



Environmental Consulting & Technology, Inc.

October 4, 1993
ECT No. GO-1100

RECEIVED

OCT 18 1993

Division of Air
Resources Management

Ms. Patty Adams
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: **Auburndale Power Partners**
FDEP Permit AC53-208321 (PSD-FL-185)
Table 1 - Allowable Emission Rates

Dear Ms. Adams:

In response to your request, a copy of the above referenced table is enclosed. As advised, this table was obtained from the applicant; my copy of the construction permit did not include Table 1.

Please call me at (904) 332-0444 if there are any questions.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas W. Davis, P.E.
Senior Engineer

TWD/tw
Enclosure

P.O. Box 8188
Gainesville, FL
32605-8188

3701 Northwest
98th Street
Gainesville, FL
32606

(904)
332-0444

FAX (904)
332-6722

Auburndale Power Partners - ACS3-208321 (PSD-FL-185)

TABLE 1 - ALLOWABLE EMISSION RATES

Pollutant	Fuel ^A	Allowable Emission Standard/Limitation	Basis
NO _x	Gas	15 ppmvd @ 15% O ₂ & ISO (78.6 lbs/hr; 344.3 TPY) ^B	BACT
	Gas	25 ppmvd @ 15% O ₂ & ISO (131.0 lbs/hr; 573.8 TPY)	BACT
	Oil	42 ppmvd @ 15% O ₂ & ISO (230.0 lbs/hr; 1,007.4 TPY)	BACT
CO	Gas	21 ppmvd (43.5 lbs/hr; 190.5 TPY) ^C	
	Gas	15 ppmvd (43.5 lbs/hr; 190.5 TPY)	BACT
	Oil	25 ppmvd (73.0 lbs/hr; 319.7 TPY)	BACT
VOC	Gas	6.0 lbs/hr; 26.3 TPY	BACT
	Oil	10.0 lbs/hr; 43.8 TPY	BACT
PM ₁₀	Gas	0.0134 lb/MMBtu (10.5 lbs/hr; 46.0 TPY)	BACT
	Oil	0.0472 lb/MMBtu (36.8 lbs/hr; 161.2 TPY)	BACT
SO ₂	Gas	40.0 lbs/hr; 175.2 TPY	BACT
	Oil	70.0 lbs/hr; 306.6 TPY	BACT
H ₂ SO ₄	Gas	7.5 lbs/hr; 32.9 TPY	BACT
	Oil	14 lbs/hr; 61.3 TPY	BACT
Opacity	Gas	10% opacity ^D	BACT
	Oil	10% opacity	BACT
Hg	Gas	1.10 x 10 ⁻⁵ lb/MMBtu (0.001 lb/hr; 0.06 TPY)	Appl.
	Oil	3.0 x 10 ⁻⁶ lb/MMBtu (0.004 lb/hr; 0.016 TPY)	Appl.
As	Oil	1.61 x 10 ⁻⁴ lb/MMBtu (0.20 lb/hr; 0.05 TPY)	BACT
F	Oil	3.30 x 10 ⁻⁵ lb/MMBtu (0.04 lb/hr; 0.17 TPY)	Appl.
Be	Oil	2.0 x 10 ⁻⁶ lb/MMBtu (0.003 lb/hr; 0.014 TPY)	BACT
Pb	Oil	1.04 x 10 ⁻⁴ lb/MMBtu (0.13 lb/hr; 0.510 TPY)	BACT

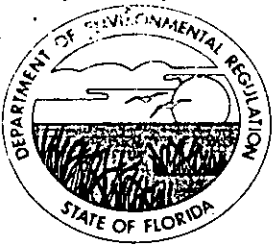
A) Fuel: Natural Gas. Emissions are based on 8360 hours per year operating time burning natural gas and 400 hours per year operating time burning No. 2 fuel oil.

Fuel: No. 2 Distillate Fuel Oil (0.05% S). Emissions are based on 8760 hours per year burning fuel oil.

B) The NO_x maximum limit will be lowered to 15 ppm by 9/30/97 (about 18 months after natural gas is first fired) using appropriate combustion technology improvements or SCR.

C) 21 ppmvd at minimum load.
15 ppmvd at base load.

D) 10% opacity at full load conditions.



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

October 1, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Ms. Patricia A. Haslach
Environmental Manager
Auburndale Power Partners, Limited Partnership
12500 Fair Lakes Circle, Suite 420
Fairfax, Virginia 22033

Dear Ms. Haslach:

Attached is one copy of the revised Technical Evaluation and Preliminary Determination and proposed permit to construct a 156 MW combined cycle system facility.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Preston Lewis of the Bureau of Air Regulation.

Sincerely,

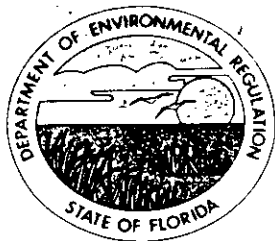


C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/TH/plm

Attachments

c: Thomas W. Davis, P.E.
Bill Thomas, SWD
Jewell Harper, USEPA
Brian Mitchell, NPS



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

November 13, 1992


Mr. Donald S. Martin
Principal Planner
Planning Division
P. O. Box 1969
Bartow, FL 33930

Dear Mr. Martin:

RE: Auburndale Cogeneration Project
PSD-FL-185, AC 53-208321

Enclosed is the Bureau of Air Regulation's October 1, 1992, Intent to Issue for the above referenced permit application. Also enclosed are comments from EPA and the U.S. Fish and Wildlife Service. The public comment period for this project expired on November 8, and the final permit is expected to be signed in the near future. Please contact Teresa Heron at (904)488-1344 (SunCom 278-1344) as soon as possible if you have any concerns or questions about the Department's proposed action.

Sincerely,


John C. Brown, Jr., P.E.
Administrator
Permitting and Standards

JCB/pa

Enclosures

cc: Teresa Heron

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CERTIFIED MAIL

In the Matter of an
Application for Permit by:

DER File No. AC 53-208321
PSD-FL-185
Polk County

Auburndale Power Partners,
Limited Partnership
County Road 544-A (Derby Avenue)
Auburndale, Florida 33823

INTENT TO ISSUE

The Department of Environmental Regulation gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above, for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Auburndale Power Partners, Limited Partnership applied on February 2, 1992, to the Department of Environmental Regulation for a permit to construct a 156 MW combined cycle system facility. The facility is located in Auburndale, Polk County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed work.

Pursuant to Section 403.815, Florida Statutes and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

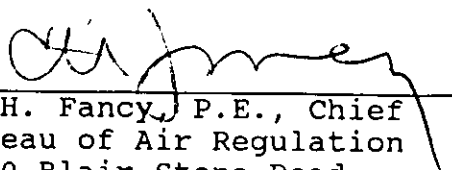
- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c)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

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the

approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION


C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on 10-1-92 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk

10-1-92
Date

Copies furnished to:

Thomas W. Davis, P.E.
Bill Thomas, SWD
Jewell Harper, USEPA
Brian Mitchell, NPS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Regulation gives notice of its intent to issue a PSD permit to Auburndale Power Partners, Limited Partnership, County Road 544-A (Derby Avenue), Auburndale, Polk County, Florida, to construct a 156 MW combined cycle system facility. A determination of Best Available Control Technology (BACT) was required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be

filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

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

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, Florida 33610-7347

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

Revised
Technical Evaluation
and
Preliminary Determination .

Auburndale Power Partners, Limited Partnership
Auburndale, Polk County, Florida

156 MW Combined Cycle System

Permit Number: AC 53-208321
PSD-FL-185

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

October 1, 1992

SYNOPSIS OF APPLICATION

I. NAME AND ADDRESS OF APPLICANT

Auburndale Power Partners, Limited Partnership
12500 Fair Lakes Circle, Suite 420
Fairfax, Virginia 22033

II. REVIEWING AND PROCESS SCHEDULE

Date of Receipt of Application: February 2, 1992

Completeness Review: Department letter dated March 10, 1992.

Response to Incompleteness Letters: Company letters received on April 28, May 19, June 18, and July 8, 1992.

Application Completeness Date: May 19, 1992.

III. FACILITY INFORMATION

III.1 Facility Location

This facility is located on County Road 544-A (Derby Avenue) in Auburndale, Polk County, Florida. The UTM coordinates are Zone 17, 420.8 km East and 3103 km North.

III.2 Facility Identification Code (SIC)

Major Group No. 49 - Electric, Gas and Sanitary Services.

Industry Group No. 491 - Combination Electric, Gas and Other Utility Services.

Industry Group No. 4911 - Electric and Other Services Combined.

III.3 Facility Category

Auburndale Power Partners, Limited Partnership's proposed project in Auburndale is classified as a major emitting facility. The proposed 156 MW (megawatt) combined cycle system will emit the following pollutants: 573.8 tons per year (TPY) of nitrogen oxides (NO_x); 175 TPY of sulfur dioxide (SO₂); 191 TPY of carbon monoxide (CO); 46 TPY of particulate matter (PM); 27 TPY of volatile organic compounds (VOC); 0.014 TPY of beryllium; 0.51 TPY of lead; 0.060 TPY of mercury; and 23 TPY of sulfuric acid mist if operated at 8,360 hours per year on gas and 400 hours per year on fuel oil with a maximum of 0.05 percent sulfur(s) by weight.

IV. PROJECT DESCRIPTION

Auburndale Power Partners, Limited Partnership proposes to operate a combined cycle system consisting of one 104 MW combustion turbine (CT), Westinghouse 501D, one 52 MW steam turbine (ST), and one unfired heat recovery steam generator (HRSG) and ancillary equipment. This total system is rated at 156 MW output nominal capacity. Natural gas will be the primary fuel for the cogeneration facility over its lifetime. A long-term contract for natural gas has been obtained, and a pipeline to the site is scheduled to be completed by December 1, 1994. No. 2 distillate fuel oil (0.05% S by weight) will be the backup fuel. Fuel oil will be delivered to the site by truck and stored on site in two 600,000 gallon storage tanks. Pending the completion of the natural gas pipeline, fuel oil may be used continuously during the facility's first 18 months of operation. Fuel oil will be used for a maximum of 400 hours per year thereafter. The CT will be served by a single HRSG, exhausting to an individual stack. There will be no bypass stacks on the CT for simple cycle operation.

V. RULE APPLICABILITY

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, Chapters 17-2 and 17-4, Florida Administrative Code (F.A.C.), and 40 CFR (July, 1990 version).

The plant is located in an area designated attainment for all criteria pollutants in accordance with F.A.C. Rule 17-2.420.

The proposed project will be reviewed under F.A.C. Rule 17-2.500(5), New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a major modification to a major facility. This review consists of a determination of Best Available Control Technology (BACT) and unless otherwise exempted, an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility; along with air quality impacts resulting from associated commercial, residential and industrial growth.

The proposed source shall be in compliance with all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and the 40 CFR (July, 1991 version). The proposed source shall be in compliance with all applicable provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-2.660: Standards of Performance for New Stationary Sources (NSPS); 17-2.700: Stationary Point Source Emission Test Procedures; and, 17-4.130: Plant Operation-Problems.

The source shall be in compliance with the New Source Performance Standards for Gas Turbines, Subpart GG, Appendix A, which is contained in 40 CFR 60, and is adopted by reference in F.A.C. Rule 17-2.660.

VI. SOURCE IMPACT ANALYSIS

VI.1 Emission Limitations

The operation of this combined cycle system facility burning No. 2 fuel oil and natural gas will produce emissions of NO_x, SO₂, CO, sulfuric acid mist, PM, As, F, Be, Pb and Hg. The impact of these pollutant emissions are below the Florida ambient air quality standards (AAQS) and/or the acceptable ambient concentration levels (AAC). Table 1 lists each contaminant and its maximum expected emission rates.

VI.2 Air Toxics Evaluation

The operation of the sources will produce emissions of chemical compounds that may be toxic in high concentrations. The emission rates of these chemicals shall not create ambient concentrations greater than the acceptable ambient concentrations (AAC) as shown below. Determination of the AAC for these organic compounds shall be determined by Department approved dispersion modeling or ambient monitoring.

$$AAC = \frac{OEL}{\text{Safety Factor}}$$

Where,

AAC = acceptable ambient concentration

Safety Factor = 50 for category B substances and 8 hrs/day
100 for category A substances and 8 hrs/day
210 for category B substances and 24 hrs/day
420 for category A substances and 24 hrs/day

OEL = Occupational exposure level such as ACGIH, ASHA and NIOSH published standards for toxic materials.

MSDS = Material Safety Data Sheets

VI.3 Air Quality Analysis

a. Introduction

The operation of the proposed facility will result in emissions increases which are projected to be greater than the PSD significant emission rates for the following pollutants: NO_x, SO₂, PM, PM₁₀, Be, CO, VOC, Pb, inorganic arsenic, and H₂SO₄ mist. Therefore, the project is subject to the PSD NSR requirements contained in F.A.C. Rule 17-2.500(5) for these pollutants. Part of these requirements is an air quality impact analysis for these pollutants, which includes:

- An analysis of existing air quality;

- A PSD increment analysis (for SO₂, PM, PM₁₀, and NO_x);
- An ambient Air Quality Standards analysis (AAQS);
- An analysis of impacts on soils, vegetation, visibility and growth-related air quality impacts; and,
- A Good Engineering Practice (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A brief description of the modeling methods used and results of the required analyses follow. A more complete description is contained in the permit application on file.

b. Analysis of the Existing Air Quality

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement can be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. The predicted maximum concentration increase for each pollutant subject to PSD (NSR) is given below:

	SO ₂	TSP & PM10	NO _x	CO	Be	Pb
PSD de minimus Concentra. (ug/m ³)	13	10	14	575	0.001	0.1
Averaging Time	24-hr	24-hr	Annual	8-hr	24-hr	3 mo.
Maximum Predicted Impact (ug/m ³)	2.8	2.7	0.16	10.3	.0002	<.007

There are no monitoring de minimus concentrations for H₂SO₄ mist and inorganic arsenic. As shown above, the predicted impacts are all less than the corresponding de minimus concentrations; therefore, no preconstruction monitoring is required for these pollutants.

c. Modeling Method

The EPA-approved Industrial Source Complex Short-Term (ISCST)

dispersion model was used by the applicant to predict the impact of the proposed project on the surrounding ambient air. All recommended EPA default options were used. Downwash parameters were used because the stacks were less than the good engineering practice (GEP) stack height. Five years of sequential hourly surface and mixing depth data from the Tampa Florida National Weather Service (NWS) station collected during 1982 through 1986 were used in the model. Since five years of data were used, the highest-second-high (HSH) short-term predicted concentrations are compared with the appropriate ambient air quality standards or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

d. Modeling Results

The applicant first evaluated the potential increase in ambient ground-level concentrations associated with the project to determine if these predicted ambient concentration increases would be greater than specified PSD significant impact levels for criteria pollutants SO₂, CO, NO₂, PM and PM₁₀. This evaluation was based on the proposed facility operating at load conditions of 100%, 92°F; 80%, 47°F; and 65%, 29°F. Dispersion modeling was performed with receptors placed along the 36 standard radial directions (10 degrees apart) surrounding the proposed unit beginning at 250m and going out at intervals of 250m to a distance of 1500m from the proposed facility. Additional rings were placed at intervals of 2.0, 2.5, 3.0, 4.0, 5.0, 7.5, 10.0, 15.0 and 20.0 km. The results of this modeling presented below show that the increases in ambient ground-level concentrations for all averaging times are less than the PSD significant impact levels for SO₂, CO, NO₂, PM and PM₁₀.

Avg. Time PSD Signifi. Level (ug/m ³)	Annual	SO ₂		NO ₂ Annual	CO		PM and PM ₁₀	
		3-hr	24-hr		1-hr	8-hr	Ann.	24-hr
Level (ug/m ³)	1.0	25.0	5.0	1.0	2000	500	1.0	5.0
Ambient Concen. Increase (ug/m ³)	0.2	12.6	2.8	0.2	15	10	0.04	1.4

Therefore, further dispersion modeling for comparison with AAQS and PSD Class II increment consumption were not required for these pollutants. Pb has no significant impact level; however, maximum predicted Pb concentrations of 0.007 ug/m³, 24-hour average were less than the 1.5 ug/m³ quarterly ambient air quality standard.

Be, inorganic arsenic and H₂SO₄ mist are noncriteria pollutants, which means that neither national AAQS nor PSD Significant Impacts have been defined for these pollutants. However, the Department does have a draft Air Toxics Permitting Strategy, which defines no threat levels for these pollutants. The

Pollutant	Emission Standards/Limitations		Method of Control
	Oil (a)	Gas (b)	
NO _x	42 ppmv	25 ppmv (c) 15 ppmv	Steam Injection
CO	73 lbs/hr	44 lbs/hr	Combustion
PM & PM10	37 lbs/hr	10 lbs/hr	Combustion
SO ₂	70 lbs/hr	40 lbs/hr	No. 2 Fuel Oil (0.05% S)
H ₂ SO ₄	14 lbs/hr	7.5 lbs/hr	No. 2 Fuel Oil (0.05% S)
VOC	10 lbs/hr	6 lbs/hr	Combustion
Pb	0.13 lb/hr		Fuel Quality
As	0.20 lb/hr		Fuel Quality
Be	0.003 lb/hr		Fuel Quality

- (a) No. 2 fuel oil burning for the first eighteen (18) months of operation. Max. 0.05% S by weight.
- (b) Natural gas (8360 hours per year), Fuel oil (400 hours per year).
- (c) Initial NO_x emission rates for natural gas firing shall not exceed 25 ppm at 15% oxygen on a dry basis. The permittee shall achieve NO_x emissions of 15 ppm at 15% oxygen at the earliest achievable date based on steam injection technology or any other technology available, but no later than 9/30/97.

Details of the Analysis May be Obtained by Contacting:

Preston Lewis, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

Carol M. Browner, Secretary
Dept. of Environmental Regulation

Date 1992

Date 1992

BACT Determination by DER

NO_x Control

The information that the applicant presented and Department calculations indicates that the cost of controlling NO_x (\$6,900/ton) is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant, the Department believes that the use of SCR for NO_x control is not justifiable as BACT at this time.

A review of the permitting activities for combined cycle proposals across the nation indicates that SCR has been required and most recently proposed for installations with a variety of operating conditions (i.e., natural gas, fuel oil, and various capacity factors). Although, the cost and other concerns expressed by the applicant are valid, the Department, in this case, is willing to accept steam injection and advanced combustor design as BACT for a limited time (up to 9/30/97).

The Department will revise and lower the allowable BACT limit for this project no later than 9/30/97. It is the Department's understanding that Westinghouse will develop new combustor technology within this period. If the 15 (gas)/42 (oil) ppmvd emission rates cannot be met by September 30, 1997, SCR will be installed. Therefore, the permittee shall install a duct module suitable for future installation of SCR equipment.

SO₂ Control

BACT for sulfur dioxide is the burning of fuel oil No. 2 with 0.05% sulfur content by weight.

VOC and CO Control

Combustion control will be considered as BACT for CO and VOC when firing natural gas.

Other Emissions Control

The emission limitations for PM and PM₁₀, Be, Pb, and As are based on previous BACT determinations for similar facilities.

The emission limits for Auburndale Power Partners project are thereby established as follows:

achieved by application of low-NO_x burners or SCR. Therefore, the Department has accepted the steam injection and advanced combustor design as BACT for a limited time (up to 9/30/97).

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

The applicant has stated that sulfur dioxide (SO₂) and sulfuric acid mist (H₂SO₄) emissions when firing fuel oil will be controlled by lowering the operating time to 400 hours/year per unit and the fuel oil sulfur content to a maximum of 0.05 % by weight. This will result in an annual emission rate of 175 tons SO₂ per year and 23 tons H₂SO₄ mist per year.

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

In developing the NSPS for stationary gas turbines, EPA recognized that FGD technology was inappropriate to apply to these combustion units. EPA acknowledged in the preamble of the proposed NSPS that "Due to the high volumes of exhaust gases, the cost of flue gas desulfurization (FGD) to control SO₂ emissions from stationary gas turbines is considered unreasonable."(23). EPA reinforced this point when, later on in the preamble, they stated that "FGD... would cost about two to three times as much as the gas turbine."(23). The economic impact of applying FGD today would be no different.

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

The elimination of flue gas control as a BACT option then leaves the use of low sulfur fuel oil as the next option to be investigated. Auburndale Power Partners, as stated above, has proposed the use of No. 2 fuel oil with a 0.05% sulfur by weight as BACT for this project. The Department accepts their proposal as BACT for this project.

For fuel oil firing, the cost associated with controlling NO_x emissions must take into account the potential operating problems that can occur with using SCR in the oil firing mode.

A concern associated with the use of SCR on combined cycle projects is the formation of ammonium bisulfate. For the SCR process, ammonium bisulfate can be formed due to the reaction of sulfur in the fuel and the ammonia injected. The ammonium bisulfate formed has a tendency to plug the tubes of the heat recovery steam generator leading to operational problems. As this the case, SCR has been judged to be technically infeasible for oil firing in some previous BACT determinations.

The latest information available now indicates that SCR can be used for oil firing provided that adjustments are made in the ammonia to NO_x injection ratio. For natural gas firing operation NO_x emissions can be controlled with up to a 90 percent efficiency using a 1 to 1 or greater injection ratio. By lowering the injection ratio for oil firing, testing has indicated that NO_x can be controlled with efficiencies ranging from 60 to 75 percent. When the injection ratio is lowered there is not a problem with ammonium bisulfate formation since essentially all of the ammonia is able to react with the nitrogen oxides present in the combustion gases. Based on this strategy SCR has been both proposed and established as BACT for oil fired combined cycle facilities with NO_x emission limits ranging from 11.7 to 25 ppmvd depending on the efficiency of control established.

The applicant has indicated that the total levelized annual cost (operating plus amortized capital cost) to install SCR for this project at 100 percent capacity factor is \$2,283,326. Taking into consideration the total annual cost, a cost/benefit analysis of using SCR can now be developed.

Based on the information supplied by the applicant, it is estimated that the maximum annual NO_x emissions using steam injection and advanced combustor design will be 574 tons/year. Assuming that SCR would reduce the NO_x emissions by 65%, about 201 tons of NO_x would be emitted annually. When this reduction (373 TPY) is taken into consideration with the total levelized annual cost of \$2,283,326; the cost per ton of controlling NO_x is \$6,121. This calculated cost is higher than has previously been approved as BACT.

A review of the latest DER BACT determinations show limits of 15 ppmv (natural gas) using low-NO_x burn technology. Based on the equipment selected, the applicant could not achieve that limit (15 ppmv) due to the fact that it is technically infeasible since their vendor, Westinghouse, does not presently offer this technology. The applicant and their CT vendor, Westinghouse, have agreed to lower NO_x to 15 ppm by 9/30/97. This lower NO_x limit will be

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

Selective catalytic reduction is a post-combustion method for control of NOx emissions. The SCR process combines vaporized ammonia with NOx in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90% reduction of NOx with a new catalyst. As the catalyst ages, the maximum NOx reduction will decrease to approximately 86 percent.

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

- a) Reduced power output.
- b) Ammonia slip.
- c) Disposal of hazardous waste generated (spend catalyst).
- d) A total SCR energy penalty of 14,911 MMBtu/yr, which is equivalent to the use of 14.2 million ft³ of natural gas annually, based on a gas heating value of 1,050 Btu per ft³.
- e) Since several schools are located within close proximity to the site, the Polk County Planning Commission and the school boards have expressed concern over the potential for ammonia (NH₃) exposure to high concentration and storage, as well.
- f) Ammonium bisulfate and ammonium sulfate particulate emissions (ammonium salts) due to the reaction of NH₃ with SO₃ present in the exhaust gases.
- g) Cost effectiveness for the application of SCR technology to the Auburndale cogeneration project was considered to be \$6,900 per ton of NO_x removed.

Since SCR has been determined to be BACT for several combined cycle facilities, the EPA has clearly stated that there must be unique circumstances to consider the rejection of such control on the basis of economics.

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

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

The majority of BACT emissions limitations have been based on combustion controls for carbon monoxide and volatile organic compounds minimization, additional control is achievable through the use of catalytic oxidation. Catalytic oxidation is a postcombustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection. These installations have been required to use LAER technology and typically have CO limits in the 10-ppm range (corrected to dry conditions).

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst such as platinum. Combustion of CO starts at about 300°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required. For CT/HRSG combinations, the oxidation catalyst can be located directly after the CT or in the HRSG. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency.

Due to the oxidation of sulfur compounds and excessive formation of H₂SO₄ mist emissions, oxidation catalyst are not considered to be technically feasible for gas turbines fired with fuel oil. Catalytic oxidation has not been demonstrated on a continuous basis when using fuel oil.

Use of oxidation catalyst technology would be feasible for natural gas-fired unit; however, the cost effectiveness of \$7,099 per ton of CO removed will have an economic impact on this project.

The Department is in agreement with the applicant's proposal of combustor design and good operating practices as BACT for CO and VOCs for this cogeneration project.

ACID GASES

Nitrogen Oxides (NO_x)

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

The applicant has stated that BACT for nitrogen oxides will be met by using steam injection and advanced combustor design to limit emissions to 25 ppmvd (corrected to 15% O₂) when burning natural gas and 42 ppmvd (corrected to 15% O₂) when burning fuel oil.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT POLLUTANT ANALYSIS

COMBUSTION PRODUCTS

Particulate Matter (PM/PM₁₀)

The design of this system ensures that particulate emissions will be minimized by combustion control and the use of clean fuels. The particulate emissions from the combustion turbine when burning natural gas and fuel oil will not exceed 0.013 and 0.047 lb/MMBtu, respectively. The Department accepts the applicant's proposed control for particulate matter and heavy metals.

Lead, Arsenic, Beryllium (Pb, As, Be)

The Department agrees with the applicant's rationale that there are no feasible methods to control lead, beryllium, and arsenic; except by limiting the inherent quality of the fuel.

Although the emissions of these toxic pollutants could be controlled by particulate control devices, such as a baghouse or scrubber, the amount of emission reductions would not warrant the added expense. As this is the case, the Department does not believe that the BACT determination would be affected by the emissions of these pollutants.

PRODUCTS OF INCOMPLETE COMBUSTION

Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

The emissions of carbon monoxide exceed the PSD significant emission rate of 100 TPY. The applicant has indicated that the carbon monoxide emissions from the proposed turbine is on exhaust concentrations of 15 ppmvd for natural gas firing and 25 ppmvd for fuel oil firing.

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

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

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

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

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

Best Available Control Technology (BACT) Determination
Auburndale Power Partners
Polk County

The applicant proposes to install a combustion turbine generator at their facility in Polk County. The generator system will consist of one nominal 104 megawatt (MW) combustion turbine (CT), with exhaust through heat recovery steam generator (HRSG), which will be used to power a nominal 52 MW steam turbine.

The combustion turbine (Westinghouse 501D) will be capable of combined cycle operation. The applicant requested that the combustion turbine use oil (0.05% S by weight) for the first eighteen (18) months; thereafter, they will use natural gas. The applicant has indicated the maximum annual tonnage of regulated air pollutants emitted from the facility based on 100 percent capacity factor and type of fuel fired to be as follows:

Pollutant	Emissions (TPY)		PSD Significant Emission Rate (TPY)
	Oil	Gas/Oil	
NO _x	1,007	573.8	40
SO ₂	307	175.2	40
PM/PM ₁₀	161	46	25/15
CO	320	190	100
VOC	44	27	40
H ₂ SO ₄	39	23	7
Be	0.01	0.01	0.0004
As	0.05	0.05	0.1
Pb	0.51	0.51	0.6

Florida Administrative Code (F.A.C.) Rule 17-2.500(2) (f) (3) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

February 2, 1992

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Proposed Limits</u>
NO _x	25 ppmvd @ 15% O ₂ (natural gas burning) 42 ppmvd @ 15% O ₂ for oil firing
SO ₂	0.05% sulfur by weight
CO, VOC	Combustion Control
PM/PM ₁₀	Combustion Control

Auburndale Power Partners - AC53-208321 (PSD-FL-185)

TABLE 1 - ALLOWABLE EMISSION RATES

Pollutant	Fuel ^A	Allowable Emission Standard/Limitation	Basis
NO _x	Gas	15 ppmvd @ 15% O ₂ & ISO (78.6 lbs/hr; 344.3 TPY) ^B	BACT
	Gas	25 ppmvd @ 15% O ₂ & ISO (131.0 lbs/hr; 573.8 TPY)	BACT
	Oil	42 ppmvd @ 15% O ₂ & ISO (230.0 lbs/hr; 1,007.4 TPY)	BACT
CO	Gas	21 ppmvd (43.5 lbs/hr; 190.5 TPY) ^C	
	Gas	15 ppmvd (43.5 lbs/hr; 190.5 TPY)	BACT
	Oil	25 ppmvd (73.0 lbs/hr; 319.7 TPY)	BACT
VOC	Gas	6.0 lbs/hr; 26.3 TPY	BACT
	Oil	10.0 lbs/hr; 43.8 TPY	BACT
PM ₁₀	Gas	0.0134 lb/MMBtu (10.5 lbs/hr; 46.0 TPY)	BACT
	Oil	0.0472 lb/MMBtu (36.8 lbs/hr; 161.2 TPY)	BACT
SO ₂	Gas	40.0 lbs/hr; 175.2 TPY	BACT
	Oil	70.0 lbs/hr; 306.6 TPY	BACT
H ₂ SO ₄	Gas	7.5 lbs/hr; 22.3 TPY	BACT
	Oil	14 lbs/hr; 39.0 TPY	BACT
Opacity	Gas	10% opacity ^D	BACT
	Oil	10% opacity	BACT
Hg	Gas	1.10 x 10 ⁻⁵ lb/MMBtu (0.001 lb/hr; 0.06 TPY)	Appl.
	Oil	3.0 x 10 ⁻⁶ lb/MMBtu (0.004 lb/hr; 0.016 TPY)	Appl.
As	Oil	1.61 x 10 ⁻⁴ lb/MMBtu (0.20 lb/hr; 0.05 TPY)	BACT
F	Oil	3.30 x 10 ⁻⁵ lb/MMBtu (0.04 lb/hr; 0.17 TPY)	Appl.
Be	Oil	2.0 x 10 ⁻⁶ lb/MMBtu (0.003 lb/hr; 0.014 TPY)	BACT
Pb	Oil	1.04 x 10 ⁻⁴ lb/MMBtu (0.13 lb/hr; 0.510 TPY)	BACT

A) Fuel: Natural Gas. Emissions are based on 8360 hours per year operating time burning natural gas and 400 hours per year operating time burning No. 2 fuel oil.

Fuel: No. 2 Distillate Fuel Oil (0.05% S). Emissions are based on 8760 hours per year burning fuel oil.

B) The NO_x maximum limit will be lowered to 15 ppm by 9/30/97 (about 18 months after natural gas is first fired) using appropriate combustion technology improvements or SCR.

C) 21 ppmvd at minimum load.
15 ppmvd at base load.

D) 10% opacity at full load conditions.

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SPECIFIC CONDITIONS:

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

Issued this _____ day
of _____, 1992

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Carol M. Browner
Secretary

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Auburndale Power Partners

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SPECIFIC CONDITIONS:

22. This source shall be in compliance with all applicable provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-2.660: Standards of Performance for New Stationary Sources (NSPS); 17-2.700: Stationary Point Source Emission Test Procedures; and, 17-4.130: Plant Operation-Problems.

23. If construction does not commence within 18 months of issuance of this permit, then the permittee shall obtain from DER a review and, if necessary, a modification of the control technology and allowable emissions for the unit(s) on which construction has not commenced (40 CFR 52.21(r)(2)).

24. Quarterly excess emission reports, in accordance with the July 1, 1991 version of 40 CFR 60.7 and 60.334 shall be submitted to DER's Southwest District office.

25. Literature on equipment selected shall be submitted as it becomes available. A CT-specific graph of the relationship between NOx emissions and steam injection and also another of ambient temperature and heat inputs to the CT shall be submitted to DER's Southwest District office and the Bureau of Air Regulation.

26. Construction period fugitive dust emissions shall be minimized by covering or watering dust generation areas.

27. Pursuant to F.A.C. Rule 17-2.210(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur, nitrogen contents and the lower heating value of the fuel being fired, fuel usage, hours of operation, air emissions limits, etc. Annual reports shall be sent to the Department's Southwest District office by March 1 of each calendar year.

28. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

29. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed

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operate between 95% and 100% of permitted capacity during the compliance test(s) as adjusted for ambient temperature. Compliance test results shall be submitted to the Southwest District office no later than 45 days after completion.

15. The permittee shall leave sufficient space suitable for future installation of SCR equipment should the facility be unable to meet the NO_x standards, if required.

16. The permittee shall install, calibrate, maintain, and operate a continuous emission monitor in the stack to measure and record the nitrogen oxides emissions from this source. The continuous emission monitor must comply with 40 CFR 60, Appendix B, Performance Specification 2 (July 1, 1991).

17. A continuous monitoring system shall be installed to monitor and record the fuel consumption on each unit. While steam injection is being utilized for NO_x control, the steam to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored. The system shall meet the requirements of 40 CFR Part 60, Subpart GG.

18. Sulfur, nitrogen content and lower heating value of the fuel being fired in the combustion turbines shall be based on a weighted 12 month rolling average from fuel delivery receipts. The records of fuel oil usage shall be kept by the company for a two-year period for regulatory agency inspection purposes. For sulfur dioxide, periods of excess emissions shall be reported if the fuel being fired in the gas turbine exceeds 0.05 percent sulfur by weight.

Rule Requirements

19. This source shall comply with all applicable provisions of Chapter 403, Florida Statutes, Chapters 17-2 and 17-4, Florida Administrative Code and 40 CFR (July, 1991 version).

20. The sources shall comply with all requirements of 40 CFR 60, Subpart GG, and F.A.C. Rule 17-2.660(2)(a), Standards of Performance for Stationary Gas Turbines.

21. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (F.A.C. Rule 17-2.210(1)).

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10. Compliance with the SO₂ emission limit can also be determined by calculations based on fuel analysis using ASTM D4292 for the sulfur content of liquid fuels and ASTM D4084-82 or D3246-81 for sulfur content of gaseous fuel.

11. Trace elements of Beryllium (Be) shall be tested during initial compliance test using EMTIC Interim Test Method. As an alternative, Method 104 may be used; or Be may be determined from fuel sample analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.

12. Mercury (Hg) shall be tested during initial compliance test using EPA Method 101 (40 CFR 61, Appendix B) or fuel sampling analysis using methods acceptable to the Department.

13. During performance tests, to determine compliance with the proposed NO_x standard, measured NO_x emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_x \text{ obs}) \left(\frac{P_{\text{ref}}}{P_{\text{obs}}} \right)^{0.5} e^{19 (H_{\text{obs}} - 0.00633)} \left(\frac{288^\circ K}{T_{\text{AMB}}} \right)^{1.53}$$

where:

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

NO_x obs = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = Temperature of ambient air at test.

14. Test results will be the average of 3 valid runs. The Southwest District office will be notified at least 30 days in writing in advance of the compliance test(s). The sources shall

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- c) Maximum sulfur content in No. 2 fuel oil shall not exceed 0.05 percent by weight.
 - d) The maximum heat input of 1,170 MMBtu/hr LHV at ISO conditions (base load) for distillate fuel oil No. 2.
 - e) The maximum heat input of 1,214 MMBtu/hr LHV at ISO conditions (base load) for natural gas.
6. Any change in the method of operation, equipment or operating hours shall be submitted to DER's Bureau of Air Regulation.
7. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility may be included in the operating permit.

Compliance Determination

8. Compliance with the NO_x, SO₂, CO, PM, PM₁₀, and VOC standards shall be determined (while operating at 95-100% of the permitted maximum heat rate input) within 180 days of initial operation and annually thereafter, by the following reference methods as described in 40 CFR 60, Appendix A (July, 1991 version) and adopted by reference in F.A.C. Rule 17-2.700.

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method 3. Gas Analysis
- Method 5. Determination of Particulate Matter Emissions from Stationary Sources
- Method 9. Determination of the Opacity of the Emissions from Stationary Sources
- Method 8. Determination of the Sulfuric Acid of the Emissions from Stationary Sources
- Method 10. Determination of the Carbon Monoxide Emission from Stationary Sources
- Method 20. Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines
- Method 25A. Determination of the Volatile Organic Compounds Emissions from Stationary Sources

Other DER approved methods may be used for compliance testing after prior Departmental approval.

9. Method 5 must be performed on this unit to determine the initial compliance status of the unit. Thereafter, the opacity emissions test may be used unless 10% opacity is exceeded.

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- 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.

SPECIFIC CONDITIONS:

Emission Limits

1. The maximum allowable emissions from this source shall not exceed the emission rates listed in Table 1.
2. Visible emissions shall not exceed 20% opacity. At full load, visible emissions shall not exceed 10% opacity.

Operating Rates

3. This source is allowed to operate continuously (8760 hours per year).
4. This source is allowed to use natural gas as the primary fuel and low sulfur No. 2 distillate oil as the secondary fuel (with the conditions specified in Specific Condition No. 5 below).
5. The permitted materials and utilization rates for the combined cycle gas turbine shall not exceed the values as follows:
 - a) Maximum low sulfur No. 2 fuel oil consumption for the facility shall be allowed for the equivalent of 18 months (13,140 hours) of the initial facility operation, or until the Florida Gas Transmission (FGT) Phase III expansion is complete and natural gas is available; whichever occurs first. The unit start-up is expected by 10/94 and natural gas would be used by 4/96.
 - b) Once the FGT Phase III expansion is complete and natural gas is available to the facility, low sulfur No. 2 fuel oil firing shall be limited to 400 hours annually.

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10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - (x) Determination of Best Available Control Technology (BACT)
 - (x) Determination of Prevention of Significant Deterioration (PSD)
 - (x) Compliance with New Source Performance Standards (NSPS)
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling or measurements;

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

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

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

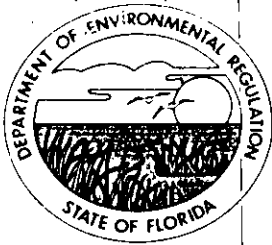
9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving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

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GENERAL CONDITIONS:

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



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:

Auburndale Power Partners
12500 Fair Lakes Circle, Ste. 420
Fairfax, Virginia 22033

Permit Number: AC 53-208321

PSD-FL-185

Expiration Date: Oct. 30, 1995

County: Polk

Latitude/Longitude: 28°03'15"N

81°48'20"W

Project: 156 MW Combined Cycle
System

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Auburndale Power Partners proposes to operate a combined cycle system consisting of one combustion turbine, one steam turbine, and one heat recovery steam generator and ancillary equipment. This total system is rated at 156 MW output nominal capacity (52 MW output from the steam turbine generator). This facility is located on County Road 544-A (Derby Avenue) in Auburndale, Polk County, Florida. The UTM coordinates are Zone 17, 420.8 km East and 3103 km North.

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

Attachments are listed below:

1. Auburndale Power Partners (APP) application received February 10, 1992.
2. Department's letter dated March 10, 1992.
3. APP's letter received April 28, 1992.
4. APP's letter received May 19, 1992.
5. APP's letter received June 18, 1992.

was performed by the applicant. No significant impacts on the Class I area are expected.

In addition, the maximum predicted concentrations from NOx, CO, SO₂, PM and PM₁₀ are predicted to be less than the AAQS, including the national secondary standards designed to protect public welfare-related values. As such, no harmful effects on soil and vegetation are expected in the area of the project. Also, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

VII. CONCLUSION

Based on the information provided by Auburndale Power Partners, Limited Partnership, the Department has reasonable assurance that the proposed installation of the 156 MW combined cycle system, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

[Handwritten signature]
#41755

was performed by the applicant. No significant impacts on the Class I area are expected.

In addition, the maximum predicted concentrations from NO_x, CO, SO₂, PM and PM₁₀ are predicted to be less than the AAQS, including the national secondary standards designed to protect public welfare-related values. As such, no harmful effects on soil and vegetation are expected in the area of the project. Also, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

VII. CONCLUSION

Based on the information provided by Auburndale Power Partners, Limited Partnership, the Department has reasonable assurance that the proposed installation of the 156 MW combined cycle system, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

Shenton Lewis
#4/755

Department and the applicant have used the same modeling procedure described above to evaluate the maximum ground level concentrations of these pollutants for comparison with the no-threat levels. The results of this analysis are shown below:

<u>Avg. Time</u>	<u>Be Annual</u>	<u>H₂SO₄ mist 24-hr</u>	<u>As Annual</u>
No Threat-Level (ug/m ³)	0.00042	2.4	.00023
Max. Concen.	0.000003	0.5	.00015

All of these values are less than their respective no-threat levels.

The nearest PSD Class I area is the Chassahowitzka National Wilderness Area located about 100 km northwest of the facility. The predicted impact of SO₂ and NO₂ emissions from the proposed project on this area was evaluated by first using the ISCST model to predict maximum increment consumptions by the source alone and by comparing these predicted values to the appropriate recommended significance levels to determine whether further modeling was necessary. The significance levels used by the Department were the more stringent National Park Service (NPS) recommended levels. The predicted maximum NO₂ and SO₂ increment consumptions for all applicable averaging times, except for the SO₂ 24-hour average, were less than these significance levels. Therefore, no further modeling for these time periods was required. Since the predicted maximum SO₂ 24-hour concentration was predicted to be greater than the NPS levels, the Department and the NPS directed the applicant to further evaluate the SO₂ short term impacts on the Class I area. The applicant used ISCST and modeled the inventory of all PSD increment consuming and expanding sources on the selected days and at the specific receptors where the proposed facility's impacts were significant. The inventory was provided by the Department. Results of this analysis show that on the days and at the location of significant impacts due to the proposed facility, total 24-hour SO₂ impacts at Chassahowitzka were predicted to be less than the allowable 24-hour PSD Class I increment of 5 ug/m³. Therefore, emissions from the proposed project will not cause or contribute to an exceedance of SO₂ increments.

e. Additional Impacts Analysis

A Level-1 screening analysis using the EPA model, VISCREEN was used to determine any potential adverse visibility impacts on the Class I Chassahowitzka National Wilderness Area located about 100km away. Based on this analysis, the maximum predicted visual impacts due to the proposed project are less than the screening criteria both inside and outside the Class I area. A comprehensive air quality related values (AQRV) analysis for this Class I area



Imperial

Polk County

Board of County Commissioners

Planning Division

P.O. Box 1969
330 W. Church St.
Bartow, FL 33830
(813) 534-6084
SUNCOM 569-6084
FAX (813) 534-6021

November 5, 1992

Mr. Clair Fancy, Chief
Bureau of Air Regulation
Florida Dept. of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Auburndale Power Partners
Permit Application

Dear Mr. Fancy:

This letter is to inform you that Polk County is an interested party in the permitting process for the following project:

Applicant: Auburndale Power Partners
Non-Certified Electric Generating Facility

Plant Location: Section 15, Township 28, Range 25
The site is located at the intersection of Derby and Chambers Roads, southwest of Auburndale, Florida.

Please notify us of all meetings as we would like the opportunity to participate in the conditioning of the permit for the purposes of compliance with the Polk County Comprehensive Plan and site specific parameters. If this permit has already been granted or if an intent to issue has been noticed, please contact Don Martin of my staff immediately. Under provisions of Florida Statutes, we would like to comment as it relates to local issues.

Thank you for your cooperation in this matter.

Sincerely,

Robert Anders, AICP
Planning Director

xc: chron file, case file-SA 91-02
file name: p:\u\p\cmd\power\ncertpp\wmd-cup.cfp

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NOV 06 1992

Division of Air
Resources Management



QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

6141331744

6141331744

RECIPIENT'S COPY

From (Your Name) Please Print [Redacted]		Date 11/5/92	To (Recipient's Name) Please Print Clair Fancy, Chief		Recipient's Phone Number (Very Important) [Redacted]
Company [Redacted]		Your Phone Number (Very Important) 612-294-3300	Bureau of Air Regulation		Department/Floor No. [Redacted]
Street Address CHARLES CRAIG ALTY		FLORIDA DEPT. OF ENVIRONMENTAL REGULATION			
City TALLAHASSEE		State FL	Twin Towers Office Bldg.		ZIP Required 32399-246
NICE HAVEN		FL	Tallahassee		FL
YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.) JURDALE POWER PARTNERS					
PAYMENT: <input type="checkbox"/> Bill Sender <input type="checkbox"/> Bill Recipient's FedEx Acct. No. <input type="checkbox"/> Bill 3rd Party FedEx Acct. No. <input type="checkbox"/> Bill Credit Card		IF HOLD FOR PICK-UP, Print FEDEX Address Here			
<input type="checkbox"/> Cash <input type="checkbox"/> Check		Street Address [Redacted]			
City [Redacted]		State [Redacted]		ZIP Required [Redacted]	
4 SERVICES (Check only one box)		5 DELIVERY AND SPECIAL HANDLING (Check services required)		6 PACKAGES	
Priority Overnight (Delivery by next business morning) 11 <input type="checkbox"/> OTHER PACKAGING 16 <input type="checkbox"/> FEDEX LETTER 12 <input type="checkbox"/> FEDEX PAK 13 <input type="checkbox"/> FEDEX BOX 14 <input type="checkbox"/> FEDEX TUBE		Standard Overnight (Delivery by next business afternoon for Saturday delivery) 51 <input type="checkbox"/> OTHER PACKAGING 56 <input type="checkbox"/> FEDEX LETTER 52 <input type="checkbox"/> FEDEX PAK 53 <input type="checkbox"/> FEDEX BOX 54 <input type="checkbox"/> FEDEX TUBE		Economy Two-Day (Delivery by second business day) 30 <input type="checkbox"/> ECONOMY	
Government Overnight (Restricted for authorized users only) 46 <input type="checkbox"/> GOVT LETTER 41 <input type="checkbox"/> GOVT PACKAGE		HOLD FOR PICK-UP (Fill in Box H) 1 <input type="checkbox"/> WEEKDAY or 31 <input type="checkbox"/> SATURDAY DELIVER { 2 <input type="checkbox"/> WEEKDAY or 3 <input type="checkbox"/> SATURDAY (Extra charge) (Not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) 5 <input type="checkbox"/> 6 <input type="checkbox"/> DRY ICE (Dangerous Goods Shipper's Declaration not required) Dry Ice 9 UN 1845 _____ X _____ kg III 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 12 <input type="checkbox"/> HOLIDAY DELIVERY (If offered) (Extra charge)		WEIGHT in Pounds Owy Total Total Total DIM SHIPMENT (Chargeable Weight) L x W x H Received At: 1 <input type="checkbox"/> Regular Stop 3 <input type="checkbox"/> Drop Box 2 <input type="checkbox"/> On Call Stop 4 <input type="checkbox"/> BSC 5 <input type="checkbox"/> Station	
70 <input type="checkbox"/> OVERNIGHT FREIGHT** (Confirmed reservation required) *Delivery commitment may be later in some areas		80 <input type="checkbox"/> TWO-DAY FREIGHT** (Declared Value Limit \$500) **Call for delivery schedule		Emp. No. Date Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 6/92 PART #137204 FXEM 10/92 FORMAT #136 136 © 1991-92 FEDEX PRINTED IN U.S.A.	

Donald S. Martin
Principal Planner
Planning Division
P.O. Box 1969
Bartow, Florida 33830

RE: Auburndale Power Partners

I have received the permit application pursuant to the above referenced project as well as Polk County's Notice of Interested Party and Notice of Participation. We will keep you informed of all proceedings and decisions in regards to this project.

AGENCY:
Florida Department of Environmental Regulation
FDER/EPA PSD Air Permit

Teresa M. Heron
(Signature of Permit Reviewer)

11/10/92
(date)

Teresa Heron
(Print Name)

Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

(Address)

(904) 488-1344 SunCom 278-1344
(Phone)

(to be retained by Planning's case/SA file)



United States Department of the Interior

FISH AND WILDLIFE SERVICE

75 SPRING STREET, S.W.

ATLANTA, GEORGIA

30303

November 5, 1992



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

RECEIVED

NOV 10 1992

Division of Air
Resources Management

Dear Mr. Fancy:

We have completed our review of the material you sent us regarding the Auburndale Power Partner's (Auburndale) proposal to construct a cogeneration power production facility in Polk County, Florida. The Auburndale site is located approximately 105 km southeast of the Chassahowitzka Wilderness Area (WA), a Class I air quality area administered by the Fish and Wildlife Service. The proposed facility would be a significant emitter of nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), volatile organic compounds (VOC), beryllium (Be), and sulfuric acid mist (H_2SO_4). Our detailed comments follow, but as you know, we are particularly concerned about the potential for new emission sources to cause or contribute to SO_2 increment exceedances at the wilderness area.

Control Technology Review

Auburndale proposes to minimize emissions from the turbine by using proper combustion controls, burning low sulfur fuel (initially oil with a maximum sulfur content of 0.05 percent, and then gas when it becomes available), and use of water injection and advanced burner design. As we indicated in our June 26, 1992, comments on the completeness of the Auburndale application, we agree that proper combustion controls and burning a low sulfur fuel are best available control technology (BACT) for PM, Be, CO, VOC, SO_2 , and H_2SO_4 . Again, we are pleased that Auburndale has agreed to lower the maximum sulfur content of the fuel from the originally proposed 0.20 percent to 0.05 percent. This change will result in a significant reduction in SO_2 and H_2SO_4 emissions when Auburndale fires the turbine with oil. For NO_x , we still believe that either water injection in combination with Selective Catalytic Reduction (SCR), or dry low- NO_x combustors represent BACT for new combined cycle combustion turbine projects. Dry low- NO_x combustors can reduce NO_x levels to less than 15 parts per

million (ppm) when firing natural gas, while SCR can achieve flue gas NO_x concentrations as low as 6 ppm when burning gas and 9 ppm when burning oil. However, we do not object to you allowing Auburndale to emit at the proposed 25 ppm NO_x rate while Westinghouse develops dry low-NO_x combustors for the proposed turbine, provided Auburndale does indeed install SCR technology, as they proposed, if they can not meet the 15 ppm rate by September 30, 1997.

Air Quality Analysis

In addressing the Class I SO₂ and NO₂ increments, Auburndale first modeled its impact at the Chassahowitzka WA with the EPA ISCST model, using 5 years of meteorological data (1982-1986). For the 24-hour averaging period, the ISCST modeling indicates that the Auburndale facility would significantly consume SO₂ increment, (i.e. having an impact greater than 0.07 ug/m³) at the Chassahowitzka WA in 2 of the 5 years, with a maximum concentration of 0.087 ug/m³. The Auburndale facility is predicted not to significantly consume SO₂ increment during the 3-hour or annual averaging periods. The modeling also shows that the proposed source would not significantly consume NO₂ increment during the annual averaging period.

For the days that the Auburndale facility exceeded the 0.07 ug/m³ 24-hour significant level, Auburndale performed a Class I cumulative increment analysis with 78 sources identified by the State. The results of this analysis showed that Auburndale would not cause or significantly contribute to Class I increment exceedances at the Chassahowitzka WA.

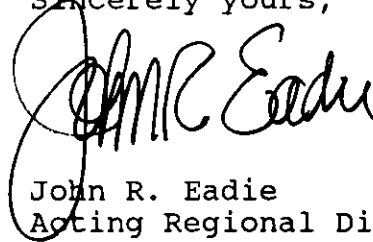
Air Quality Related Values Analysis

The Auburndale application and supplemental analyses sufficiently addressed potential effects on vegetation, soils, water, wildlife, and visibility in the Chassahowitzka WA from the proposed emissions. Based on our review of this information, we do not anticipate that these resources will be adversely affected by emissions from the proposed project.

In the near future, the Interagency Working Group on Air Quality Modeling will be releasing the revised MESOPUFF II model. This version will have the capability to calculate nitrate and sulfate deposition mass, as well as ground level concentrations. At that time, we will request that new sources which have a significant concentration impact in a Class I area perform cumulative modeling analyses to calculate both deposition and concentration at the respective Class I areas. Applicants can contact our Air Quality office in Denver for guidance on the deposition modeling. We appreciate your continued cooperation in requiring applicants to adequately

assess the impacts of new emissions on the resources in our Class I areas. If you have any questions regarding this matter, please contact Mr. John Notar of our Air Quality office in Denver at 303/969-2071.

Sincerely yours,



John R. Eadie
Acting Regional Director

cc: S. Heron
C. Holladay
B. Thomas, SW Dist.
G. Harper, EPA
J. Davis, ECT
D. Martin, Polk Co.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

OCT 28 1992

4APT-AEB

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

RE: Auburndale Power Partners,
Auburndale Cogeneration Project (PSD-FL-185)

Dear Mr. Fancy:

This is to acknowledge receipt of your revised preliminary determination and draft Prevention of Significant Deterioration (PSD) permit for the above referenced facility, dated October 1, 1992. The proposed facility will produce approximately 156 megawatts (MW) of electricity and will also provide steam to several nearby manufacturing plants. The proposed combined cycle system will consist of one 104 MW Westinghouse 501D5 combustion turbine, one 52 MW steam turbine generator, and one unfired heat recovery steam generator.

Your determination proposes to limit NO_x emissions through steam injection and advanced burner technology, to limit SO₂ and H₂SO₄ Mist emissions through limiting the sulfur content of the No. 2 distillate fuel oil, to limit CO and VOC emissions through good combustion techniques, to limit PM/PM₁₀ emissions by combustion controls and the use of clean fuels, and to limit Pb, Be, and As emissions through the use of clean fuels. In addition, this facility will meet revised, lower NO_x limits no later than September 30, 1997, through advanced combustor design or the use of selective catalytic reduction.

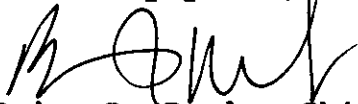
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NOV 02 1992

Division of Air
Resources Management

We have reviewed the package as submitted and have no adverse comments. Thank you for the opportunity to review and comment on this package. If you have any questions or comments, please contact Mr. Scott Davis of my staff at (404) 347-5014.

Sincerely yours,



Brian L. Beals, Chief
Source Evaluation Unit
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

cc: J. Heron
C. Halladay
B. Thomas, SW Dist
J. Davis, ECT
B. Mitchell, NPS



Environmental Consulting & Technology, Inc.

October 12, 1992
ECT No. 91077-0400-1100

Mr. C. H. Fancy, P.E.
Chief
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Auburndale Cogeneration Project
PSD-FL-185, AC 53-208321

Dear Mr. Fancy:

Pursuant to the public notice requirements specified in your October 1, 1992 correspondence, proof of public notice publication for the above referenced project is attached. The public notice was published in The Auburndale Star on October 8, 1992.

In reviewing the draft permit, a clerical error on Table 1 - Allowable Emission Rates - was noticed. The draft permit was revised to reflect increased hourly sulfuric acid (H_2SO_4) emission rates. However, the current draft permit retains the original annual emission rates for this pollutant. Annual H_2SO_4 emission rates for gas and oil should be 32.9 and 61.3 tons per year, respectively.

Please contact me at (904) 336-0444 if there are any questions.

Sincerely,

ENVIRONMENTAL TECHNOLOGY & CONSULTING, INC.

Thomas W. Davis

Thomas W. Davis, P.E.
Senior Engineer

TWD/tw
Attachment

cc: Ms. Patricia Haslach, Mission Energy
Mr. George Schott, Westinghouse

*J. Nixon
C. Holladay
B. Thomas, SE Dist*

*J. Harper, EPA
B. Mitchell, NPS*

RECEIVED

OCT 13 1992

**Division of Air
Resources Management**

P.O. Box 8188
Gainesville, FL
32605-8188

5200 Newberry Road
Suite E-1
Gainesville, FL
32607

(904)
336-0444

FAX (904)
335-0373

The Auburndale Star

Published Weekly
Auburndale, Polk County, Florida 33823

STATE OF FLORIDA COUNTY OF POLK:

Before the undersigned authority personally appeared Pam Breuggeman
who on oath says that she is Adv Manager of the Auburndale Star a
weekly newspaper published at Auburndale in Polk County, Florida; that the attached
copy of advertisement, being a Notice of Intent To Issue Permit
in the matter of Dept Of Environmental Regulation ECT
in the Circuit Court, was published in said newspaper in the issues
of October 8, 1992

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

Pam Breuggeman



BILL CHESTNUT
(SEAL)
My Comm. Exp. 11-5-95
Bonded By Service Ins. Co.

Sworn to and subscribed before

me this 27th day of
OCT, A.D. 1992

Bill Chestnut
Notary Public

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Regulation gives notice of its intent to issue a PSD permit to Auburndale Power Partners, Limited Partnership, County Road 544-A (Derby Avenue), Auburndale, Polk County, Florida, to construct a 156 MW combined cycle system facility. A determination of Best Available Control Technology (BACT) was required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a Waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's file action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 am to 5:00 pm, Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Southwest District
4520 Oak Fair Blvd.
Tampa, Florida 33610-7347

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's Final Determination.

Further, a public hearing can be requested by any person(s). Such request must be submitted within 30 days of this notice.

October 8, 1992



Environmental Consulting & Technology, Inc.

RECEIVED

SEP 10 1992

September 9, 1992
ECT No. 91077-0400

Division of Air
Resources Management

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

Re: Auburndale Cogeneration Project; Supplemental Impacts Analysis

Dear Mr. Fancy:

Enclosed are three copies of the referenced analysis. This supplemental analysis addresses potential impacts on air quality related values (AQRVs) at the Chassahowitzka National Wilderness Area. This analysis was requested by Mr. Cleve Holladay of your staff in response to comments received from the National Park Service.

Please feel free to contact me if you or your staff have any questions regarding this analysis.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Jeffrey L. Meling, P.E.
Principal Engineer

JLM/dlm

Enclosures

cc: P.A. Haslach, Mission Energy, w/enclosure

J. Haslach
C. Holladay
B. Mitchell, NPS

G-PRJ92.3/JLM0909.1-090992

P.O. Box 8188
Gainesville, FL
32605-8188

5200 Newberry Road
Suite E-1
Gainesville, FL
32607

(904)
336-0444

FAX (904)
335-0373

IMPACTS OF EMISSIONS FROM THE AUBURNDALE COGENERATION FACILITY ON SOILS, VEGETATION, AND WILDLIFE AT CHASSAHOWITZKA NATIONAL WILDERNESS AREA

INTRODUCTION

Auburndale Power Partners, Limited Partnership, a wholly-owned subsidiary of Mission Energy Company, proposes to construct a new cogeneration facility near Auburndale, Polk County, Florida. The facility will be capable of producing approximately 150 megawatts (MW) of electricity and will also provide steam to several manufacturing plants located nearby. Operation of the cogeneration facility will result in the emission of air pollutants.

A permit application for the proposed facility was submitted to the Florida Department of Environmental Regulation (FDER) in February 1992. The application addressed the major review requirements associated with the rules pertaining to prevention of significant deterioration (PSD). Subsequent submittals to FDER responded to questions and resolved, with one exception, all outstanding issues. The one exception was the analysis of potential impacts on air quality related values (AQRVs) at the Chassahowitzka National Wilderness Area (NWA). This supplemental report addresses that remaining topic.

IMPACTS ON SOILS

The U.S. Department of Agriculture (USDA) lists the primary soil type in Chassahowitzka as Weekiwachee-Durbin muck. This soil type is characterized by high levels of sulfur and organic content. Sulfur levels may approach 4 percent in the upper soil layer. Daily flooding by high tides cause the pH to vary between 6.1 and 7.8.

Typically, sulfur dioxide (SO₂) represents the greatest threat to soil since this pollutant causes increased sulfur content and decreased pH. However, for this project, given the extremely low levels of SO₂ emitted, the distance from the source,

the naturally high sulfur content of the Class I area soils, and the pH variability caused by tidal influences, no impacts to soils are expected.

IMPACTS ON VEGETATION

The Chassahowitzka NWA is a complex ecosystem of vegetation assemblages that depend on the subtle interplay of slight changes in elevation, salinity, hydroperiod, and edaphic factors for distribution, extent, and species composition. The mosaic of plant communities at the Chassahowitzka NWA is represented by pine woods and hammock forests within areas of higher ground, various freshwater forested and nonforested wetlands situated within lowland depressions that are inundated/saturated with fresh water for at least part of the year (mixed swamp, marsh, etc.) and brackish to saltwater wetlands such as salt marsh and mangrove swamp distributed at lower elevations on land that is normally inundated by tidal action and freshwater pulses from upland surface water runoff. The predominant flora associated with these associations is typically common to the Central Florida region and characterized by a high diversity of terrestrial, wetland, and aquatic species. Common vascular taxa within the Chassahowitzka NWA would include slash pine, laurel oak, live oak, cabbage palm, sweet gum, red maple, saw palmetto, and gallberry in the inland areas and needlerush, red mangrove, cordgrass, and saltgrass in the brackish to marine reaches.

It is difficult to project site-specific ecological impacts due to air emissions based upon data and conclusions in the available literature because of significant variations in experimental designs relating dose, duration, and vegetation species. Minor variations in experimental design and the conditions under which the various vegetation species have been fumigated can result in large differences in the tolerance limits of tested species.

Table 1 presents generalized injury threshold concentrations and characteristic injury symptoms for important air pollution constituents. In an attempt to minimize interpretive error while still providing some basis for comparison, another table is

Table 1. General Plant Injury Symptoms and Threshold Concentrations for Important Air Pollutants*

Pollutant	Symptoms	Part of Leaf Affected	<u>Injury Treshold</u> Sustained Exposure	
			$\mu\text{g}/\text{m}^3$	
Sulfur dioxide	Bleached spots, intercostal chlorosis	Mesophyll cells	785	8 hours
Ozone	Flecking, stippling, bleached spotting, pigmentation; conifer needle tips become brown and necrotic	Palisade or spongy parenchyma in leaves with no palisade	59	4 hours
Nitrogen dioxide	Irregular, white or brown collapsed lesions on intercostal tissue and near leaf margin	Mesophyll cells	4,700	4 hours
Hydrogen fluoride	Tip and margin burns, dwarfing, leaf abscission; narrow brown-red band separates necrotic from green tissue; fungal disease, cold and high temperatures, drought, and wind may produce similar markings; suture red spot on peach fruit	Epidermis and mesophyll cells	0.08	5 weeks
Mercury	Chlorosis and abscission; brown spotting; yellowing of veins	Epidermis and meophyll cells	<8,200	1 to 2 days
Sulfuric acid	Necrotic spots on upper surface similar to those caused by caustic or acidic compounds; high humidity needed	All		

*From: Hindawi; I.J. (1970).

provided which lists Florida native and cultivated plant species and categorizes those species according to literature-reported responses to exposure from pertinent combustion emissions (Table 2). In each case, the vegetation is categorized using the lowest threshold for injury (regardless of experimental method) reported in the literature.

Vegetation damage is described as impacts resulting in foliar damage. Less apparent vegetation injury is described as a reduction in growth and/or productivity without visible damage as well as changes in secondary metabolites such as tannin and phenolic compounds. Vegetation damage often results from acute exposure to pollution (i.e., relatively high doses over relatively short time periods). Injury is also associated with prolonged exposures of vegetation to relatively low doses of pollutants (chronic exposure). Acute damages, which have both functional and visible consequences, are usually manifested by internal physical damage to foliar tissues. Chronic injuries are typically more associated with changes in physiological processes. The following discussion summarizes descriptions from the literature of the effects upon vegetation associated with the relevant pollutants.

SULFUR DIOXIDE

Natural (ambient) background concentrations of SO_2 range between 0.28 and 2.8 microgram per cubic meter ($\mu\text{g}/\text{m}^3$) on a mean annual basis (Prinz and Brandt, 1985). The most common source of atmospheric SO_2 is the combustion of fossil fuels (Mudd and Kozlowski, 1975). Gaseous SO_2 primarily affects vegetation by diffusion through the stomata (Varshney and Garg, 1979). Small amounts of SO_2 may also be absorbed through the protective cuticle. Adverse effects on plants from SO_2 are primarily due to impacts on photosynthetic processes. SO_2 can react with chlorophyll by bleaching or phaeophytinization. This latter process constitutes a photosynthetic deactivation of the chlorophyll molecule. Acute damage due to SO_2 appears as marginal or intercostal areas of dead tissue which at first cause leaves to appear water-soaked (Barrett and Benedict, 1970). Chronic injuries are less apparent; the leaves remain turgid and continue to function at a reduced level. In more severe

Table 2. Air Pollutant Injury Threshold Concentrations for Plants Cultivated in or Native to Central Florida*

Common Name	Scientific Name	SO ₂	O ₃	NO _x	HF	SO ₂ /O ₃ Synergism	SO ₂ NO _x Synergism	Mercury Vapor
Red Maple	<u>Acer rubrum</u>		>196 ^d (chronic)					>50 ^f (7 days)
Box elder	<u>Acer negundo</u>				4-7 ^c (9 days)			
Maple	<u>Acer sp.</u>	≥5,240 ^e (8 hours)	196 ^d (chronic)					>50 ^g (7 days)
Lambs-quarters	<u>Chenopodium album</u>			1.88 x 10 ^{6b} (2 hours)				
Orange	<u>Citrus sinensis</u>	>5,240 ^e (8 hours)		>7,380 ^b (2 hours)				
Strawberry	<u>Fragaria sp.</u>							>50 ^g (7 days)
Sunflower	<u>Helianthus annuus</u>			>7,380 ^b (2 hours)				≥50 ^g (7 days)
Morning glory	<u>Ipomoea purpurea</u>	131-1,310 ^e (8 hours)						>50 ^g (7 days)
Privet	<u>Ligustrum sp.</u>		196 ^d (chronic)					≥50 ^g (7 days)
Tomato	<u>Lycopersicon esculentum</u>			7,380 ^b (2 hours)		262/195 ^f (4 hours)	131/62 ^f (4 hours)	>50 ^g (7 days)
Boston fern	<u>Nephrolepis exaltata</u>							50 ^g (7 days)
Black gum	<u>Nyssa sylvatica</u>		(chronic)					
Oxalis	<u>Oxalis sp.</u>							50 ^g (7 days)
Virginia creeper	<u>Parthenocissus quinquefolia</u>		196 ^d (chronic)					
Bean	<u>Phaseolus vulgaris</u>			7,380 ^b (2 hours)				

Table 2. Air Pollutant Injury Threshold Concentrations for Plants Cultivated in or Native to Central Florida*

Common Name	Scientific Name	SO ₂	O ₃	NO _x	HF	SO ₂ /O ₃ Synergism	SO ₂ NO _x Synergism	Mercury Vapor
Caribbean pine	<u>Pinus caribaea</u>	131-1,310 ^e (8 hours)						
Slash pine	<u>Pinus elliottii</u>	650 ^a (2 hours)						
Peach	<u>Prunus persica</u>				4-7 ^c (9 days)			
Black cherry	<u>Prunus serotina</u>		196 ^a (4 hours) 373 ^a (2 hours)					
Bracken fern	<u>Pteridium aquilinum</u>	131-1,310 ^e (8 hours)						
Blackberry	<u>Rubus sp.</u>	131-1,310 ^e (8 hours)						
Willow	<u>Salix sp.</u>		196 ^d (chronic)					50 ^g (7 days)
American elm	<u>Ulmus americana</u>	131-1,310 ^e (8 hours)						

*Concentrations in µg/m³ (averaging times shown in parentheses).

Sources:^aLinzon, 1986.

^bTaylor and MacLean, 1970.

^cTreshow and Pack, 1970.

^dHeath, 1975.

^eJones *et al.*, 1974.

^fReinert, *et al.*, 1975.

^gSiegel, *et al.*, 1984.

cases of chronic SO₂ exposure, there is some bleaching of the chlorophyll which appears as a mild chlorosis or yellowing of the leaf and/or a silvery or bronzing of the undersurface. Species which are categorized as sensitive to SO₂ emissions are those which show damage to at least 5 percent of the leaf area upon being exposed to 131 to 1,310 µg/m³ SO₂ for a period of 8 hours (Jones *et al.*, 1974).

Researchers have conducted numerous studies to determine the effects of SO₂ exposure to a wide variety of selected plant species. A review of the literature demonstrates that the most sensitive vascular plants (e.g., white ash, sumacs, yellow poplar, goldenrods, legumes, blackberry, southern pine, red oak, black oak, ragweeds) exhibit visible injury to short-term (3 hours) exposure to SO₂ concentrations ranging from 790 to 1,570 µg/m³. Caribbean pine (*Pinus caribaea*) seedlings, similar in ecology and appearance to South Florida slash pine (*Pinus elliotti* var. *densa*) exhibited up to 5-percent needle necrosis when exposed to 1,310 µg/m³ SO₂ for 4 hours (Umbach and Davis, 1988). Citrus is reported as being more tolerant to SO₂ exposures, with visible injury appearing when SO₂ concentrations exceed 1,572 to 2,096 µg/m³ for a 3-hour period (U.S. Environmental Protection Agency [EPA], 1976). Native plant species common to the region are either tolerant (red maple, live oak, cypress, slash pine) or sensitive (bracken fern) to SO₂ exposures (Woltz and Howe, 1981; USDA, 1972; EPA, 1976; Loomis and Padgett, 1973). Complicating generalizations regarding SO₂ injury is the observation that the genetic variability of native annual plants can result in the selection of SO₂ resistant strains in as little as 25 years (Westman *et al.*, 1985).

NITROGEN OXIDES

During combustion, atmospheric nitrogen is oxidized to nitrogen oxide (NO_x) and small amounts of nitrogen dioxide (NO₂) (Taylor *et al.*, 1975). The NO_x is photochemically oxidized to NO₂, which in turn is subsequently consumed in the production of ozone. Impacts to vegetation from NO₂ result from high concentrations occurring during short time periods (Taylor and MacLean, 1970). Acute exposures of this sort will cause necrotic lesions in leaf tissue and excessive

defoliation (MacLean *et al.*, 1968). Short-term (acute) exposures of NO_2 of less than $1,880 \mu\text{g}/\text{m}^3$ for 1 hour have caused no adverse effects (Taylor *et al.*, 1975).

PARTICULATE MATTER

In addition to gaseous emissions, small amounts of particulate matter (PM) will be emitted. Typically, the density of particulate limits impacts such that only vegetation in proximity to the source may be affected.

Included among the PM will be low concentrations of mercury, beryllium, arsenic, and lead. The mercury may occur as both mercury vapors and particulates. The mechanism of mercury phytotoxicity is currently under investigation. Past investigations indicate that mercury vapors will cause chlorosis, abscission of older leaves, growth reduction, and poor development. Most investigations have been restricted to greenhouse crops where air quality monitoring was not conducted. One investigation indicates that vegetation exposed to $50 \mu\text{g}/\text{m}^3$ mercury for 7 days experienced leaf abscission (Siegel *et al.*, 1984).

The literature regarding effects on vegetation from beryllium, arsenic, and lead is scarce. One investigation indicates that vegetation growth was reduced by beryllium concentrations in excess of $735 \mu\text{g}/\text{m}^3$ (Gough *et al.*, 1979). Arsenic uptake by vegetation to a concentration of 5 micrograms per gram ($\mu\text{g}/\text{g}$) is considered harmful. Lead retards plant growth above a concentration of $30 \mu\text{g}/\text{g}$ in the soil.

CARBON MONOXIDE

Carbon monoxide (CO) is not considered harmful to plants and is not known to be effectively taken up by plants (Bennett and Hill, 1975). Microorganisms within the soil appear to be a major sink for CO.

SULFURIC ACID MIST

Acidic precipitation or acid rain is coupled to the emissions of the pollutant SO_2 mainly formed during the burning of high-sulfur fossil fuels. This compound is

oxidized in the atmosphere and dissolves in rain forming sulfuric acid (H_2SO_4) which falls as acidic precipitation (Ravera, 1989). A small amount of fuel-bound sulfur may also be emitted directly as H_2SO_4 . Concentration data are not available, but H_2SO_4 mist has yielded necrotic spotting on the upper surfaces of leaves (Middleton *et al.*, 1950).

During the last decade, much attention has been focused on acid rain. Acidic deposition is an ecosystem-level problem that affects vegetation because of some alterations of soil conditions such as increased leaching of essential base cations or elevated concentration of aluminum in the soil water (Goldstein *et al.*, 1985). Although effects of acid rain in eastern North America have been well publicized (decline of conifer forests in the Appalachians), documented detrimental effects of acid rain on Florida vegetation are lacking (Gholz, 1985; Charles, 1991).

SYNERGISTIC EFFECTS

Combinations of air pollutants, where individual components are present in concentrations below their respective thresholds for vegetation injury, may still affect vegetation. If the effects appear to be directly proportional to the sum of the component's concentrations, the effect is termed additive. If effects are in excess of those expected from the summation of the component's concentrations, the effects are termed synergistic.

The most commonly investigated combination of pollutants is that of SO_2 and ozone. The mechanism for this synergistic effect is believed to involve the influence of SO_2 on stomatal opening (Unsworth *et al.*, 1972). Under controlled humidity and ambient carbon dioxide (CO_2) concentrations, an increase in SO_2 will have the effect of enhancing stomatal opening, even at night. It is believed that the synergistic response is a result of an increase in susceptibility to vegetation injury, since in the presence of open stomata pollutant gases enter the leaf tissue more easily. Concentrations of ozone at or below the typical injury threshold will result in injury to less than 5 percent of the leaf area. The same holds true for vegetation when

exposed to concentrations of SO₂ at or below the injury threshold. However, vegetation exposed to combinations of the two gasses at concentrations of 262 µg/m³ SO₂ and 195 µg/m³ ozone can result in damage to much more than 5 percent of the leaf area (Reinert *et al.*, 1975). Furthermore, the symptoms are those of injury from ozone. Such levels predicted for this project are below those thresholds.

Synergism effects associated with SO₂ and other emissions products appear to operate under a similar mechanism. Recalling that NO₂ emissions are implicated in vegetation impacts based upon conversion to phytotoxic ozone, the appropriate synergistic reactions involve SO₂-ozone and SO₂-NO₂. Typically injury thresholds for susceptible plants approximate the injury thresholds as reported for SO₂ previously (Reinert *et al.*, 1975).

As presented above, the literature was reviewed as to potential effects of air pollutants on vegetation. Maximum air pollutant impacts at Chassahowitzka due to emissions from Auburndale Cogeneration Facility will be very low. The potential for damage at the Chassahowitzka NWA could, therefore, be considered negligible given: (1) the much lower air pollution impacts predicted at Chassahowitzka relative to the immediate Auburndale Cogeneration Facility plant vicinity, and (2) the absence of any plant species at Chassahowitzka that would be especially sensitive to the very low predicted pollutant concentrations.

IMPACTS ON WILDLIFE

Wildlife resources in the 30,500-acre Chassahowitzka NWA are fairly typical of central Florida's Gulf Coast. The eastern portions of the site are fringed by hardwood swamp habitats, but the primary habitats are the estuarine and brackish marshes along with the saltwater bays containing many mangrove-covered islands. These habitats support large numbers of resident and migratory waterfowl, water birds, and shorebirds. Wading birds are also quite common. Deer, raccoons, black bears, otters, and bobcats are the notable mammals. Alligators are numerous. Bald

eagles and the West Indian manatee are the primary endangered/threatened species utilizing the area.

Air pollution impacts to wildlife have been reported in the literature although many of the incidents involved acute exposures to pollutants usually caused by unusual or highly concentrated releases or unique weather conditions. Generally, there are three ways pollutants may affect wildlife: through inhalation, through exposure with skin, and through ingestion (Newman, 1980). Ingestion is the most common means and can occur through eating or drinking of high concentrations of pollutants. Bioaccumulation is the process of animals collecting and accumulating pollutant levels in their bodies over time. Other animals that prey on these animals would then be ingesting concentrated pollutant levels.

Based on a review of the limited literature on air pollutant effects on wildlife, it is unlikely that the levels of pollutants produced by this project will cause injury or death to wildlife. Concentrations of pollutants will be low, emissions will be dispersed over a large area, and mobility of wildlife will minimize their exposure to any unusual concentrations caused by equipment malfunction or unique weather patterns.

Bioaccumulation, particularly of mercury, has been a concern in Florida. There is increasing evidence that mercury may be naturally evolved in Florida and that, combined with manmade sources, is becoming bioaccumulated in certain fish and wildlife. It is unknown what naturally occurring levels may be present in onsite fish and wildlife. However, the likelihood that the small amount attributable to this project would all be methylated, end up in the food chain, and then consumed by predators is considered negligible.

The acid rain effects on wildlife in Florida are primarily those related to aquatic animals. Acidified water may prevent fish egg hatching, damage larvae, and lower immunity factors in adult fish (Barker, 1983). Acid rain can also result in release of

metals (especially aluminum) from lake sediments; this can cause a biochemical deterioration of fish gills leading to death by suffocation. However, the sensitivity of Florida lakes to acid rain is in question. Florida lakes have a wide natural range of pH (from 4 pH units to 8.8 pH units). Most well-buffered lakes are in central and south Florida, and rainfall is in the pH range of 4.8 to 5.1. According to Barker (1983) and Charles (1991), no evidence is currently available to clearly show that degradation of aquatic systems have occurred as a direct result of acid precipitation in Florida. The air emissions from Auburndale Cogeneration Facility that could contribute to the formation of atmospheric acids are not predicted to significantly increase acid precipitation and are predicted to have no impact on wildlife at Chassahowitzka.

In conclusion, it is unlikely that the projected air emission levels from the Auburndale Cogeneration Facility will have any measurable direct or indirect effects on wildlife utilizing the Chassahowitzka NWA.

CONCLUSIONS

As described in the previous sections, analyses were undertaken to evaluate the potential for emissions from Auburndale Cogeneration Facility to affect the resources of the Chassahowitzka NWA. Air quality impacts with respect to PSD Class I increments were earlier projected using the ISC2 model. The modeling inputs and assumptions were conservative (i.e., predicted impacts would be higher than actually expected or observed). However, even with this conservatism no increment exceedances were predicted.

The literature was reviewed to establish pollutant levels that would have the potential to impact soils, vegetation, and wildlife. Air quality impacts at Chassahowitzka due to emissions from the Auburndale Cogeneration Facility are predicted to be very low relative to the thresholds documented in the literature. This would be expected given the use of clean fuels at, and low emissions from, the Auburndale Cogeneration Facility.



RECEIVED
SEP 3 1992

Division of Air
Resources Management

September 1, 1992

Mr. Preston Lewis
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

**SUBJECT: CORRECTION TO COMMENTS SUBMITTED ON AUBURNDALE
POWER PARTNERS DRAFT PSD PERMIT**

Dear Mr. Lewis:

I am writing to inform you of a correction to our comments submitted on August 25, 1992. Specifically, please ignore comment number nine regarding CO emission rates. CO emission rate of 21 ppmvd is correctly stated in the draft permit for part load condition only.

Thank you for your attention to this matter.

Sincerely,

Patricia Haslach
Environmental Manager,
Eastern Region

12500 FAIR LAKES CIRCLE
SUITE 420

FAIRFAX, VIRGINIA
22033

(703) 222-0445
FAX: (703) 222-0516

cc: J. Dixon
C. Holladay
B. Thomas, SWD
G. Harp, EPA
B. Mitchell, WPS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

AUG 28 1992

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Division of Air
Resource Management

4APT-AEB

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

RE: Auburndale Power Partners,
Auburndale Cogeneration Project (PSD-FL-185)

Dear Mr. Fancy:

This is to acknowledge receipt of your preliminary determination and draft Prevention of Significant Deterioration (PSD) permit for the above referenced facility, dated August 6, 1992. The proposed facility will produce approximately 156 megawatts (MW) of electricity and will also provide steam to several nearby manufacturing plants. The proposed combined cycle system will consist of one 104 MW Westinghouse 501D5 combustion turbine, one 52 MW steam turbine generator, and one unfired heat recovery steam generator.

Your determination proposes to limit NO_x emissions through steam injection and advanced burner technology, to limit SO₂ and H₂SO₄ Mist emissions through limiting the sulfur content of the No. 2 distillate fuel oil, to limit CO and VOC emissions through good combustion techniques, to limit PM/PM₁₀ emissions by combustion controls and the use of clean fuels, and to limit Pb, Be, and As emissions through the use of clean fuels. In addition, this facility will meet revised, lower NO_x limits no later than September 30, 1997, through advanced combustor design or the use of selective catalytic reduction.

We have reviewed the package as submitted and have the following comment:

On page 6 of the permit, Specific Conditions, Operating Rates, number 6.a) and 6.b) should be redesignated as 5.d) and 5.e) as they contain maximum heat input values for the combined cycle gas turbine.

Thank you for the opportunity to review and comment on the package. If you have any questions or comments, please contact Mr. Scott Davis of my staff at (404) 347-5014.

Sincerely yours,

Jewell A. Harper
Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

CHF/PL

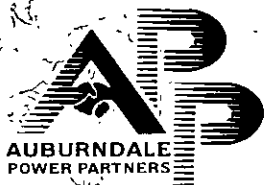
Teresa Heron

Cleve Holladay

Bill Thomas, SWD

Linda Novak, Polk Co

9-9-92 RSM



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AUG 26 1992

Bureau of
Air Regulation

August 25, 1992

Mr. Preston Lewis
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: COMMENTS ON AUBURNDALE POWER PARTNERS
DRAFT PSD PERMIT

Dear Mr. Lewis:

Our project team has reviewed the draft permit to construct for our Auburndale Power Partner project, and have some comments we would like you to incorporate in the final permit if possible. The majority of the comments are minor in nature, however, we are requesting one change in emission rate of a non-criteria pollutant (sulfuric acid mist) due to a revision in the emission rate our turbine vendor provided us after the draft permit was issued.

I have recently spoken with Teresa Heron about this issue, and she informed me that this change would require your review, but that it should not pose any problems since we have not advertised for public notice yet.

I will be following up these comments with a phone call to you to see if any of these comments are of major concern. In the mean time, please feel free to call me if you have any questions on the comments submitted.

Sincerely,

Patricia A. Haslach
Patricia A. Haslach
Environmental Manager,
Eastern Region

Attachments

cc: J. Heron
C. Holladay
B. Thomas, SW Dist
J. Harper, EPA
C. Shaver, NPS
CHF/PL
8-27-92
PA

12500 FAIR LAKES CIRCLE
SUITE 420

FAIRFAX, VIRGINIA
22033

[703] 222-0445
FAX: [703] 222-0516



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Patricia Haslach

Your Phone Number (Very Important)

(703) 222-0445

To (Recipient's Name) Please Print

Mr. Preston Lewis

Recipient's Phone Number (Very Important)

(904) 488-1844

Company

MISSION ENERGY COMPANY

Company

Bureau of Air Regulation - P.D.E.R.

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City

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Emp. No.

Date

☐ Cash Received☐ Return Shipment☐ Third Party☐ Chg. To Del.☐ Chg. To Hold

Street Address

City

State

Zip

Received By:

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Date/Time Received

FedEx Employee Number

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Signature:

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**AUBURNDALE POWER PARTNERS, LIMITED PARTNERSHIP
COMMENTS ON DRAFT PSD PERMIT**

1. Intent to Issue notice refers to the project in several places as "Auburndale Power Adventures". Please change to "Auburndale Power Partners, Limited Partnership".

2. Regarding project name on Technical Evaluation and Synopsis of Application, legal project name is "Auburndale Power Partners, Limited Partnership".

3. Page 2, Synopsis of Application, III.3 Facility Category: Nitrogen Oxides tons/year value should be changed to 573.8 tons per year from 509 tons/year. 573.8 tons/year reflects continuous operation at 130 lb/hr, consistent with the value given in Table 1 of the permit.

4. Page 2, Synopsis of Application, III.3 Facility Category: The second sentence says that "The proposed 156 MW combined cycle system will increase this facilities emissions by.... Since this is a new facility, there is no increase in emissions. The write-up should be revised to correct this matter.

5. Table 1 - Allowable Emission Rates: NOx annual emission for natural gas, 25 ppm case should be revised from 509 TPY to 573.8 TPY as indicated in #3 above.

6. Table 1 - Allowable Emission Rates: H2SO4 emissions: Auburndale Power Partners is requesting a change in allowable emission rates from 5.1 lb/hr on gas and 8.9 lb/hr on oil to 7.5 lb/hr on gas and 14 lb/hr on oil. This increase in emission rates is requested due to information recently presented by our turbine vendor, Westinghouse, indicating that additional H2SO4 emissions may occur due to reaction of SO3 as exhaust gas passes through the HRSG and ductwork and contacts moisture to form additional H2SO4. The emission rates originally provided, and currently stated in the draft permit, are based on H2SO4 emissions from engine exhaust only.

Review of the Air Toxics Impacts modeling in our PSD application shows that the increased H2SO4 emission rates are well below those modeled in our application (since the application was based on 0.2% sulfur fuel oil). As a result, the requested H2SO4 emission rates will result in impacts well below the "No-Threat Level" as indicated in Table 6-12 of our PSD application (page 6-20).

7. Table 1 - Allowable Emission Rates: please footnote allowable opacity of 10% as footnote (D) with the following explanation "full load condition". Per specific condition #2, 20% opacity is allowable up to full load conditions.

8. Table 1 - Allowable Emission Rates: For non-criteria pollutants As, F, Be, Pb, units on first emission rates should be added, i.e. lb/MMBtu should follow first set of numbers.

9. Table 1 - Allowable Emission Rates: Footnote (C). Footnote C needs to be revised to reflect the fact that with the new combustor to be installed by 9/30/97, CO emission rates at full load will not exceed 21 ppmvd. 15 ppmvd is not to exceed CO level for combustor used until 9/30/97 only.

10. Page 6 of 10 of draft permit, specific conditions 6a and 6b: please indicated heat input values as LHV.

11. Page 8 of 10 of draft permit, specific condition #18: this condition should be revised to indicate that the "steam to fuel ratio at which compliance is achieved shall be incorporated into the permit..."