Adams, Patty

From: Harvey, Mary
Sent: Friday, March 23, 2007 8:59 AM
To: Adams, Patty
Subject: FW: Lakeland Electric - Facility #1050004-018-AC-FINAL

From: Zhang-Torres
Sent: Friday, March 23, 2007 8:46 AM
To: Harvey, Mary
Subject: RE: Lakeland Electric - Facility #1050004-018-AC-FINAL

We got it. Thanks.

Cindy

From: Harvey, Mary
Sent: Thursday, March 22, 2007 3:50 PM
To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; 'andrew.nguyen@lakelandelectric.com'; Zhang-Torres; 'kkosky@golder.com'; 'little.james@epa.gov'; 'worley.gregg@epa.gov'; 'dee_morse@nps.gov'
Cc: Cascio, Tom; Adams, Patty; Gibson, Victoria
Subject: Lakeland Electric - Facility #1050004-018-AC-FINAL

Dear Sir/Madam:

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

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

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

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Friday, March 23, 2007 9:26 AM
To: Adams, Patty
Subject: FW: Lakeland Electric - Facility #1050004-018-AC-FINAL

From: Bachand, Timothy [mailto:Timothy.Bachand@lakelandelectric.com]
Sent: Thursday, March 22, 2007 5:18 PM
To: Harvey, Mary
Subject: Read: Lakeland Electric - Facility #1050004-018-AC-FINAL

Your message

To: Timothy.Bachand@lakelandelectric.com
Subject:

was read on 3/22/2007 5:18 PM.

Adams, Patty

From: Harvey, Mary
Sent: Friday, March 23, 2007 9:26 AM
To: Adams, Patty
Subject: FW: FW: Lakeland Electric - Facility #1050004-018-AC-FINAL

-----Original Message-----
From: Worley.Gregg@epamail.epa.gov [mailto:Worley.Gregg@epamail.epa.gov]
Sent: Thursday, March 22, 2007 4:11 PM
To: Harvey, Mary
Subject: Re: FW: Lakeland Electric - Facility #1050004-018-AC-FINAL

I received the files

Gregg M. Worley
Chief, Air Permits Section
U.S. EPA Region 4
(404) 562-9141
fax (404) 562-9019

Adams, Patty

From: Harvey, Mary

Sent: Thursday, March 22, 2007 3:50 PM

To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; 'andrew.nguyen@lakelandelectric.com'; Zhang-Torres; 'kkosky@golder.com'; 'little.james@epa.gov'; 'worley.gregg@epa.gov'; 'dee_morse@nps.gov'

Cc: Cascio, Tom; Adams, Patty; Gibson, Victoria

Subject: Lakeland Electric - Facility #1050004-018-AC-FINAL

Attachments: 1050004.018.AC.F_pdf.zip

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Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Thursday, March 22, 2007 4:00 PM
To: Cascio, Tom; Adams, Patty
Subject: FW: Lakeland Electric - Facility #1050004-018-AC-FINAL

From: Nguyen, Andrew [mailto:Andrew.Nguyen@lakelandelectric.com]
Sent: Thursday, March 22, 2007 3:53 PM
To: Harvey, Mary
Subject: RE: Lakeland Electric - Facility #1050004-018-AC-FINAL

Dear Mary,

We received your email.

Thank you !!!

Andrew Thuy Nguyen
Environmental Permitting
Lakeland Electric
Phone: 863.834.8180
Fax: 863.834.8187
Cell: 863.255.4633

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Thursday, March 22, 2007 3:50 PM
To: Bachand, Timothy; Shelton, Farzie; Nguyen, Andrew; Zhang-Torres; kkosky@golder.com; little.james@epa.gov; worley.gregg@epa.gov; dee_morse@nps.gov
Cc: Cascio, Tom; Adams, Patty; Gibson, Victoria
Subject: Lakeland Electric - Facility #1050004-018-AC-FINAL

Dear Sir/Madam:

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Thank you,

DEP, Bureau of Air Regulation

Florida Department of Environmental Protection

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

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

PERMITTEE

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Authorized Representative:
Mr. Timothy Bachand, Director, Energy Supply

Air Permit No. 1050004-018-AC
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3
Facility ID No. 1050004
SIC No. 4911
Low NO_X Burners & Overfire Air

Permit Expires: June 1, 2008

PROJECT AND LOCATION

This permit authorizes the installation of low NO_x burners (LNB) and an overfire air (OFA) system on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and Title 40, Parts 60 and 63 of the Code of Federal Regulations (CFR). The permittee is authorized to install the proposed equipment in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

CONTENTS

Section 1. General Information
Section 2. Administrative Requirements
Section 3. Emissions Units Specific Conditions
Section 4. Appendices

Joseph Kahn, Director
Division of Air Resource Management

March 22, 2007
(Date)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Authorized Representative:
Mr. Timothy Bachand, Director, Energy Supply

Air Permit No. 1050004-018-AC
PSD Permit No. PSD-FL-387
C.D. McIntosh, Jr. Power Plant
Low NO_X Burners & Overfire Air

Enclosed is Final Air Permit No. 1050004-018-AC, which authorizes the installation of low NO_X burners and an overfire air system on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. As noted in the attached Final Determination, no changes were made. This permit is issued pursuant to Chapter 403, Florida Statutes (F.S.).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S. by filing a Notice of Appeal pursuant to Rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000); and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this "Notice of Final Permit" (including the "Final Permit") was sent by electronic mail (with return receipt requested) before the close of business on 3/22/07 to the persons listed:

Timothy Bachand, Authorized Representative: timothy.bachand@lakelandelectric.com
Farzie Shelton, Lakeland Electric: farzie.shelton@lakelandelectric.com
Andrew Nguyen, Lakeland Electric: andrew.nguyen@lakelandelectric.com
Mara Nasca, Southwest District Office: mara.nasca@dep.state.fl.us
Kennard F. Kosky, P.E., Golder Associates, Inc.: kkosky@golder.com
Jim Little, EPA Region 4: little.james@epa.gov
Mr. Gregg Worley, EPA Region 4: worley.gregg@epamail.epa.gov
Mr. Dee Morse, NPS: dee_morse@nps.gov

Clerk Stamp

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

(Clerk) 3/22/07 (Date)

FINAL DETERMINATION

PERMITTEE

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

PERMITTING AUTHORITY

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

PROJECT

Air Permit No. 1050004-018-AC (PSD-FL-387)

C.D. McIntosh, Jr. Power Plant – Unit 3

This permit authorizes the installation of low NO_X burners and an overfire air system on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

NOTICE AND PUBLICATION

The Department distributed an "Intent to Issue Permit" package on February 16, 2007. The applicant published the "Public Notice of Intent to Issue" in The Ledger on February 19, 2007. No petitions for administrative hearings or extensions of time to petition for an administrative hearing were filed. The following comments were received from the Environmental Protection Agency (EPA) Region 4 Office on the Draft Permit Intent Package in e-mail memoranda dated March 15, 2007, and March 20, 2007.

Comment 1:

The final determination should contain a table that compares the PSD significant emission rates to the increases or decreases for the project (projected actual emissions minus baseline actual emissions).

Department Response:

This information is included in the table below. Backup data are attached to this Final Determination as two spreadsheets, titled Table 1 and Table 2.

Pollutant	Baseline Actual Emissions*	Projected Actual Emissions	Net Emissions Increase	PSD Trigger
NO_X	6584	1956**	-4628	40
CO	177	2500	2323	100
PM	438	443	5	25
SO_2	7416	7416	0	40
VOC	30	30	0	40
SAM	136	139	3	7
Pb	0.2	0.2	0	0.6

Note: All numbers above are in tons per year (tpy) units.

* Data are taken from 2001 to 2005 Department Annual Operating Reports (maximum 2-year average values).

** The applicant used its CAIR allowances to project its Projected Actual Emissions.were projected by applicant to .

Comment 2:

If the applicant wants to take advantage of any decreases in NSR regulated pollutants in the future (i.e., as part of a netting analysis) the reductions need to be made federally enforceable through a permitting action.

Department Response:

The Department acknowledges the comment and will advise the applicant accordingly. However, we are aware of no planned construction activities at the facility beyond the current phased project to install low NO_X burners, overfire air and and the subsequent phase to install a selective catalytic reduction system (SCR) on Unit 3. The applicant will have the opportunity to consider taking further enforceable limits during the processing of the SCR request.

CONCLUSION

The final action of the Department is to issue the permit.

Table 1

Year	2001	2002	2003	2004	2005	
Heat Input	26,651,502	23,346,665	24,331,274	19,275,401	27,030,645	mmBtu/year
Hours	8324	7896	8017	6850	8268	
CO	195.7	157.4	129.5	93.1	136.1	Tons
		176.55	143.45	111.3	114.6	
	3201.77	2956.77	3034.96	2813.93	3269.31	mmBtu/hour
	2665.15	2334.67	2433.13	1927.54	2703.06	(mmBtu/year)*(.20 lb/mmBtu)/2000
Supplemental CO Calculations:						Tons/year
CO (TPY) with LNB		2,499.91	2,383.90	2,180.33	2,315.30	
CO (TPY) Increase		**2,323.36**	2,240.45	2,069.03	2,200.70	Maximum increase in bold
PSD Significant Emission Rate		100	100	100	100	

Example of NOx Emission Reductions under FDEP CAIR Rules:

Year	2001	2002	2003	2004	2005	
Existing NOx (TPY)	7,140.50	6,026.53	6,263.32	3,780.56	6,338.09	Existing NOx emissions from AOR
Existing NOx (lb/MMBtu)	0.54	0.52	0.51	0.39	0.47	Existing NOx emission rate calculated
Existing NOx (TPY)		6,583.51	6,144.92	5,021.94	5,059.33	Existing 2-year average NOx emissions
CAIR Allowances		1,956.00	1,956.00	1,956.00	1,956.00	CAIR allowances (FDEP, June 2006)
NOx (lb/MMBtu) with CAIR		0.17	0.16	0.20	0.14	CAIR NOx emission rate
NOx (TPY) reductions		-4,627.51	-4,188.92	-3,065.94	-3,103.33	CAIR reductions

Table 2

Calculations of Sulfuric Acid Mist (SAM) Emissions for the Lakeland Electric McIntosh Unit 3 SCR Project

Category	Units	Baseline	Projected	Mass Maximum (lb/hr)
Coal Sulfur Content	%	2.04	2.04	
Coal Heat Content	Btu/lb	12,731	12,731	
Uncontrolled SO_2 Emissions[a]	lb/MMBtu	3.20	3.20	11651.99
Combustion Factor[b]		0.010	0.010	
SAM from Combustion	lb/MMBtu	0.047	0.047	169.50
SCR Factor[c]		0.000	0.008	
SAM produced by SCR	lb/MMBtu	0.000	0.039	
SAM Leaving SCR[d]	lb/MMBtu	0.047	0.086	169.50
Air Heater Factor[e]		0.850	0.850	
SAM Leaving Air Heater	lb/MMBtu	0.040	0.073	144.08
ESP and Sorbent Injection[f]		0.630	0.350	
SAM Leaving ESP	lb/MMBtu	0.025	0.025	90.77
FGD System Factor[g]		0.470	0.470	
SAM Leaving FGD	lb/MMBtu	0.012	0.012	42.66
Maximum Heat Input	MMBtu/hr	3,640	3,640	
Capacity Factor (heat Input basis)		78%	78%	
Annual Heat Input (maximum 2-year average)	MMBtu/yr	24,999,083	24,999,083	
SAM Emissions	lb/MMBtu	0.012	0.012	
	ppm (est.)	2.660	2.715	
	lb/hr	42.66	43.53	
	tons/year	146.494	149.496	3

Note: Baseline and Projected based on 2001-2002 data, which represents the maximum sulfur and heat input.

[a] assumes 100 percent of sulfur converted to SO_2 for the purpose of calculating the amount of SAM produced; actual SO_2 emissions are 95 percent

[b] average of high and low sulfur eastern bituminous factors (Southern Company, 2005).

[c] 1 percent SO_3 produced from SO_2 oxidation; average of low and high sulfur fuel factors (Southern Company, 20(

[d] Excess ammonia slip will scavenge SAM. This is included in the ESP removal.

[e] 15% recommended in Table 4-1 (0.85 factor) for high/medium sulfur eastern bituminous (Southern Company, 20(

[f] 0.63 based on average of high and low S coals (Southern Company, 2005); 0.35 for 65% removal with sorbent inje

[g] 0.47 representative of 53 percent removal in FGD system (Southern Company, 2005).

PM Calculations Lakeland Electric McIntosh Unit 3

Heat Input	3,640	MMBtu/hr
Heat Content	12,731	Btu/lb
Coal Usage	285,923	lb/hr
Ash Content	9%	
Fly Ash	80%	
Fly Ash	20,586.5	lb/hr
SAM Removed	120.6	lb/hr
SAM PM (est.)	159.9	lb/hr (Ca sorbent assumed as a maximum)
SAM PM (est.)	0.78%	of PM
ESP Removal	99.10%	based on Title V Application
PM Increase	1.44	lb/hr
Capacity Factor	78%	
PM Increase	4.94	tons/year

FACILITY AND PROJECT DESCRIPTION

Lakeland Electric operates the C.D. McIntosh, Jr. Power Plant, which is an electric services facility (SIC No. 4911). The plant currently consists of:

The existing facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. There are storage and handling facilities for solid and liquid fuels, ash and limestone. A wastewater treatment facility is also located on site.

This permit authorizes the installation of a newer generation set of Low NO_X burners (LNBs) and an overfire air (OFA) system on Unit 3 as the first phase of a project to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides (NO_X) under the Clean Air Interstate Rule (CAIR).

Lakeland Electric will install of 32 complete Advanced Burner Systems Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including windboxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

The applicant elects to install the Low NO_X burners and overfire air system to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation.

ID	Emission Unit Description
006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator

REGULATORY CLASSIFICATION

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

Title IV: The facility OPERATES existing units subject to the Acid Rain provisions of the Clean Air Act (CAA).

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

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

NSPS: The facility OPERATES units subject to New Source Performance Standards in 40 CFR 60.

NEHSAP: The facility DOES NOT OPERATE units subject to National Emissions Standards for HAPs in 40 CFR 63.

RELEVANT DOCUMENTS

The following relevant documents are not a part of this permit, but helped form the basis for this permitting action: the permit application and additional information received to make it complete; the draft permit package including the Department's Technical Evaluation and Preliminary Determination; publication and comments; and the Department's Final Determination.

1. Permitting Authority: The Permitting Authority for this project is the Bureau of Air Regulation in the Division of Air Resource Management of the Department. The mailing address for the Bureau of Air Regulation is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400.
2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Southwest District Office. The mailing address and phone number of the Southwest District Office is: 13051 N. Telecom Parkway, Temple Terrace, FL 33637-0926; 813-632-7600.
3. Appendices: The following Appendices are attached as part of this permit: Appendix BD (Final BACT Determinations and Emissions Standards); Appendix GC (General Conditions).
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.
5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]
7. Title V Permit: This permit authorizes specific modifications and/or new construction on the affected emissions units as well as initial operation to determine compliance with conditions of this permit. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after completing the required work and commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Bureau of Air Regulation with copies to each Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

This section of the permit addresses the following emissions unit.

ID No.	Emissions Unit Description
006	McIntosh Fossil Fired Steam Generator Unit 3 is a nominal 364 megawatt fossil fuel-fired steam generator. Unit 3 may burn coal, residual oil, natural gas and may co-fire refuse derived fuel and petroleum coke. The maximum heat input rate is 3,640 million Btu per hour. Unit 3 is equipped with an electrostatic precipitator (ESP), a flue gas desulfurization (FGD) system, and low-NO_X burners to control emissions of particulate matter, sulfur dioxide (SO_2), and NO_X. The unit is also equipped with an Acid Rain SO_2 continuous emissions monitor.

APPLICABLE STANDARDS AND REGULATIONS

1. BACT Determinations: The emission unit addressed in this section is subject to a Best Available Control Technology (BACT) determination for carbon monoxide (CO). [Rule 62-212.400, F.A.C.]

2. NSPS Requirements: The Unit 3 boiler shall comply with all applicable requirements of 40 CFR 60, listed below, adopted by reference in Rule 62-204.800(7)(b), F.A.C.

   (a) Subpart A, General Provisions, including:

   - 40 CFR 60.7, Notification and Record Keeping
   - 40 CFR 60.8, Performance Tests
   - 40 CFR 60.11, Compliance with Standards and Maintenance Requirements
   - 40 CFR 60.12, Circumvention
   - 40 CFR 60.13, Monitoring Requirements
   - 40 CFR 60.19, General Notification and Reporting Requirements

   (b) Subpart D, Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971.

ADMINISTRATIVE REQUIREMENTS

3. Relation to Other Permits: The conditions of this permit are in addition to those of any other air construction or operation permits for these units.
   [Rule 62-4.030, 62-4.210, and 62-210.300(1)(b), F.A.C.]

CONTROL TECHNOLOGY

4. Low NO_X Burners and Overfire Air: The permittee is authorized to install, operate and maintain new low NO_X burners and an overfire air system on Unit No. 3 boiler for the purpose of reducing NO_X emissions. Equipment will include 32 complete Advanced Burner Systems (ABS) Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including windboxes on the front and rear walls with interconnecting ductwork to the existing secondary air. [Application, and Rule 62-296.470(CAIR), F.A.C.]

EMISSION STANDARDS

5. Carbon Monoxide (CO):

   a. Emissions of CO shall not exceed 0.20 lb/mmBtu heat input on a 30-operating day rolling average as demonstrated by the required CEMS. This CO emission limit may be adjusted downward to make this limit more stringent based on the Department's reassessment of BACT during the subsequent phase of this project involving installation of selective catalytic reduction.

   b. Emissions of CO shall not exceed 0.20 lb/mmBtu on a 3-hr average during the initial compliance demonstration.

   [62-210.200 (BACT), and 62-212.400(PSD), F.A.C.]

6. Emissions Limits Subject to Revision: Emissions of CO from Unit 3 shall not exceed the limitations specified in this permit. Based on results of compliance tests and continuous monitoring data, the Department will reassess the BACT determination in conjunction with the subsequent phase of the project which will include installation of selective catalytic reduction. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, SO_2, NO_X, PM/PM_{10}, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of a federally enforceable permit and shall be publicly noticed by the permittee.
   [Rules 62-4.070(3), and 62-212.400(7)(a), F.A.C.]

EMISSIONS COMPLIANCE DEMONSTRATION

7. Continuous Compliance with CO limits: Upon certification of the CO CEMS, pursuant to condition 11 below, compliance with the 30 operating day rolling average shall be demonstrated using data collected from the required CEMS. [Rule 62-4.070(3), F.A.C.]

8. Initial Compliance Demonstration: Within 60 days of commencing operation, following installation of the Low-NO_X burners and overfire air system, tests shall be conducted to determine emissions of CO and NO_X. Tests shall be conducted between 90% and 100% of permitted capacity while firing a coal and petcoke blend or a blend of coal, petcoke and refuse derived fuel. Tests shall consist of three, 1-hour test runs.
   [Rule 62-297.310(7)(a)1, F.A.C.]

9. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
7E	Determination of Nitrogen Oxide Emissions (Instrumental).
10	Determination of Carbon Monoxide Emissions

   The methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rules 62-204.800, F.A.C.; 40 CFR 60, Appendix A]

10. Test Results. Compliance test results shall be submitted to the Department's Southwest District Office no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

CONTINUOUS MONITORING REQUIREMENTS

11. Performance Specifications and Quality Assurance: The acceptability of the CO CEMS shall be evaluated by conducting the appropriate performance specification, as follows.

    The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A within 180 calendar days of commencing operation following installation of the Low-NO_X burners and overfire air system, but no later than October 1, 2007. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F. The required RATA tests shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the expected range of emissions and corresponding emission standards.

    [Rules 62-4.070(3), 62-210.200(BACT), F.A.C.]

12. CEMS Data Requirements for CO BACT Standard:

    a. *Data Collection*: The CO CEMS shall monitor and record emissions during all operations and whenever emissions are being generated, including during episodes of startups, shutdowns, and malfunctions. All data shall be used, except for invalid measurements taken during monitor system breakdowns, repairs, calibration checks, zero adjustments, and span adjustments.

    b. *Operating Hours and Operating Days*: An hour is the 60-minute period beginning at the top of each hour. Any hour during which an emissions unit is in operation for more than 15 minutes is an operating hour for that emission unit. A day is the 24-hour period from midnight to midnight. Any day with at least one operating hour for an emissions unit is an operating day for that emission unit.

    c. *Valid Hourly Averages*: The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over the hour at a minimum of one measurement per minute. All valid measurements collected during an hour shall be used to calculate a 1-hour block average that begins at the top of each hour.

        1) Hours that are not **operating** hours are not **valid** hours.

        2) For each operating hour, the 1-hour block average shall be computed from at least two data points separated by a minimum of 15 minutes. If less than two such data points are available, there is insufficient data, the 1-hour block average is not valid, and the hour is considered as "monitor unavailable."

    d. *Rolling 30-day average:* Compliance shall be determined after each operating day by calculating the arithmetic average of all the valid hourly averages from that operating day and the prior 29 operating days.

    e. *Monitor Availability*: The quarterly excess emissions report shall identify monitor availability for each quarter in which the unit operated. Monitor availability for the CEMS shall be 95% or greater in any calendar quarter in which the unit operated for more than 760 hours. In the event the applicable availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving the required availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

    [Rules 62-4.070(3) and 62-210.200(BACT), F.A.C.]

CEMS FOR ANNUAL EMISSIONS REPORTING

13. CEMS Annual Emissions Requirement: The owner or operator shall use data from the CO CEMS when calculating annual emissions for purposes of computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for purposes of computing emissions pursuant to the reporting requirements of Rule 62-210.370(3), F.A.C. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit.
[Rules 62-210.200, and 62-210.370(3), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Emissions Performance Test Reports: A report indicating the results of any required emissions performance test shall be submitted to the Compliance Authority no later than 45 days after completion of the last test run. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. and in Appendix SC of this permit. [Rule 62-297.310(8), F.A.C.].

15. Excess Emissions Reporting:

    a. *Malfunction Notification:* If emissions in excess of a standard (subject to the specified averaging period) occur due to malfunction, the permittee shall notify the Compliance Authority within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. The Department may request a written summary report of the incident.

    b. *SIP Quarterly Report*: Within 30 days following the end of each calendar-quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of CO emissions in excess of the BACT permit standard following the NSPS format in 40 CFR 60.7(c), Subpart A. In addition, the report shall summarize the CO CEMS system monitor availability for the previous quarter.

    c. *NSPS Reporting*: Within 30 days following the calendar quarter, the permittee shall submit the written reports required by 40 CFR 60 Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators) for the previous semi-annual period to the Compliance Authority.

    {Note: If there are no periods of excess emissions as defined in 40 CFR, Part 60, Subpart D, a statement to that effect may be submitted with the SIP Quarterly Report to suffice for the NSPS Semi-Annual Report.}

    [Rules 62-4.130, 62-204.800, 62-210.700(6) and 62-212.400(BACT), F.A.C., and 40 CFR 60.7]

16. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating hours and emissions from this facility in accordance with 62-210.370. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

17. Monthly CO CEMS Report: Upon certification of the CO CEMS the permittee shall submit, on a monthly basis, a report in electronic file format which includes Unit 3 CO, NO_X, and heat input data. The report shall be submitted by the 15th of each month by mailing a compact disc to the Department's Bureau of Air Regulation Permitting South Section and shall include all hourly readings from the previous month. Alternatively, upon contacting the Bureau's project engineer, the file may be emailed to the appropriate BAR personnel.

The Department establishes the following standards as the Best Available Control Technology for the Unit 3 fossil fuel fired steam generator:

Emissions of CO shall not exceed 0.20 lb/mmBtu heat input on a 30-operating day rolling average as demonstrated by the required CEMS. An initial 3 run test will be used to demonstrate the initial compliance with a 3-hour 0.20 lb/mmBtu limit.

Based on results of compliance tests and continuous monitoring data, the Department will reassess the BACT determination in conjunction with the subsequent phase of the project which will include installation of selective catalytic reduction. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, SO_2, NO_x, PM/PM_{10}, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of a federally enforceable permit and shall be publicly noticed by the permittee.

SECTION 4. APPENDIX GC – GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver 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 acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

   a. Have access to and copy and 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.

LAKELAND ELECTRIC

Farzie Shelton, chE; REM

Associate GM Technical Support

FedEx Priority Overnight

February 21, 2007

Ms. Trina L. Vielhauer, Chief
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

Re: DEP File No. 1050004-018-AC (PSD-FL-387)
C.D. McIntosh Jr. Power Plant – Unit 3

Dear Ms. Vielhauer:

We are in receipt of your letter dated February 16, 2007 and attached Drafts PSD Permit, Technical Evaluation and Preliminary Determination, and Public Notice of Intent to Issue PSD Permit.

Pursuant to the requirements of Chapter 50, Florida Statutes, on February 19, 2007 we published the "Public Notice of Intent to Issue PSD Permit" in the Lakeland Ledger. Therefore, enclosed please find Affidavit of Publication confirming the legal advertisement of the Department's notice.

If you should have any questions, please do not hesitate to contact me.

Sincerely,

for Farzie Shelton

Enclosure

cc: Mr. Al Linero P.E. (FDEP – Tallahassee)
Mr. Tom Cascio (FDEP – Tallahassee)
Ms. Mara Grace Nasca (FDEP – Southwest District)

City of Lakeland • Department of Electric Utilities

501 East Lemon Street • Lakeland, Fl 33801-5050 • 863. 834.6603 • Fax 863. 834.8187 • Cell 863.860.5998

farzie.shelton@lakelandelectric.com

AFFIDAVIT OF PUBLICATION
THE LEDGER
Lakeland, Polk County, Florida

Case No's:

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being A

Notice of Intent

in the matter of Dep File 105004-018-AC-PSD-FL-387

Concerning City of Lakeland /McIntosh, Fr. Power Plant

was published in said newspaper in the issues of 2-19; 2007

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

Signed: Paula Freeman
Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this 19TH day of February A.D. 20 07

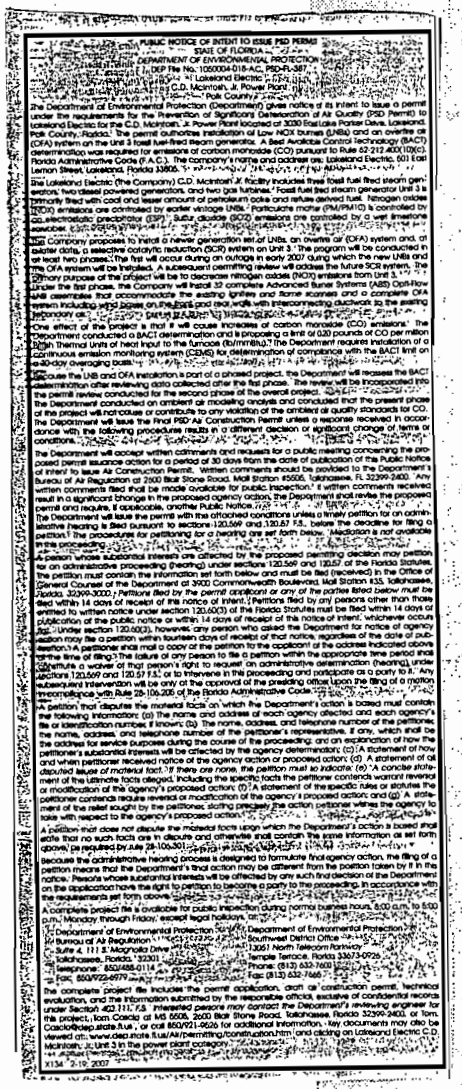
Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 200015
EXPIRES: October 17, 2008
Bonded Thru Notary Pub Ac Endorsements

My Commission Expires

X134



PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 1050004-018-AC, PSD-FL-387
Lakeland Electric
C.D. McIntosh, Jr. Power Plant
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit under the requirements for the Prevention of Significant Deterioration of Air Quality (PSD Permit) to Lakeland Electric for the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The permit authorizes installation of Low NOX burners (LNBs) and an overfire air (OFA) system on the Unit 3 fossil fuel-fired steam generator. A Best Available Control Technology (BACT) determination was required for emissions of carbon monoxide (CO) pursuant to Rule 62-212.400(10)(c), Florida Administrative Code (F.A.C.). The company's name and address are: Lakeland Electric, 501 East Lemon Street, Lakeland, Florida 33805.

The Lakeland Electric (the Company) C.D. McIntosh Jr. facility includes three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 3 is primarily fired with coal and lesser amount of petroleum coke and refuse derived fuel. Nitrogen oxides (NOX) emissions are controlled by earlier vintage LNBs. Particulate matter (PM/PM10) is controlled by an electrostatic precipitator (ESP). Sulfur dioxide (SO2) emissions are controlled by a wet limestone scrubber.

The Company proposes to install a newer generation set of LNBs, an overfire air (OFA) system and, at a later date, a selective catalytic reduction (SCR) system on Unit 3. The program will be conducted in at least two phases. The first will occur during an outage in early 2007 during which the new LNBs and the OFA system will be installed. A subsequent permitting review will address the future SCR system. The primary purpose of the project will be to decrease nitrogen oxides (NOX) emissions from Unit 3. Under the first phase, the Company will install 32 complete Advanced Burner Systems (ABS) Opti-Flow ABS assemblies that accommodate the existing ignitors and flame scanners and a complete OFA system including wind boxes on the Unit 3 east and west walls with interconnecting ductwork to the existing secondary air [illegible].

One effect of the project is that it will cause increases of carbon monoxide (CO) emissions. The Department conducted a BACT determination and is proposing a limit of 0.20 pounds of CO per million British Thermal Units of heat input to the furnaces (lb/mmBtu). The Department requires installation of a continuous emission monitoring system (CEMS) for determination of compliance with the BACT limit on a 30-day averaging basis.

Because the LNB and OFA installation is part of a phased project, the Department will reassess the BACT determination after reviewing data collected after the first phase. The review will be incorporated into the permit review conducted for the second phase of the overall project.

The Department conducted an ambient air modeling analysis and concluded that the present phase of the project will not cause or contribute to any violation of the ambient air quality standards for CO. The Department will issue the final PSD Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

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

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

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000, *Petitions filed by the permit applicant or any of the parties listed below must be* filed within 14 days of receipt of the notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of the notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S. or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the discretion of the presiding officer upon the filing of a motion in accordance with Rule 28-106.205 of the Florida Administrative Code.

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

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

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

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

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

Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926
Phone: (813) 632-7600
Fax: (813) 632-7668

The complete project file includes the permit application, draft or construction permit, technical evaluation, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project, Tom Cascio at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or Tom.Cascio@dep.state.fl.us , or call 850/921-9626 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm and clicking on Lakeland Electric C.D. McIntosh, Jr. Unit 3 in the power plant category.

X134 2-19; 2007

Adams, Patty

From: Harvey, Mary
Sent: Tuesday, February 20, 2007 10:01 AM
To: Adams, Patty
Subject: FW: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

From: Bachand, Timothy [mailto:Timothy.Bachand@lakelandelectric.com]
Sent: Monday, February 19, 2007 6:20 PM
To: Harvey, Mary
Subject: RE: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

Documents received.

Timothy L. Bachand, P.E.
Manger of Engineering - Production

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Friday, February 16, 2007 2:56 PM
To: Bachand, Timothy; Shelton, Farzie; Nasca, Mara; kkosky@golder.com
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

Dear Sir/Madam:

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

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

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

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Monday, February 19, 2007 7:44 AM
To: Adams, Patty; Mulkey, Cindy
Subject: FW: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

From: Nasca, Mara
Sent: Friday, February 16, 2007 5:24 PM
To: Harvey, Mary
Cc: Zhang-Torres
Subject: RE: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

Thanks Mary,
Will you please replace me with Cindy Zhang-Torres for permit routing....thanks !
Mara

From: Harvey, Mary
Sent: Friday, February 16, 2007 2:56 PM
To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'kkosky@golder.com'
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

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Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Friday, February 16, 2007 3:04 PM
To: 'little.james@epa.gov'
Cc: Mulkey, Cindy; Adams, Patty
Subject: FW: Lakeland Unit 3 Draft Permit - DEP File #1050004-018
Attachments: 387DraftPermit - DEP File #1050004-018-AC-DRAFT.PDF; 387Intent - DEP File #1050004-018-AC-DRAFT.PDF; 387PublicNotice - DEP File #1050004-018-AC-DRAFT.PDF; 387TE - DEP File #1050004-018-AC-DRAFT.PDF; Signed Documents - DEP File #1050004-018-AC-DRAFT.pdf

Jim there are five files in the attachment box. Please click on the down arrow for the file that said Signed Documents etc.

Thanks,
Mary

From: Harvey, Mary
Sent: Friday, February 16, 2007 2:56 PM
To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandelectric.com'; Nasca, Mara; 'kkosky@golder.com'
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Lakeland Unit 3 Draft Permit - DEP File #1050004-018

Dear Sir/Madam:

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

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

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The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Harvey, Mary

From: Mulkey, Cindy
Sent: Friday, February 16, 2007 1:59 PM
To: Harvey, Mary
Cc: Adams, Patty; Linero, Alvaro
Subject: Lakeland Unit 3 Draft Permit
Attachments: 387TE.doc; 387Intent.DOC; 387PublicNotice.doc; 387DraftPermit.doc

Mary,
Attached are the documents for the Lakeland draft permit to be issued today.
I did not send the cover letter because you will be scanning it for the signature anyway.
Let me know if you need anything else.

Thanks!
Cindy

Cindy Mulkey
Engineering Specialist
Bureau of Air Regulation
South Permitting Section
(850) 921-8968
FAX (850)921-9533
SC 291-8968

Florida Department of Environmental Protection

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

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

February 16, 2007

Electronically sent – Received Receipt requested.

Mr. Timothy Bachand, Director, Energy Supply
Lakeland Electric
5010 East Lemon Street
Lakeland, Florida 33805

Re: DEP File No. 1050004-018-AC (PSD-FL-387)
C.D. McIntosh, Jr. Power Plant – Unit 3

Dear Mr. Bachand:

Enclosed is one copy of the Draft Air Construction Permit authorizing the installation of Low NO_X burners and an overfire air system on Unit 3 at the existing C.D. McIntosh Plant in Lakeland in Polk County. The Department's Intent to Issue PSD Permit, the Technical Evaluation and Preliminary Determination, and the Public Notice of Intent to Issue Air Construction Permit are also included.

The Public Notice must be published one time only as soon as possible in a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, such as a newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in denial of the permit modification.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A.A. Linero, Program Administrator, at the letterhead address. If you have any questions regarding this matter, please contact Tom Cascio at (850)921-9526 or Mr. Linero at (850)921-9523.

Sincerely,

for Trina Vielhauer, Chief
Bureau of Air Regulation

TLV/aal

Enclosures

In the Matter of an
Application for Permit by:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Authorized Representative:
Mr. Timothy Bachand, Director Energy Supply

DEP File No. 1050004-018-AC
Draft Permit No. PSD-FL-387
C.D. McIntosh Jr. Power Plant Unit 3
Low NO_X Burners and Overfire Air
Polk County, Florida

INTENT TO ISSUE PSD PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit pursuant to the rules for the Prevention of Significant Deterioration of Air Quality (PSD Permit), copy of DRAFT Permit attached, for the proposed project as detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination for the reasons stated below.

Lakeland Electric (the Company) operates the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The Company applied for a permit to install of Low NO_X burners and overfire air equipment in the furnace of the existing Unit 3 at the plant.

The Department has permitting jurisdiction under the provisions of Chapter 403.087, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. This action is not exempt from permitting procedures. The Department has determined that a PSD permit is required.

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

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

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

The Department will accept written comments concerning the proposed permit issuance action for a period of 30 days from the date of publication of Public Notice. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee,

Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

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

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

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Florida 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the construction permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

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

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

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

Executed in Tallahassee, Florida.

for Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Draft PSD Permit, Technical Evaluation and Preliminary Determination, Intent to Issue PSD Permit, and Public Notice of Intent to Issue PSD Permit, and all copies were sent electronically (with Received Receipt) before the close of business on 2/16/07 to the person(s) listed below.

Timothy Bachand, Authorized Representative: timothy.bachand@lakelandelectric.com
Farzie Shelton, Lakeland Electric: farzie.shelton@lakelandelectric.com
Mara Nasca, Southwest District Office: mara.nasca@dep.state.fl.us
Kennard F. Kosky, P.E., Golder Associates, Inc.: kkosky@golder.com
Jim Little, EPA Region 4: little.james@epa.gov

Clerk Stamp

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

(Clerk) 2/16/07 (Date)

PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 1050004-018-AC, PSD-FL-387

Lakeland Electric
C.D. McIntosh, Jr. Power Plant

Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit under the requirements for the Prevention of Significant Deterioration of Air Quality (PSD Permit) to Lakeland Electric for the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The permit authorizes installation of Low NO_X burners (LNBs) and an overfire air (OFA) system on the Unit 3 fossil fuel-fired steam generator. A Best Available Control Technology (BACT) determination was required for emissions of carbon monoxide (CO) pursuant to Rule 62-212.400(10)(c), Florida Administrative Code (F.A.C.). The company's name and address are: Lakeland Electric, 501 East Lemon Street, Lakeland, Florida 33805.

The Lakeland Electric (the Company) C.D. McIntosh Jr. facility includes three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 3 is primarily fired with coal and lesser amount of petroleum coke and refuse derived fuel. Nitrogen oxides (NO_X) emissions are controlled by earlier vintage LNBs. Particulate matter (PM/PM_{10}) is controlled by an electrostatic precipitator (ESP). Sulfur dioxide (SO_2) emissions are controlled by a wet limestone scrubber.

The Company proposes to install a newer generation set of LNBs, an overfire air (OFA) system and, at a later date, a selective catalytic reduction (SCR) system on Unit 3. The program will be conducted in at least two phases. The first will occur during an outage in early 2007 during which the new LNBs and the OFA system will be installed. A subsequent permitting review will address the future SCR system. The primary purpose of the project will be to decrease nitrogen oxides (NO_X) emissions from Unit 3.

Under the first phase, the Company will install 32 complete Advanced Burner Systems (ABS) Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including wind boxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

One effect of the project is that it will cause increases of carbon monoxide (CO) emissions. The Department conducted a BACT determination and is proposing a limit of 0.20 pounds of CO per million British Thermal Units of heat input to the furnace (lb/mmBtu). The Department requires installation of a continuous emission monitoring system (CEMS) for determination of compliance with the BACT limit on a 30-day averaging basis.

Because the LNB and OFA installation is part of a phased project, the Department will reassess the BACT determination after reviewing data collected after the first phase. The review will be incorporated into the permit review conducted for the second phase of the overall project.

The Department conducted an ambient air modeling analysis and concluded that the present phase of the project will not cause or contribute to any violation of the ambient air quality standards for CO.

The Department will issue the Final PSD Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

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

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

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

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

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

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

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

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

Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33673-0926
Phone: (813) 632-7600
Fax: (813) 632-7665

The complete project file includes the permit application, draft air construction permit, technical evaluation, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project, Tom Cascio at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or Tom.Cascio@dep.state.fl.us , or call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm and clicking on Lakeland Electric C.D. McIntosh, Jr. Unit 3 in the power plant category.

TECHNICAL EVALUATION
AND
PRELIMINARY DETERMINATION

Lakeland Electric
C.E. McIntosh, Jr. Power Plant

Unit 3 Low NO_X Burners and Overfire Air

Polk County

DEP File No. 1050004-018-AC

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

February 16, 2007

1. GENERAL PROJECT INFORMATION

Facility Description and Location

This facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. This existing facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County; UTM Coordinates: Zone 17, 409.0 km East and 3106.2 km North; Latitude: 28° 04' 50" North and Longitude: 81° 55' 32" West. The location of the plant is shown in the map in the following figure. The photograph in the figure is Unit 3, which is the subject of this review.

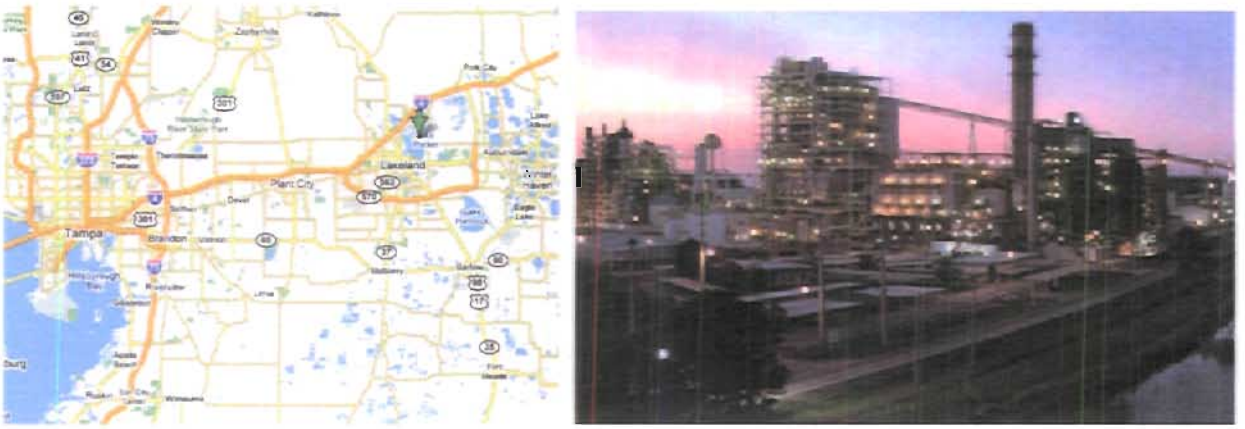


Figure 1. Location of Lakeland Electric and Photograph of C.D. McIntosh Jr. Unit 3.

This site is in an area that is in attainment with (or designated as unclassifiable for) all air pollutants subject to a National Ambient Air Quality Standard (NAAQS).

Major Regulatory Categories

The key regulatory provisions applicable to Unit 3 are:

Title I, Part C, Clean Air Act (CAA): The facility is located in an area that is designated as "attainment", "maintenance", or "unclassifiable" for each pollutant subject to a National Ambient Air Quality Standard. It is classified as a "fossil fuel-fired steam electric plant of more than 250 million BTU per hour of heat input", which is one of the 28 Prevention of Significant Deterioration (PSD) Major Facility Categories with the lower PSD applicability threshold of 100 tons per year. Potential emissions of at least one regulated pollutant exceed 100 tons per year, therefore the facility is classified as a "major stationary source" of air pollution with respect to Rule 62-212.400 F.A.C., Prevention of Significant Deterioration of Air Quality.

Title I, Section 111, CAA: Units 3 is subject to Subpart D (Standards of Performance for Fossil Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971) of the New Source Performance Standards in 40 CFR 60.

Title I, Section 112, CAA: The facility is a "Major Source" of hazardous air pollutants (HAPs).

Title IV, CAA: The facility operates units subject to the Acid Rain provisions of the Clean Air Act.

Title V, CAA: The facility is a Title V or "Major Source of Air Pollution" in accordance with Chapter 62-213, F.A.C. because the potential emissions of at least one regulated pollutant exceed 100 tons per year. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOC).

CAIR: The facility is subject to the Federal Clean Air Interstate Rule (CAIR) in accordance with the Final Department Rules issued pursuant to CAIR as implemented by FDEP in Rule 62-296.470, Florida Administrative Code (FAC).

CAMR: The facility is subject to the Federal Clean Air Mercury Rule (CAMR) implemented by the Department in Rule 62-296.480, F.A.C.

Application Processing Schedule

12/29/06: Received application to construct; incomplete.

01/23/07: Requested additional information.

01/29/07: Received additional information.

02/17/07: Distributed Intent to Issue Permit.

Description of Unit 3

Unit 3 is a nominal 360 megawatt fossil fuel-fired steam generator that burns primarily coal or blends of coal and petroleum coke (petcoke) and small amounts of refuse derived fuel (RDF). The steam generator is supplied by Babcock and Wilcox. It is a "late 70's design" with a balanced draft design with 16 burners located on the front wall, and 16 located on the back wall. The burners are fed by two pulverizers located on the front wall and two on the back wall.

The air pollution control system presently on Unit 3 consists of: older vintage Low NO_X burners (LNBs) to control nitrogen oxides (NO_X); an electrostatic precipitator (ESP) to remove particulate matter (PM/PM_{10}) including fly ash; and a wet limestone scrubber to reduce sulfur dioxide (SO_2) emissions.

The most stringent of the key emission limitations applicable when combustion solid fuels are: 0.50 lb NO_X/mmBtu (early Acid Rain compliance); 0.718 lb SO_2/mmBtu (when burning petcoke); and 0.044 lb PM/mmBtu (when burning petcoke). There is no limitation on emissions of carbon monoxide (CO).

Purposed Project

To provide full flexibility in implementing the federal cap and trade program for nitrogen oxides (NO_X) under the Clean Air Interstate Rule (CAIR), the applicant proposes to install a newer generation set of Low NO_X burners (LNBs), an overfire air (OFA) system and a selective catalytic reduction (SCR) system on Unit 3. The program will be conducted in at least two phases. The first will occur during an outage in early 2007 during which the new LNBs and the OFA system will be installed. A subsequent action will address the future SCR system.

Lakeland Electric will install 32 complete Advanced Burner Systems (ABS) Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including wind boxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

Figure 2 shows a typical front and rear wall-fired furnace arrangement as well as an igniter assembly. The igniter and burner levels are indicated by the symbols A through F in the arrangement shown for a furnace with similarities to Lakeland Unit 3.

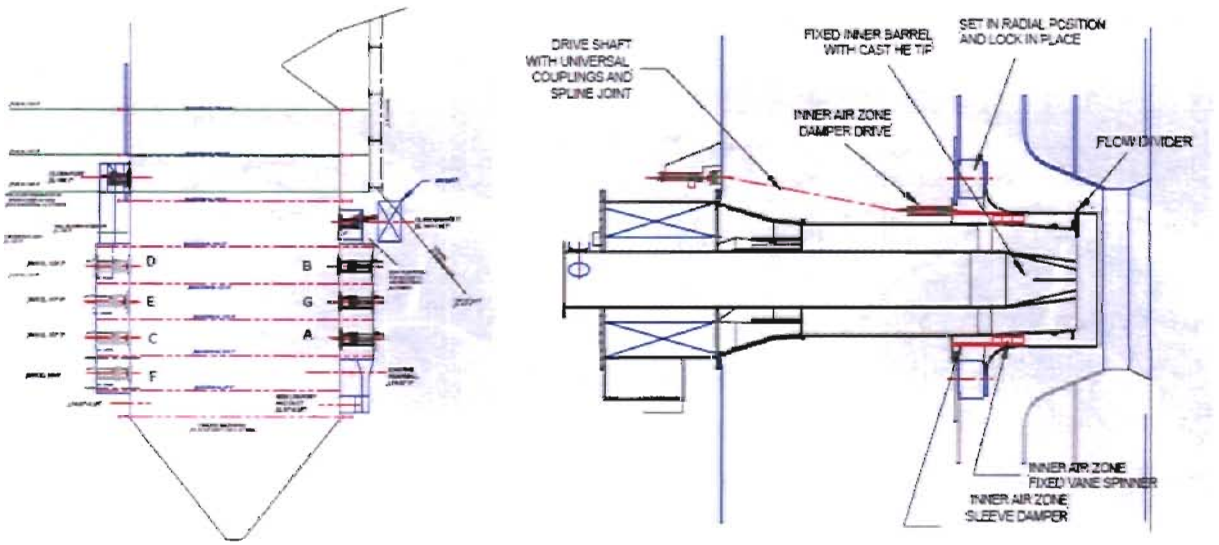


Figure 2. Key Components of a Wall-Fired Burner and Overfire Air System (Conn, 2006)

The LNBs will allow minimization of NO_X by creation of localized oxygen starved conditions during the early phases of combustion in the lower furnace. The OFA system (above the level of the highest burners) then supplies additional air needed to promote fuel burnout.

Figure 3 includes a photograph of an Opti-Flow LNB for wall-fired units and a diagram of an Opti-Flow OFA port.

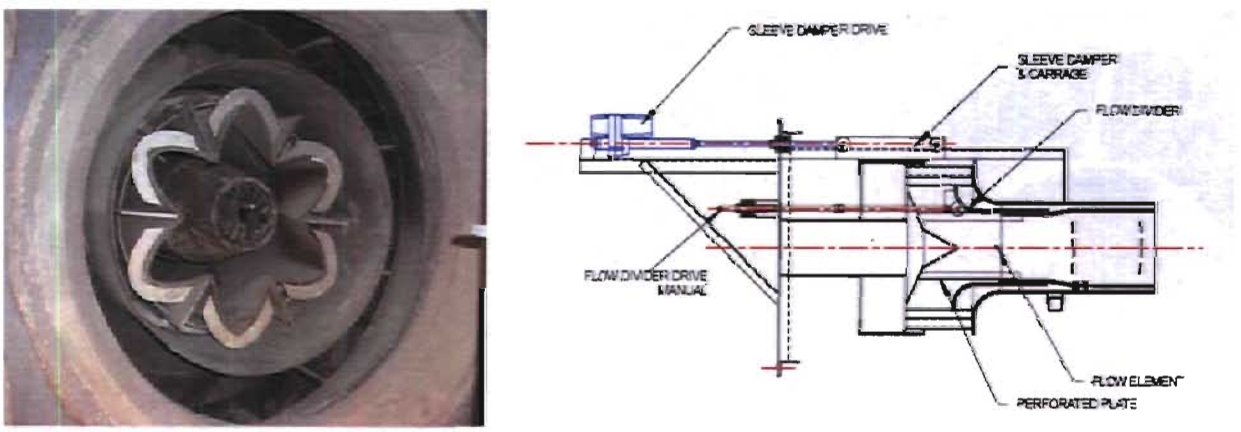


Figure 3. Photograph of Opti-Flow LNB and Overfire Air Port (Conn, 2006)

Phasing of LNB/OFA and SCR Projects

The LNB/OFA and SCR projects are the two key components of steps in Lakeland Electric's CAIR strategy. Lakeland Electric submitted the two parts in a single application. However they will be constructed in two distinct phases during separate planned outages in 2007 and 2008. Following is the strategy employed by Lakeland Electric as explained in documentation to its governing Utility Commission Meeting of September 18, 2006.

> ***Phase 1:*** *Install low NO_X burners and over-fired air system on Unit 3 in 2007 to reduce NO_X emissions to approximately 0.3 lb/mmBtu. This will result in future savings of ammonia over the remaining service life of the unit and scope [SIC] reduction in Phase 2 described below; current estimated annual savings range from $700k to $1.2M per year depending on price of ammonia. The objective of this project will be to purchase and install all equipment in the Spring 2007.*
>
> ***Phase 2:*** *Design and install a selective catalytic reduction (SCR) system for Unit 3 at an estimated cost of $50 to 80 million. The SCR can be made smaller due to the NO_X reduction gained in Phase 1.*
>
> *The LNB and OFA project is designed to reduce NO_X emissions from Unit 3 to low levels. The reductions are not actually required however they defray the costs of allowances required by the CAIR program that would need to held or purchased by the utility.*

At this time the engineering and design is much clearer for the LNB/OFA project than for the SCR project. Although the environmental benefits are clear, the environmental effects of the second phase and of the two phases together are more difficult to assess at this time than the first phase. The Department has with Lakeland Electric's concurrence broken down the evaluation and permitting into separate actions. The present evaluation will be limited to Phase 1.

2. EFFECTS ON EMISSIONS FROM THE PROPOSED PROJECT

Clearly emissions of NO_X will be reduced by the LNB/OFA project. For reference, in 2005 NO_X emissions from Unit 3 were 0.44 lb/mmBtu. The plan to reduce emissions by the LNB/OFA to 0.3 lb/mmBtu is reasonable. For example, a similar LNB/OFA project at Tampa Electric Big Bend Station Unit 4 reduced emissions from approximately the same values registered at McIntosh Unit 3 to 0.20 lb/mmBtu in 2005.

Operating the burners with lesser amounts of air in the lower furnace will tend to increase the formation of carbon monoxide (CO). The presence of CO is one of the key drivers in reducing NO_X formation in conventional power plants. The OFA compensates for the lesser air during initial combustion. However the total time of turbulent contact and the temperature will be reduced and less carbon burnout will be achieved compared with the present arrangement.

According to the supplier, Advanced Burner Technologies (a Siemens company):

> *Average NO_X emissions levels are expected to be in the 0.30 lb/mmBtu range following the installation of the Low NO_X burners and OFA system.*
>
> *In addition, average CO emission levels are not expected to exceed 200 ppm, or 50 ppm greater than the current operating level, whichever is greater.*
>
> *VOC emission levels and particulate levels are not expected to change from the current levels following the installation of the new Low NO_X burners and OFA system.*

For reference, the CO values cited are approximately equal to 0.20 lb/mmBtu and 0.05 lb/mmBtu. Therefore, according to the manufacturer future CO emissions will be the greater of 0.20 lb/mmBtu or the present value plus 0.05 lb/mmBtu. The Department accepts the conclusions regarding the VOC and particulate matter. The increase in CO, however subjects the project to further review as described below.

3. HISTORICAL OPERATIONAL AND CO EMISSIONS INFORMATION

Table 1 is a summary of the heat input to Unit 3 reported in the Annual Operating Report (AOR) for the period 2001 through 2005. Year-to-year heat input and the fuel mix vary. In 2005 petcoke constituted about 9 percent (%) of the fuel mix while coal accounted for almost all of the remainder. No municipal solid waste (MSW) was reported in 2005.

Table 1
McIntosh Unit 3 Annual Heat Input, 2001-2005

	Heat Input (mmBtu/yr)				
Year	Coal	Oil/Gas	Petcoke	MSW	Total
2005	24,739,432	88,531	2,202,682	0	27,030,645
2004	18,727,073	149,795	398,533	0	19,275,401
2003	23,556,583	170,380	541,898	62,413	24,331,274
2002	19,914,927	284,194	3,012,015	135,529	23,346,665
2001	22,521,423	480	3,868,418	261,180	26,651,501

Note: Heat Input values are calculated from Annual Operating Reports (AORs), based on fuel use and heat content.

Table 2 is a summary of the annual emissions reported in the AORs for the years 2001 through 2005 for CO.

Table 2
McIntosh Unit 3 Annual CO Emissions Reported in AORs, 2001-2005

Year	Pollutant	Tons	2-year Average Tons	Time Period
2005	CO	136	115	2004-2005
2004	CO	93	111	2003-2004
2003	CO	130	144	2002-2003
2002	CO*	157	177*	2001-2002
2001	CO	196		

Note: Data are taken from Annual Operating Reports. *Indicates maximum 2-year average values.

Using the reported average emissions in tons per year and average heat input rates for baseline years 2001-2002, CO emissions are estimated to be approximately 0.014 lb/mmBtu. This is an extremely low value. According to the applicant, the value associated with the baseline estimate of 177 tons per year (TPY) is based on a single test conducted in 2001.

It is possible that typical values are greater than recorded during the single test and that annual emissions have been underestimated. It is noted that Unit 3 is not subject to a CO limit or annual test requirement.

Using the emission factors from the supplier, annual CO emissions will be the greater of:

(0.20 lb/mmBtu)x(25,000,000 Btu/yr)x(1 ton/2000 lb) = 2,500 TPY or

(0.05 + 0.014 lb/mmBtu)x(25,000,000 Btu/yr)x(1 ton/2000 lb) = 800 TPY

Either value greatly exceeds the baseline value of 177 TPY.

CO data from conventional power plants are much less reliable than sulfur dioxide (SO_2) and NO_X data that are continuously monitored and periodically reported to the U.S. EPA for the purposes of the Acid Rain Program and, in the future, the CAIR Program.

4. REGULATIONS THAT APPLY TO THE PROJECT

State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). This project is subject to the applicable rules and regulations defined in the following Chapters of the Florida Administrative Code. These include: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT); 62-213 (Title V Air Operation Permits for Major Sources of Air Pollution); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures).

General PSD Applicability

The Department regulates major air pollution sources in accordance with Florida's Prevention of Significant Deterioration (PSD) program in accordance with Rule 62-212.400, F.A.C. A PSD review is required in areas currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) or areas designated as "unclassifiable" for a given pollutant. A new facility is considered "major" with respect to PSD if it emits or has the potential to emit: 250 tons per year or more of any regulated air pollutant; or 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 PSD Major Facility Categories defined in Rule 62-210.200, F.A.C.; or 5 tons per year of lead.

For new projects at existing PSD-major sources, each regulated pollutant is reviewed for PSD applicability based on emissions thresholds known as the "Significant Emission Rates" defined in Rule 62-210.200, F.A.C. Pollutant emissions from the project exceeding these rates are considered "significant" and applicants must employ the Best Available Control Technology (BACT) to minimize emissions of each such pollutant, and evaluate the air quality impacts.

Although a facility may be "major" with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several regulated pollutants that exceed the Significant Emission Rates.

PSD Applicability for the Project

The C.D. McIntosh, Jr. Power Plant is a major facility under Department Rules. Because there will be a physical change with the addition of the LNBs and the OFA system causing an increase in CO emissions greater than 100 TPY a review pursuant to the Rules for the Prevention of Significant Deterioration (PSD) and a BACT determination are required for this project.

It is noted that since 1992 and until 2005 there was an exemption from PSD Review for increases in emissions of pollutants caused by installation of "Pollution Control Projects" (PCPs). The purpose of the exemption as applied to power plants was primarily to exempt from the PSD rules increases caused by projects intended to reduce emissions of SO_2 and NO_X such as required for compliance with the Acid Rain regulations.

It was generally agreed that as long as PCPs were on balance "environmentally beneficial" and no national ambient air quality standards were exceeded and substantial decreases in acid rain pollutants were realized, then significant emissions of collateral emissions such as CO were allowable. Therefore during that period of time quite a number of PCPs were conducted that caused significant collateral increases of CO and (in the case of SCR projects) sulfuric acid mist that were not subjected to PSD or a BACT determination.

Also during the same period, very few conventional power projects were subjected to PSD in any manner and very few new coal-fired units were built. Almost all new projects were gas-fueled combustion turbines that operate in simple cycle or combined cycle modes. Therefore little effort was made to gather and assess CO data from conventional units. Also the New Source Performance Standards applicable to power plants do not regulate CO.

4. BACT DETERMINATION FOR THE LNB/OFA PROJECT

BACT Methodology.

A determination of the "Best Available Control Technology (BACT)" is required for each of these pollutants, which is defined in Rule 62-212.200, F.A.C. as:

> *An emission limitation, including a visible emissions standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account:*
>
> 1. *Energy, environmental and economic impacts, and other costs;*
> 2. *All scientific, engineering, and technical material and other information available to the Department; and*
> 3. *The emission limiting standards or BACT determinations of Florida and any other state; determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant.*
>
> *If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT.* Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation.

Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results.

In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63.

CO BACT Evaluation Provided by the Applicant

The following discussion is the evaluation provided by the applicant:

The CO emissions result from incomplete combustion of the fuel. CO emissions are controlled by good combustion practices. The furnace is currently operated for high-combustion efficiency, which will inherently minimize the production of CO. After the implementation of the project, the operation of the boilers will continue to maximize combustion efficiency while reducing CO emissions.

Theoretically, CO emissions can be reduced by passing the flue gas over an oxidation catalyst at a suitable temperature (900 to 1,000°F). In practice, this technology has several unknowns and disadvantages, including the following:

1. *No utility pulverized coal-fired boilers are operating with catalytic CO control systems and it would be difficult to locate an oxidation catalyst in the proper temperature zone in a boiler.*
2. *Oxidation catalyst can convert up to 70 percent of SO_2 to SO_3.*
3. *There is a lack of experience with large-scale operation of this technology using particulate-laden gases from coal-fired boilers. Oxidation catalysts can be easily eroded and fouled by silica and trace metals in the flue gas.*
4. *The temperature profile of the flue gas does not match the temperature requirements of typical catalysts which would have to be installed within the boiler make such application extremely difficult.*
    a. *Use of an undemonstrated catalyst technology would reduce the availability and reliability of the plant (e.g., catalyst plugging).*
    b. *The high costs to install and operate the system (additional pressure drop, catalyst replacement and disposal, etc.) are without corresponding demonstrated needs or benefits. Design and operation of the boilers to efficiently combust the fuel will minimize CO emissions. The additional costs to further lower emissions are not justified.*

A review of the BACT/LAER (best available control technology/lowest achievable emission rate) Clearinghouse and individual permits from states indicates that BACT emission limits established over the last 5 years range from 0.10 to 0.16 lb/mmBtu for new units. Combustion control is the primary method used to control CO emissions.

Efficiently burning the coal represents BACT for control of CO emissions although Unit 3 is not a new unit. A CO emission rate for the existing Unit 3 pulverized coal boiler of 0.20 lb/mmBtu limit is proposed as BACT. Although recently permitted projects have lower limits, the project does not include the construction of a new boiler, but the addition of new burners, OFA and SCR.

CO formation is a function of combustion efficiency, boiler design, and residence time and as such the BACT limits of new construction boilers are not directly applicable to the project. As an existing boiler, the proposed limit of 0.20 lb/mmBtu heat input is proposed as BACT. In addition, air quality impacts of the proposed project are not significant.

Department Evaluation

The Department does not necessarily agree with the evaluation of the applicant. To make a thorough BACT determination would require that Lakeland Utilities conduct a CO test program to more accurately quantify present CO emissions and to obtain data from plants that have already implemented LNB/OFA projects.

Some of the same arguments regarding oxidation catalyst erosion and conversion of SO_2 to SO_3 are typically made for SCR systems such as planned for Phase 2. The Department does not necessarily agree with those arguments and solutions are often found to mitigate the claimed effects. However the Department agrees that oxidation catalyst is not indicated for this project.

Further structural changes can also be made to increase the residence time after addition of OFA and before some of the convective passes. Those changes are not indicated for this project.

The Department does not rule out consideration of greater burn out residence times or oxidation catalyst on modifications in general or on new units. However in the special case of units previously subject to the PCP exemption and implementing projects pursuant to CAIR, it is reasonable to limit the scope of technologies and options in a BACT review. Therefore the Department will consider "Good Combustion Practices" as the technology to achieve BACT limits for this project.

In very recent years, a number of BACT determinations have been made for new units by other state agencies. However they often, although not always, are based on supplier statements (such as those submitted for the Lakeland Unit 3 LNB/OFA project) and there is usually little or no supporting data. There has not been consistency in the associated averaging time.

For example, a recently issued permit for the Longleaf Project in West Virginia included a CO BACT limitation of 0.11 lb/mmBtu on a 3-hour average based on proper boiler design and good combustion. A more recent determination was made for the Longleaf Project in Georgia with a two-tier BACT determination of 0.15 lb/mmBtu on a 3-hour basis and 0.30 lb/mmBtu on a 30-day basis. Notably, the reported CO emissions from Unit 3 are much less than either of these values.

Because of the phased nature of the project and the need to collect additional data, the Department will conduct its BACT review as provided by the PSD rules as applied to phased projects. The Department will set an initial limit of 0.20 lb/mmBtu on a 30-day basis.

The Department will require installation of a continuous emission monitoring system (CEMS). CEMS have been used throughout the industry as a cost-effective means for documenting compliance with BACT limits. There will be a requirement for the CEMS to be calibrated and used to demonstrate compliance by October 1, 2007. Based upon additional data, the Department may adjust the CO limits in Phase 2.

One high CO BACT determination of 0.55 lb/mmBtu (30-day basis, CEMS) was recently set for an OFA project at two 615 MW cyclone burner units in Missouri that are fueled with Powder River Basin Coal (PRB). In its review, the agency was very sympathetic to the applicant's circumstances due to the decision by the Washington DC Circuit Court that vacated the PCP provisions. The EPA Region commented:

> *Therefore, we recommend that the department supplement the record with additional analysis that explains why the New Madrid units are incapable of meeting 0.45, 0.40, 0.35 or some lower threshold for CO. Any engineering analysis, vendor studies, or other information from similar retrofit units would be a useful supplement to the record.*

It is noted that a final optimization of the degree to which Lakeland Electric will rely on the LNB/OFA system versus the SCR system will not be made until completion of Phase 2. The optimization is also important because operating the furnace with very high CO emissions can cause the fly ash to contain excessive carbon as indicated by greater "loss on ignition" (LOI) properties. This can have ramifications on the salability of the fly ash and the fate of any additional mercury collected on the higher LOI fly ash.

The Department will require submittal of additional information including the data collected during initial operation of Phase 1 to adjust the CO BACT determination for Phase 2. The Department notes that this approach will not be followed in general and is not intended for reviews at new units. It is intended strictly for projects previously subject to the previously discussed PCP exemption and making retrofits for CAIR.

5. AIR QUALITY IMPACT ANALYSIS

Introduction

The proposed project will increase emissions of carbon monoxide (CO) at levels in excess of PSD significant amounts. CO is a criteria pollutant and has Ambient Air Quality Standards (AAQS), significant impact levels and de minimis monitoring levels defined for it.

Major Stationary Sources in Polk County

The current largest stationary sources of CO in Polk County are listed below. The information is from annual operating reports submitted to the Department.

Table 3. Largest Sources of CO in Polk County (2005)

Owner	Site Name	TPY
Lakeland Electric	***C.D. McIntosh, Jr. Power Plant (after LNB/OFA)***	***3188***
Cutrale Citrus Juices USA	Cutrale Citrus Juices USA, Inc	787
Wheelabrator Ridge	Ridge Generating Station	493
Citrosuco North America	Citrosuco North America	383
Citrus World	Citrus World	308
Lakeland Electric	**C.D. McIntosh, Jr. Power Plant (existing)**	**204**

Air Quality and Monitoring in the Polk County

The Florida Department of Environmental Protection Southwest District operates five monitors at four sites measuring PM_{10}, $PM_{2.5}$ and ozone. The 2006 monitoring network is shown in the figure below.

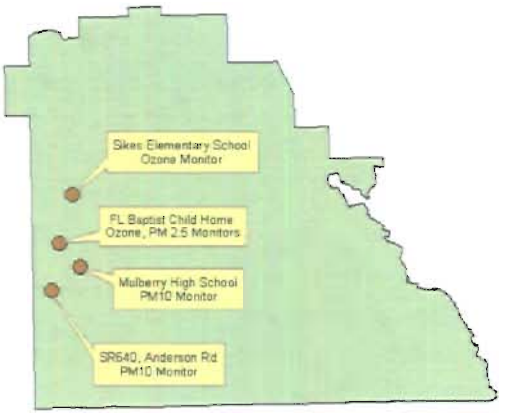


Figure 4. Southwest District Polk County Ambient Air Monitoring Network

No CO monitors are operated by the Department in Polk County. However, a CO monitor is operated by the Hillsborough County Environmental Protection Commission in nearby Plant City. Measured ambient air quality information is summarized in the following table.

Table 3. Ambient Air Quality Concentrations Nearest to Project Site (2005)

Pollutant	Location	Averaging Period	Ambient Concentration				
			High	2nd High	Mean	Standard	Units
PM_{10}	Lakeland	24-hour	44	40		150 [a]	ug/m^3
		Annual			21	50 [b]	ug/m^3
SO_2	Plant City	3-hour	15	13		500 [a]	ppb
		24-hour	6	5		100[a]	ppb
		Annual			2	20 [b]	ppb
NO_2	Plant City	Annual			7	53 [b]	ppb
CO	Plant City	1-hour	2	2		35 [a]	ppm
		8-hour	2	2		9 [a]	ppm
Ozone	Lakeland	1-hour	.099	.096		0.12 [C]	ppm
		8-hour	.085	.078		0.08 [C]	ppm

* The Mean does not satisfy summary criteria due to missing data.
a - Not to be exceeded more than once per year
b - Arithmetic mean
c - Not to be exceeded on more than an average of one day per year over a three-year period

The highest measured values of all pollutants, including CO, are all less than the respective National Ambient Air Quality Standards (NAAQS).

Air Quality Impact Analysis

Significant Impact Analysis

Significant Impact Levels (SILs) are defined for CO. A significant impact analysis is performed on CO to determine if the proposed project can cause an increase in ground level concentrations greater than the SILs.

In order to conduct a significant impact analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. The models used in this analysis and any required subsequent modeling analyses are described below. The highest predicted short-term concentrations predicted by this modeling are compared to the appropriate SILs for the PSD Class II Areas (everywhere except the Chassahowitzka National Wildlife Refuge).

For the Class II analysis a combination of fence line, near-field and far-field receptors were chosen for predicting maximum concentrations in the vicinity of the project. The fence line receptors consisted of discrete Cartesian receptors spaced at 50-meter intervals around the facility fence line. The remaining receptor grid consisted of densely spaced Cartesian receptors at 100 meters apart starting at the property line and extending to 1.5 kilometers. Beyond 1.5 kilometers, Cartesian receptors with a spacing of 150 meters were used out to 3 kilometers from the facility.

If this modeling at worst-load conditions shows ground-level increases less than the SILs, the applicant is exempted from conducting any further modeling. If the modeled concentrations from the project exceed the SILs, then additional modeling including emissions from all major facilities or projects in the region (multi-source modeling) is required to determine the proposed project's impacts compared to the AAQS or PSD increments.

The applicant's initial CO air quality impact analyses for this project indicated that maximum predicted impacts from all pollutants are less than the applicable SILs for the Class II area (i.e. all areas except CNWR). These values are tabulated in the tables below and are compared with existing ambient air quality measurements from the local ambient monitoring network.

Table 4. Maximum Projected Air Quality Impacts from C.D. McIntosh for Comparison to the PSD Class II Significant Impact Levels

Pollutant	Averaging Time	Max Predicted Impact (ug/m^3)	Significant Impact Level (ug/m^3)	Baseline Concentrations 2005 Data (ug/m^3)	Ambient Air Standards (ug/m^3)	Significant Impact?
CO	8-Hour	63	500	2,300	10,000	NO
	1-Hour	165	2000	2,300	40,000	NO

Maximum predicted impacts from the project for CO are much less than the respective AAQS and the baseline concentrations in the area. CO concentrations are also less than the respective significant impact levels that would otherwise require more detailed modeling efforts.

Preconstruction Ambient Monitoring Requirements

A preconstruction monitoring analysis is done for those pollutants with listed de minimis impact levels. These are levels, which, if exceeded, would require pre-construction ambient monitoring. For this analysis, as was done for the significant impact analysis, the applicant uses the proposed project's emissions at worst load conditions as inputs to the models. As shown in the following table, the maximum predicted impacts for CO with a listed de minimis impact level was less than this level. Therefore, no pre-construction monitoring is required for CO.

Table 5. Maximum Air Quality Impacts for Comparison to the De Minimis Ambient Impact Levels.

Pollutant	Averaging Time	Max Predicted Impact (ug/m^3)	De Minimis Level (ug/m^3)	Baseline Concentrations (ug/m^3)	Impact Greater Than De Minimis?
CO	8-hour	63	575	2,300	NO

Based on the preceding discussions, the only additional air quality analysis required is for impacts on soils, vegetation, visibility, and of growth-related air quality modeling impacts.

Models and Meteorological Data Used in the Air Quality Analysis

PSD Class II Area: The AERMOD modeling system was used to evaluate the pollutant emissions from the proposed project in the surrounding Class II Area. The AERMOD modeling system incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including the treatment of both surface and elevated sources, and both simple and complex terrain. AERMOD contains two input data processors, AERMET and AERMAP. AERMAP is the terrain processor and AERMET is the meteorological data processor.

A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfied the good engineering practice (GEP) stack height criteria.

AERMET meteorological data prepared by the Department used in the AERMOD model consisted of a concurrent 5-year period of hourly surface weather observations from the Tampa International Airport and twice-daily upper air soundings from the National Weather Service at Ruskin. The 5-year period of meteorological data was from 2001 through 2005. These stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

In reviewing this permit application, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification should EPA revise the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators.

Additional Impacts Analysis

Impact on Soils, Vegetation, and Wildlife:

Emissions reductions for NO_X will improve the current impact on soils, vegetation and wildlife from the C.D. McIntosh facility. Lower NO_X emissions, an ozone precursor, will improve facility ozone impacts. The maximum ground-level concentrations predicted to occur for CO as a result of the proposed project will be considerably less than the respective AAQS and, according to the applicant, will be orders of magnitude less than levels of CO documented to have an adverse impact on vegetation.

Growth-Related Impacts Due to the Proposed Project:

There will be short-term increases in the labor force to construct the project. According to the applicant, several dozens of additional workers will be needed over a limited amount of time. These temporary increases will not result in significant commercial and residential growth near the project.

Growth-Related Air Quality Impacts since 1977:

According to the Census, the population of Polk County has increased from 321,652 in 1980 to 483,924 in 2000. In 2000, Polk County was the 9th most populous county in Florida. Despite population growth, the air quality has improved. The chart below shows the Air Quality Index, an index of daily air quality, for Polk County over twelve years. Since 2001, there has been an increase in the number of "Good" days and a decrease in the number of "Moderate" days. There has been no more than 1 day in the "Unhealthly" categories since 2001.

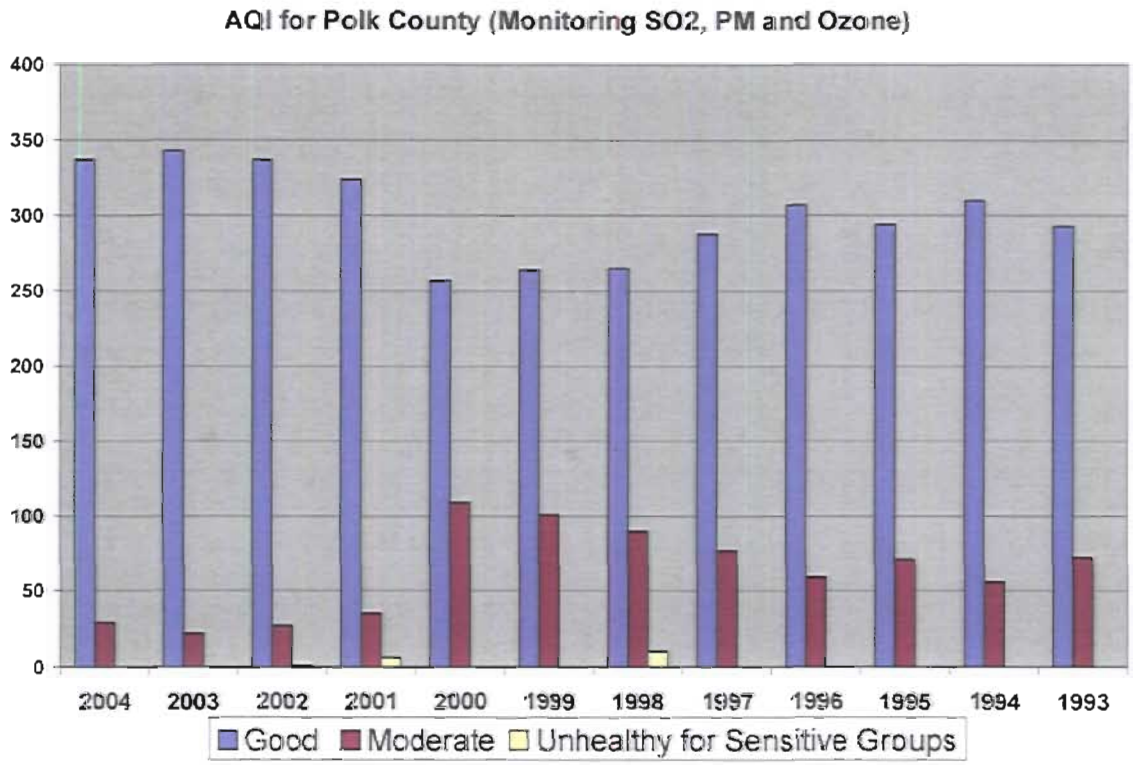


Figure 5. Polk County Air Quality Index

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the Applicant, and the conditions specified in the draft permit. Tom Cascio is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

PERMITTEE:

Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33805

Authorized Representative:
Mr. Timothy Bachand, Director, Energy Supply

DEP File No. 1050004-018-AC, PSD-FL-387
C.D. McIntosh, Jr. Power Plant
Fossil Fuel Steam Generator Unit 3
Low NO_X Burners & Overfire Air
Polk County, Florida
Expires: June 1, 2008

PROJECT AND LOCATION

This permit authorizes the installation of low NOx burners (LNB) and an overfire air (OFA) system on the Unit 3 fossil fuel fired steam generator (EU 006) at Lakeland Electric's C.D. McIntosh, Jr. Power Plant. The facility is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida.

STATEMENT OF BASIS

The applicant elects to install the Low NO_X burners and overfire air system to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation. This permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The Company is authorized to perform the proposed work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

Draft

Joseph Kahn, Director
Division of Air Resource Management

FACILITY DESCRIPTION

The existing facility consists of three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. There are storage and handling facilities for solid and liquid fuels, ash and limestone. A wastewater treatment facility is also located on site.

PROJECT DESCRIPTION

This project includes a newer generation set of Low NO_X burners (LNBs) and an overfire air (OFA) system on Unit 3 as the fist phase of a project to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides (NO_X) under the Clean Air Interstate Rule (CAIR).

Lakeland Electric will install of 32 complete Advanced Burner Systems Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including windboxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

The applicant elects to install the Low NO_X burners and overfire air system to provide full flexibility in implementing the federal cap and trade program for nitrogen oxides under the Clean Air Interstate Rule (CAIR). Because CAIR affords a regulated facility the flexibility to evaluate market conditions to determine whether it will install controls, operate existing controls, or purchase allowances generated by other plants, the Department does not require the installation of this equipment nor its operation.

EMISSIONS UNITS

This permit addresses the following emissions unit:

ID	Emission Unit Description
-006	McIntosh Unit 3 - Fossil Fuel Fired Steam Generator

REGULATORY CLASSIFICATION

Title I, Part C, Clean Air Act (CAA): The facility is a PSD-major facility pursuant to Rule 62-212, F.A.C.

Title I, Section 111, CAA: Unit 3 is subject to the New Source Performance Standards of Title 40 Code of Federal Regulations (40 CFR) 60, Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971).

Title I, Section 112, CAA: The facility is a "Major Source" of hazardous air pollutants (HAPs).

Title IV, CAA: The facility operates units subject to the Acid Rain provisions of the Clean Air Act.

Title V, CAA: The facility is a Title V or "Major Source of air pollution" in accordance with Chapter 62-213, F.A.C.

CAIR: The facility is subject to the Federal Clean Air Interstate Rule (CAIR) in accordance with the Final Department Rules issued pursuant to CAIR as implemented by FDEP in Rule 62-296.470, Florida Administrative Code (FAC).

CAMR: The facility is subject to the Federal Clean Air Mercury Rule (CAMR) implemented by the Department in Rule 62-296.480, F.A.C.

Siting: The facility was originally certified pursuant to the power plant siting provisions of Chapter 62-17, F.A.C.

APPENDICES

The following Appendices are attached as part of this permit.

Appendix BD Final BACT Determinations and Emissions Standards

Appendix GC General Conditions

RELEVANT DOCUMENTS

The documents listed below are not a part of this permit; however, this information is specifically related to the permitting action and is on file with the Department.

- Application for installation of Low-NO_X burners and overfire air system received December 29, 2006;
- Department's Request for Additional Information dated January 23, 2007;
- Response to Department's Request for Information received January 29, 2007;
- Department's Technical Evaluation and Preliminary Determination issued February 16, 2007; and
- Department's Final Determination issued concurrently with this Final Permit.

PERMITTING AUTHORITY

All documents related to applications for permits to construct, operate or modify an emissions unit shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be submitted to the Compliance Authority.

COMPLIANCE AUTHORITY

All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department of Environmental Protection Southwest District Office, 13051 N. Telecom Parkway, Temple Terrace, FL 33637-0926.

1. General Conditions: The permittee shall operate under the attached General Conditions listed in Appendix GC of this permit. General Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]

2. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the F.S.; Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the F.A.C.; and the Title 40, Parts 51, 52, 60, and 63 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

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

4. Permit Expiration: For good cause, the permittee may request that this PSD air construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation at least sixty (60) days prior to the expiration of this permit. [Rules 62-4.080(3), F.A.C]

5. PSD Source Obligation:

   a. Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. This provision does not apply to the time period between construction of the approved phases of a phased construction project except that each phase must commence construction within 18 months of the commencement date established by the Department in the permit.

   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

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

   [Rule 62-212.400(12), F.A.C.]

6. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Chapters 62-210 and 62-212, F.A.C.]

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

8. Annual Operating Report: The Annual Operating Report shall be completed each year and submitted to the appropriate Department division, district or Department-approved local air pollution control program office by March 1st of each year. Emissions shall be computed in accordance with the provisions of subsection 62-210.370(2), F.A.C. [Rule 62-210.370, F.A.C.]

This section of the permit addresses the following emissions unit.

ID No.	Emissions Unit Description
006	McIntosh Fossil Fired Steam Generator Unit 3 is a nominal 364 megawatt fossil fuel-fired steam generator. Unit 3 may burn coal, residual oil, natural gas and may co-fire refuse derived fuel and petroleum coke. The maximum heat input rate is 3,640 million Btu per hour. Unit 3 is equipped with an electrostatic precipitator (ESP), a flue gas desulfurization (FGD) system, and low-NO_X burners to control emissions of particulate matter, sulfur dioxide (SO_2), and NO_X. The unit is also equipped with an Acid Rain SO_2 continuous emissions monitor.

APPLICABLE STANDARDS AND REGULATIONS

1. BACT Determinations: The emission unit addressed in this section is subject to a Best Available Control Technology (BACT) determination for carbon monoxide (CO). [Rule 62-212.400, F.A.C.]
2. NSPS Requirements: The Unit 3 boiler shall comply with all applicable requirements of 40 CFR 60, listed below, adopted by reference in Rule 62-204.800(7)(b), F.A.C.
   (a) Subpart A, General Provisions, including:
   - 40 CFR 60.7, Notification and Record Keeping
   - 40 CFR 60.8, Performance Tests
   - 40 CFR 60.11, Compliance with Standards and Maintenance Requirements
   - 40 CFR 60.12, Circumvention
   - 40 CFR 60.13, Monitoring Requirements
   - 40 CFR 60.19, General Notification and Reporting Requirements

   (b) Subpart D, Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971.

ADMINISTRATIVE REQUIREMENTS

3. Relation to Other Permits: The conditions of this permit are in addition to those of any other air construction or operation permits for these units. [Rule 62-4.030, 62-4.210, and 62-210.300(1)(b), F.A.C.]

CONTROL TECHNOLOGY

4. Low NO_X Burners and Overfire Air: The permittee is authorized to install, operate and maintain new low NO_X burners and an overfire air system on Unit No. 3 boiler for the purpose of reducing NO_X emissions. Equipment will include 32 complete Advanced Burner Systems (ABS) Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including windboxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

[Application, and Rule 62-296.470(CAIR), F.A.C.]

EMISSION STANDARDS

5. Carbon Monoxide (CO):
   a. Emissions of CO shall not exceed 0.20 lb/mmBtu heat input on a 30-operating day rolling average as demonstrated by the required CEMS. This CO emission limit may be adjusted downward to make this limit more stringent based on the Department's reassessment of BACT during the subsequent phase of this project involving installation of selective catalytic reduction.

b. Emissions of CO shall not exceed 0.20 lb/mmBtu on a 3-hr average during the initial compliance demonstration.

[62-210.200 (BACT), and 62-212.400(PSD), F.A.C.]

6. Emissions Limits Subject to Revision: Emissions of CO from Unit 3 shall not exceed the limitations specified in this permit. Based on results of compliance tests and continuous monitoring data, the Department will reassess the BACT determination in conjunction with the subsequent phase of the project which will include installation of selective catalytic reduction. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, SO_2, NO_X, PM/PM_{10}, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of a federally enforceable permit and shall be publicly noticed by the permittee.
[Rules 62-4.070(3), and 62-212.400(7)(a), F.A.C.]

EMISSIONS COMPLIANCE DEMONSTRATION

7. Continuous Compliance with CO limits: Upon certification of the CO CEMS, pursuant to condition 11 below, compliance with the 30 operating day rolling average shall be demonstrated using data collected from the required CEMS. [Rule 62-4.070(3), F.A.C.]

8. Initial Compliance Demonstration: Within 60 days of commencing operation, following installation of the Low-NO_X burners and overfire air system, tests shall be conducted to determine emissions of CO and NO_X. Tests shall be conducted between 90% and 100% of permitted capacity while firing a coal and petcoke blend or a blend of coal, petcoke and refuse derived fuel. Tests shall consist of three, 1-hour test runs. [Rule 62-297.310(7)(a)1, F.A.C.]

9. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
7E	Determination of Nitrogen Oxide Emissions (Instrumental).
10	Determination of Carbon Monoxide Emissions

The methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C. [Rules 62-204.800, F.A.C.; 40 CFR 60, Appendix A]

10. Test Results. Compliance test results shall be submitted to the Department's Southwest District Office no later than 45 days after completion of the last test run. [Rule 62-297.310(8), F.A.C.]

CONTINUOUS MONITORING REQUIREMENTS

11. Performance Specifications and Quality Assurance: The acceptability of the CO CEMS shall be evaluated by conducting the appropriate performance specification, as follows.

The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A within 180 calendar days of commencing operation following installation of the Low-NO_X burners and overfire air system, but no later than October 1, 2007. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F. The required RATA tests shall be performed using EPA Method 10 in Appendix A of 40 CFR 60 and shall be based on a continuous sampling train. The CO monitor span values shall be set appropriately, considering the expected range of emissions and corresponding emission standards.

[Rules 62-4.070(3), 62-210.200(BACT), F.A.C.]

12. CEMS Data Requirements for CO BACT Standard:

    a. *Data Collection*: The CO CEMS shall monitor and record emissions during all operations and whenever emissions are being generated, including during episodes of startups, shutdowns, and malfunctions. All data shall be used, except for invalid measurements taken during monitor system breakdowns, repairs, calibration checks, zero adjustments, and span adjustments.

    b. *Operating Hours and Operating Days*: An hour is the 60-minute period beginning at the top of each hour. Any hour during which an emissions unit is in operation for more than 15 minutes is an operating hour for that emission unit. A day is the 24-hour period from midnight to midnight. Any day with at least one operating hour for an emissions unit is an operating day for that emission unit.

    c. *Valid Hourly Averages*: The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over the hour at a minimum of one measurement per minute. All valid measurements collected during an hour shall be used to calculate a 1-hour block average that begins at the top of each hour.

        1) Hours that are not **operating** hours are not **valid** hours.

        2) For each operating hour, the 1-hour block average shall be computed from at least two data points separated by a minimum of 15 minutes. If less than two such data points are available, there is insufficient data, the 1-hour block average is not valid, and the hour is considered as "monitor unavailable."

    d. *Rolling 30-day average:* Compliance shall be determined after each operating day by calculating the arithmetic average of all the valid hourly averages from that operating day and the prior 29 operating days.

    e. *Monitor Availability*: The quarterly excess emissions report shall identify monitor availability for each quarter in which the unit operated. Monitor availability for the CEMS shall be 95% or greater in any calendar quarter in which the unit operated for more than 760 hours. In the event the applicable availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving the required availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

    [Rules 62-4.070(3) and 62-210.200(BACT), F.A.C.]

CEMS FOR ANNUAL EMISSIONS REPORTING

13. CEMS Annual Emissions Requirement: The owner or operator shall use data from the CO CEMS when calculating annual emissions for purposes of computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for purposes of computing emissions pursuant to the reporting requirements of Rule 62-210.370(3), F.A.C. In computing the emissions of a pollutant, the owner or operator shall account for the emissions during periods of startup and shutdown of the emissions unit. [Rules 62-210.200, and 62-210.370(3), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Emissions Performance Test Reports: A report indicating the results of any required emissions performance test shall be submitted to the Compliance Authority no later than 45 days after completion of the last test run. The test report shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. and in Appendix SC of this permit.
    [Rule 62-297.310(8), F.A.C.].

15. Excess Emissions Reporting:

    a. *Malfunction Notification:* If emissions in excess of a standard (subject to the specified averaging period) occur due to malfunction, the permittee shall notify the Compliance Authority within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. The Department may request a written summary report of the incident.

    b. *SIP Quarterly Report*: Within 30 days following the end of each calendar-quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of CO emissions in excess of the BACT permit standard following the NSPS format in 40 CFR 60.7(c), Subpart A. In addition, the report shall summarize the CO CEMS system monitor availability for the previous quarter.

    c. *NSPS Reporting*: Within 30 days following the calendar quarter, the permittee shall submit the written reports required by 40 CFR 60 Subpart D (Standards of Performance for Fossil-Fuel Fired Steam Generators) for the previous semi-annual period to the Compliance Authority.

    {Note: If there are no periods of excess emissions as defined in 40 CFR, Part 60, Subpart D, a statement to that effect may be submitted with the SIP Quarterly Report to suffice for the NSPS Semi-Annual Report.}

    [Rules 62-4.130, 62-204.800, 62-210.700(6) and 62-212.400(BACT), F.A.C., and 40 CFR 60.7]

16. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating hours and emissions from this facility in accordance with 62-210.370. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

17. Monthly CO CEMS Report: Upon certification of the CO CEMS the permittee shall submit, on a monthly basis, a report in electronic file format which includes Unit 3 CO, NO_X, and heat input data. The report shall be submitted by the 15th of each month by mailing a compact disc to the Department's Bureau of Air Regulation Permitting South Section and shall include all hourly readings from the previous month. Alternatively, upon contacting the Bureau's project engineer, the file may be emailed to the appropriate BAR personnel.

APPENDIX BD

The Department establishes the following standards as the Best Available Control Technology for the Unit 3 fossil fuel fired steam generator:

Emissions of CO shall not exceed 0.20 lb/mmBtu heat input on a 30-operating day rolling average as demonstrated by the required CEMS. An initial 3 run test will be used to demonstrate the initial compliance with a 3-hour 0.20 lb/mmBtu limit.

Based on results of compliance tests and continuous monitoring data, the Department will reassess the BACT determination in conjunction with the subsequent phase of the project which will include installation of selective catalytic reduction. The emission limit may be adjusted downward to make this limit more stringent provided that overall control attained for all air pollutants including CO, SO_2, NOx, PM/PM_{10}, sulfuric acid mist, and VOC is optimized. Such revision shall be based on data that represents a full range of operating conditions and a representative period of time. Such revision, if required by the Department, shall be in the form of a federally enforceable permit and shall be publicly noticed by the permittee.

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey and 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 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 acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

   Reasonable time may depend on the nature of the concern being investigated.
8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

   a. A description of and cause of non-compliance; and

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

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

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

10. The permittee agrees to comply with changes in Department rules and 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 Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

    a. Determination of Best Available Control Technology for carbon monoxide (X);
    b. Determination of Prevention of Significant Deterioration for carbon monoxide (X);
    c. Compliance with National Emission Standards for Hazardous Air Pollutants (Not Applicable to this permitting action); and
    d. Compliance with New Source Performance Standards (Not Applicable to this permitting action).

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 or 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:

        1) The date, exact place, and time of sampling or measurements;
        2) The person responsible for performing the sampling or measurements;
        3) The dates analyses were performed;
        4) The person responsible for performing the analyses;
        5) The analytical techniques or methods used; and
        6) 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.

LAKELAND ELECTRIC

Farzie Shelton, chE; REM

Associate GM Technical Support

January 26, 2007

Ms. Trina Vielhauer, Chief
Florida Department of Environmental Protection
Bureau of Air Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Attention: MR. Al Linero P.E.

RE: C.D. McIntosh, Jr. Power Plant
Title V Permit # 1050004-018-A
Addition of Low NO_x Burners, Overfire Air, and Selective Catalytic Reduction to Unit No. 3
Request for Additional Information

Dear Al:

We are in receipt of your letter dated January 23, 2007 in which the Department is requesting additional information in reference to the above. Therefore, accordingly we requested Mr. Ken Kosky of Golder Associates (our consulting engineer) to provide the Department with the response which we are enclosing for your review.

As you are aware, Tom Cascio has been in touch with us via several e-mails requesting some of the same information that was contained in your letter to which we had responded satisfactorily.

As we discussed previously, Lakeland will be commencing installation of these pollution controls commencing March 1, 2007 during Unit No. 3 outage which was specifically arranged to take care of the issues of allowances associated with implementation of CAIR. Therefore, we are extremely anxious to receive this permit in timely manner to meet our scheduled outage. We appreciate all help you can extend to us in order to achieve our goal.

In addition to mailing our response, I am sending you the same via e-mail in hope of expediting these permitting efforts. In conclusion, as always, Lakeland greatly values your help and cooperation in this matter as it is imperative for Lakeland to have all permits in hand prior to the March 1, 2007. If you should have any questions, please do not hesitate to contact me.

Sincerely

Farzie Shelton

CC: Hamilton Oven, Administrator; Siting Coordination Office

LAKELAND ELECTRIC

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

   Timothy Bachand, Manager of Engineering

2. Owner/Authorized Representative or Responsible Official Mailing Address:

   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street**
   City: **Lakeland** State: **FL** Zip Code: **33801-5079**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

   Telephone: **(863) 834-6633** Fax: **(863) 834-6373**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [**X**], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Item(s) Certified: Response to Department RAI letter dated January 23, 2007 regarding DEP File 1050004-AC for C.D. McIntosh Jr., Power Plant

Signature

1/26/07

Date

Golder Associates Inc.

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

January 26, 2007 063-7630

Lakeland Electric
501 E. Lemon Street
Lakeland, Florida 33801-5079

Attention: Ms. Farzie Shelton, Associate General Manger Technical Support

RE: C.D. MCINTOSH, JR. POWER PLANT
DEP FILE NO. 1050004-018-AC
ADDITION OF LOW-NO_X BURNERS, OVERFIRE AIR, AND SELECTIVE CATALYTIC REDUCTION TO UNIT NO. 3
REQUEST FOR ADDITIONAL INFORMATION

Dear Farzie:

Presented below is the additional information requested by the Florida Department of Environmental Protection (FDEP) in the letter dated January 23, 2007. The information is provided in the same order as requested.

Comment 1. On page 19 of Part I of the Application, we note that sulfur dioxide (SO_2), nitrogen oxides (NO_x), and volatile organic compounds (VOC) are not listed as pollutants emitted by the emissions units. Was this an oversight?

Response: The emission unit pages for SO_2, NO_x, and VOCs were not included in the application since there are no changes in the emission of these air pollutants as a result of the addition of low-NO_x burners and over-fire air (LNB/OFA), and selective catalytic reduction (SCR). For completeness, the emission unit pages for these pollutants have been completed and are attached. The emissions are based on those currently authorized in the Title V Permit (1050004-016-AV). While the LNB/OFA and SCR will substantially reduce NO_x emissions to comply with the FDEP's requirements in 62-296.470 Florida Administrative Code (F.A.C.) for allowances, there are no specific emissions limiting standards. Lakeland Electric's decision to install these pollution controls has been based on economic factors associated with the availability and cost of NO_x allowances. Therefore, this project will provide Lakeland an option and flexibility of utilizing these pollution controls or purchase allowances.

Comment 2. On page 1-1 of Part II of the Application, you state that "there is the potential for collateral increases in ... sulfuric acid mist (SAM) and particulate matter (PM)." Please provide quantitative estimates of these expected increases. Do you propose pounds per hour and tons per year limits in addition to pounds per million Btu heat input limits? What testing methodology and averaging times do you suggest?

Response: Tables RAI-2A and RAI-2B provide emission estimates for SAM and PM, respectively. As shown in Table RAI-2A the projected increase for SAM is 3 tons/year, while the projected increase for PM is 4.94 tons/year. The proposed condition for SAM and PM was included on pages 3-2 and 3-3 of Part II of the Application and is repeated herein:

The applicant shall maintain and submit to the FDEP on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with 62-212.300(1)(e) F.A.C. that the installation of LNB, OFA and SCR did not result in emission increases of PM and SAM. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the AORs using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM.

Comment 3: **On page 2-1 of Part II of the Application, you state "average NO_x emissions levels are expected to be in the 0.30 lb/MMBtu range following the installation of the LNB and OFA system." Please provide a basis for this conclusion with quantitative estimates if possible.**

Response: The letter from the LNB/OFA vendor, Advanced Burner Technologies (A Siemens Company) is attached. The NO_x emissions are provided as 0.3 lb/MMBtu. The vendor letter also includes schematic descriptions of the system.

Comment 4: **On page 2-1 of Part II of the Application, you state "VOC emission levels ... are not expected to change from current emission levels." Please justify this conclusion with quantitative estimates if possible. Do you propose VOC emission limits and testing?**

Response: The burner supplier, Advanced Burner Technologies, has indicated that the VOC and PM levels from the Low-NO_x Burner (LNB)/Over Fire Air (OFA) system are not expected to change (see attached letter). VOC emissions, as indicated in AP-42, are a result of boiler efficiency. The installation of the LNB systems includes Computational Fluid Dynamic (CFD) modeling of the new LNB/OFA system to insure that combustion efficiency is optimized and minimize VOC emissions. Please note that VOC emissions from coal-fired units like McIntosh Unit 3 are typically very low and the EPA AP-42 emission factor does not distinguish any difference with the application of LNB/OFA systems.

Comment 5: **Are the pollutant emissions reported in Table 3-2 based on stack test data?**

Response: Yes. The information in Table 3-2 was taken from the AORs, which were developed from the latest test data.

Comment 6: **On page 4-1 of Part II of the Application, you state that "for the Project, the emissions of CO are expected to exceed the significant emission rate." Please provide a quantitative estimate of this expected increase. Do you propose pounds per hour and tons per year limits in addition to the pounds per million Btu heat input limit? Do you propose the use of CO CEMs as the method of compliance? What averaging times do you suggest?**

Response: The potential CO emissions after the installation of LNB/OFA were included in the application and are 728 pounds per hour (lb/hr) and 3,188.6 tons per year (TPY). The projected actual emissions on the same basis as the SAM and PM emissions are 2,487 TPY. The baseline actual emissions are 176.6 TPY (Table 3-2) of the application. The net emissions increase for CO is 2,310.5 TPY (i.e., using the 78 percent capacity factor 2-year average of historical heat input). It should be noted that the baseline actual emissions are based on a single stack test taken in 2001. CO emission can be highly variable in a pulverized coal-fired unit.

The emission limit proposed for CO emissions is 0.2 pound per million British thermal units (lb/MMBtu). The proposed compliance method is EPA Method 10 performed initially and annually.

Comment 7: Do you expect any change in the quality and composition of the unit's fly ash as a result of the installation of the low NO_x burners, overfire air and SCR system?

Response: The LNB/OFA system is not expected to change the quality and composition of fly ash. This is primarily dictated by the fuels.

Comment 8: Have you considered imposing an ammonia slip limit in the construction permit? What method of testing and test frequency do you recommend?

Response: Ammonia slip as presented in the Part II of the Application is 2 parts per million by volume, dry (ppmvd) at 4-percent oxygen. A portion of the unreacted ammonia leaving the SCR catalyst will react with SO_3 and be removed in the electrostatic precipitator (ESP) as particulate matter. Any remaining ammonia will be captured in the flue gas desulfurization (FGD) system since ammonia is extremely soluble in water. There will be virtually no ammonia slip leaving the stack. An ammonia slip condition is unnecessary and unwarranted.

Comment 9: It appears that the Process Flow Diagram does not include the ammonia injection subsystem to control sulfur trioxide production. Please update this diagram. Please also provide more details regarding the operating parameters of this subsystem.

Response: The flow diagram has been updated to show the potential location of sorbent injection. The actual type of sorbent injection system has not been selected. A dry sorbent, sorbent slurry or gas (e.g., ammonia) may be used. In an effort to provide the Department reasonable assurance that a sorbent injection can remove SO_3, a description of potential technologies is summarized below.

Post-combustion Injection Technologies

The post-combustion injection SAM-control technologies involve injection of reactants downstream of the SCR and air heater and upstream of a PM control device for removal of SO_3. The injection technologies include sodium bicarbonate ($NaHCO_3$) injection, calcium hydroxide – hydrated lime [$Ca(OH)_2$] injection, Trona injection, dry magnesium oxide (MgO) injection, sodium bisulfite ($NaHSO_3$ or SBS) injection, calcium carbonate ($CaCO_3$) injection, micronized limestone injection, and ammonia (NH_3) injection.

Dry sodium bicarbonate is an alkaline compound that can react with and remove SO_3 from the flue gas. Sodium bicarbonate is injected as a dry fine powder and forms a water-soluble particulate. The overall chemical reaction can be summarized as:

$$NaHCO_3 + SO_3 \rightarrow Na2SO_4 + NaHSO_4 + H_2O + CO_2$$

Hydrated lime or calcium hydroxide is a reactive alkaline compound that can be used to mitigate SO_3 emissions. This sorbent is injected as a dry powder with SO removal in the gas stream and the particulate control device. This technology is similar to that used in spray-dryer absorber systems, when combined with an ESP or fabric filter for SO_2 and SO_3 control using low-sulfur coals. The overall chemical reaction with the SO_3 can be summarized as:

$$Ca(OH)_2 + SO_3 \rightarrow CaSO_4 + H_2O$$

Trona, or hydrated sodium bicarbonate carbonate, is a reactive alkaline compound that can be used to mitigate SO_3 emissions. The overall chemical reaction involving SO_3 can be summarized as:

$$aNaHCO_3\ Na2CO_3{\cdot}2H_2O + bSO_3 \rightarrow cNaHSO_4 + dNa2SO_4 + eCO_2 + fH_2O$$

$Mg(OH)_3$ is a very reactive alkaline compound that can be used to mitigate SO_3 emissions. The overall chemical reaction can be summarized as:

$$MgO_3 + SO_3 \rightarrow MgSO_4$$

$NaHSO_3$ can react with SO_3 in the flue gas to form sodium sulfate and sodium bisulfate. The overall chemical reaction is:

$$2NaHSO_3 + SO_3 \rightarrow Na2SO_4 + 2SO_2 + H_2O$$

Since commercially available $NaHSO_3$ has up to 10 percent by weight of sodium sulfite, the following side reaction occurs:

$$Na2\ SO_3 + SO_2 + H_2O \rightarrow 2NaHSO_3$$

The $NaHSO_3$ generated by the side reaction can react and remove SO_3 in the flue gas. Alternately, it can react directly with SO_3 and remove it as sodium sulfate:

$$Na2SO_3 + SO_3 + O_2 \rightarrow Na2SO_4$$

Micronized dry limestone is an alkaline compound that can provide a large amount of surface area to allow deposition (condensation and adsorption) and removal of the SO_3 on the small limestone particles (large surface area). The adsorption removal mechanism (adsorption of SO_3 on the micronized limestone particles) for SO_3 follows the overall chemical reaction:

$$CaCO_3 + SO_3 + H_2O \rightarrow CaSO_4 + H_2O + CO_2$$

NH_3 injected in the flue gas reacts with SO_3 to form ammonium sulfate and ammonium bisulfate salts. The overall reaction is:

$$NH_3 + H2SO_4 \rightarrow (NH_4)_2SO_4$$

$$2NH_3 + H2SO_4 \rightarrow (NH_4)HSO_4$$

$NaHCO_3$, $NaHSO_3$, and magnesium hydroxide have high reactivities with SO_3 and are predicted to achieve 80- to 90-percent removal of SO_3. $NaHSO_3$ technology is commercially available, and has been installed in over a dozen units for SO_3 control. An advantage of $NaHSO_3$ injection is that a reaction with SO_2 does not occur, as with other alkaline sorbents (e.g., calcium- or magnesium-based compounds). $Ca(OH)_2$ and limestone are not as reactive with SO_3, and would have removal efficiencies of less than 80 percent. Ammonia injection can from ammonium bisulfate or ammonium sulfate depending upon the molar ratio for injection. Ammonia sulfate is desired since it is a solid particle. Ammonia injection has shown removal efficiencies of 90 percent prior to particulate control devices.

Comment 1: **On page 4-1 of Part II of the application, you indicate that recent CO BACT determinations for new units range from 0.1 to 0.2 lb/MMBtu. Because the project includes the installation of new burners, please explain why new burners cannot be selected to achieve CO emission levels comparable to the lower range of the recent BACT determinations.**

Response: The 0.2 lb/MMBtu is equivalent to 200 ppm provided by the LBN/OFA vendor. Lower levels established for new units involve completely new boiler system including pulverizers, burner positions, air handling systems and many other factors that can influence CO emissions. McIntosh Unit 3 is an existing late 1970's vintage boiler with associated combustion technology. Due to the existing character of the unit and the requirement to reduce NO_x emission levels using LNB and OFA, an emission limit of 0.2 lb/MMBtu is appropriate. It should be noted that the Department recently established for Seminole Electric Cooperative, Inc. Seminole Generating Station Units 1 and 2 a CO emission rate of 0.2 lb/MMBtu. Seminole Generating Station Units 1 and 2 are of the same boiler vintage as McIntosh Unit 3. In fact, the in-service date for Unit 3 was in 1982 while the in-service dates for SGS Units 1 and 2 were in 1984.

Comment 2: **Rule 62-212.400(3)(h)(5), F.A.C., states that an application must include information relating to the air quality impacts of, and the nature and extent of, all general commercial, residential, industrial and other growth which has occurred since August 7, 1977, in the area the facility or modification would affect. Please satisfy this rule.**

Response: Rule 62-212.400(4)(e), F.A.C., states that an application must include information relating to the air quality impacts of, and the nature and extent of all general, residential, commercial, industrial, and other growth that has occurred since August 7, 1977, in the area the facility or modification would affect. An analysis of growth would consider air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the construction and operation of the addition of LNB/OFA and SCR. The proposed project would have minimal effect resulting from associated growth. The installation of LNB/OFA and SCR is much limited in scope than the existing McIntosh Unit 3. Since McIntosh Unit 3 has been operating since 1982, the addition of LNB/OFA and SCR will have minor influence on the area. The areas surrounding the McIntosh have already been developed and growth associated with the project will not be discernable. The construction of the project may have several dozens of construction workers for a limited period of time. Within the region there are thousands of construction workers from which the project can draw. In addition, any workers required to be brought in due to their special skills can easily find accommodations in the areas. The central Florida region has tens of thousands of temporary accommodations. Operation will require minimal staff since the systems will be automated. Maintenance activities, such as catalyst change-out may require small number of workers but over very short timeframes. Overall, the proposed LNB/OFA and SCR installation will have minimal influence on the air quality impacts due to associated growth in the area.

Comment 3: **Please address any additional impacts from CO regarding vegetation, soils and wildlife in the surrounding Class II area.**

Response: Presented below is information related to the additional impacts of CO regarding vegetation, soils and wildlife.

The foundation for protecting the air quality including impacts to soils, vegetation and wildlife is the Ambient Air Quality Standards (AAQS) established under the federal Clean Air Act (CAA). The CAA clearly establishes the requirements of the AAQS as stated by EPA (2005):

> *"The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (NAAQS) for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. The Clean Air Act requires periodic review of the science upon which the standards are based and the standards themselves."* http://www.epa.gov/ttn/naaqs/ Florida has adopted both the Primary and Secondary NAAQS. The maximum projected CO impacts associated with the installation of LNB/OFA are 165.2 and 62.8 $\mu g/m^3$ for the 1-hour and 8-hour averaging times, respectively. These values are about 10 times less than the significant impact levels and several orders of magnitude less than the AAQS for CO of 40,000 $\mu g/m^3$ for the 1-hour averaging time and 10,000 $\mu g/m^3$ for the 8-hour averaging time. The low CO concentrations relative to the AAQS demonstrate that CO emissions from McIntosh Unit 3 would not impact vegetation or wildlife. Moreover, unlike acid gases, CO does not deposit in the soils.

The main effect on vegetation of high concentrations of CO is the inhibition of cytochrome *c* oxidase, the terminal oxidase in the mitochondrial electron transfer chain. Inhibition of cytochrome *c* oxidase depletes the supply of adenosine triphosphate (ATP), the principal donor of free energy required for cell functions. However, this inhibition only occurs at extremely high concentrations of CO. Pollok *et al.* (1989) reported that exposure to $CO:O_2$ ratio of 25 (equivalent to an ambient CO concentration of $6.85 \times 10^6 \mu g/m^3$) resulted in stomatal closure in the leaves of the sunflower (*Helianthus annuus*). Naik *et al.* (1992) reported cytochrome *c* oxidase inhibition in corn, sorghum, millet, and Guinea grass at $CO:O_2$ ratios of 2.5 (equivalent to an ambient CO concentration of $6.85 \times 10^5 \mu g/m^3$). These plants were considered the species most sensitive to CO-induced inhibition of cytochrome *c* oxidase. The maximum CO impacts at 0.2 lb/MMBtu for McIntosh Unit 3 are orders of magnitude less than any level where effects to vegetation would occur.

Please contact me if there are any questions related to the information contained in this evaluation. A certification has been provided.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal

Enclosures

KFK/nav

0637630/4.1/RAI012607/R012607.doc

TABLE RAI-2A
CULATIONS OF SULFURIC ACID MIST (SAM) EMISSIONS FOR THE LAKELAND ELECTRIC MCINTOSH UNIT 3 SCR PROJ

Category	Units	Baseline	Projected	Mass Maximum (lb/hr)	Mass Maximum (lb/hr)	Pollutant
Coal Sulfur Content	%	2.04	2.04			
Coal Heat Content	Btu/lb	12,731	12,731			
Uncontrolled SO_2 Emissions[a]	lb/MMBtu	3.20	3.20	11,651.99	11,651.99	SO_2
Combustion Factor[b]		0.010	0.010			
SAM from Combustion	lb/MMBtu	0.047	0.047	169.50	169.50	SAM
SCR Factor[c]		0.000	0.008			
SAM produced by SCR	lb/MMBtu	0.000	0.039			
SAM Leaving SCR[d]	lb/MMBtu	0.047	0.086	169.50	311.35	SAM
Air Heater Factor[e]		0.850	0.850			
SAM Leaving Air Heater	lb/MMBtu	0.040	0.073	144.08	264.65	SAM
ESP and Sorbent Injection[f]		0.630	0.350		120.574	SAM Reduction
SAM Leaving ESP	lb/MMBtu	0.025	0.025	90.77	92.63	SAM
FGD System Factor[g]		0.470	0.470			
SAM Leaving FGD	lb/MMBtu	0.012	0.012	42.66	43.53	SAM
Maximum Heat Input	MMBtu/hr	3,640	3,640			
Capacity Factor (heat Input basis)		78%	78%			
Annual Heat Input (maximum 2-year average)	MMBtu/yr	24,999,083	24,999,083			
SAM Emissions	lb/MMBtu	0.012	0.012			
	ppm (est.)	2.660	2.715			
	lb/hr	42.66	43.53			
	tons/year	146.494	149.496	3	tons/year increase	

Note: Baseline and Projected based on 2001-2002 data, which represents the maximum sulfur and heat input.

[a] Assumes 100 percent of sulfur converted to SO_2 for calculating the amount of SAM produced; actual SO_2 emissions are 95 percent.

[b] Average of high and low sulfur eastern bituminous factors (Southern Company, 2005).

[c] 1 percent SO_3 produced from SO_2 oxidation; average of low and high sulfur fuel factors (Southern Company, 2005).

[d] Excess ammonia slip will scavenge SAM. This is included in the ESP removal.

[e] 15% recommended in Table 4-1 (0.85 factor) for high/medium sulfur eastern bituminous (Southern Company, 2005)

[f] 0.63 based on average of high- and low-sulfur coals (Southern Company, 2005); 0.35 for 65-percet removal with sorbent injection.

[g] 0.47 representative of 53 percent removal in FGD system (Southern Company, 2005).

TABLE RAI-2B
PM CALCULATIONS LAKELAND ELECTRIC MCINTOSH UNIT 3

Category	Data	Units/Basis
Heat Input	3,640	MMBtu/hr (Title V Permit)
Heat Content	12,731	Btu/lb (Actual 2-Year Average)
Coal Usage	285,923	lb/hr (Calculated)
Ash Content	9%	(Actual)
Fly Ash	80%	(Typical)
Fly Ash	20,586.5	lb/hr
SAM Removed	120.6	lb/hr (Table RAI-2A)
SAM PM (est.)	159.9	lb/hr (Ca sorbent assumed as a maximum)
SAM PM (est.)	0.78%	of PM (Calculated)
ESP Removal	99.10%	based on Title V Application
PM Increase	1.44	lb/hr
Capacity Factor	78%	(Projected Actual)
PM Increase	4.94	tons/year

LAKELAND ELECTRIC

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:

   Timothy Bachand, Manager of Engineering

2. Owner/Authorized Representative or Responsible Official Mailing Address:

   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street**
   City: **Lakeland** State: **FL** Zip Code: **33801-5079**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

   Telephone: **(863) 834-6633** Fax: **(863) 834-6373**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Item(s) Certified: Response to Department RAI letter dated January 23, 2007 regarding DEP File 1050004-AC for C.D. McIntosh Jr., Power Plant

   Signature

   1/26/07
   Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext. **516** Fax: **(352) 336-6603**
4. Professional Engineer Email Address: **kkosky@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature _____ Date 1/26/07

(seal)

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	010		EL
SAM	032	010	NS
CO			EL
SO_2	067		EL
NO_x	139	205, 204	EL
VOC			NS

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4,368** lb/hour **11,447.2** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **1.2 lb/MMBtu** Reference: **Title V Permit; Subpart Da**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
1.2 lb/mmBtu x 3,640 mmBtu/hr = 4,368 lb/hr (maximum)
0.718 lb/MMBtu x 3,640 MMBtu/hr = 2,613.5 lb/hr (annual)
2,618 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 11,447.2 ton/yr

11. Pollutant Potential/Estimated Fugitive Emissions Comment:
Title V Permit 1050004-016-AV; based on co-firing of petcoke.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.2 lb/MMBtu**	4. Equivalent Allowable Emissions: **4,368** lb/hour **11,447.2** tons/year
5. Method of Compliance: **CEMS**	
6. Allowable Emissions Comment (Description of Operating Method): **Annual based on co-firing of petcoke.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **2,548** lb/hour **11,160** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.7 lb/MMBtu** Reference: **Title V Permit**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.7 lb/mmBtu x 3,640 mmBtu/hr = 2,548 lb/hr
2548 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 11,160 ton/yr

11. Pollutant Potential/Estimated Fugitive Emissions Comment:
Title V Permit 1050004-016-AV; based on Subpart Da requirements.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.7 lb/MMBtu	4. Equivalent Allowable Emissions: 2548 lb/hour 11,160 tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **9.5** lb/hour **41.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.06 lb/ton** Reference: **AP-42**	7. Emissions Method Code: **3**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:
0.0026 lb/mmBtu x 3,640 mmBtu/hr = 9.5 lb/hr
728.0 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 3,188.6 ton/yr

Note: 0.06 lb/ton equivalent to 0.0026 lb/MMBtu.

11. Pollutant Potential/Estimated Fugitive Emissions Comment:
Based on AP-42

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

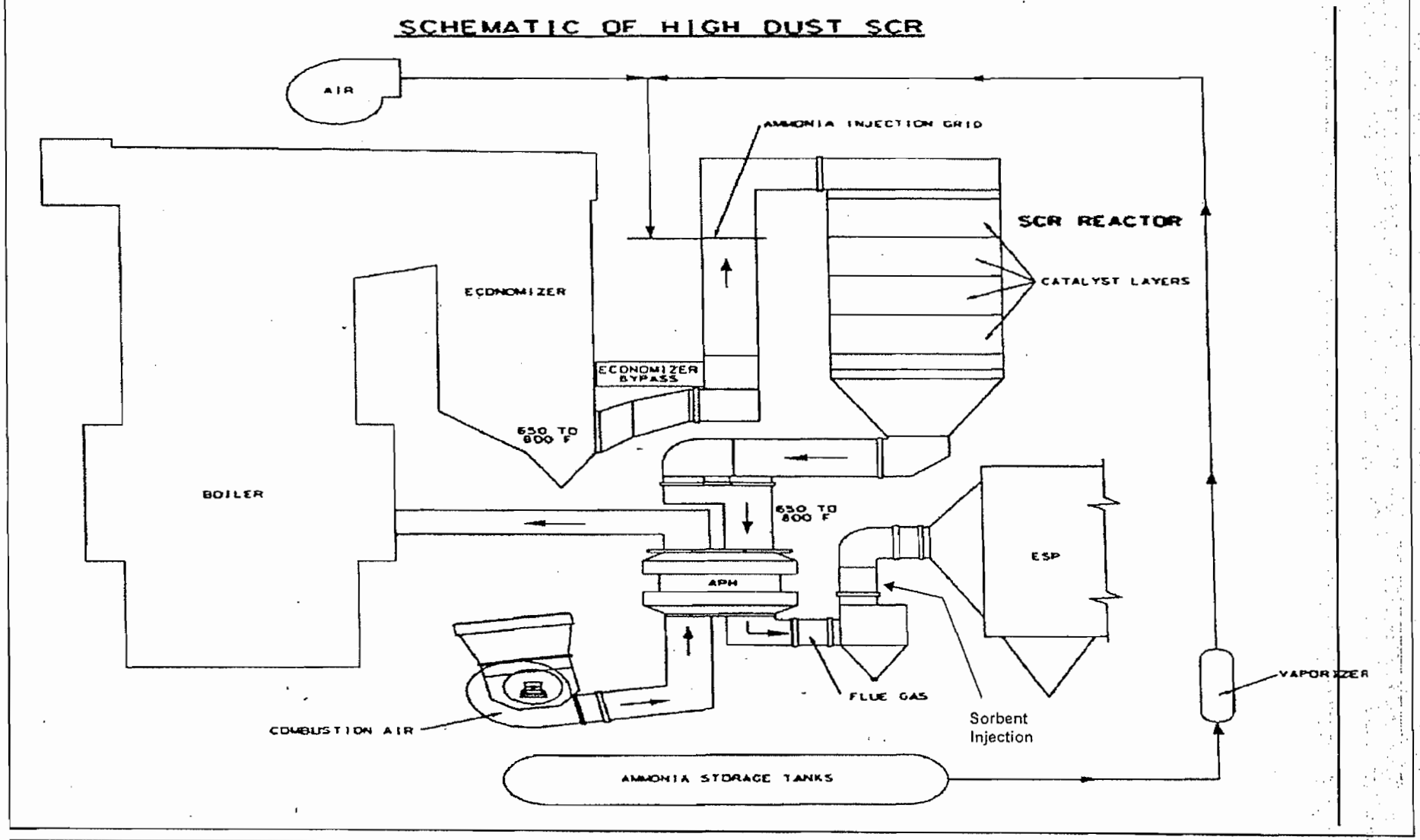


Figure 2-1
Process Flow Diagram
0637630/4.2/Figure 2-1
Source: Golder, 2006.

Golder Associates

ADVANCED BURNER TECHNOLOGIES
A Siemens Company

Advanced Burner Technologies (ABT)
Permit Support Summary

For

City of Lakeland
McIntosh Station Unit 3
Lakeland, Florida

1.0 Introduction

The City of Lakeland has contracted with Siemens Power Group, Inc. (SPG) to design and furnish new low NOx burners and overfire air (OFA) equipment for City's McIntosh Unit 3 boiler. Advanced Burner Technologies, Inc. (ABT) is a wholly owned subsidiary of SPG, and will be providing the design, fabrication, delivery, and field testing services for the new low NO_x system.

2.0 Background

The McIntosh Power Plant Unit 3 has a nominal base load gross electrical capacity of 360 MW. The steam generator is a balanced draft design operating at sub-critical pressure originally supplied by Babcock and Wilcox. The furnace is a front and rear wall fired design, to deliver steam at a nominal rating of 2,476,952 lb/hr at 2458 psia and 1005 F superheat and 1005 reheat steam temperature. The firing walls are arranged with 16 burners on the front wall fed by two MPS-75 pulverizers, and 16 burners on the rear wall, also fed by two MPS-75 pulverizers.

3.0 System Description

ABT will provide a complete Low NOx burner system including new low NOx burners and new OFA system. The following major components are part of the Low NO_x system and will be installed at McIntosh Unit 3 in April 2007:

- Thirty-two (32) complete new Opti-Flow™ low NO_x burner assemblies, with features to accommodate the existing igniter and flame scanner assemblies. These will be installed in the existing burner locations on both the front and rear furnace walls.
- Complete new OFA system including new OFA windboxes mounted on the boiler front and rear walls. Interconnecting ductwork to the existing secondary air ducts will be required.
- Eight (8) complete new OFA register assemblies, four (4) each to be located within the new front and rear OFA windboxes.
- Computational Fluid Dynamic (CFD) modeling of the existing secondary air and newly supplied OFA system.
- Testing and Field Advisory Services.

Please refer to Section 7 of this document for system drawings of the ABT low NO_x burner and OFA system.

4.0 Emissions Levels

Average NOx emissions levels are expected to be in the 0.30 lb/MMBtu range following the installation of the low NOx burners and OFA system.

In addition, average CO emission levels are not expected to exceed 200 ppm, or 50 ppm greater than the current operating level, whichever is greater.

VOC emission levels and particulate levels are not expected to change from current emission levels following the installation of the new low NOx burner and OFA system.

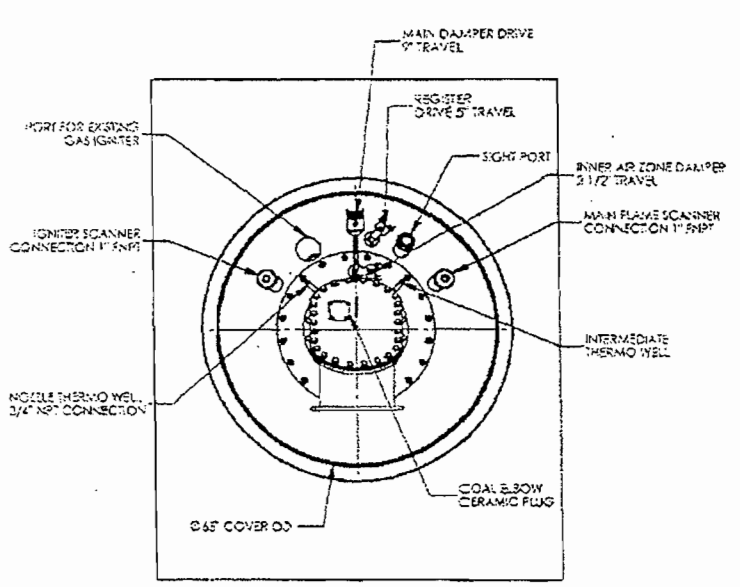
5.0 Project Schedule

The low NOx burner and OFA equipment will be delivered to the McIntosh site starting the first week of March 2007. Deliveries will be completed by the first week of April 2007. The power plant outage is scheduled to start April 3, 2007 and will last approximately thirty-six (36) days. Upon completion of the outage, the unit will be started up and burner tuning will take place to optimize the newly installed low NOx system. Optimization and testing efforts are expected to take thirty (30) days to complete.

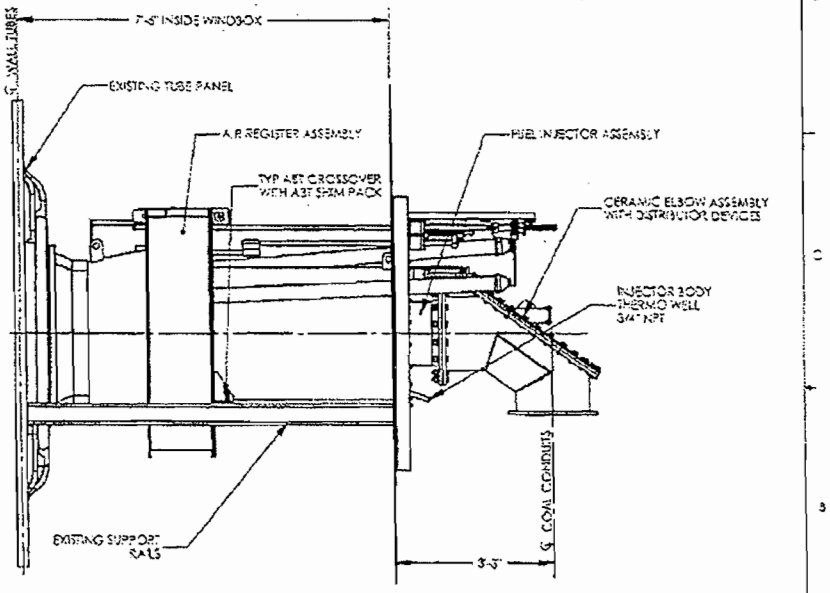
6.0 System Information (See Attached)

- Burner General Arrangement
- Boiler General Arrangement (Front / Rear Elevation)
- Boiler General Arrangement (Side Elevation)
- General Arrangement (Section A-A)
- OFA Register Assembly General Arrangement
- Secondary Air System Schematic

BEST AVAILABLE COPY



COW BURNER SHOWN
CW OPPOSITE HAND



EST. WEIGHT: lb.	TOLERANCES UNLESS SPECIFIED	MACHINED PARTS	WELD FABRICATED PARTS
	UP TO 6" INCL.	±0.015"	±0.03"
	OVER 6" TO 24" INCL.	±0.03"	±0.06"
	OVER 24"	±0.06"	±0.125"
MATERIAL:	ANGLES ±0° 30'		
SIZE:	SURFACE ROUGHNESS NOT EXCEED 125		
TYPE:	BREAK SHARP CORNERS		
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED	DO NOT SCALE PRINT		
CUSTOMER NAME	PLANT NAME	UNIT	
CITY OF LAKELAND	McINTOSH	3	

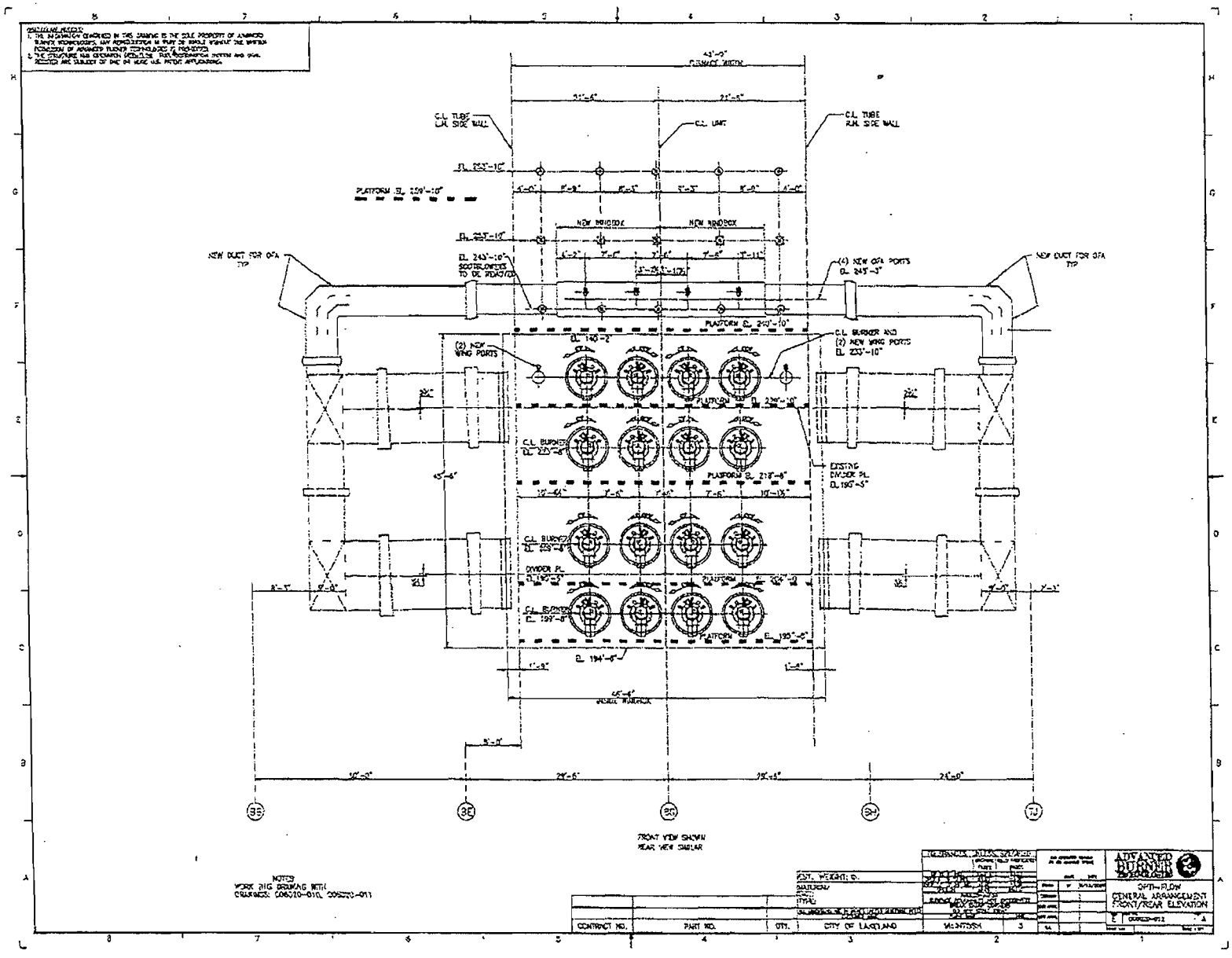
CAD GENERATED DRAWING DO NOT MANUALLY UPDATE	NAME	DATE
DRAWN	RJ	9/14/2006
CHECKED	JPM	9/15/2006
ENG APPR.		
MFG APPR.		
Q.A.		

ADVANCED BURNER TECHNOLOGIES
A Siemens Company

OPTI-FLOW BURNER
GENERAL ARRANGEMENT

SIZE	DWG. NO.	REV
B	Q06020-20	B

SCALE: 1:24 SHEET 1 OF 1

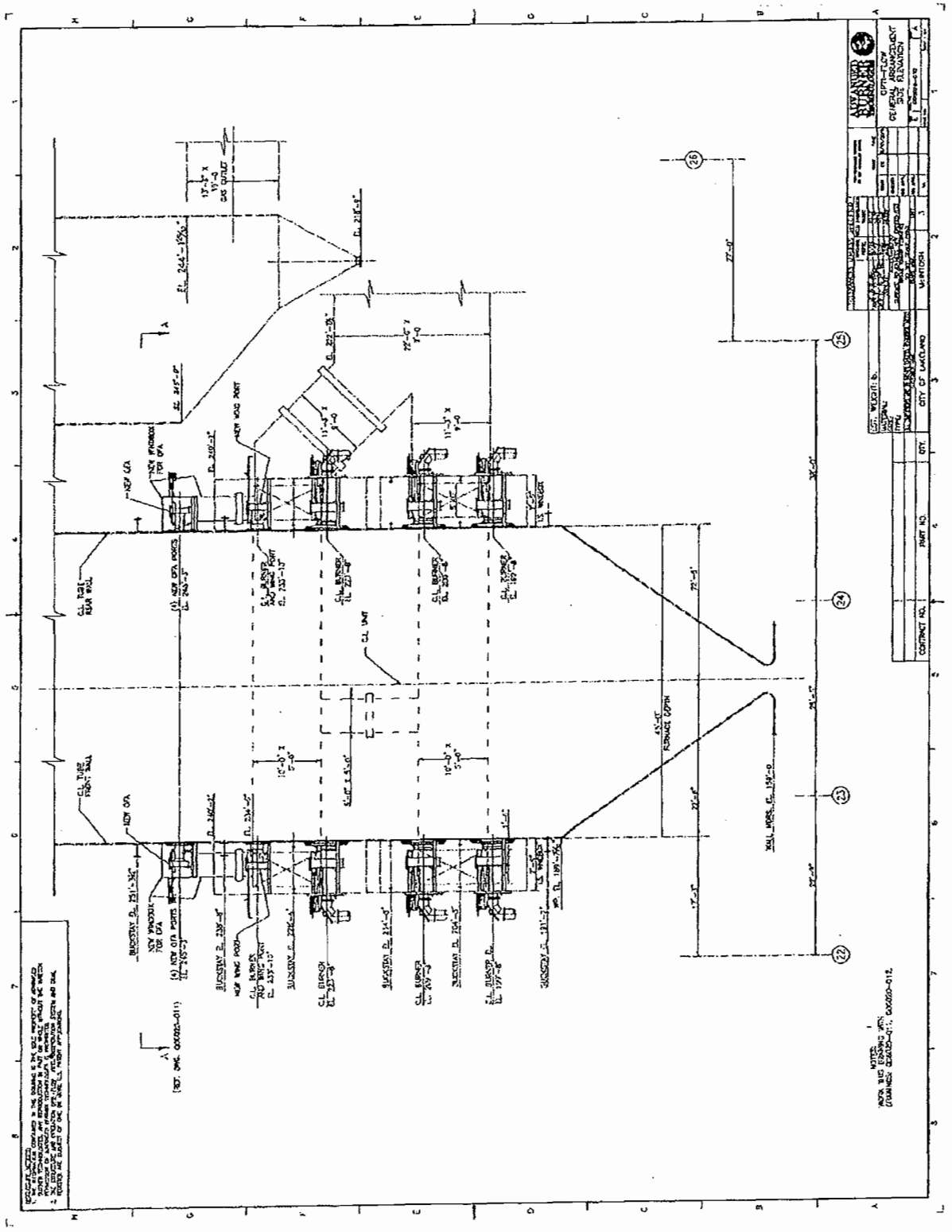


ADVANCED BURNER TECHNOLOGIES
A Siemens Company

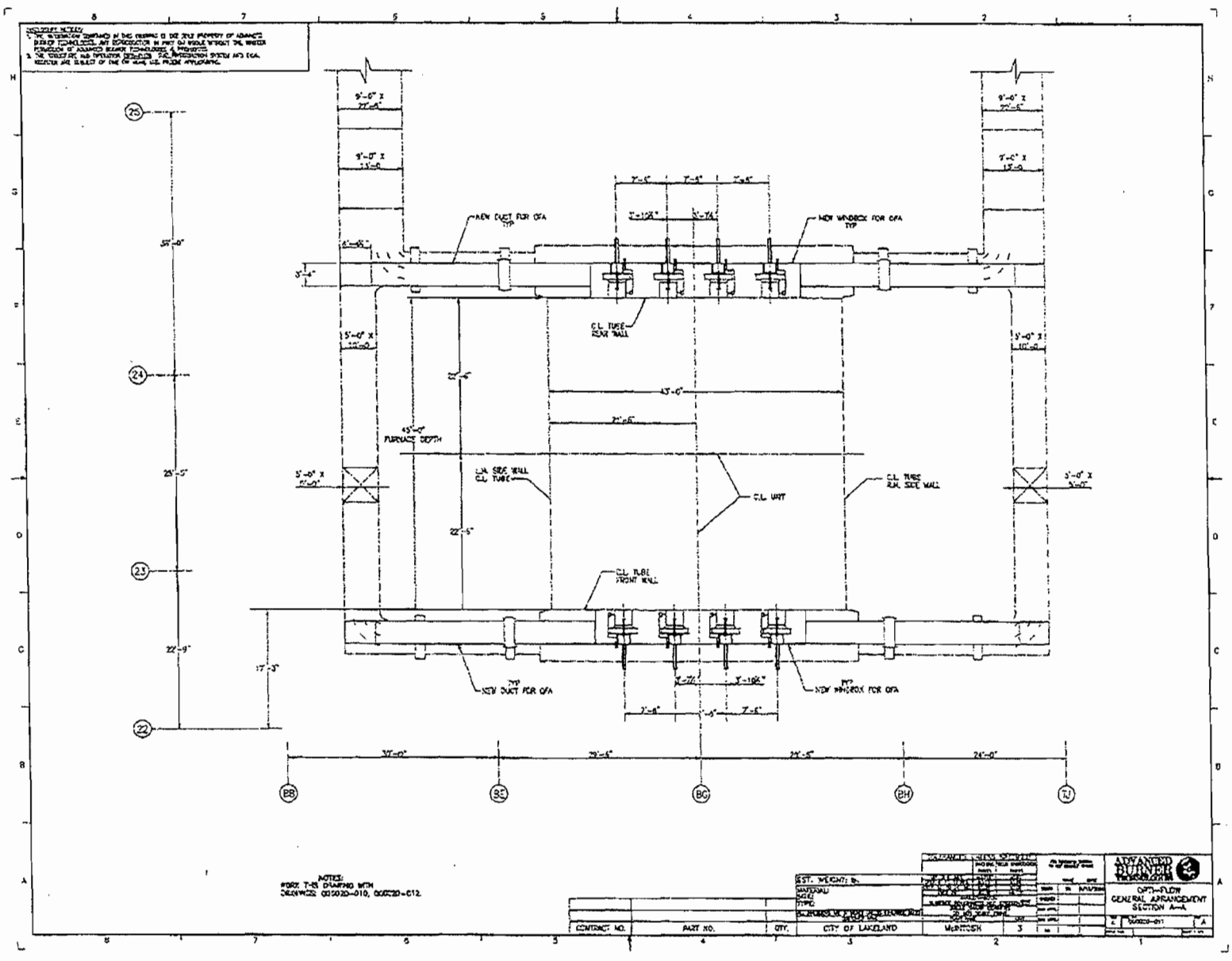
10/30/06

ADVANCED BURNER TECHNOLOGIES
A Siemens Company

BEST AVAILABLE COPY



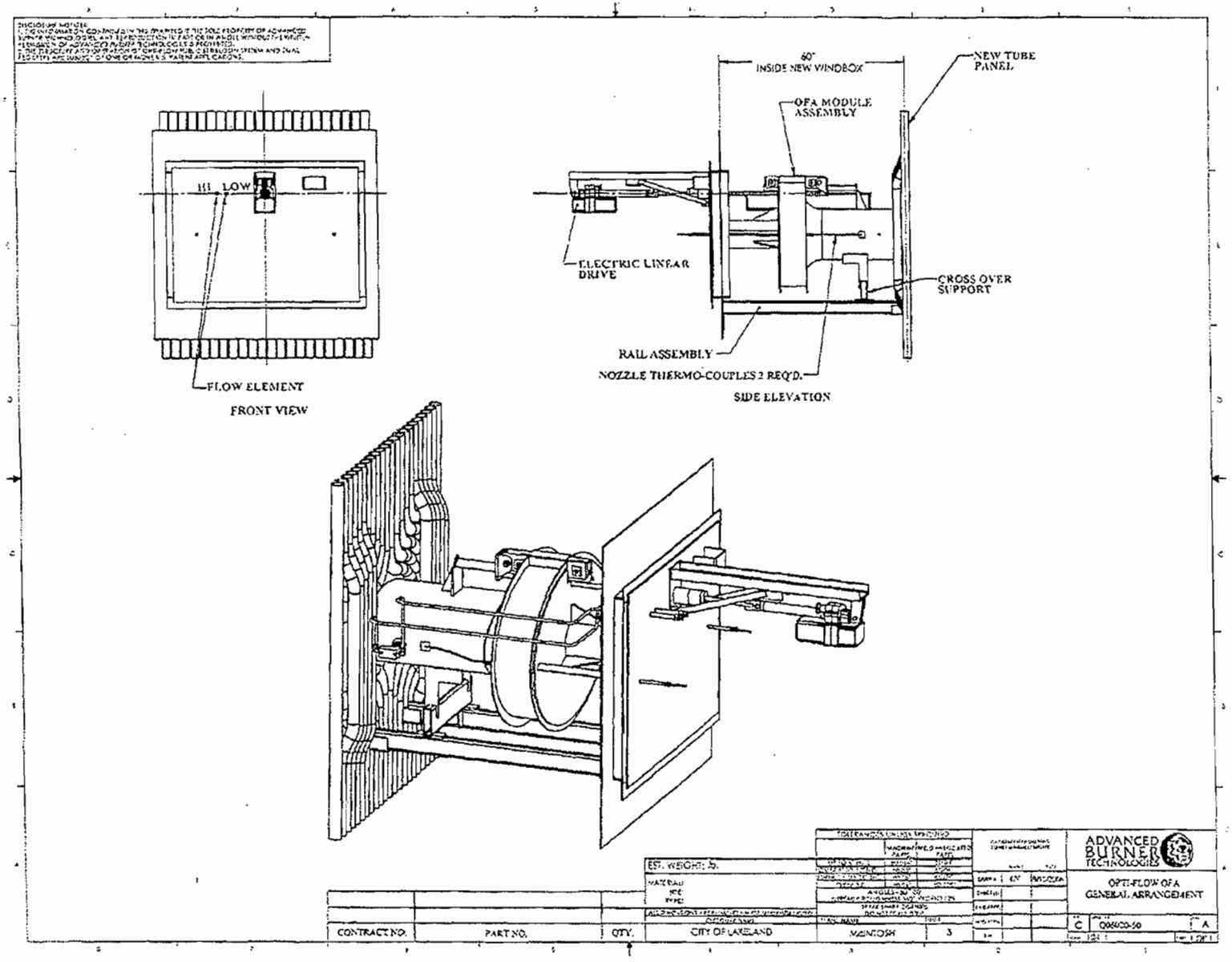
BEST AVAILABLE COPY



ADVANCED BURNER TECHNOLOGIES
A Siemens Company

10/30/06

BEST AVAILABLE COPY



10/30/06

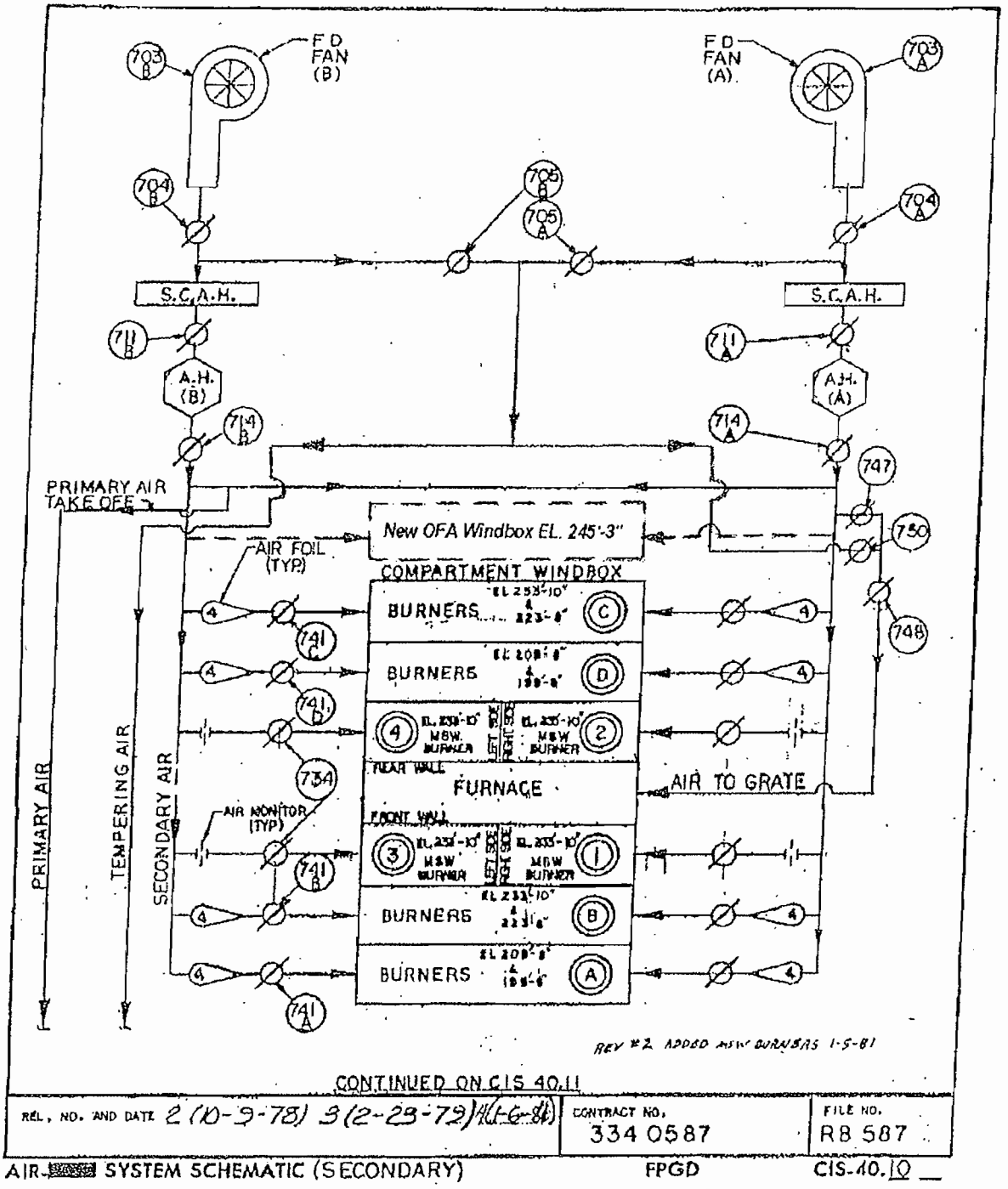
7

ADVANCED BURNER TECHNOLOGIES
A Siemens Company

ADVANCED BURNER TECHNOLOGIES
A Siemens Company

Secondary Air System Schematic

(modified to show new OFA system)



Key: - - - - - - New OFA Equipment

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

January 23, 2007

Electronic Mail – Received Receipt Requested

Mr. Timothy Bachand, Authorized Representative (timothy.bachand@lakelandelectric.com)
Lakeland Electric
501 East Lemon Street, MS-M01
Lakeland, Florida 33801

Re: C.D. McIntosh, Jr. Power Plant
DEP File No. 1050004-018-AC
Addition of Low NOx Burners, Overfire Air, and Selective Catalytic Reduction to Unit No. 3
Request for Additional Information

Dear Mr. Bachand:

Thank you for your air construction permit application and fee received on December 29, 2006, requesting a modification to add low NO_x burners (LNB), overfire air (OFA), and selective catalytic reduction (SCR) to Unit No. 3 at the C.D. McIntosh, Jr. Power Plant. However, we have deemed your application incomplete, due to the following items needing further clarification:

1. On page 19 of Part I of the Application, we note that sulfur dioxide (SO_2), nitrogen oxides (NO_x), and volatile organic compounds (VOC) are not listed as pollutants emitted by the emissions units. Was this an oversight?

2. On page 1-1 of Part II of the Application, you state that "there is the potential for collateral increases in ... sulfuric acid mist (SAM) and particulate matter (PM)." Please provide quantitative estimates of these expected increases. Do you propose pounds per hour and tons per year limits in addition to pounds per million Btu heat input limits? What testing methodology and averaging times do you suggest?

3. On page 2-1 of Part II of the Application, you state "average NO_x emissions levels are expected to be in the 0.30 lb/MMBtu range following the installation of the LNB and OFA system." Please provide a basis for this conclusion with quantitative estimates if possible.

4. On page 2-1 of Part II of the Application, you state "VOC emission levels ... are not expected to change from current emission levels." Please justify this conclusion with quantitative estimates if possible. Do you propose VOC emission limits and testing?

5. Are the pollutant emissions reported in Table 3-2 based on stack test data?

6. On page 4-1 of Part II of the Application, you state that "for the Project, the emissions of CO are expected to exceed the significant emission rate." Please provide a quantitative estimate of this

expected increase. Do you propose pounds per hour and tons per year limits in addition to the pounds per million Btu heat input limit? Do you propose the use of CO CEMs as the method of compliance? What averaging times do you suggest?

7. Do you expect any change in the quality and composition of the unit's fly ash as a result of the installation of the low NO_x burners, overfire air and SCR system?

8. Have you considered imposing an ammonia slip limit in the construction permit? What method of testing and test frequency do you recommend?

9. It appears that the Process Flow Diagram does not include the ammonia injection subsystem to control sulfur trioxide production. Please update this diagram. Please also provide more details regarding the operating parameters of this subsystem.

10. On page 4-1 of Part II of the application, you indicate that recent CO BACT determinations for new units range from 0.1 to 0.2 lb/MMBtu. Because the project includes the installation of new burners, please explain why new burners cannot be selected to achieve CO emission levels comparable to the lower range of the recent BACT determinations.

11. Rule 62-212.400(3)(h)(5), F.A.C., states that an application must include information relating to the air quality impacts of, and the nature and extent of, all general commercial, residential, industrial and other growth which has occurred since August 7, 1977, in the area the facility or modification would affect. Please satisfy this rule.

12. Please address any additional impacts from CO regarding vegetation, soils and wildlife in the surrounding Class II area.

When we receive this information, we will continue processing your application. We are available to discuss the details of our request for additional information. Rule 62-4.050(3), F.A.C., requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Permit applicants are advised that Rule 62-213.420(1)(b), F.A.C., requires applicants to respond to requests for information within 90 days, unless the applicant has requested in writing, and has been granted, additional time within 90 days. If you have any questions, please contact Tom Cascio at 850-921-9526.

Sincerely,

A. A. Linero, P.E.
Program Administrator
Permitting South Section

AAL/tbc

Cc: Farzie Shelton, Lakeland Electric (farzie.shelton@lakelandelectric.com)
Mara Nasca, Southwest District Office (mara.nasca@dep.state.fl.us)
Kennard F. Kosky, P.E., Golder Associates, Inc. (kkosky@golder.com)
Debbie Nelson, Bureau of Air Regulation (deborah.nelson@dep.state.fl.us)

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:02 PM
To: Adams, Patty
Subject: FW: Delivery Status Notification (Relay)

Attachments: ATT172494.txt; DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant


ATT172494.txt
(297 B)


DEP File No.
1050004-018-AC - ..

-----Original Message-----
From: Exchange Administrator
Sent: Tuesday, January 23, 2007 3:02 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

This is an automatically generated Delivery Status Notification.

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

farzie.shelton@lakelandgov.net

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:02 PM
To: Adams, Patty
Subject: FW: Delivery Status Notification (Relay)

Attachments: ATT172490.txt; DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant


ATT172490.txt
(303 B)


DEP File No.
1050004-018-AC - ..

-----Original Message-----
From: Exchange Administrator
Sent: Tuesday, January 23, 2007 3:01 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

This is an automatically generated Delivery Status Notification.

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

timothy.bachand@lakelandelectric.com

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:02 PM
To: Adams, Patty
Subject: FW: Delivery Status Notification (Relay)

Attachments: ATT172494.txt; DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant


ATT172494.txt
(297 B)


DEP File No.
1050004-018-AC - ..

-----Original Message-----
From: Exchange Administrator
Sent: Tuesday, January 23, 2007 3:02 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

This is an automatically generated Delivery Status Notification.

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

farzie.shelton@lakelandgov.net

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:02 PM
To: Adams, Patty
Subject: FW: Delivery Status Notification (Relay)

Attachments: ATT172487.txt; DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant


ATT172487.txt
(284 B)


DEP File No.
1050004-018-AC - ..

-----Original Message-----
From: Exchange Administrator
Sent: Tuesday, January 23, 2007 3:01 PM
To: Friday, Barbara
Subject: Delivery Status Notification (Relay)

This is an automatically generated Delivery Status Notification.

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

KKosky@Golder.com

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:01 PM
To: Adams, Patty
Subject: FW: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

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From: System Administrator
Sent: Tuesday, January 23, 2007 3:01 PM
To: Friday, Barbara
Subject: Delivered:DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

Your message

To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandgov.net'; Nasca, Mara; 'KKosky@Golder.com'; Nelson, Deborah
Cc: Linero, Alvaro; Cascio, Tom
Subject: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant
Sent: 1/23/2007 3:01 PM

was delivered to the following recipient(s):

Nasca, Mara on 1/23/2007 3:01 PM

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:02 PM
To: Adams, Patty
Subject: FW: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

---

From: System Administrator
Sent: Tuesday, January 23, 2007 3:01 PM
To: Friday, Barbara
Subject: Delivered:DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

Your message

To: 'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandgov.net'; Nasca, Mara; 'KKosky@Golder.com'; Nelson, Deborah
Cc: Linero, Alvaro; Cascio, Tom
Subject: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant
Sent: 1/23/2007 3:01 PM

was delivered to the following recipient(s):

Nelson, Deborah on 1/23/2007 3:01 PM
Cascio, Tom on 1/23/2007 3:01 PM

Adams, Patty

From: Friday, Barbara
Sent: Tuesday, January 23, 2007 3:12 PM
To: Adams, Patty
Subject: FW: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

---

From: Nelson, Deborah
Sent: Tuesday, January 23, 2007 3:08 PM
To: Friday, Barbara
Subject: Read: DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant

Your message

To:	'timothy.bachand@lakelandelectric.com'; 'farzie.shelton@lakelandgov.net'; Nasca, Mara; 'KKosky@Golder.com'; Nelson, Deborah
Cc:	Linero, Alvaro; Cascio, Tom
Subject:	DEP File No. 1050004-018-AC - C.D. McIntosh Jr., Power Plant
Sent:	1/23/2007 3:01 PM

was read on 1/23/2007 3:08 PM.

Friday, Barbara

From: Kozlov, Leonard
To: Friday, Barbara
Sent: Tuesday, January 23, 2007 8:35 AM
Subject: Read: DRAFT AC Permit No.: 0090069-004-AC(PSD-FL-378)

Your message

To:	'scott.salisbury@landfillenergy.com'; 'euripides.rodriguez@brevardcounty.us'; 'worley.gregg@epa.gov'; 'John_Bunyak@nps.gov'; Kozlov, Leonard; 'jeff.pope@us.bureauveritas.com'; 'dderenzo@derenzo.com'
Cc:	Koerner, Jeff
Subject:	DRAFT AC Permit No.: 0090069-004-AC(PSD-FL-378)
Sent:	1/19/2007 1:40 PM

was read on 1/23/2007 8:35 AM.

AFFIDAVIT OF PUBLICATION
THE LEDGER
Lakeland, Polk County, Florida

Case No's:

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Paula Freeman, who on oath says that she is Inside Classified Sales Manager The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being A

Notice of Intent

in the matter of **Dep File 105004-018-AC-PSD-FL-387**

Concerning **City of Lakeland /McIntosh, Fr. Power Plant**

was published in said newspaper in the issues of **2-19; 2007**

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

Signed.....
Paula Freeman
Inside Classified Sales Manager
Who is personally known to me.

Sworn to and subscribed before me this. 19TH
day of February A.D. 20 07

Patricia Ann Rouse
Notary Public

(Seal)

PATRICIA ANN ROUSE
MY COMMISSION # DD 330015
EXPIRES: October 17, 2008
Bonded Thru Notary Public Underwriters

My Commission Expires.....

X134

PUBLIC NOTICE OF INTENT TO ISSUE PSD PERMIT
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 1050004-018-AC, PSD-FL-387
Lakeland Electric
C.D. McIntosh, Jr. Power Plant
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit under the requirements for the Prevention of Significant Deterioration of Air Quality (PSD Permit) to Lakeland Electric for the C.D. McIntosh, Jr. Power Plant located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The permit authorizes installation of Low NOX burners (LNBs) and an overfire air (OFA) system on the Unit 3 fossil fuel-fired steam generator. A Best Available Control Technology (BACT) determination was required for emissions of carbon monoxide (CO) pursuant to Rule 62-212.400(10)(c), Florida Administrative Code (F.A.C.). The company's name and address are: Lakeland Electric, 501 East Lemon Street, Lakeland, Florida 33805.

The Lakeland Electric (the Company) C.D. McIntosh Jr. facility includes three fossil fuel fired steam generators, two diesel powered generators, and two gas turbines. Fossil fuel fired steam generator Unit 3 is primarily fired with coal and lesser amount of petroleum coke and refuse derived fuel. Nitrogen oxides (NOX) emissions are controlled by earlier vintage LNBs. Particulate matter (PM/PM10) is controlled by an electrostatic precipitator (ESP). Sulfur dioxide (SO2) emissions are controlled by a wet limestone scrubber.

The Company proposes to install a newer generation set of LNBs, an overfire air (OFA) system and, at a later date, a selective catalytic reduction (SCR) system on Unit 3. The program will be conducted in at least two phases. The first will occur during an outage in early 2007 during which the new LNBs and the OFA system will be installed. A subsequent permitting review will address the future SCR system. The primary purpose of the project will be to decrease nitrogen oxides (NOX) emissions from Unit 3.
Under the first phase, the Company will install 32 complete Advanced Burner Systems (ABS) Opti-Flow LNB assemblies that accommodate the existing igniters and flame scanners and a complete OFA system including wind boxes on the front and rear walls with interconnecting ductwork to the existing secondary air.

One effect of the project is that it will cause increases of carbon monoxide (CO) emissions. The Department conducted a BACT determination and is proposing a limit of 0.20 pounds of CO per million British Thermal Units of heat input to the furnace (lb/mmBtu). The Deportment requires installation of a continuous emission monitoring system (CEMS) for determination of compliance with the BACT limit on a 30-day averaging basis.

Because the LNB and OFA installation is part of a phased project, the Department will reassess the BACT determination after reviewing data collected after the first phase. The review will be incorporated into the permit review conducted for the second phase of the overall project.
The Department conducted an ambient air modeling analysis and concluded that the present phase of the project will not cause or contribute to any violation of the ambient air quality standards for CO.
The Department will issue the Final PSD Air Construction Permit unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for a public meeting concerning the proposed permit issuance action for a period of 30 days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.
The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within 14 days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the public notice or within 14 days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

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

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

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

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

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

Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33673-0926
Phone: (813) 632-7600
Fax: (813) 632-7665

The complete project file includes the permit application, draft air construction permit, technical evaluation, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Department's reviewing engineer for this project, Tom Cascio at MS 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or Tom.Cascio@dep.state.fl.us , or call 850/921-9526 for additional information. Key documents may also be viewed at: www.dep.state.fl.us/Air/permitting/construction.htm and clicking on Lakeland Electric C.D. McIntosh, Jr. Unit 3 in the power plant category.

X134 2-19; 2007

LAKELAND ELECTRIC

Farzie Shelton, chE; REM

Associate GM Technical Support

CERTIFIED MAIL

December 27, 2006

Ms. Patty Adams
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
MS 5505
Tallahassee, Florida 32399-2400

RE: PSD Application C.D. McIntosh Plant
1050004-018-AC

Dear Ms. Adams:

This letter is to confirm the receipt of your email dated December 22, 2006, regarding the processing fee of $7,500 that is required pursuant to Chapter 62-4.050(4)(a), F.A.C. I apologize for not getting back to you sooner; but I am on vacation until the first of the year.

In our zealous effort to meet our internal deadline, the processing fee was inadvertently omitted; however we have received approval to cut the check before the new year. The check No. 595636, in the amount of $7,500 is enclosed with this submittal.

We hope we can still get the permit issued before March 2007 and your Department's help will be greatly appreciated.

Sincerely,

For Farzie Shelton
Associate GM of Technical Support

Enc.

cc: Tom Cascio
EP Box File
Ken Kosky

City of Lakeland • Department of Electric Utilities

501 East Lemon Street • Lakeland, Fl 33801-5050 • 863. 834.6603 • Fax 863. 834.8187 • Cell 863.860.5998

farzie.shelton@lakelandelectric.com

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

December 21, 2006

SENT VIA ELECTRONIC MAIL – RECEIPT REQUESTED

Ms. Farzie Shelton
Associate General Manager – Technical Support
Lakeland Electric
501 East Lemon Street
Lakeland, Florida 33801

RE: PSD Application, C.D. McIntosh Plant
1050004-018-AC

Dear Ms. Shelton:

The Bureau of Air Regulation received your December, 2006, construction permit application for the addition of low Nox burners, overfire air, and selective catalytic reduction in McIntosh Unit 3. Since this is a PSD application, a $7,500 processing fee pursuant to Chapter 62-4.050(4)(a), F.A.C., will be required before we can begin reviewing your application. If you have any questions, please call Tom Cascio, review engineer, at (850)921-9526.

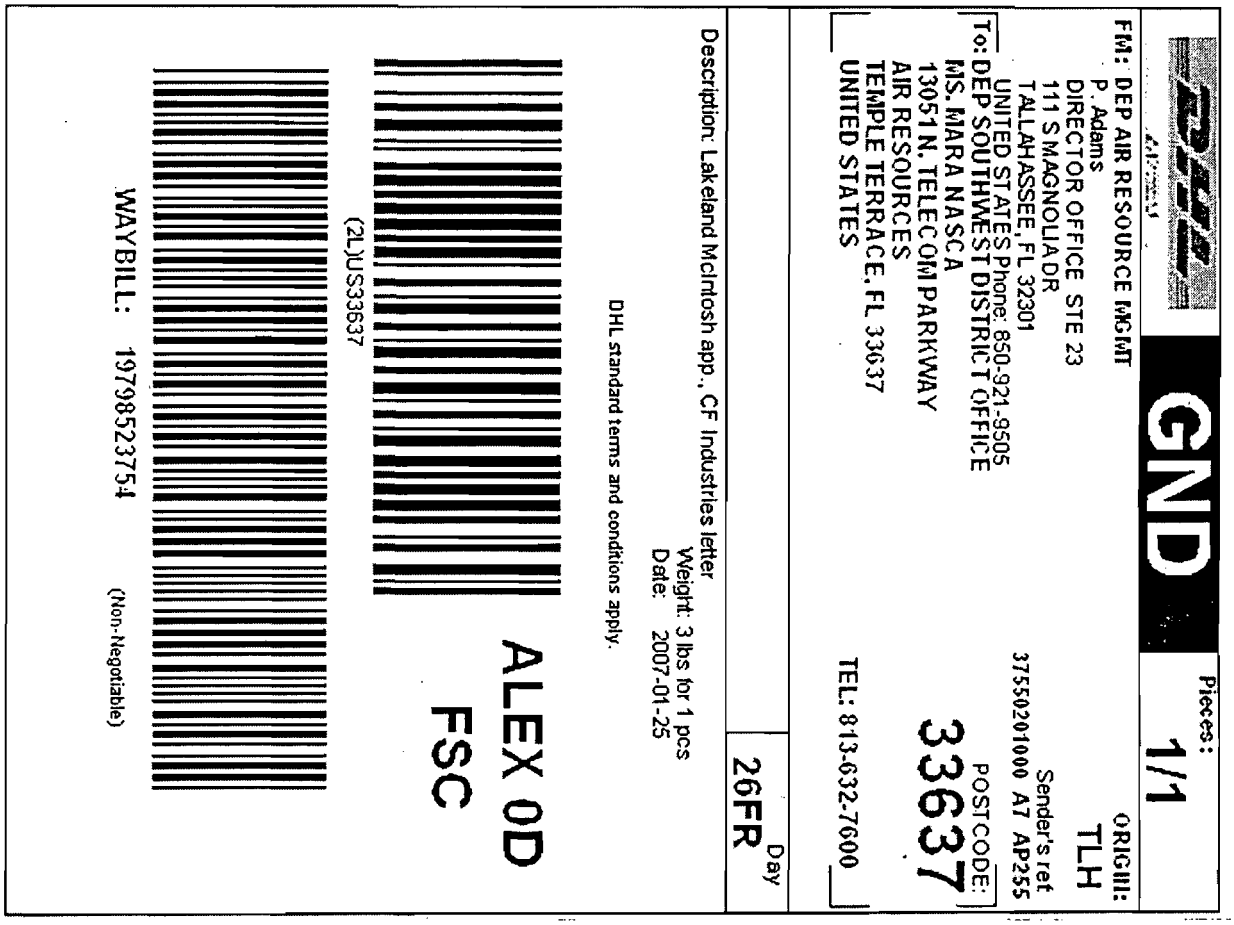
Sincerely,

Patty Adams

Patty Adams
Bureau of Air Regulation

/pa

cc: Tom Cascio



PEEL HERE PEEL HERE

Please fold or cut in half

DO NOT PHOTOCOPY

Using a photocopy could delay the delivery of your package and will result in additional shipping charge

SENDER'S RECEIPT
Waybill #: 19798523754

To(Company):
DEP Southwest District Office
Air Resources
13051 N. Telecom Parkway

Temple Terrace, FL 33637
UNITED STATES

Attention To: Ms. Mara Nasca
Phone#: 813-632-7600

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 3.07
Protection: Not Required
Description: Lakeland McIntosh app., CF Industries letter

Weight (lbs.): 3
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Ground (Est. delivery in 1 business day(s))

Special Svc:

Date Printed: 1/25/2007
Bill Shipment To: Sender
Bill To Acct: 778941286

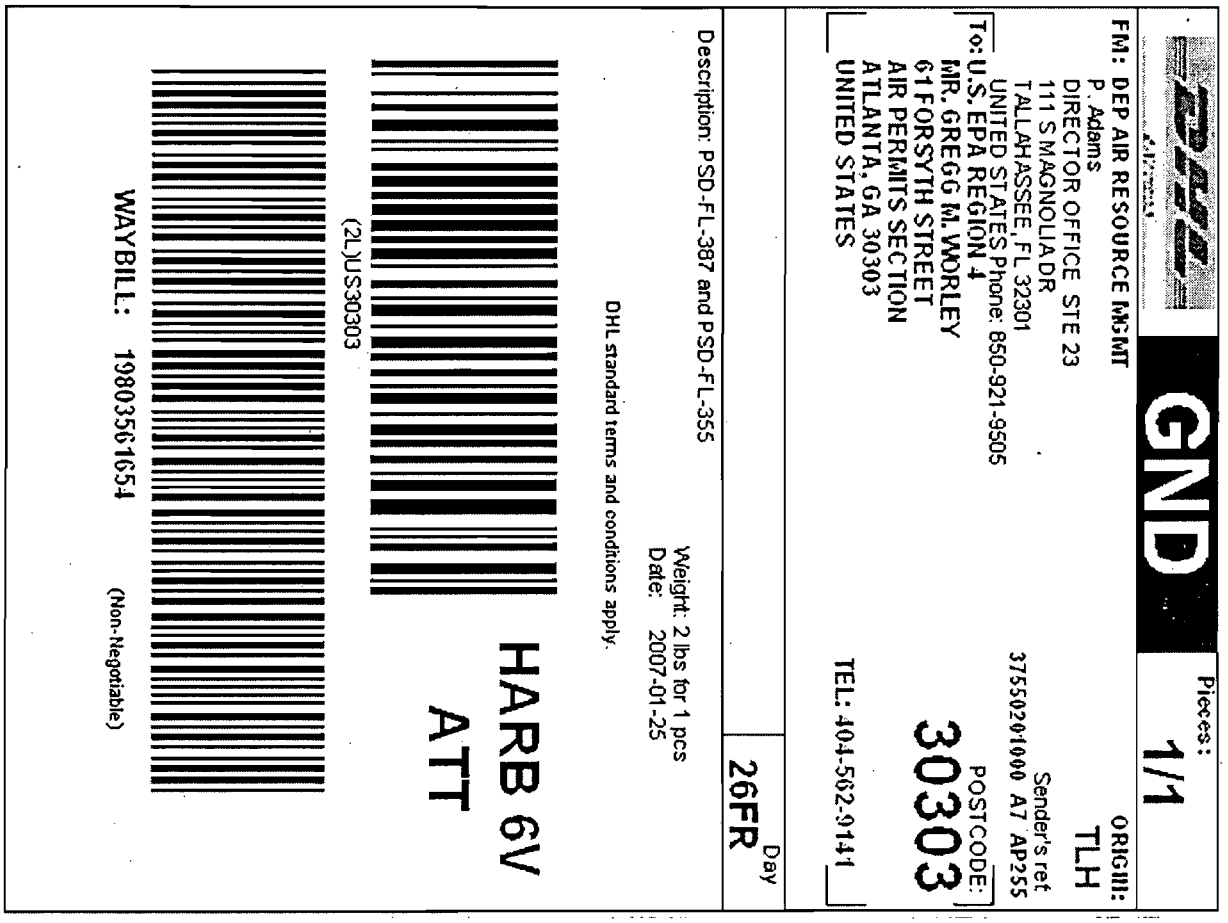
DHL Signature (optional) _____ Route _____ Date _____ Time _____

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

Thank you for shipping with DHL

Create new shipment ▶ View pending shipments Print waybill

DHL EXPRESS



PEEL HERE PEEL HERE

Please fold or cut in half

DO NOT PHOTOCOPY

Using a photocopy could delay the delivery of your package and will result in additional shipping charge

SENDER'S RECEIPT
Waybill #: 19803561654

To(Company):
U.S. EPA Region 4
Air Permits Section
61 Forsyth Street

Atlanta, GA 30303
UNITED STATES

Attention To: Mr. Gregg M. Worley
Phone#: 404-562-9141

Sent By: P. Adams
Phone#: 850-921-9505

Rate Estimate: 3.07
Protection: Not Required
Description: PSD-FL-387 and PSD-FL-355

Weight (lbs.): 2
Dimensions: 0 x 0 x 0

Ship Ref: 37550201000 A7 AP255
Service Level: Ground (Est. delivery in 1 business day(s))

Special Svc:

Date Printed: 1/25/2007
Bill Shipment To: Sender
Bill To Acct: 778941286

DHL Signature (optional) _____ Route _____ Date _____ Time _____

For Tracking, please go to www.dhl-usa.com or call 1-800-225-5345

Thank you for shipping with DHL

Create new shipment ▶ View pending shipments Print waybill

RECEIVED

DEC 11 2006

BUREAU OF AIR REGULATION

PREVENTION OF SIGNIFICANT DETERIORATION CONSTRUCTION PERMIT APPLICATION FOR THE ADDITION OF LOW NO_x BURNERS, OVERFIRE AIR, AND SELECTIVE CATALYTIC REDUCTION IN UNIT NO. 3

C.D. MCINTOSH, JR. POWER PLANT
LAKELAND, FLORIDA

Prepared For:
City of Lakeland, Department of Electric Utilities
C.D. McIntosh, Jr. Power Plant
3030 East Lake Parker Drive
Lakeland, Florida 33805

Prepared By:
Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

December 2006

063-7630

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APPLICATION FOR AIR PERMIT – LONG FORM

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit for a proposed project:

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL)

Air Operation Permit – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Revised/Renewal Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **City of Lakeland, Department of Electric Utilities**
2. Site Name: **C.D. McIntosh, Jr. Power Plant**
3. Facility Identification Number: **1050004**
4. Facility Location...:
   Street Address or Other Locator: **3030 East Lake Parker Drive**
   City: **Lakeland** County: **Polk** Zip Code: **33805**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Ms. Farzie Shelton, Associate General Manager - Technical Support**
2. Application Contact Mailing Address...
   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street**
   City: **Lakeland** State: **FL** Zip Code: **33801-5079**
3. Application Contact Telephone Numbers...
   Telephone: **(863) 834-6603** ext. Fax: **(863) 834-8187**
4. Application Contact Email Address: **farzie.shelton@lakelandelectric.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 12/9/06
2. Project Number(s): 1050004-018-AC
3. PSD Number (if applicable): PSD-FL-347
4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☒ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Lakeland Electric is seeking authorization to install Low-NOx burners and selective catalytic reduction (SCR) in McIntosh Unit 3 to meet the requirements of EPA's Clean Air Interstate Rule (CAIR) as implemented by FDEP in Rule 62-296.470 Florida Administrative Code (F.A.C.)

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
006	McIntosh Unit 3	ACIA	NA

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
   City of Lakeland / Lakeland Electric - Mr. Timothy Bachand
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Lakeland Electric**
   Street Address: **501 East Lemon Street, MS-MO1**
   City: **Lakeland** State: **FL** Zip Code: **33801**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(863) 834-6633** ext.**Direct line** Fax: **(863) 834-5760**
4. Owner/Authorized Representative Email Address: **timothy.bachand@lakelandelectric.com**
5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.

   Signature

   12/8/06
   Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext. **516** Fax: **(352) 336-6603**
4. Professional Engineer Email Address: **kkosky@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Kennard F. Kosky — Signature

12/8/06 — Date

(seal) 755

* Attach any exception to certification statement.

** **Board of Professional Engineers Certificate of Authorization #00001670**

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **409.0** North (km) **3106.2**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **26/4/50** Longitude (DD/MM/SS) **81/55/32**	
3. Governmental Facility Code: **4**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment : **The McIntosh Power Plant consists of 3 fossil fuel fired-steam generators (FFFSG), 2 diesel powered generators, 1 gas turbine peaking unit, and 1 combustion turbine operating in combined cycle (Unit 5). FFFSG Units 1 and 2 are fired with No. 6 fuel oil and natural gas (distillate oil is used as an ignitor). FFFSG Unit 3 is primarily fired with coal, refuse derived fule and petroleum coke. Unit 5 is a Westinghoue 501G combustion turbine and is primarily fired with natural gas with distillate oil as backup.**			

Facility Contact

1. Facility Contact Name: **Andrew Nguyen, Environmental Permitting**
2. Facility Contact Mailing Address... Organization/Firm: **Lakeland Electric** Street Address: **501 East Lemon Street** City: **Lakeland** State: **FL** Zip Code: **33801-5079**
3. Facility Contact Telephone Numbers: Telephone: **(863) 834-8180** ext. Fax: **(863) 603-8187**
4. Facility Contact Email Address: **andrew.nguyen@lakelandelectric.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: **Unit 1, Unit 2, Unit 3, and Unit 5 are regulated under Acid Rain, Phase II** **Unit 2 is subject to NSPS Subpart D,** **Unit 3 is subject to Subpart Da,** **Unit 5 is subject to Subpart KKKK.** **State:** **Unit 1 is subject to 62-296.405** **Unit 2, 3, and 5 are subject to 62-204.800** **Unit 3 is subject to 62-212.400(6)**	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM10	A	N
VOC	A	N
SO2	A	N
H106	A	N
NOX	A	N
HAPS	A	N
HCl	A	N
SAM	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID No.s Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **Part II** ☐ Previously Submitted, Date:____
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☒ Attached, Document ID: **Part II** ☐ Previously Submitted, Date:____
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID:____ ☒ Previously Submitted, Date: **June 14, 1996**

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: ☐ Attached, Document ID:____ ☒ Not Applicable (existing permitted facility)
2. Description of Proposed Construction or Modification, or Plantwide Applicability Limit (PAL): ☒ Attached, Document ID:**See Part II**
3. Rule Applicability Analysis: ☒ Attached, Document ID:**See Part II**
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): ☒ Attached, Document ID:**See Part II** ☐ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(5)(h)5., F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(5)(e)1. and 62-212.500(4)(e), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable

FACILITY INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:____ ☐ Not Applicable (revision application)
2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:____
   ☐ Not Applicable (revision application with no change in applicable requirements)
3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable
5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:____ ☐ Not Applicable
6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:____ ☐ Not Applicable

Additional Requirements Comment

See Part II.

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION
Section [1]
UNIT No. 3

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **McIntosh Unit 3 – Fossil-Fuel-Fired Steam Generator (FFFSG)**

3. Emissions Unit Identification Number: **006**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		**1982**	**49**	☒ Yes ☐ No

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: **364** MW

11. Emissions Unit Comment: **This emission unit is a coal-fired steam-generating unit which also co-fires refuse-derived fuel and petroleum coke.**

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
   PM – Electrostatic Precipitator (ESP), followed by
   SO2 – Flue Gas Desulfurization (FGD) system.
   NOX – Low NOX burners (LNB), Selective Catalytic Reduction (SCR) with ammonia injection.

2. Control Device or Method Code(s): **10, 67, 24, 139, and 032**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: **3,640** million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule: **24** hours/day **52** weeks/year	**7** days/week **8,760** hours/year

6. Operating Capacity/Schedule Comment:

Emission unit co-fires coal and coal/petroleum coke and/or RDF. Unit is also authorized to burn residual oil and gas. Heat input based on fuel flow sampling. The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability. Regular record keeping is not required for heat input. Instead the owner or operator is expected to determine heat input whenever emission testing is required, to demonstrate at what percentage of the rated capacity that the unit was tested. Rule 62-297.310(5) F.A.C., included in the permit, requires measurement of the process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods including but not limited to fuel flow metering or tank drop measurements, using the heat value of the fuel determined by the fuel vendor or the owner or operator, to calculate average hourly heat input during the test.

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Site Plan**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Exhausts through a single stack.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **250**feet	7. Exit Diameter: **18**feet
8. Exit Temperature: **125**°F	9. Actual Volumetric Flow Rate: **1,260,536** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: **17** East (km): **409.3** North (km): **3106.3**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **4**

1. Segment Description (Process/Fuel Type): **Coal**		
2. Source Classification Code (SCC): **1-01-001-01**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate: **159.6**	5. Maximum Annual Rate: **1,398,096**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **3.3**	8. Maximum % Ash: **16**	9. Million Btu per SCC Unit: **23**
10. Segment Comment: **Up to 20 percent petroleum coke is authorized to be co-fired with coal.**		

Segment Description and Rate: Segment **2** of **4**

1. Segment Description (Process/Fuel Type): **Oil**		
2. Source Classification Code (SCC): **1-01-004-01**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **24,268**	5. Maximum Annual Rate: **212,584**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.73**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **150**
10. Segment Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **3** of **4**

1. Segment Description (Process/Fuel Type): **Coal/Petroleum Coke (80/20 weight basis)**		
2. Source Classification Code (SCC): **1-01-001-01**	3. SCC Units: **Tons**	
4. Maximum Hourly Rate: **152.6**	5. Maximum Annual Rate: **1,336,776**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **3.3**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **24**
10. Segment Comment:		

Segment Description and Rate: Segment **4** of **4**

1. Segment Description (Process/Fuel Type): **Natural Gas**		
2. Source Classification Code (SCC): **1-01-006-01**	3. SCC Units: **Million Cubic Feet**	
4. Maximum Hourly Rate: **3.56**	5. Maximum Annual Rate: **31,139**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **3.3**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,024**
10. Segment Comment: **Natural gas or propane only or in combination with any other fuels or fuel combinations.**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	010		EL
SAM	032	010	NS
CO			EL

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **99.1**
3. Potential Emissions: **273** lb/hour **483.1** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.075 lb/MMBtu** Reference: **Title V Permit No. 1050004-016-AV**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years

10. Calculation of Emissions:
0.075 lb/mmBtu x 3,640 mmBtu/hr = 273 lb/hr

11. Pollutant Potential/Estimated Fugitive Emissions Comment:
Annual emissions based on actual emissions for 2003-2002. See Part II

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.070 lb/mmBtu**	4. Equivalent Allowable Emissions: **254**lb/hour **483.1**tons/year
5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B, if greater than 400 hours.**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for oil firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.**	

Allowable Emissions Allowable Emissions 2 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.075 lb/MMBtu**	4. Equivalent Allowable Emissions: **273** lb/hour **483.1**tons/year
5. Method of Compliance: **Annual stack test; EPA Method 5 or 5B, if greater than 400 hours.**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for oil/RDF firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.**	

Allowable Emissions Allowable Emissions 3 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.05 lb/MMBtu**	4. Equivalent Allowable Emissions: **182** lb/hour **483.1** tons/year
5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B.**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for coal/petroleum coke/RDF firing and coal/RDF firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **4** of **4**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.044 lb/mmBtu**	4. Equivalent Allowable Emissions: **160**lb/hour **483.1**tons/year
5. Method of Compliance: **Annual stack test; EPA Method 5 and 5B.**	
6. Allowable Emissions Comment (Description of Operating Method): **Allowable emission limit based on Title V Permit No. 1050004-016-AV for coal firing and coal/petroleum coke firing. No increase in representative actual annual emissions plus the PSD significant emission rate will occur as a result of the project.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SAM**	2. Total Percent Efficiency of Control: **30+%**
3. Potential Emissions: lb/hour **135.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
8. Calculation of Emissions:	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: **Annual emissions based on actual emissions for 2002-2001. See Part II**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **135.6 tons/yr**	4. Equivalent Allowable Emissions: lb/hour **135.6** tons/year
5. Method of Compliance: **Annual Operating Reports; See Part II**	
6. Allowable Emissions Comment (Description of Operating Method): **No increase in representative actual annual emissions plus th PSD significant emission rate will occur as a result of the addition of the project.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **728** lb/hour **3,188.6** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.20 lb/MMBtu** Reference: **BACT See Part II**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if Required): Tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Potential Actual Emissions (if Required): Tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **0.20 lb/mmBtu x 3,640 mmBtu/hr = 728.0 lb/hr** **728.0 lb/hr x 8,760 hr/yr ÷ 2,000 lb/ton = 3,188.6 ton/yr**	
11. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.20 lb/MMBtu**	4. Equivalent Allowable Emissions: **728** lb/hour **3,188.6** tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **2**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **27** % Maximum Period of Excess Opacity Allowed: **6** min/hour	
4. Method of Compliance: **Annual VE testing; EPA Method 9**	
5. Visible Emissions Comment: **Title V Permit 1050004-016-AV**	

Visible Emissions Limitation: Visible Emissions Limitation **2** of **2**

1. Visible Emissions Subtype: **VE99**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **None**	
5. Visible Emissions Comment: **Excess VE emissions allowed under FDEP Rule 62-210.700(1) and 40 CFR 60.8(c), and 60.11(c) for 2 hours (120 minutes) per 24-hour period for startup, shutdown, and malfunction.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor _____ of _____

1. Parameter Code: **EM**	2. Pollutant(s): **SO2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Advanced Pollution Inst.** Model Number: **152**	Serial Number: **139/176 and 172/156**
5. Installation Date: **09 Nov 1994**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75, Title V Permit No. 1050004-016-AV.**	

Continuous Monitoring System: Continuous Monitor **2** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **NOx**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Advanced Pollution Inst.** Model Number: **252**	Serial Number: **165 and 136**
5. Installation Date: **09 Nov 1994**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75, Title V Permit No. 1050004-016-AV.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **3** of **8**

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **United Science Inc.** Model Number: **500C**	Serial Number: **0993688**
5. Installation Date: **09 Nov 1994**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75 and Title V Permit No. 1050004-016-AV.**	

Continuous Monitoring System: Continuous Monitor **4** of **8**

1. Parameter Code: **CO2**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **California Instruments** Model Number: **3300**	Serial Number: **N3L2487T and N3L2490T**
5. Installation Date: **09 Nov 1994**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR Part 75.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **5** of **8**

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **United Science Ultraflow** Model Number: **100**	Serial Number: **1001060**
5. Installation Date: **10 Nov 1995**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Flow monitor required pursuant to 40 CFR Part 75.**	

Continuous Monitoring System: Continuous Monitor **6** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **SO2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Lear Siegler** Model Number: **SM 810**	Serial Number: **29259M**
5. Installation Date: **17 Sep 1982**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 60.45.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **7** of **8**

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Lear Seigler** Model Number: **CM50**	Serial Number: **291230**
5. Installation Date: **17 Sep 1982**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **COM required pursuant to 40 CFR 60.45.**	

Continuous Monitoring System: Continuous Monitor **8** of **8**

1. Parameter Code: **O2**	2. Pollutant(s):
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **Lear Siegler** Model Number: **RM41**	Serial Number:
5. Installation Date: **17 Sep 1982**	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **O2 required pursuant to 40 CFR 60.45.**	

EMISSIONS UNIT INFORMATION
Section [1]
UNIT No. 3

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **See Part II** ☐ Previously Submitted, Date ____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____ ☒ Previously Submitted, Date ____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **See Part II** ☐ Previously Submitted, Date ____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____ ☐ Previously Submitted, Date ____
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: ____ ☐ Previously Submitted, Date ____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: ____
   Test Date(s)/Pollutant(s) Tested: ____
   ☐ Previously Submitted, Date: ____
   Test Date(s)/Pollutant(s) Tested: ____
   ☐ To be Submitted, Date (if known): ____
   Test Date(s)/Pollutant(s) Tested: ____
   ☒ Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: ____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1]
UNIT No. 3

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☒ Attached, Document ID: **Part II** ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☒ Attached, Document ID: **Part II** ☐ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: ____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: ____ ☐ Not Applicable
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: ____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: ____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: ____ ☐ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID: ____
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID: ____
      ☐ Previously Submitted, Date: ____
   ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1]
UNIT No. 3

Additional Requirements Comment

PART II

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Figure 2-3 SCR General Arrangement

1.0 INTRODUCTION

Lakeland Electric is seeking authorization from the Florida Department of Environmental Protection (FDEP) to install low-nitrogen oxides (NO_x) burners (LNB), overfire air (OFA), and selective catalytic reduction (SCR) in Unit 3 at the C.C. McIntosh, Jr. Power Plant (McIntosh Power Plant) to meet the requirements of the Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) as implemented by FDEP in Rule 62-296.470 Florida Administrative Code (FAC). In addition, the addition of SCR will have the co-benefits of reducing emissions of mercury to meet EPA's Clean Air Mercury Rule (CAMR) implemented by FDEP in Rule 62-296.480 FAC The primary purpose of the project will be to decrease (NO_x) emissions from Unit 3 to meet the annual and ozone season NO_x CAIR allocations. While the addition of SCR will substantially decrease emissions of NO_x, there is the potential for collateral increases in emissions of carbon monoxide, sulfuric acid mist (SAM) and particulate matter (PM). The potential increase in carbon monoxide (CO) is a result of the installation of LNBs that would decrease NO_x from current levels. The potential increase of SAM emissions is a result of the oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3) that is emitted as SAM after the flue gas desulfurization (FGD) system. Potential increases in SAM emissions will be minimized through the injection of ammonia (NH_3) to react with SO_3 prior to the electrostatic precipitator (ESP). The reactants, primarily ammonium sulfate, will be collected in the ESP. The potential increase in PM from the reaction of NH_3 and SO_3 will be collected in the ESP and FGD system. With the exception of CO, there will be no emissions over the prevention of significant deterioration (PSD) emission rates from the installation of LNBs and SCR.

The C. D. McIntosh Power Plant is located at 3030 East Lake Parker Drive, Lakeland, Polk County, Florida. The facility is authorized to operate under Title V Permit [Final Title V Permit No. 1050004-016-AV].

Golder Associates Inc. (Golder) was contracted to prepare the necessary air permit application seeking authorization to install LNBs, OFA, and SCR on Unit No. 3. The air permit application consists of the appropriate applications form [Part I; DEP Form 62-210.900(1)], a technical description of the project (Part II Section 2.0), rule applicability for the project (Part II, Section 3.0) and a PSD evaluation for CO (Part II Section 4.0).

2.0 PROJECT DESCRIPTION

LNBs and SCR have been selected as the control systems to meet the NO_x CAIR for Unit 3. The LNB will be supplied by Siemens Power Group, Inc. (SPG). The system will include new LNBs and OFA equipment. Advanced Burner Technologies, Inc. (ABT) is a wholly owned subsidiary of SPG, and will be providing the design, fabrication, delivery, and field testing services for the new LNB system. The following major components are part of the LNB system and will be installed at Unit 3 in April 2007:

- 32 complete new Opti-Flow™ low NO_x burner assemblies, with features to accommodate the existing igniter and flame scanner assemblies. These will be installed in the existing burner locations on both the front and rear furnace walls.
- Complete new OFA system including new OFA windboxes mounted on the boiler front and rear walls. Interconnecting ductwork to the existing secondary air ducts will be required.
- 8 complete new OFA register assemblies, 4 each to be located within the new front and rear OFA windboxes.
- Computational Fluid Dynamic (CFD) modeling of the existing secondary air and newly supplied OFA system.
- Testing and Field Advisory Services.

Average NO_x emissions levels are expected to be in the 0.30 lb/MMBtu range following the installation of the LNB and OFA system. Average CO emission levels are not expected to exceed 200 parts per million (ppm). VOC emission levels and particulate levels are not expected to change from current emission levels following the installation of the new LNB and OFA system.

The SCR system is designed to work in conjunction with the new LNB and OFA system that will be added to the boiler to maintain stack NOx emissions levels at or below 0.10 pounds per million British thermal units (lb/MMBtu) on an annual average.

2.1 SCR Process

The SCR system uses an NH_3 reagent over a vanadium/titanium based catalyst to convert NO_x (NO and NO_2) to elemental nitrogen (N_2) and water (H_2O). The chemical reactions that take place are as follows:

Primary Reaction: $4NO + 4NH_3 + O_2 \rightarrow 4N2 + 6H_2O$

Secondary Reactions: $2NO_2 + 4NH_3 + O_2 \rightarrow 3N2 + 6H_2O$

$6NO + 4NH_3 \rightarrow 5N2 + 6H2O$

$6NO_2 + 8NH_3 \rightarrow 7N_2 + 12H_2O$

$NO + NO_2 + 2NH_3 \rightarrow 2N_2 + 2H_2O$

NO_x from coal combustion is about 95 percent NO and 5 percent NO_2, so the primary reaction is the most significant for the SCR process. This reaction indicates that one mole of NH_3 is required to remove one mole of NO. The function of the catalyst is to lower the required activation energy for the reaction and to increase the reaction rate. As flue gas passes over the catalyst surface, activated sites rapidly adsorb NH_3 and NO to form an activated complex. The reaction proceeds to produce nitrogen (N_2) and water (H_2O), which are then desorbed back to the flue gas. The site at which the reaction occurs is then reactivated via oxidation.

SCR is a process that uses catalyst to promote the conversion of nitrogen oxides (NO_x) to N_2 and H_2O in the flue gas. This conversion occurs between the boiler economizer and the air heaters in a specially designed ductwork section, called the SCR reactor that contains the catalyst. NH_3 vapor, mixed with dilution air, is injected into the flue gas upstream of the catalyst and is thoroughly mixed with the flue gas prior to its admittance to the catalyst. As the flue gas passes over the catalyst, the NO and NO_2 combine with the NH_3 to form N_2 and H_2O.

Unit 3 will have two SCR reactors. Each SCR reactor will consist of a steel reactor box designed to support the SCR catalyst modules and to properly distribute flue gas through the catalyst layers. Flue gas flow will be vertically downward through the catalyst to minimize ash pluggage. Flue gas ductwork will be provided from the economizer outlet to the air heater inlet (including an SCR bypass duct and associated dampers). The SCR inlet duct will include a static flue gas mixer, and NH_3 injection grid.

Figure 2-1 presents a schematic flow diagram of the SCR system showing the inlet duct from the economizer, the NH_3 injection grid and SCR catalyst. A photograph of the existing Unit 3 boiler showing the air heaters and ESP is shown in Figure 2-2. The general arrangement of the SCR system is illustrated in Figure 2-3.

2.2 NH_3 System

NH_3 is introduced in the SCR as a mixture of anhydrous NH_3 and air. The air/NH_3 vapor mixture (typically 5 percent NH_3 by volume) is produced in NH_3 vaporization equipment and supplied to the NH_3 injection grid header. The air/NH_3 vapor mixture is distributed across the entire duct cross section using the NH_3 injection grid (AIG). The AIG consists of a series of pipes, each with nozzles that inject the mixture into a particular section of the SCR reactor inlet duct. The pipes will extend the entire width of the ductwork and contain a sufficient number of nozzles with orifices sized for the particular NH_3 distribution requirement. If necessary, as determined by the physical flow model test of the SCR reactor and associated ductwork, a static mixer may be required upstream of the NH_3 injection grid to help reduce the stratification of temperature and chemical composition of the flue gas flow out of the economizers.

Anhydrous NH_3 will be delivered to the site by tank truck and unloaded into one of two bulk storage tanks (each with the storage capacity of ~75 tons). Liquid anhydrous NH_3 will be transferred from the storage tanks to NH_3 vaporizers. After vaporization, the NH_3 gas will be mixed with ambient air and distributed into the flue gas through ammonia injection grids located upstream of the reactor.

2.3 SCR Catalyst Details

The catalyst used for NO_x reduction primarily consists of a vanadium and titanium (Ti) mixture. However, the final catalyst composition can consist of many active metals and support materials. Titanium dioxide (TiO_2) is used as the base material that disperses and supports vanadium pentoxide (V_2O_5), which is the active catalyst material. V_2O_5 is widely used in the SCR industry due to its resistance to sulfur poisoning. The vanadium content controls the reactivity of the catalyst, but also catalyzes the oxidation of SO_2 to SO_3. For moderate to high sulfur coal applications, it is necessary to minimize the vanadium content to reduce SO_2 oxidation. Additionally, the vanadium already present in the petcoke fuel will deposit on the catalyst, potentially increasing the oxidation of SO_2 to SO_3. Tungsten oxide also provides thermal and mechanical stability to the catalyst. The concentrations of vanadium pentoxide, titanium dioxide, and tungsten oxide will be customized by the catalyst vendor to meet the specific requirements for Unit 3 SCR system installation. The catalyst will be made up of several identical catalyst modules that will be loaded into the SCR reactor.

2.4 SCR Cleaning and Replacement Schedule

Each SCR reactor will include sonic horns to keep the catalyst free of fly ash buildup. Provisions for catalyst loading into the reactors will be included. The SCR reactors will be designed for three initial

layers of catalyst and a spare level for a future additional layer of catalyst. The catalyst replacement schedule will be determined as data are collected and reviewed once the SCR system is in operation.

2.5 Schedule

The SCR project is currently scheduled for operation in December 2008. Initial foundation construction is scheduled for the third quarter of 2007. Some small existing equipment at grade is planned for relocation during the Spring 2007 outage to allow future construction space for constructing the SCR foundation.

The conceptual SCR system design characteristics are listed below:

- Baseline NO_x Loading: 0.36 lb/MMBtu (after installation of LNB, 0.36lb/MMbtu is the SCR Design basis and is calculated at 20% over 0.30lb/MMbtu←LNB guarantee)
- Target NO_x Emissions: 0.10 lb/MMBtu (annual average)
- NH_3 Slip: 2 ppm volume dry (vd) at 4 percent O_2
- SO_2 to SO_3 Conversion: 0.8 percent
- Catalyst Type: High Dust
- Catalyst Configuration: Vertical
- Number of Reactors : 2
- Number of Initial Catalyst Layers (Per Reactor): 3
- Number of Spare Layers (Per Reactor): 1
- Modules Per Layer (Per Reactor): 9 x 5
- Reactor Dimensions (Inside x Inside)" 34'- 3" x 30'- 3"
- Full Load Gas Flow: 1,730,060 actual cubic feet per meter (acfm) at SCR inlet
- Normal Operating Temperature 640° F
- Superficial Velocity Through Catalyst: 15 to 16 feet per second (ft/sec)
- Pressure Drop Through Box and Ductwork: 10.0 inches (w.c.)
- NH_3 Consumption at Design Conditions: 415 pounds per hour (lb/hr)
- Reagent (NH_3) Storage Required: 2 x 30,000 gallons = ~ 2 x 75 tons at 60°F

TABLE 2-1
MCINTOSH UNIT 3 ANNUAL HEAT INPUT, 2002 - 2005

Year	Heat Input (MMBtu/yr)				
	Coal	Oil/Gas	Pet Coke	MSW	Total
2005	24,739,432	88,531	2,202,682	0	27,030,645
2004	18,727,073	149,795	398,533	0	19,275,401
2003	23,556,583	170,380	541,898	62,413	24,331,274
2002	19,914,927	284,194	3,012,015	135,529	23,346,665
2001	22,521,423	480	3,868,418	261,180	26,651,502

Note: Heat Input calculated from Annual Operating Reports based on fuel use and heat content.

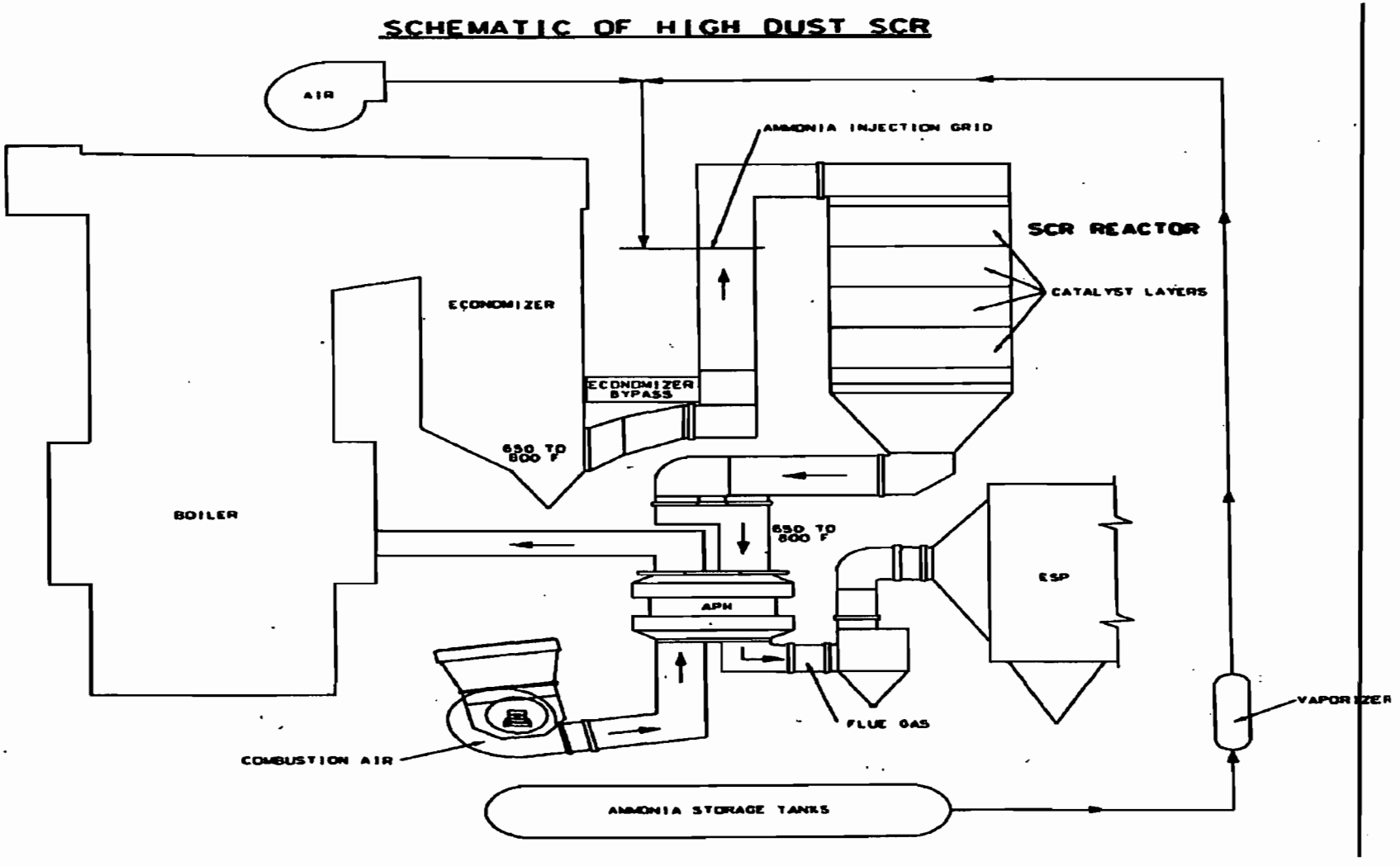
TABLE 2-2
MCINTOSH UNIT 3 ANNUAL EMISSIONS REPORTED IN ANNUAL OPERATING REPORTS, 1999 - 2003

Year	Pollutant	Unit 3 (tons)
2005	CO	136.1
	PM	264.6
	SAM	147.3
2004	CO	93.1
	PM	302.1
	SAM	103.9
2003	CO	129.5
	PM	486.0
	SAM	131.1
2002	CO	157.4
	PM	390.1
	SAM	125.6
2001	CO	195.7
	PM	266.5
	SAM	145.6

Note: Data from Annual Operating Reports.

FIGURE 2-1

PROCESS FLOW DIAGRAM



Boiler

FIGURE 2-2

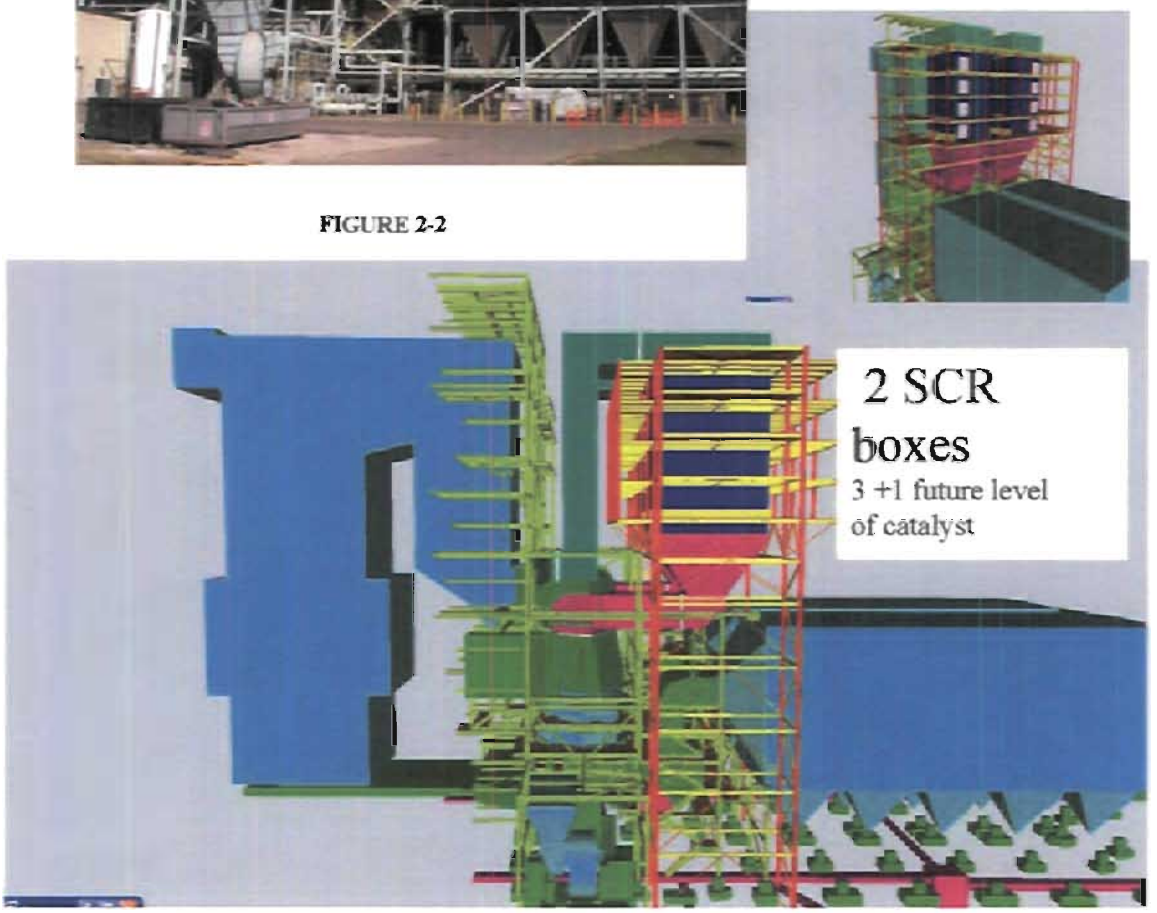
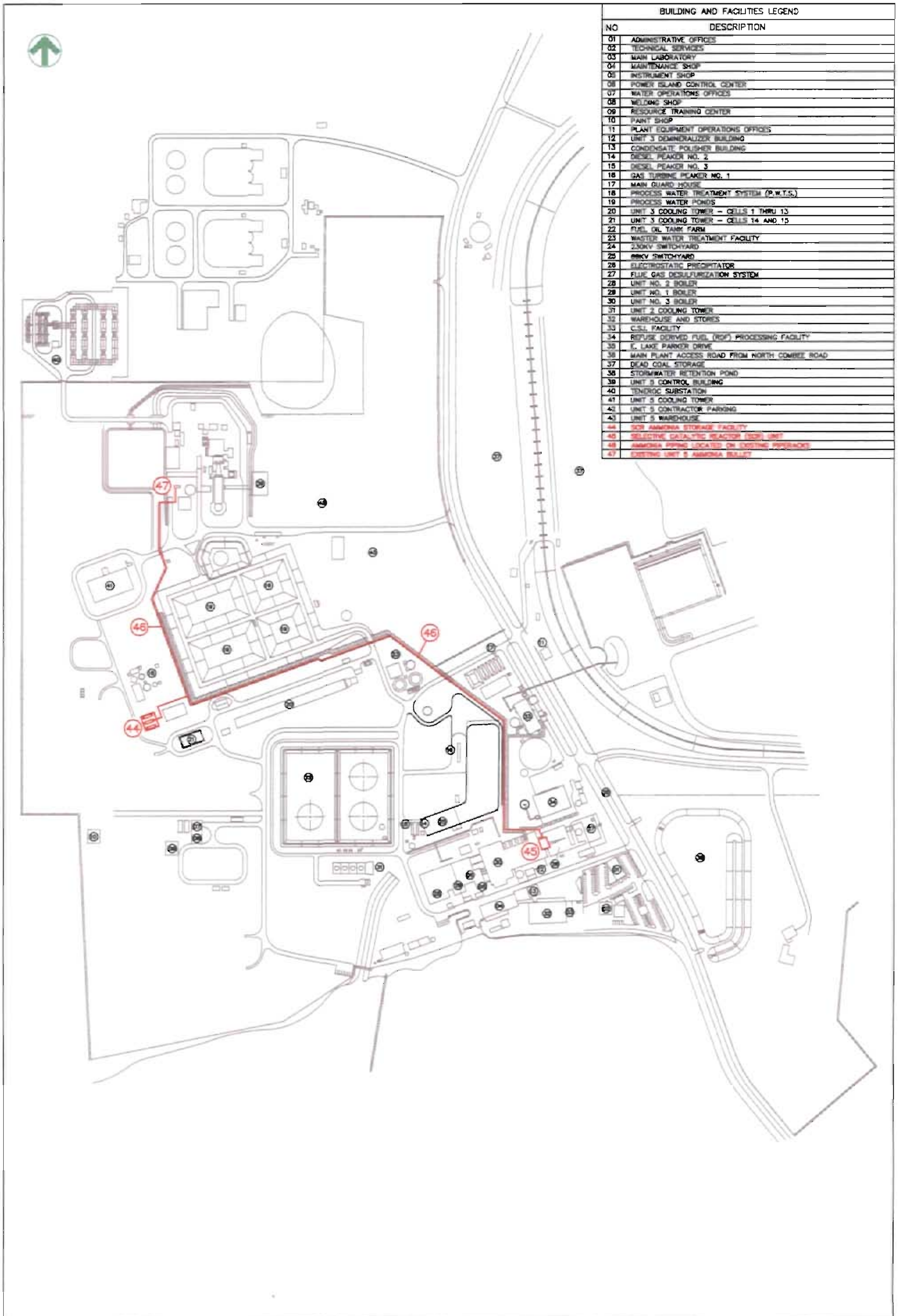


FIGURE 2-3 –SCR General Arrangement



BUILDING AND FACILITIES LEGEND

NO	DESCRIPTION
01	ADMINISTRATIVE OFFICES
02	TECHNICAL SERVICES
03	MAIN LABORATORY
04	MAINTENANCE SHOP
05	INSTRUMENT SHOP
06	POWER ISLAND CONTROL CENTER
07	WATER OPERATIONS OFFICES
08	WELDING SHOP
09	RESOURCE TRAINING CENTER
10	PAINT SHOP
11	PLANT EQUIPMENT OPERATIONS OFFICES
12	UNIT 3 DEMINERALIZER BUILDING
13	CONDENSATE POLISHER BUILDING
14	DIESEL PEAKER NO. 2
15	DIESEL PEAKER NO. 3
16	GAS TURBINE PEAKER NO. 1
17	MAIN GUARD HOUSE
18	PROCESS WATER TREATMENT SYSTEM (P.W.T.S.)
19	PROCESS WATER PONDS
20	UNIT 3 COOLING TOWER – CELLS 1 THRU 13
21	UNIT 3 COOLING TOWER – CELLS 14 AND 15
22	FUEL OIL TANK FARM
23	WASTER WATER TREATMENT FACILITY
24	230KV SWITCHYARD
25	69KV SWITCHYARD
26	ELECTROSTATIC PRECIPITATOR
27	FLUE GAS DESULFURIZATION SYSTEM
28	UNIT NO. 2 BOILER
29	UNIT NO. 1 BOILER
30	UNIT NO. 3 BOILER
31	UNIT 2 COOLING TOWER
32	WAREHOUSE AND STORES
33	C.S.I. FACILITY
34	REFUSE DERIVED FUEL (RDF) PROCESSING FACILITY
35	E. LAKE PARKER DRIVE
36	MAIN PLANT ACCESS ROAD FROM NORTH COMBEE ROAD
37	DEAD COAL STORAGE
38	STORMWATER RETENTION POND
39	UNIT 5 CONTROL BUILDING
40	TENOROC SUBSTATION
41	UNIT 5 COOLING TOWER
42	UNIT 5 CONTRACTOR PARKING
43	UNIT 5 WAREHOUSE
44	SCR AMMONIA STORAGE FACILITY
45	SELECTIVE CATALYTIC REACTOR (SCR) UNIT
46	AMMONIA PIPING LOCATED ON EXISTING PIPERACKS
47	EXISTING UNIT 5 AMMONIA BULLET

REV. NO.	DRN. BY	DATE	ENG. BY	APPR.	REVISION

LAKELAND ELECTRIC

DRAWING TITLE: McINTOSH POWER PLANT OVERALL SITE PLAN

DIVISION: PRODUCTION ENGINEERING
ENGINEER: MILLER
DRN. BY: MGIEGER
DATE: 09-26-01
APPR. BY: .

PROJ. NO. .
PLOT DATE 09-26-01
DWG. NO. SK-1

SCALE NONE
CAD NO. stateplane
SHT. NO. · OF ·
REV. 1

SIZE B

3.0 RULE APPLICABILITY

Under Federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. EPA has approved Florida's State Implementation Plan (SIP), which contains PSD regulations. Therefore, PSD approval authority has been granted to the FDEP. For projects approved under the Florida PPSA, the PSD program is delegated.

A "major facility" is defined as any 1 of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more of any pollutant regulated under CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review. For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates.

PSD review is used to determine whether significant air quality deterioration will result from the new or modified facility. Federal PSD requirements are contained in 40 Code of Federal Regulations (CFR) 52.21, *Prevention of Significant Deterioration of Air Quality.* The State of Florida has adopted the federal PSD regulations by reference (Rule 62-212.400, FAC). Major facilities and major modifications are required to undergo the following analysis related to PSD for each pollutant emitted in significant amounts:

- Control technology review;
- Source impact analysis;
- Air quality analysis (monitoring);
- Source information; and
- Additional impact analyses.

The McIntosh Power Plant is a major facility under FDEP Rules. Because there is a physical change with the addition of LNB, OFA, and SCR and the pollution control exemption in the PSD rules have been vacated, the project is a potential modification as defined in the FDEP Rules in 62-210.200 and under the PSD rules in 62-212.400, FAC. PSD review would be required for the project if there were a significant net increase in emissions. The comparison is made based on the projected future actual

emissions and the baseline actual emissions. The baseline actual emissions for a fossil fuel fired steam electric generating unit are the emissions over a consecutive 24-month period, 5 years immediately preceding the date that a complete application is submitted. The use of different consecutive 24-month periods for each pollutant are allowed. For an existing facility for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The net emissions increase is determined using the baseline-to-projected actual test. In this comparison, if the projected actual emissions minus the baseline actual emissions equal or exceed the PSD significant emission rates, then PSD review would apply.

Presented in Table 3-1 is the heat input reported in the Annual Operating Report (AOR) for the period 2001 through 2005. Table 3-2 presents the annual emissions reported in the AORs for the years 2001 through 2005 for CO, PM and SAM. Table 3-2 also presents the average calendar year emissions for each consecutive 2-year period from 2001 through 2005 based on the average calendar year emissions. The use of calendar year dates from the AOR is representative of historic normal operation. The annual average emissions for each consecutive 2-year period are consistent with the definition of baseline actual emissions for fossil fuel fired steam electric generating units. The highest two consecutive 2-year averages in Table 3-2 for the period 2001-2002 are proposed as the basis for future comparisons for CO and SAM emissions and 2003-2002 for PM emissions. Years 2001-2002 also have the highest 2-year average heat input.

Boiler Unit No. 3 operates as a base-load unit, but, for any given year, operation can vary slightly due to electric demand and operational variability due to outages and maintenance. Due to this slight variability, two consecutive years out of the last 5 years are appropriate for any future comparisons.

The proposed conditions for the installation of the LNB/SCR/OFA system with NH_3 control for SAM emissions are presented below:

SCR Systems: The permittee shall construct, tune, operate, and maintain a new LNB, OFA, and SCR system for Units No. 3 to reduce emissions of NO_x as described in the application and the control system shall be operated as necessary to comply with CAIR at Lakeland Electric's discretion.

The applicant shall maintain and submit to the FDEP on an annual basis for a period of 5 years from the date the SCR systems are initially operated, information demonstrating in accordance with 62-212.300(1)(e) F.A.C. that the installation of LNB, OFA and SCR did not result in emission

increases of PM and SAM. The future emissions shall be compared with the baseline actual emissions for the period 2002-2001 for SAM and 2003-2002 for PM as reported in the AORs using EPA Method 5B for PM and Method 8A (controlled condensate) for SAM.

TABLE 3-1
MCINTOSH UNIT 3 ANNUAL HEAT INPUT, 2001-2005

Year	Heat Input (MMBtu/yr)				
	Coal	Oil/Gas	Pet Coke	MSW	Total
2005	24,739,432	88,531	2,202,682	0	27,030,645
2004	18,727,073	149,795	398,533	0	19,275,401
2003	23,556,583	170,380	541,898	62,413	24,331,274
2002	19,914,927	284,194	3,012,015	135,529	23,346,665
2001	22,521,423	480	3,868,418	261,180	26,651,502

Note: Heat Input calculated from Annual Operating Reports based on fuel use and heat content.

TABLE 3-2
MCINTOSH UNIT 3 ANNUAL EMISSIONS REPORTED IN AORS, 2001-2005

Year	Pollutant	Unit 3 (tons)	2-year Average (tons)	2-year Average (period)
2005	CO	136.1	114.6	2005-2004
	PM	264.6	283.3	
	SAM	147.3	125.6	
2004	CO	93.1	111.3	2004-2003
	PM	302.1	394.1	
	SAM	103.9	117.5	
2003	CO	129.5	143.5	2003-2002
	PM	486.0	**438.1**	
	SAM	131.1	128.3	
2002	CO	157.4	**176.6**	2002-2001
	PM	390.1	328.3	
	SAM	125.6	***135.6***	
2001	CO	195.7	-	-
	PM	266.5		
	SAM	145.6		

Note: Data from Annual Operating Reports. Highest 2-year averages indicated in bold format.

4.0 PSD EVALUATION FOR CO

The Project is considered a modification under PSD regulation. A modification under PSD rules would occur if a physical or operational change causes an increase in annual emissions by more than the PSD significant emission rates. The comparison is made based on the projected future actual emissions and the baseline actual emissions. The baseline actual emissions are the emissions over a consecutive 24-month period, 5 years immediately preceeding the date that a complete application and the use of different consecutive 24-month periods for each pollutant are allowed.

For an existing source for which a modification is proposed, the modification is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates. The net emissions increase is determined using the baseline-to-projected actual test. In this comparison, if the projected actual emissions minus the baseline actual emissions equal or exceed the PSD significant emission rates, then PSD review would apply. For the Project, the emissions of CO are projected to exceed the significant emission rate.

4.1 CO BACT Evaluation

There are no applicable new source performance standards (NSPS) requirements for the control of CO from utility boilers. CO emissions result from incomplete combustion of the fuel. CO emissions are controlled by good combustion practices (GCP). The boilers are currently operated for high-combustion efficiency, which will inherently minimize the production of CO. After the implementation of the project, the operation of the boilers will continue to maximize combustion efficiency while reducing CO emissions.

Theoretically, CO emissions can be reduced by passing the flue gas over an oxidation catalyst at a suitable temperature (900 to 1,000°F). In practice, this technology has several unknowns and disadvantages, including the following:

1. No utility pulverized coal-fired boilers are operating with catalytic CO control systems and it would be difficult to locate an oxidation catalyst in the proper temperature zone in a boiler.
2. Oxidation catalyst can convert up to 70 percent of SO_2 to SO_3.
3. There is a lack of experience with large-scale operation of this technology using particulate-laden gases from coal-fired boilers. Oxidation catalysts can be easily eroded and fouled by silica and trace metals in the flue gas.

4. The temperature profile of the flue gas does not match the temperature requirements of typical catalysts which would have to be installed within the boiler make such application extremely difficult.

    a. Use of an undemonstrated catalyst technology would reduce the availability and reliability of the plant (e.g., catalyst plugging).

    b. The high costs to install and operate the system (additional pressure drop, catalyst replacement and disposal, etc.) are without corresponding demonstrated needs or benefits. Design and operation of the boilers to efficiently combust the fuel will minimize CO emissions. The additional costs to further lower emissions are not justified.

A review of the BACT/LAER (best available control technology/lowest achievable emission rate) Clearing house and individual permits from states indicates that BACT emission limits established over the last 5 years range from 0.1 to 0.16 lb/MMBtu for new units. Combustion control is the primary method used to control CO emissions.

Efficiently burning the coal represents BACT for control of CO emissions although Unit 3 is not a new unit. A CO emission rate for the existing Unit 3 pulverized coal boiler of 0.20 lb/MMBtu limit is proposed as BACT. Although recently permitted projects have lower limits the project does not include the construction of a new boiler, but the addition of new burners, OFA and SCR. CO formation is a function of combustion efficiency, boiler design, and residence time and as such the BACT limits of new construction boilers are not directly applicable to the project. As an existing boiler the proposed limit of 0.20 lb/MMBtu limit is proposed as BACT. In addition, air quality impacts of the proposed power plant are not significant.

TABLE 4-1
REPRESENTATIVE PROJECT COMPARISONS FOR RECENTLY PERMITTED PROJECTS

Project	Date	Status	Plant Size MW	Type
Seminole Electric Unit 3 - Flroida	Aug-06	Draft Permit	750	SCPC
Thoroughbred - Kentucky	May-06 (Revision)	Final Permit	1,500	PC
Louisville Gas & Electric - Kentucky	Jan-06 (Revision)	Final Permit	750	SCPC
River Hill Power - Pennsylvania	July - 05	Final Permit	290	CFB -Waste Coal
Prairie State-Illinois	Apr-05	Final Permit	1,500	PC
Elm Road-Wisconsin	Jan-04	Final Permit	1,830	SCPC
Longview-West Virginia	Mar-04	Final Permit	600	PC
City Public Service-Texas	Sep-05	Draft Permit	750	PC
Public Service of Colorado	Jul-05	Final Permit	1,410	PC
Public Service Corp Wausau - Wisconsin	Oct-04	Final Permit	500	SCPC
NRG Energy - Louisiana	Aug-05	Final Permit	675	SCPC
Southwest Springfield - Missouri	Dec-04	Final Permit	275	PC
Omaha Public Power - Nebraska	March-05	Final Permit	660	PC
Municipal Energy Hastings - Nebraska	March-04	Final Permit	220	PC
Xcel Energy - Colorodo	July-05	Final Permit	750	SCPC
Bull Mountain - Montana	July-03	Final Permit	780	PC
Intermountain Power Service - Utah	Oct-04	Final Permit	950	PC
NEVCO Energy - Utah	Oct-04	Final Permit	270	CFB
Springerville Generating Station Units 3 and 4 - Arizona	April-02	Final Permit	800	PC
TS Power Plant - Nevada	May-05	Final Permit	200	PC
Indeck-Elwood LLC - Illinois	Oct-03	Final Permit	660	two CFB
JEA Northside - Florida	May-99	Final Permit	595	CFB
MidAmerican Energy - Iowa	Jun-03	Final Permit	765	SCPC
Sante Cooper - South Carolina	Feb-04	Final Permit	1320	two CFB
Montana Dakota Utilities - North Dakota	Jun-05	Final Permit	220	PC
Newmont - Nevada	May-05	Final Permit	200	PC
Sand Sage - Kansas	Oct-02	Final Permit	660	PC
KCP&L - Missouri	Jan-06	Final Permit	930	PC

TABLE 4-2
COMPARISON OF CO AND VOCS EMISSIONS FROM RECENTLY PERMITTED PROJECTS

Project	Plant Size MW	Heat Input MMBtu/hr	Controlled CO lb/MMBtu	CO lb/MW-hr	Comments
Seminole Electric Unit 3 - Florida	750	7,500	0.13 0.15	1.30 1.50	Coal Only, Combustion Controls 30-day Average All Fuels
Thoroughbred - Kentucky	1,500	14,886	0.1	0.99	Combustion Controls
Louisville Gas & Electric - Kentucky	750	6,942	*0.1/0.5*	*0.93/4.6*	CO 30-day/3-hour average, VOC 3-hr Average, Combustion Controls
River Hill Power - Pennsylvania	290	NA	0.2	NA	>70% Load, Combustion Controls
Prairie State-Illinois	1,500	14,900	0.12	1.19	Combustion Controls
Elm Road-Wisconsin	1,230	12,360	0.12	1.21	Combustion Controls
Longview-West Virginia	600	6,114	0.11	1.12	Combustion Controls
City Public Service-Texas	750	8,000	0.15	1.60	Combustion Controls
Public Service of Colorado	750	7,421	0.13	1.29	Combustion Controls
Public Service Corp Wausau - Wisconsin	500	5176	0.15	1.55	Combustion Controls
NRG Energy - Louisiana	675	6566	0.135	1.31	Combustion Controls
Southwest Springfield - Missouri	275	2725	0.16	1.59	Combustion Controls
Omaha Public Power - Nebraska	660	NA	0.16	NA	Combustion Controls
Municipal Energy Hastings - Nebraska	220	2210.5	0.15	1.51	Combustion Controls
Xcel Energy - Colorodo	750	7421	0.13	1.29	Combustion Controls
Bull Mountain - Montana	780	8026	0.15	1.54	Combustion Controls
Intermountain Power Service - Utah	950	9050	0.15	1.43	Combustion Controls
NEVCO Energy - Utah	270	2531.5	0.115	1.08	Combustion Controls
Springerville Generating Station Units 3 and 4 - Arizona	800	8400	0.15	1.58	VOC limit = 0.06 lb/ton coal combusted, Combustion Controls
TS Power Plant - Nevada	200	2030	0.15	1.52	Combustion Controls
Indeck-Elwood LLC - Illinois	660	5800	0.11	0.97	Combustion Controls
JEA Northside - Florida	595	5528	-	-	CO = 350 lb/hr, 24-hr block average, VOC = 14 lb/hr, Combustion Controls
MidAmerican Energy - Iowa	765	-	0.154	-	Combustion Controls
Sante Cooper - South Carolina	*1320*	*11,100*	*0.16*	*1.35*	units 2, 3 and 4
Montana Dakota Utilities - North Dakota	220	2,116	0.154	1.48	3-hr average
Newmont - Nevada	200	2,030	0.15	1.52	24-hr rolling
Sand Sage - Kansas	660	6,501	0.15	1.48	Combustion Controls
KCP&L - Missouri	930	7,800	0.16	1.34	Combustion Controls

5.0 AIR QUALITY IMPACT ANALYSIS METHODOLOGY

5.1 Significant Impact Analysis

A significant impact analysis was performed to determine the maximum air quality impacts of the proposed project's CO emission increase. The highest predicted 8-hour and 1-hour CO concentrations were compared to the EPA significant impact levels for CO. If the maximum air quality impacts exceed the significant impact levels, than a detailed cumulative source analysis needs to be performed to demonstrate compliance with the CO ambient air quality standards (AAQS).

5.1.1 AAQS Analysis

In general, when 5 years of meteorological data are used, the highest annual and the highest-second-highest (H2H) short-term concentrations are compared to the applicable CO AAQS. The H2H short-term concentration is calculated for a receptor field by:

1. Eliminating the highest concentration predicted at each receptor,
2. Identifying the second-highest concentration at each receptor, and
3. Selecting the highest concentration among these second-highest concentrations.

This approach is consistent with most air quality standards which permit a short-term average concentration to be exceeded once per year at each receptor.

For the AAQS analysis, the future emissions of the McIntosh Power Plant are to be modeled along with background CO emission facilities. The total air quality concentration is estimated by adding the maximum concentrations from all modeled sources to a non-modeled background concentration. The maximum total air quality concentrations are then compared to the AAQS.

5.1.2 Model Selection

The selection of an air quality model to predict air quality impacts for the proposed project was based on the ability of the model to simulate impacts in the area surrounding the proposed project. The American Meteorological Society and EPA Regulatory Model (AERMOD, Version 04300) was selected for this analysis. The AERMOD dispersion model is available on the EPA's Internet web site, Support Center for Regulatory Air Models (SCRAM), within the Technical Transfer Network (TTN). A listing of the AERMOD model features is presented in Table 3-1.

On November 9, 2005, the EPA implemented AERMOD into its Guideline of Air Quality Models (Appendix W to 40 CFR Part 51) as the recommended model for regulatory modeling applications.

The FDEP is allowing the use of AERMOD for air permitting projects as a replacement for the Industrial Source Complex Short-Term Model (ISCST3) which will no longer be in effect as of December 2006.

The EPA and FDEP recommend that the AERMOD model be used to predict pollutant concentrations at receptors located within 50 km from a source. The AERMOD model calculates hourly concentrations based on hourly meteorological data. The AERMOD model is applicable for most applications since it is recognized as containing the latest scientific algorithms for simulating plume behavior in all types of terrain. For evaluating plume behavior within the building wake of structures, the AERMOD model incorporates the Plume Rise Model Enhancement (PRIME) downwash algorithm developed by the Electric Power Research Institute (EPRI). AERMOD can predict pollutant concentrations for averaging times of annual and 24-, 8-, 3-, and 1-hours.

The AERMOD model was used to predict the maximum pollutant concentrations in nearby areas surrounding the McIntosh Power Plant. The EPA regulatory default options were used to predict all maximum impacts.

These options include:

- Final plume rise at all receptor locations,
- Stack-tip downwash,
- Buoyancy-induced dispersion,
- Default wind speed profile coefficients,
- Default vertical potential temperature gradients, and
- Calm wind processing.

5.1.3 Meteorological Data

Meteorological data used in the AERMOD model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations from the National Weather Service (NWS) office located at the Tampa International Airport (TPA) and twice-daily upper air soundings collected at Ruskin for the years 2001 through 2005. The NWS office at TPA is located approximately 62 kilometers (km) west-southwest of the McIntosh Power Plant site and is the closest primary weather station to the study area considered to have meteorological data representative of the site. The meteorological data from this NWS station have been used for numerous air modeling

studies for the City of Lakeland. The meteorological data has been obtained and processed by FDEP into a format that is suitable for input to AERMOD using the meteorological preprocessor program AERMET.

5.1.4 Source Data

The Universal Transverse Mercator (UTM) coordinate location and stack parameters for Unit 3 that were used for the modeling analysis are presented in Table 5-2. The Unit 3 stack height is 250 feet. The project's maximum CO emission increase is 800.8 lb/hr.

5.1.5 Building Downwash Effects

The only significant structure in the vicinity of Unit 3's stack is the unit's boiler building, which is 209 feet tall. As the Unit 3 stack height is less than GEP, the potential for building downwash to occur was evaluated in the air modeling analysis for this stack. Direction-specific building parameters were calculated with the Building Profile Input Program (BPIP), Version 04274, which incorporates PRIME algorithms developed by the EPRI.

5.1.6 Receptor Locations

To predict maximum concentrations in the vicinity of the proposed project, a receptor grid was developed in UTM coordinate system, zone 17, North American Datum 1927 (NAD27), and included the following:

- 50-meter intervals along the fence line or restricted property boundary,
- 100-meter intervals beyond the fence line to 1.5 km from the site, and
- 150-meter intervals from 1.5 to 3 km from the site.

The fence line was determined from a plot plan of the site in AutoCad format. For the receptors, elevations and hill scale heights were obtained from 7.5-minute U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data using the AERMOD terrain pre-processor program AERMAP, Version 04300.

5.2 Air Modeling Results

5.2.1 Significant Impact Analysis

A summary of the air modeling results is presented in Table 5-3. The maximum predicted 1- and 8-hour CO impacts are well below their respective significant impact levels. Therefore, additional

cumulative source modeling analyses are not required and the proposed project will be in compliance with the CO AAQS.

TABLE 5-1

MAJOR FEATURES OF THE AERMOD MODEL, VERSION 04300

AERMOD Model Features
• Plume dispersion/growth rates are determined by the profile of vertical and horizontal turbulence, vary with height, and use a continuous growth function.
• In a convective atmosphere, uses three separate algorithms to describe plume behavior as it comes in contact with the mixed layer lid; in a stable atmosphere uses a mechanically mixed layer near the surface.
• Polar or Cartesian coordinate systems for receptor locations can be included directly or by an external file reference.
• Urban model dispersion is input as a function of city size and population density; sources can also be modeled individually as urban sources.
• Stable plume rise: uses Briggs equations with winds and temperature gradients at stack top up to half-way up to plume rise. Convective plume rise: plume superimposed on random convective velocities.
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash.
• Has capability of simulating point, volume, area, and multi-sized area sources.
• Accounts for the effects of vertical variations in wind and turbulence (Brower *et al.*, 1998).
• Uses measured and computed boundary layer parameters and similarity relationships to develop vertical profiles of wind, temperature, and turbulence (Brower *et al.*, 1998).
• Concentration estimates for 1-hour to annual average times.
• Creates vertical profiles of wind, temperature, and turbulence using all available measurement levels.
• Terrain features are depicted by use of a controlling hill elevation and a receptor point elevation.
• Modeling domain surface characteristics are determined by selected direction and month/season values of surface roughness length, Albedo, and Bowen ratio.
• Contains a mechanical and convective mixed layer height, the latter based on the hourly accumulation of sensible heat flux.
• The method of Pasquill (1976) to account for buoyancy-induced dispersion.
• A default regulatory option to set various model options and parameters to EPA-recommended values.
• Contains procedures for calm-wind and missing data for the processing of short term averages.

Note: AERMOD = the American Meteorological Society and Environmental Protection Agency Regulatory Model.

Source: Paine *et al.*, 2004.

TABLE 5-2
CITY OF LAKELAND UNIT 3 STACK PARAMETERS

Source		UTM NAD27		Stack Parameters							
				Physical				Operating			
	Model	East	North	Height		Diameter		Temperature		Velocity	
Description	ID	(m)	(m)	(ft)	(m)	(ft)	(m)	(°F)	(K)	(fps)	(m/s)
Boiler Unit 3	UNIT 3	409364.79	3106270.99	250	76.2	18.0	5.49	125	324.8	91.9	28.02

TABLE 5-3
SIGNIFICANT IMPACT ANALYSIS RESULTS FOR UNIT 3

Averaging Period	Year	Maximum Predicted Impact (mg/m^3)	Receptor Location[a]		Period Ending (YYMMDDHH)	Significant Impact Level (mg/m^3)	Monitoring de Minimis Concentration (mg/m^3)
			East (m)	North (m)			
1-hour High 1st High	2001	145.4	410250	3106450	01121419	2000	--
	2002	155.7	410250	3106350	02102821		
	2003	149.7	410250	3106450	03052601		
	2004	151	410150	3106650	04053124		
	2005	165.2	410250	3106350	05070622		
8-hour High 1st High	2001	62.8	410650	3106350	01071216	500	575
	2002	52.8	408807	3105966	02061116		
	2003	49.3	408850	3105350	03110924		
	2004	57.6	410350	3106450	04011508		
	2005	56.9	410650	3106350	05061716		

Note:

[a] UTM coordinates in Zone 17

YY =Year, MM=Month, DD=Day, HH=Hour