Unit 2. The hydrated lime will react with SO_3 to form particulate calcium compounds, which will be collected in the downstream fabric filter. With the hydrated lime injection in the CDS, there will be no PSD-significant emissions increases of SAM due to the installation of SCR systems on Unit 2.

The Public Notice was published on July 6, 2007 in the Gainesville Sun. No comments were received from the public, EPA Region 4, or the National Park Service. Comments were submitted by the applicant resulting in minor changes as described in the final determination. The permittee submitted a request for extension of time until August 27, 2007, to file a petition for an administrative hearing. The permittee withdrew this request on August 10, 2007.

We recommend your approval and signature.

JK/sa

Attachments

Friday, Barbara

From: Forney.Kathleen@epamail.epa.gov

Sent: Tuesday, August 14, 2007 10:19 AM

To: Friday, Barbara

Cc: Little.James@epamail.epa.gov; Forney.Kathleen@epamail.epa.gov

Subject: Re: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

We Received this pemit.
Thanks

Katy R. Forney
Air Permits Section
EPA - Region 4
61 Forsyth St., SW
Atlanta, GA 30024

Phone: 404-562-9130
Fax: 404-562-9019

Friday, Barbara

From: Dee_Morse@nps.gov
Sent: Monday, August 13, 2007 6:58 PM
To: Friday, Barbara
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Return Receipt

Your document: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

was received by: Dee Morse/DENVER/NPS

at: 08/13/2007 04:58:26 PM

Friday, Barbara

From: Mailer-Daemon@ectinc.com
Sent: Monday, August 13, 2007 1:47 PM
To: Friday, Barbara
Subject: Confirm: `FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station' received

A message which requested delivery confirmation recently arrived at this server. This server honors all delivery confirmation requests whether generated from local mail traffic or from mail received via an outside source (such as SMTP/POP).

Message-ID: <1900D374FE4CCB4AB8DEB001320338BABA7E04@tlhexsmb5.floridadep.net>
To : tdavis@ectinc.com
From : Barbara.Friday@dep.state.fl.us
Subject : FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Date : Mon, 13 Aug 2007 13:38:14 -0400

Receiving Domain: ectinc.com

Friday, Barbara

From: Tom Davis [tdavis@ectinc.com]
Sent: Monday, August 13, 2007 1:41 PM
To: Friday, Barbara
Subject: RE: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

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From: Friday, Barbara [mailto:Barbara.Friday@dep.state.fl.us]
Sent: Monday, August 13, 2007 1:38 PM
To: alfordkc@gru.com; jonynasye@gru.com; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; tdavis@ectinc.com; Halpin, Mike
Cc: Arif, Syed
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: http://www.adobe.com/products/acrobat/readstep.html.

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

To: alfordkc@gru.com; jonynasye@gru.com; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike

Cc: Arif, Syed

Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Attachments: grutepd.pdf; grufd.pdf; grugc.pdf; grunoticeoffinalpermit.pdf; grupermit.pdf; grupermitsignaturepage.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

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Thank you,

DEP, Bureau of Air Regulation

Friday, Barbara

From: System Administrator
To: Halpin, Mike; Arif, Syed
Sent: Monday, August 13, 2007 1:38 PM
Subject: Delivered:FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was delivered to the following recipient(s):

Halpin, Mike on 8/13/2007 1:38 PM
Arif, Syed on 8/13/2007 1:38 PM

Friday, Barbara

From: System Administrator
To: Kirts, Christopher
Sent: Monday, August 13, 2007 1:39 PM
Subject: Delivered:FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was delivered to the following recipient(s):

Kirts, Christopher on 8/13/2007 1:38 PM

Friday, Barbara

From: Exchange Administrator
Sent: Monday, August 13, 2007 1:39 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT140921.txt; FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

ATT140921.txt (284 B)

FINAL AC Permit No.: 0010006-0...

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

dee_morse@nps.gov

Friday, Barbara

From: Exchange Administrator
Sent: Monday, August 13, 2007 1:39 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

Attachments: ATT140924.txt; FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

ATT140924.txt
(284 B)

FINAL AC Permit
No.: 0010006-0...

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

tdavis@ectinc.com

Friday, Barbara

From: Mail Delivery System [MAILER-DAEMON@mseive02.rtp.epa.gov]
Sent: Monday, August 13, 2007 1:37 PM
To: Friday, Barbara
Subject: Successful Mail Delivery Report

Attachments: Delivery report; Message Headers


Delivery report.txt (690 B)


Message Headers.txt (2 KB)

This is the mail system at host mseive02.rtp.epa.gov.

Your message was successfully delivered to the destination(s) listed below. If the message was delivered to mailbox you will receive no further notifications. Otherwise you may still receive notifications of mail delivery errors from other systems.

The mail system

<forney.kathleen@epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46C096CF_13620_5123_1

<little.james@epa.gov>: delivery via 127.0.0.1[127.0.0.1]:10025: 250 OK, sent 46C096CF_13620_5123_1

Friday, Barbara

From: Jonynas, Yolanta E [JONYNASYE@gru.com]
To: Friday, Barbara
Sent: Monday, August 13, 2007 1:41 PM
Subject: Read: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To: JONYNASYE@gru.com
Subject:

was read on 8/13/2007 1:41 PM.

Friday, Barbara

From: Alford, Karen C [ALFORDKC@gru.com]
Sent: Monday, August 13, 2007 2:00 PM
To: Friday, Barbara
Cc: Jonynas, Yolanta E
Subject: RE: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Received - Thank you.

Karen C. Alford
Administrative Director
Energy Supply
Gainesville Regional Utilities
P.O. Box 147117, Station A137
Gainesville, FL 32614-7117
352-393-1730
352-334-2786 fax
www.gru.com

-----Original Message-----
From: Friday, Barbara [mailto:Barbara.Friday@dep.state.fl.us]
Sent: Monday, August 13, 2007 1:38 PM
To: Alford, Karen C; Jonynas, Yolanta E; little.james@epa.gov; forney.kathleen@epa.gov; dee_morse@nps.gov; Kirts, Christopher; tdavis@ectinc.com; Halpin, Mike
Cc: Arif, Syed
Subject: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

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Thank you,

Friday, Barbara

From: Kirts, Christopher
To: Friday, Barbara
Sent: Monday, August 13, 2007 2:03 PM
Subject: Read: FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station

Your message

To:	'alfordkc@gru.com'; 'jonynasye@gru.com'; 'little.james@epa.gov'; 'forney.kathleen@epa.gov'; 'dee_morse@nps.gov'; Kirts, Christopher; 'tdavis@ectinc.com'; Halpin, Mike
Cc:	Arif, Syed
Subject:	FINAL AC Permit No.: 0010006-005-AC - City of Gainesville - Gainesville Regional Utilities-Deerhaven Generating Station
Sent:	8/13/2007 1:38 PM

was read on 8/13/2007 2:03 PM.