



Farzie Shelton, ChE; REM

Associate GM Technical Support

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March 3, 2010

BUREAU OF AIR REGULATION

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

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MAR 05 2010

BUREAU OF AIR REGULATION

RE: Lakeland Electric C.D. McIntosh, Jr. Power Plant – Facility No. 1050004
EU ID 028 (Unit 5) Low Load Turndown Construction Application

1050004-028-AC

Dear Ms. Vielhauer:

Lakeland Electric would like to submit this minor source air construction permit application for approval to install a Low Load Turndown system on McIntosh EU ID 028 (Unit 5). No emissions increases will result from this project as this improvement will effectively reduce CO and VOC emissions at lower loads, and therefore, is not a "modification" as defined in Rule 62-210.200(205), Florida Administrative Code. Lakeland Electric would like to make these improvements during the Unit's next outage, scheduled to tentatively start April 9, 2010, and therefore requests that the Department not delay in the issuance of this permit. Enclosed please find four (4) copies of this application signed by Mr. Ken Kosky of Golder Associates and certified by Mr. Thomas J. Trickey our Authorized Representative. This application has been prepared in accordance with Rule 62-210, F.A.C. and instructions associated with DEP Form No. 62.210.900(1).

If you have any questions regarding the enclosed, please do not hesitate to contact me.

Sincerely,

Farzie Shelton

Enclosures: 4 copies of application

City of Lakeland • Department of Electric Utilities

501 East Lemon Street • Lakeland, FL 33801-5050 • 863. 834.6603 • Fax 863. 834.8187 • Cell 863.430.8297

farzie.shelton@lakelandelectric.com

Page 1 of 1

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BUREAU OF AIR REGULATION

**AIR PERMIT APPLICATION
FOR C.D. MCINTOSH, JR.
POWER PLANT**

Lakeland Electric
Lakeland, Florida

Prepared For: Lakeland Electric
501 East Lemon Street
Lakeland, FL 33801-5079 USA

Submitted By: Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA

March 2010

093-87775



Permit Application

A world of
capabilities
delivered locally



Department of Environmental Protection

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Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM BUREAU OF AIR REGULATION

I. APPLICATION INFORMATION

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

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- 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, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Lakeland Electric	
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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: Ms. Farzie Shelton, Associate General Manager of 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 - 6362	
4. Application Contact E-mail Address: farzie.shelton@lakelandelectric.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 3/5/10	3. PSD Number (if applicable):
2. Project Number(s): 1090604-025-AC	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being 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

This minor source air construction permit application is for approval to install a Low Load Turndown (LLT) system on McIntosh Unit 5 (EU ID 028) that reduces CO and VOC emissions at lower loads down to 25-percent.

There are no emissions increases and the proposed project is not a "modification" as defined in Rule 62-210.200(205), Florida Administrative Code (F.A.C.).

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
028	<i>McIntosh Unit 5 - 370 MW Combined Cycle Combustion Turbine</i>	AC1F	

Application Processing Fee

Check one: Attached - Amount: \$ _____ Not Applicable

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name : Mr. Thomas J. Trickey, P.E., Plant Manager
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Lakeland Electric Street Address: 501 E. Lemon Street City: Lakeland State: FL Zip Code: 33801-5079
3. Owner/Authorized Representative Telephone Numbers... Telephone: (863) 834 - 6477 ext. N/A Fax: (863) 834 - 5670
4. Owner/Authorized Representative E-mail Address: tom.trickey@lakelandelectric.com
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i> Subject: C.D. McIntosh, Jr. Power Plant – 1050004-023-AV Unit 5 (EU 028) Low Load Turndown Project <u>Tom Trickey</u> Signature <u>3-3-2010</u> Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation 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):			
<input type="checkbox"/> 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.			
<input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively.			
<input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.			
<input type="checkbox"/> The designated representative at an Acid Rain source, CAIR source, or Hg Budget 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 E-mail Address:			
6. Application Responsible Official Certification:			
<p>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.</p>			
_____ Signature		_____ Date	

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Ken Kosky Registration Number: 14996
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 6026 NW 1st Place City: Gainesville State: FL Zip Code: 32607
3. Professional Engineer Telephone Numbers... Telephone: (352) 336-5600 ext. 21156 Fax: (352) 336-6603
4. Professional Engineer E-mail Address:
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(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</i> <i>(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.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , 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.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/> , 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 <input type="checkbox"/> , 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.</i> <i>(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 <input type="checkbox"/> , 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.</i> Signature <u><i>Howard F. Hoef</i></u> Date <u>3/3/10</u> (seal) <u>149</u>

* 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) 3,106.2		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 28/04/50 Longitude (DD/MM/SS) 81/55/32	
3. Governmental Facility Code: 0	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 three fossil fuel-fired steam generators (FFFSG), two diesel powered generators, one gas turbine peaking unit, and one combined-cycle combustion turbine (Unit 5). FFFSG Unit 1 is fired with No. 6 fuel oil, natural gas, and on-specification used oil (distillate oil is used as an ignitor). FFFSG Unit 2 is fired with natural gas, No. 6 fuel oil, and No. 2 fuel oil. FFFSG Unit 3 is primarily fired with coal, refuse derived fuel, and petroleum coke. Unit 5 consists of a Siemens 501G combustion turbine and is primarily fired with natural gas with distillate oil as a backup. The McIntosh Plant was recently authorized to construct a truck unloading hopper and baghouse (EU031) and a coal processing and conveying system (EU032) under construction permit No. 1050004-024-AC.			

Facility Contact

1. Facility Contact Name: Ms. Farzie Shelton, General Manager of Technical Support
2. Facility Contact Mailing Address... Organization/Firm: Lakeland Electric Street Address: 501 E. Lemon Street City: Lakeland State: FL Zip Code: 33801-5079
3. Facility Contact Telephone Numbers: Telephone: (863) 834 - 6603 ext. Fax: (863) 834 - 6362
4. Facility Contact E-mail Address: farzie.shelton@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 E-mail Address:

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. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> 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 GG. The coal processing and conveying system (EU032), when constructed will be subject to Subpart Y.	

List of Pollutants Emitted by Facility

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

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'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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u>

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input checked="" type="checkbox"/> Attached, Document ID: <u>Part II</u>
3. Rule Applicability Analysis: <input checked="" type="checkbox"/> Attached, Document ID: <u>Part II</u>
4. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
 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 Onsite 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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms: Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u> <input type="checkbox"/> Not Applicable (not an Acid Rain source) Phase II NO _x Averaging Plan (DEP Form No. 62-210.900(1)(a)1.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u> <input type="checkbox"/> Not Applicable New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable
2. CAIR Part (DEP Form No. 62-210.900(1)(b)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>July 2008</u> <input type="checkbox"/> Not Applicable (not a CAIR source)
3. Hg Budget Part (DEP Form No. 62-210.900(1)(c)): <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date: _____ <input checked="" type="checkbox"/> Not Applicable (not a Hg Budget unit)

Additional Requirements Comment

EMISSIONS UNIT INFORMATION

Section [1]
McIntosh Unit 5

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 an initial, revised or renewal 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. 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 an 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 or 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. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes 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]
McIntosh Unit 5

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 5 – Combined Cycle Stationary Combustion Turbine

3. Emissions Unit Identification Number: **028**

4. Emissions Unit Status Code: A	5. Commence Construction Date:	6. Initial Startup Date: January 2002	7. Emissions Unit Major Group SIC Code: 49
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8. Federal Program Applicability: (Check all that apply)

- Acid Rain Unit
- CAIR Unit
- Hg Budget Unit

9. Package Unit:

Manufacturer: **Siemens**

Model Number: **501G**

10. Generator Nameplate Rating: **370 MW**

11. Emissions Unit Comment:

Emission unit is a Siemens (formerly Westinghouse) 501G combustion turbine operating in combined cycle with a HRSG and 120 MW steam electric turbine. The combustion turbine is fired with natural gas or a maximum 0.05 percent sulfur No. 2 fuel oil. The diesel fuel may contain the additive Soltron as recommended by the manufacturer.

EMISSIONS UNIT INFORMATION

**Section [1]
McIntosh Unit 5**

Emissions Unit Control Equipment/Method: Control 1 of 4

1. Control Equipment/Method Description:
Water Injection – Oil firing.

2. Control Device or Method Code: **028**

Emissions Unit Control Equipment/Method: Control 2 of 4

1. Control Equipment/Method Description:
Selective Catalytic Reduction (SCR) – Natural gas firing.

2. Control Device or Method Code: **139**

Emissions Unit Control Equipment/Method: Control 3 of 4

1. Control Equipment/Method Description:
Dry Low NO_x combustion – Natural gas firing.

2. Control Device or Method Code: **205**

Emissions Unit Control Equipment/Method: Control 4 of 4

1. Control Equipment/Method Description:
Oxidation catalyst.

2. Control Device or Method Code: **039**

EMISSIONS UNIT INFORMATION

Section [1]
McIntosh Unit 5

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:	2,407 million Btu/hr	
4. Maximum Incineration Rate:	pounds/hr	
	tons/day	
5. Requested Maximum Operating Schedule:		
	24 hours/day	7 days/week
	52 weeks/year	8760 hours/year
6. Operating Capacity/Schedule Comment:	<p>Maximum heat input rates: Natural gas firing – 2,407 MMBtu/hr (LHV, at baseload) No. 2 fuel oil firing – 2,236 MMBtu/hr (LHV, at baseload)</p> <p>Heat input rates are based on the lower heating value of the fuels at ambient conditions of 59°F temperature, 60% relative humidity, 100% load, and 14.7 psi pressure.</p> <p>Based on application for Permit No. 1050004-016-AV.</p>	

EMISSIONS UNIT INFORMATION

**Section [1]
McIntosh Unit 5**

**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: S007		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: 300 feet		7. Exit Diameter: 20 Feet
8. Exit Temperature: 187°F	9. Actual Volumetric Flow Rate: 1,271,428 acfm		10. Water Vapor: 12.44 %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: Feet	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 408.79 North (km): 3106.66		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Stack parameters for ISO turbine inlet operating condition firing natural gas at baseload. For oil firing, 188°F exit temperature, 1,291,502 ACFM flow rate and 12.05% water vapor at baseload; ISO conditions.			

EMISSIONS UNIT INFORMATION

Section [1]
McIntosh Unit 5

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): External Combustion Boilers; Electric Generation; Natural-Gas Boilers; Turbine		
2. Source Classification Code (SCC): 2-01-002-01		3. SCC Units: Million cubic feet natural gas burned
4. Maximum Hourly Rate: 2.53	5. Maximum Annual Rate: 16,462	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 950
10. Segment Comment: Maximum hourly rate = 2,407 MMBtu/hr / 950 MMBtu/MM ft³ (LHV) = 2.53 MM ft³/hr Annual fuel heat input limited to 15.639 X 10¹² Btu (LHV) per year. Max hourly a function of turbine inlet temperature. See Permit Nos. PSD-FL-245 and 1050004-016-AV.		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): External Combustion Boilers; Electric Generation; Distillate Oil (Diesel); Turbine.		
2. Source Classification Code (SCC): 2-01-001-01		3. SCC Units: 1,000 gallons burned
4. Maximum Hourly Rate: 17.0	5. Maximum Annual Rate: 4,251	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 132
10. Segment Comment: Maximum hourly rate = 2,236 MMBtu/hr x 1,000 gallons / 131.5 MMBtu = 17,003 gal/hr Annual limited by Permit No. 1050004-016-AV to 15.639 X 10¹² Btu (LHV) per year. Maximum hourly a function of turbine inlet temperature. The diesel fuel may contain the additive Soltron as recommended by the manufacturer.		

EMISSIONS UNIT INFORMATION

Section [1]
McIntosh Unit 5

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			EL
PM10			NS
CO	039		EL
VOC	039		WP
SO2			EL
NOx	205, 028	139	EL
SAM			NS

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
McIntosh Unit 5

Page [1] of [2]
Carbon Monoxide – CO

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 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 operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: CO		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 2 ppm @ 100% load firing NG Reference: Title V Permit 1050004-023-AV			7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Part II for low load CO emissions using LLT system.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 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:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): No changes in allowable emissions result from 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, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 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 operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: VOC		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: Reference: Title V Permit 1050004-023-AV			7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Part II for low load VOC emissions using LLT system.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
McIntosh Unit 5

Page [2] of [2]
Volatile Organic Compounds- VOC

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

Complete Subsection F2 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:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method): No changes in allowable emissions result from 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):	

EMISSIONS UNIT INFORMATION

Section [1]
McIntosh Unit 5

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G 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: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: Annual VE Test EPA Method 9	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: VE99	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> 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: FDEP Rule 62-210.700(1), which allows 2 hr (120 minutes) per 24 hr for startup, shutdown and malfunction.	

EMISSIONS UNIT INFORMATION**Section [1]
McIntosh Unit 5****H. CONTINUOUS MONITOR INFORMATION****Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.****Continuous Monitoring System: Continuous Monitor 1 of 2**

1. Parameter Code: EM	2. Pollutant(s): NO_x
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Siemens Model Number: 300-CLD Serial Number: 28J04015	
5. Installation Date: Relocation to new stack December 2001	6. Performance Specification Test Date: February 27, 2002
7. Continuous Monitor Comment: NO_x CEM proposed to meet requirements of 40 CFR Part 75.	

Continuous Monitoring System: Continuous Monitor 2 of 2

1. Parameter Code: EM	2. Pollutant(s): NO_x
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: Siemens Model Number: Oxymat 6E Serial Number: N1K80365	
5. Installation Date: December 2001	6. Performance Specification Test Date: February 27, 2002
7. Continuous Monitor Comment: Monitor is an O₂ analyzer for NO_x emissions determination.	

EMISSIONS UNIT INFORMATION

**Section [1]
McIntosh Unit 5**

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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>July 2008</u>
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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

PART II

PART II
APPLICATION FOR MINOR SOURCE AIR CONSTRUCTION PERMIT
FOR THE ADDITION OF LOW LOAD TURNDOWN SYSTEM FOR MCINTOSH UNIT 5
(EU ID 028)

EXECUTIVE SUMMARY

Lakeland Electric is seeking authorization from the Florida Department of Environmental Protection (FDEP) to install a Low Load Turndown (LLT) system on McIntosh Unit 5 (EU ID 028) to increase operational flexibility by allowing operation at lower loads (down to 25 percent) with reduced air emissions. The McIntosh, Jr. Power Plant is currently operating under Title V Operating Permit No. 1050004-023-AV. McIntosh Unit 5 is permitted to operate 8,760 hours per year (hrs/yr) and burn natural gas or distillate fuel oil with maximum 0.05-percent sulfur content. The LLT system is an upgraded combustion chamber design and control system developed by Siemens that allows operation at lower load down to 25 percent without greatly increasing emissions of carbon monoxide (CO) and volatile organic compounds (VOC). The operation of McIntosh Unit 5 for loads from 100 percent to 75 percent will not be affected by the LLT system. However, at loads of 50 percent to 25 percent, the emissions of CO and VOC will decrease from the current levels. Since there are no emissions increases, the proposed project is not a "modification" as defined in Rule 62-210.200(205), Florida Administrative Code (F.A.C.). As a result, a minor source air construction permit is being submitted for the project.

Golder Associates Inc. (Golder) was contracted to prepare the necessary air permit application seeking authorization to allow installation of the LLT system. The air permit application consists of the appropriate applications form [Part I; DEP Form 62-210.900(1)], a technical description of the project, and rule applicability for the project.

PROJECT DESCRIPTION

McIntosh Unit 5 is a combined-cycle combustion turbine (CT) permitted to operate 8,760 hrs/yr. CO and VOCs are controlled by good combustor design and an oxidation catalyst. When the CT is operating at base load (100 percent load), the combustion system operates at high-firing temperature, and CO are emissions that are reduced through oxidation to carbon dioxide (CO₂). At lower loads (less than 75 percent), when the firing temperature is lower, the CO oxidation is slower, which results in increased CO emissions. Based on Siemens-Westinghouse emissions performance data submitted with the initial air construction permit application for McIntosh Unit 5 in December, 1997, the CO emissions increase from 37 parts per million volume dry (ppmvd) [corrected at 15-percent oxygen (O₂)] at base load to 336 ppmvd at 50-percent load [for 59 degrees Fahrenheit (°F) ambient temperature]. An oxidation catalyst, designed with a minimum control efficiency of 90 percent is used to control CO emissions. The oxidation catalyst allows McIntosh Unit 5 to operate at lower loads with lower CO emissions.

The LLT system with improved combustion design will result in lower CO emissions at lower loads down to 25 percent. Therefore, the CO emissions with the LLT system and the oxidation catalyst are expected to decrease compared to current operation without the LLT system.

Similar to the CO emissions, the VOC emissions are also a result of incomplete thermal oxidation of hydrocarbons contained in the fuel and as a result, also increase during lower load operations. Based on Siemens data, the LLT system will also reduce VOC emissions during lower loads.

The LLT system works on the principle of improved combustion chamber design. Based on the Siemens paper "Low Load Operational Flexibility for Siemens G Class Gas Turbines" presented in Orlando, FL in December 2008, the design improvements include:

- Closed loop inlet guide vane control
- Bypassing compressed air around the combustor into the turbine to increase the fuel-to-air ratio inside the combustor
- Lowering of the rotor air cooler temperature

The design improvements result in higher firing temperature at lower loads, which results in improved CO to CO₂ conversion.

To evaluate the emissions performance of the LLT system, a comparison of the current emissions using previously submitted performance data was made with the emissions estimated using the LLT system. Table 1 presents this comparison. Data for the original combustor design was submitted as the design performance curves with the air construction permit application for McIntosh Unit 5 (Permit No. 1050004-004-AC/PSD-FL-245, application dated December 1997). These performance curves were the basis of the emission limits established for McIntosh Unit 5. In addition, additional information was provided to FDEP on low-load operation during the conversion of McIntosh Unit 5 as a simple cycle unit to a combined cycle unit. (see Siemens-Westinghouse letter to Lakeland Electric dated September 28, 2001, provided as Attachment A.) The low-load data indicated that for 20-percent load emissions data CO emissions are 4000 ppmvd and VOC emissions are 665 ppmvd. From these data, the CO and VOC emissions for 25-percent load using the current combustor system were estimated using a linear interpolation between the 20-percent load and the 50-percent load. As shown in Table 1, the CO and VOC emissions with the current combustor design is estimated to be 3,390 ppmvd and 564 ppmvd, respectively, at 25-percent load. With the LLT system, the CO emissions at 50 percent load will be reduced from 338 ppmvd for the original combustor to 14 ppmvd with the LLT system. At 25-percent load, the CO emissions will be reduced from an estimated 1,157 ppmvd for the original combustor to 490 ppmvd with the LLT system. Also shown in Table 1 are the mass CO emissions for the current combustor and the LLT system. As shown in the table, the mass CO emissions for the LLT system at 25-percent load [1,157 pounds per hour (lb/hr)] is lower than the mass CO emissions for the current combustor at 50

percent load (1,177 lb/hr). CO emissions are further reduced by 90 percent with the oxidation catalyst from the values shown in the table.

The performance of the LLT system from 50- to 25-percent load for VOC emissions is similar to CO. With the LLT system, the VOC emissions at 50-percent load will be reduced from 58 ppmvd for the original combustor to 0.5 ppmvd with the LLT system. At 25-percent load, the VOC emissions will be reduced from an estimated 564 ppmvd for the original combustor to 28 ppmvd with the LLT system. Also shown in Table 1 are the mass VOC emissions for the current combustor and the LLT system. As shown in the table, the mass VOC emissions for the LLT system at 25-percent load (66 lb/hr) is lower than the mass VOC emissions for the current combustor at 50-percent load (115 lb/hr). VOC emissions are further reduced with the oxidation catalyst from the values shown in the table.

It should also be noted that the LLT system is expected to reduce CO and VOC emissions from 100 percent load to 50 percent load. This will result in lower emissions over the entire operating spectrum for McIntosh Unit 5.

In order to evaluate the potential influence of the LTT system on annual emissions, the emissions profiles for the existing performance curves in Table 1 were used to develop emission profiles over the operating range of the current combustion system and the LLT system. These emission profiles were developed using the curve fitting routine in Excel. The emission profiles were used to calculate daily CO and VOC emissions based on the average operating load. The daily operating load was developed using continuous emission monitoring system (CEMS) data required pursuant to 40 CFR Part 75 and reported to FDEP/ the U.S. Environmental Protection Agency (EPA) to meet the requirements of Acid Rain CEMS. The daily operating load was used in the equations developed for the emissions profile and summed to developed annual emissions. The most recent years, 2008 and 2009, were used to estimate annual CO and VOC emissions for the comparison. The following figures and tables are attached showing the calculations:

- Figure 1 – CO and VOC Emission Profiles for the Current Combustion System and the LLT System
- Table 2 – Calculated Daily CO Emissions for 2009 Using the Current Combustion System and Using LLT System
- Table 3 – Calculated Daily CO Emissions for 2008 Using the Current Combustion System and Using LLT System
- Table 4 – Calculated Daily VOC Emissions for 2009 Using the Current Combustion System and Using LLT System
- Table 5 – Calculated Daily VOC Emissions for 2008 Using the Current Combustion System and Using LLT System

Table 6 shows the results of the calculated 2009 and 2008 annual emissions for CO and VOC using the current combustion system and the LLT system. As shown in this comparison the CO and VOC emission with the LLT system is calculated to decrease by over 80 and 90 percent, respectively.

Unlike CO and VOC, emissions of nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter less than 10 microns (PM₁₀), and particulate matter less than 2.5 microns (PM_{2.5}) decrease with lower loads. Therefore, emissions of these pollutants will not increase as a result of the LLT system operating at lower loads. Based on Siemens data, the LLT system is not active above approximately 97-percent CT load. The Siemens data on the estimated emissions with the LLT system presented in Table 1 are based on natural gas firing, which is the primary fuel used in McIntosh Unit 5. The current CO emissions limit of 2 ppmvd (corrected at 15-percent O₂) at full load applies to natural gas firing only.

RULE APPLICABILITY

Under federal and State of Florida prevention of significant deterioration (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. The applicable PSD rules in Florida are found at Rule 62-212.400, F.A.C.

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 the 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 for any CAA-regulated air pollutant due to the modification is greater than the PSD significant emission rates defined in 40 CFR Part 52.21(b)(23). If subject to PSD review, a PSD air construction permit is required for the project, which is required to undergo other analyses such as control technology review, air quality impact analysis, etc. If the net increase in emissions for any CAA-regulated air pollutant is smaller than the PSD significant emission rates, then a minor source air construction permit is required for the project.

The McIntosh Power Plant facility is a major facility under FDEP rules. Based on Rule 62-210.200(205), F.A.C., modification is defined as any physical change in, change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any pollutant subject to new source review regulation under the CAA. The addition of the LLT system will be a physical change. However, CO and VOC emissions are estimated to decrease over the entire operating spectrum and the estimated annual emission over the operating spectrum are substantially reduced using the LLT system. Indeed, the mass CO and VOC emissions of the LLT system at 25-percent load are lower than the mass

CO and VOC emissions at 50-percent load. As a result, there will not be any increase in emissions. In fact based on the comparison shown in Table 1, there will be a decrease in the CO and VOC emissions. Therefore, the proposed project is not a modification as defined under the FDEP rules.

TABLES

**TABLE 1
COMPARISON OF LOW-LOAD TURNDOWN SYSTEM EMISSIONS WITH CURRENT COMBUSTION SYSTEM EMISSIONS**

Load (%)	Carbon Monoxide (CO)				Volatile Organic Compounds (VOC)			
	Low Load Turndown ^a		Current Combustion System ^b		Low Load Turndown ^a		Current Combustion System ^b	
	(ppmvd @ 15% O ₂)	(lb/hr)	(ppmvd @ 15% O ₂)	(lb/hr)	(ppmvd @ 15% O ₂)	(lb/hr)	(ppmvd @ 15% O ₂)	(lb/hr)
100	1	4	37	211	0.0	0	3	10
75	9	31	71	336	0.2	0.6	3	8
50	14	55	338	1,177	0.5	2	58	115
25	490	1,157	3,390	10,903	28	66	564	1,090

^a Estimated emissions with Low Load Turndown are based on Siemens data.

^b 100, 75, and 50% load data based on Siemens performance data (Permit No. 1050004-004-AC/PSD-FL-245 dated December 8, 1997).

25% load data is based on Siemens letter dated September 28, 2001 (see Attachment B for copy) for 20% load, which was used to interpolate the 25% load ppmv. Mass emissions (lb/hr) at 25% load was estimated using the equation of the linear trendline through the available data points at 50-, 75-, and 100-percent loads (see Figure 1).

Checked by: _____

Reviewed by: _____

TABLE 2
2009 CO Emissions Based on Load Varying Emissions Profile

Day	2009 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled CO ^a		Controlled CO ^b	Uncontrolled CO ^c		Controlled CO ^b
					(lb/hr)	(lb/day)	(lb/day)	(lb/hr)	(lb/day)	(lb/day)
08/16/2009	24.0	39,181	1,633	73.0	437	10,479	1,048	19	1,362	136
08/17/2009	24.0	37,247	1,552	69.4	506	12,148	1,215	23	1,571	157
08/18/2009	16.5	23,838	1,449	64.8	618	10,172	1,017	29	1,906	191
08/19/2009	24.0	42,684	1,778	79.5	340	8,161	816	13	1,070	107
08/20/2009	23.4	40,921	1,747	78.1	358	8,386	839	14	1,125	112
08/21/2009	16.9	25,363	1,498	67.0	561	9,500	950	26	1,736	174
08/22/2009	24.0	38,697	1,612	72.1	453	10,867	1,087	20	1,411	141
08/23/2009	22.1	36,203	1,637	73.2	433	9,587	959	18	1,353	135
08/24/2009	17.0	28,748	1,691	75.6	394	6,697	670	16	1,233	123
08/25/2009	24.0	43,743	1,823	81.5	317	7,597	760	12	999	100
08/26/2009	22.7	37,807	1,668	74.6	410	9,301	930	17	1,283	128
08/27/2009	16.7	28,331	1,698	76.0	389	6,488	649	16	1,218	122
08/28/2009	24.0	42,969	1,790	80.1	333	8,003	800	13	1,050	105
08/29/2009	23.0	38,074	1,657	74.1	418	9,611	961	18	1,307	131
08/30/2009	17.3	29,850	1,727	77.3	370	6,397	640	15	1,162	116
08/31/2009	24.0	41,068	1,711	76.5	381	9,134	913	16	1,193	119
09/01/2009	23.2	39,370	1,701	76.1	388	8,971	897	16	1,214	121
09/02/2009	17.2	27,578	1,603	71.7	460	7,916	792	20	1,433	143
09/03/2009	24.0	38,916	1,621	72.5	445	10,689	1,069	19	1,389	139
09/04/2009	23.5	40,269	1,714	76.6	379	8,907	891	16	1,188	119
09/05/2009	16.7	24,260	1,455	65.1	611	10,181	1,018	29	1,884	188
09/06/2009	24.0	40,794	1,700	76.0	388	9,315	931	16	1,216	122
09/07/2009	22.2	36,122	1,629	72.8	440	9,753	975	19	1,372	137
09/08/2009	17.8	31,747	1,789	80.0	334	5,937	594	13	1,053	105
09/09/2009	24.0	44,885	1,870	83.6	294	7,047	705	11	929	93
09/10/2009	24.0	46,622	1,943	86.9	263	6,307	631	10	834	83
09/11/2009	24.0	46,326	1,930	86.3	268	6,425	643	10	849	85
09/12/2009	24.0	45,216	1,884	84.3	287	6,897	690	11	909	91
09/13/2009	24.0	41,894	1,746	78.1	359	8,619	862	14	1,128	113
09/14/2009	24.0	45,474	1,895	84.7	283	6,783	678	11	895	90
09/15/2009	24.0	42,145	1,756	78.5	353	8,470	847	14	1,109	111
09/16/2009	24.0	44,757	1,865	83.4	296	7,105	711	11	936	94
09/17/2009	24.0	44,670	1,861	83.2	298	7,146	715	11	941	94
09/18/2009	24.0	42,771	1,782	79.7	338	8,112	811	13	1,064	106
09/19/2009	23.6	38,642	1,636	73.2	434	10,250	1,025	19	1,354	135
09/20/2009	16.7	25,560	1,589	71.0	473	7,907	791	21	1,471	147
09/21/2009	24.0	42,637	1,777	79.5	341	8,187	819	14	1,073	107
09/22/2009	24.0	42,709	1,780	79.6	339	8,147	815	13	1,068	107
09/23/2009	24.0	44,395	1,850	82.7	303	7,276	728	12	958	96
09/24/2009	24.0	41,573	1,732	77.5	367	8,814	881	15	1,153	115
09/25/2009	21.6	37,678	1,744	78.0	360	7,772	777	14	1,130	113
09/26/2009	17.7	29,523	1,668	74.6	410	7,259	726	17	1,282	128
09/27/2009	20.9	37,750	1,811	81.0	323	6,730	673	13	1,017	102
09/28/2009	19.5	33,828	1,739	77.8	363	7,059	706	15	1,140	114
09/29/2009	24.0	44,278	1,845	82.5	306	7,332	733	12	965	96
09/30/2009	24.0	42,750	1,781	79.7	338	8,124	812	13	1,065	107
10/01/2009	21.0	36,288	1,730	77.4	368	7,724	772	15	1,156	116
10/03/2009	16.6	27,359	1,650	73.8	423	7,016	702	18	1,322	132
10/04/2009	24.0	42,607	1,775	79.4	342	8,204	820	14	1,075	108
10/05/2009	24.0	44,733	1,864	83.4	297	7,117	712	11	937	94
10/06/2009	24.0	43,930	1,830	81.9	313	7,503	750	12	987	99
10/07/2009	24.0	44,697	1,862	83.3	297	7,133	713	11	940	94
10/08/2009	24.0	47,148	1,964	87.9	254	6,104	610	9	808	81
10/09/2009	24.0	45,735	1,906	85.2	278	6,671	667	10	881	88
10/10/2009	24.0	42,945	1,789	80.0	334	8,017	802	13	1,052	105
10/11/2009	24.0	42,255	1,761	78.7	350	8,405	840	14	1,101	110
10/12/2009	24.0	44,898	1,871	83.7	293	7,040	704	11	928	93
10/13/2009	24.0	43,355	1,806	80.8	325	7,797	780	13	1,024	102
10/14/2009	24.0	43,791	1,825	81.6	316	7,573	757	12	995	100
10/15/2009	24.0	42,085	1,754	78.4	354	8,505	850	14	1,113	111
10/16/2009	24.0	42,766	1,782	79.7	338	8,115	812	13	1,064	106
10/17/2009	2.9	3,511	1,202	53.8	1,067	3,114	311	60	3,227	323
11/16/2009	8.6	8,106	943	42.2	2,171	18,672	1,867	152	6,412	641
11/17/2009	23.2	39,890	1,717	76.8	377	8,751	875	15	1,181	118
11/21/2009	21.0	32,322	1,539	68.8	519	10,890	1,089	23	1,608	161
11/22/2009	24.0	40,146	1,673	74.8	407	9,760	976	17	1,272	127
11/23/2009	24.0	41,376	1,724	77.1	372	8,937	894	15	1,168	117
11/24/2009	8.9	11,558	1,296	57.9	857	7,648	765	45	2,614	261
						Total lbs =	196,865		Total lbs =	29,121
						Total TPY =	98		Total TPY =	15

^a Calculated using $Y = 120,564,454.53X^{-2.92}$, where "X" is load (see Figure 1).

^b Using 90-percent control due to the oxidation catalyst system.

^c Calculated using $Y = 244,919,743.15X^{-3.82}$, where "X" is load (see Figure 1).

Checked by: _____
Reviewed by: _____

**TABLE 3
2008 CO Emissions Based on Load Varying Emissions Profile**

Day	2008 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled CO ^a		Controlled CO ^b (lb/day)	Uncontrolled CO ^c		Controlled CO ^b (lb/day)
					(lb/hr)	(lb/day)		(lb/hr)	(lb/day)	
01/01/2008	8.2	7,920	968	43.3	2,008	16,424	1,642	137	5,945	595
01/02/2008	24.0	32,734	1,364	61.0	738	17,714	1,771	37	2,262	226
01/03/2008	13.3	22,778	1,709	76.4	382	5,094	509	16	1,198	120
01/09/2008	14.0	15,623	1,116	49.9	1,326	18,566	1,857	80	3,983	398
01/10/2008	24.0	39,992	1,666	74.5	411	9,871	987	17	1,286	129
01/11/2008	1.0	1,034	1,089	48.7	1,425	1,354	135	88	4,269	427
03/03/2008	19.2	26,792	1,394	62.3	693	13,312	1,331	34	2,127	213
03/04/2008	23.2	37,404	1,614	72.2	452	10,471	1,047	20	1,408	141
03/14/2008	3.2	2,586	813	36.4	3,343	10,631	1,063	268	9,728	973
03/15/2008	24.0	37,287	1,554	69.5	505	12,111	1,211	23	1,567	157
03/16/2008	24.0	48,161	2,007	89.7	239	5,736	574	8	761	76
03/17/2008	24.0	42,088	1,754	78.4	354	8,503	850	14	1,113	111
03/18/2008	24.0	41,782	1,741	77.9	362	8,686	869	15	1,136	114
03/19/2008	24.0	41,976	1,749	78.2	357	8,569	857	14	1,122	112
03/20/2008	24.0	43,305	1,804	80.7	326	7,824	782	13	1,027	103
03/21/2008	24.0	39,752	1,656	74.1	419	10,046	1,005	18	1,308	131
03/22/2008	24.0	36,895	1,537	68.8	520	12,490	1,249	23	1,614	161
03/23/2008	23.1	37,602	1,628	72.8	440	10,172	1,017	19	1,374	137
03/29/2008	24.0	33,505	1,396	62.4	690	16,549	1,655	34	2,118	212
03/30/2008	24.0	40,589	1,691	75.6	394	9,453	945	16	1,233	123
03/31/2008	24.0	42,801	1,783	79.8	337	8,096	810	13	1,062	106
04/01/2008	18.4	32,631	1,773	79.3	343	6,309	631	14	1,079	108
04/02/2008	9.8	13,952	1,424	63.7	651	6,382	638	31	2,004	200
04/03/2008	24.0	41,284	1,720	76.9	375	8,996	900	15	1,176	118
04/04/2008	24.0	42,416	1,767	79.0	346	8,312	831	14	1,089	109
04/05/2008	24.0	42,505	1,771	79.2	344	8,262	826	14	1,083	108
04/06/2008	24.0	40,001	1,667	74.5	411	9,864	986	17	1,285	128
04/07/2008	24.0	39,257	1,636	73.2	434	10,420	1,042	19	1,355	135
04/08/2008	24.0	37,804	1,575	70.4	485	11,633	1,163	21	1,507	151
04/09/2008	24.0	39,925	1,664	74.4	413	9,919	992	17	1,292	129
04/10/2008	24.0	41,196	1,716	76.8	377	9,052	905	15	1,183	118
04/11/2008	24.0	43,045	1,794	80.2	332	7,963	796	13	1,045	104
04/12/2008	21.8	34,635	1,587	71.0	474	10,342	1,034	21	1,475	147
04/19/2008	14.8	18,745	1,267	56.6	916	13,560	1,356	49	2,787	279
04/20/2008	24.0	38,777	1,616	72.3	450	10,801	1,080	19	1,403	140
04/21/2008	24.0	41,720	1,738	77.7	363	8,724	872	15	1,141	114
04/22/2008	4.5	5,544	1,246	55.7	961	4,278	428	52	2,920	292
04/25/2008	19.4	29,752	1,534	68.6	524	10,167	1,017	24	1,625	162
04/26/2008	24.0	41,012	1,709	76.4	382	9,171	917	16	1,198	120
04/27/2008	4.3	5,452	1,259	56.3	932	4,035	404	50	2,833	283
06/16/2008	18.3	21,410	1,170	52.3	1,155	21,140	2,114	67	3,486	349
06/17/2008	21.6	36,188	1,673	74.8	406	8,792	879	17	1,271	127
06/18/2008	18.8	25,861	1,378	61.6	717	13,450	1,345	36	2,198	220
06/19/2008	22.9	36,777	1,607	71.9	457	10,454	1,045	20	1,423	142
06/20/2008	17.4	26,972	1,555	69.5	504	8,739	874	22	1,564	156
06/21/2008	24.0	32,082	1,337	59.8	783	18,786	1,879	40	2,394	239
06/22/2008	17.2	23,771	1,384	61.9	707	12,131	1,213	35	2,168	217
06/23/2008	19.6	31,945	1,632	73.0	437	8,565	856	19	1,365	136
06/24/2008	23.5	38,264	1,627	72.8	441	10,374	1,037	19	1,376	138
06/25/2008	17.6	27,445	1,561	69.8	498	8,746	875	22	1,545	155
06/26/2008	24.0	36,070	1,503	67.2	556	13,343	1,334	26	1,720	172
06/27/2008	24.0	41,055	1,711	76.5	381	9,143	914	16	1,194	119
06/28/2008	24.0	40,410	1,684	75.3	399	9,575	958	17	1,249	125
06/29/2008	22.2	35,026	1,581	70.7	479	10,615	1,061	21	1,490	149
06/30/2008	15.9	22,680	1,431	64.0	642	10,170	1,017	31	1,976	198
07/01/2008	24.0	36,592	1,525	68.2	533	12,795	1,279	24	1,652	165
07/02/2008	21.9	33,881	1,546	69.1	512	11,228	1,123	23	1,589	159
07/03/2008	14.0	20,218	1,444	64.6	625	8,744	874	30	1,925	192
07/04/2008	21.0	33,411	1,591	71.2	471	9,886	989	21	1,465	146
07/05/2008	1.5	1,127	742	33.2	4,373	6,647	665	380	12,609	1,261
07/07/2008	19.8	30,023	1,519	67.9	539	10,662	1,066	25	1,670	167
07/08/2008	22.1	35,042	1,588	71.0	474	10,452	1,045	21	1,473	147
07/09/2008	17.4	28,948	1,661	74.3	415	7,238	724	17	1,298	130
07/10/2008	22.7	37,606	1,654	74.0	420	9,545	955	18	1,312	131
07/11/2008	14.8	21,495	1,449	64.8	618	9,165	917	29	1,905	191
07/17/2008	1.0	577	588	26.3	8,595	8,423	842	920	24,213	2,421
07/18/2008	24.0	32,936	1,372	61.4	725	17,398	1,740	36	2,223	222
07/19/2008	20.9	37,109	1,774	79.3	343	7,168	717	14	1,078	108
07/20/2008	19.5	34,243	1,761	78.7	350	6,812	681	14	1,101	110
07/21/2008	23.3	40,300	1,727	77.3	370	8,638	864	15	1,162	116
07/22/2008	17.0	25,147	1,481	66.2	580	9,854	985	27	1,793	179
07/23/2008	22.3	35,565	1,593	71.2	469	10,479	1,048	21	1,461	146
07/24/2008	17.0	24,704	1,453	65.0	613	10,427	1,043	29	1,892	189
07/25/2008	20.6	31,979	1,556	69.6	502	10,321	1,032	22	1,559	156
07/28/2008	19.3	29,990	1,558	69.7	501	9,635	964	22	1,554	155
07/29/2008	22.4	35,889	1,602	71.7	461	10,331	1,033	20	1,436	144
07/30/2008	10.7	17,566	1,642	73.4	430	4,597	460	18	1,341	134
08/01/2008	3.0	2,573	866	38.7	2,777	8,247	825	210	8,131	813
08/02/2008	24.0	39,723	1,655	74.0	419	10,067	1,007	18	1,311	131
08/03/2008	23.7	41,831	1,767	79.0	347	8,212	821	14	1,091	109
08/04/2008	16.3	26,538	1,633	73.0	436	7,088	709	19	1,361	136
08/05/2008	23.4	40,877	1,751	78.3	356	8,315	831	14	1,119	112
08/06/2008	17.0	28,641	1,688	75.5	396	6,724	672	16	1,240	124
08/07/2008	24.0	43,752	1,823	81.5	316	7,593	759	12	998	100
08/08/2008	21.8	35,094	1,610	72.0	455	9,917	992	20	1,417	142
08/09/2008	17.0	25,825	1,519	67.9	539	9,160	916	25	1,669	167
08/10/2008	21.5	32,904	1,534	68.6	524	11,234	1,123	24	1,624	162
08/11/2008	15.8	25,424	1,614	72.2	451	7,107	711	19	1,406	141
08/12/2008	21.4	33,270	1,556	69.6	502	10,738	1,074	22	1,559	156
08/13/2008	17.0	27,414	1,613	72.1	453	7,694	769	20	1,410	141
08/14/2008	21.5	34,251	1,595	71.3	467	10,028	1,003	20	1,454	145
08/15/2008	18.0	29,444	1,636	73.2	434	7,814	781	19	1,355	135

TABLE 3
2008 CO Emissions Based on Load Varying Emissions Profile

Day	2008 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled CO ^a		Controlled CO ^b	Uncontrolled CO ^c		Controlled CO ^b
					(lb/hr)	(lb/day)	(lb/day)	(lb/hr)	(lb/day)	(lb/day)
08/16/2008	23.3	34,497	1,482	66.3	579	13,464	1,346	27	1,788	179
08/17/2008	17.0	27,569	1,625	72.7	443	7,516	752	19	1,381	138
08/18/2008	20.0	27,893	1,393	62.3	695	13,913	1,391	34	2,133	213
08/19/2008	19.0	29,847	1,571	70.3	489	9,283	928	22	1,518	152
08/20/2008	24.0	41,222	1,718	76.8	376	9,035	904	15	1,181	118
08/21/2008	24.0	43,176	1,799	80.5	329	7,892	789	13	1,036	104
08/22/2008	24.0	48,193	2,008	89.8	239	5,725	573	8	760	76
08/23/2008	24.0	44,378	1,849	82.7	303	7,284	728	12	959	96
08/24/2008	24.0	43,050	1,794	80.2	332	7,960	796	13	1,045	104
08/25/2008	23.8	44,053	1,853	82.8	302	7,178	718	12	954	95
08/26/2008	16.5	28,238	1,713	76.6	379	6,247	625	16	1,188	119
08/27/2008	24.0	42,655	1,777	79.5	341	8,177	818	13	1,072	107
08/28/2008	23.2	38,098	1,641	73.4	430	9,991	999	18	1,343	134
08/29/2008	16.5	27,874	1,692	75.7	393	6,474	647	16	1,231	123
08/30/2008	23.1	31,811	1,379	61.7	715	16,492	1,649	36	2,193	219
08/31/2008	16.8	21,260	1,264	56.5	922	15,505	1,550	50	2,803	280
09/01/2008	23.8	35,960	1,509	67.5	549	13,092	1,309	25	1,701	170
09/02/2008	16.9	26,524	1,567	70.1	492	8,336	834	22	1,530	153
09/03/2008	24.0	37,829	1,576	70.5	484	11,611	1,161	21	1,504	150
09/04/2008	16.1	26,020	1,621	72.5	446	7,152	715	19	1,389	139
09/05/2008	22.9	37,395	1,637	73.2	434	9,906	991	18	1,353	135
09/06/2008	16.6	27,260	1,642	73.4	429	7,125	712	18	1,340	134
09/07/2008	24.0	41,454	1,727	77.2	370	8,888	889	15	1,162	116
09/08/2008	23.1	41,171	1,786	79.9	336	7,740	774	13	1,057	106
09/09/2008	17.0	28,732	1,695	75.8	391	6,631	663	16	1,225	123
09/10/2008	22.7	36,662	1,617	72.3	449	10,175	1,017	19	1,399	140
09/11/2008	17.6	28,114	1,600	71.6	463	8,135	813	20	1,442	144
09/12/2008	23.2	41,118	1,771	79.2	344	7,996	800	14	1,083	108
09/13/2008	17.0	29,311	1,724	77.1	372	6,329	633	15	1,168	117
09/14/2008	23.8	40,250	1,693	75.7	392	9,328	933	16	1,229	123
09/15/2008	16.5	28,796	1,743	78.0	361	5,957	596	15	1,132	113
09/16/2008	23.8	44,085	1,851	82.8	303	7,211	721	12	956	96
09/17/2008	16.5	27,284	1,652	73.9	422	6,973	697	18	1,318	132
09/18/2008	22.7	39,935	1,757	78.6	352	8,009	801	14	1,107	111
09/19/2008	16.0	26,780	1,674	74.9	406	6,496	650	17	1,270	127
09/20/2008	23.1	42,670	1,850	82.7	303	6,996	700	12	958	96
09/21/2008	17.0	29,646	1,744	78.0	360	6,122	612	15	1,131	113
09/22/2008	21.7	37,368	1,724	77.1	373	8,078	808	15	1,169	117
09/23/2008	18.3	30,867	1,690	75.6	395	7,217	722	16	1,237	124
09/24/2008	22.8	38,723	1,700	76.0	388	8,840	884	16	1,216	122
09/27/2008	21.0	35,673	1,699	76.0	389	8,165	816	16	1,218	122
09/28/2008	24.0	43,229	1,801	80.6	328	7,864	786	13	1,032	103
09/29/2008	24.0	47,255	1,969	88.1	253	6,063	606	9	803	80
09/30/2008	24.0	44,872	1,870	83.6	294	7,052	705	11	929	93
10/01/2008	24.0	44,023	1,834	82.0	311	7,457	746	12	981	98
10/02/2008	23.9	41,397	1,732	77.5	367	8,779	878	15	1,153	115
10/03/2008	16.4	29,005	1,769	79.1	346	5,668	567	14	1,087	109
10/04/2008	24.0	41,600	1,733	77.5	367	8,797	880	15	1,150	115
10/05/2008	24.0	38,521	1,605	71.8	459	11,012	1,101	20	1,429	143
10/06/2008	24.0	45,059	1,877	84.0	290	6,967	697	11	918	92
10/07/2008	24.0	46,690	1,945	87.0	262	6,280	628	10	831	83
10/08/2008	24.0	45,350	1,890	84.5	285	6,838	684	11	902	90
10/09/2008	24.0	44,747	1,864	83.4	296	7,110	711	11	937	94
10/10/2008	24.0	44,645	1,860	83.2	298	7,157	716	11	943	94
10/11/2008	24.0	44,988	1,874	83.8	292	7,000	700	11	923	92
10/12/2008	24.0	45,376	1,891	84.6	284	6,826	683	11	900	90
10/13/2008	24.0	46,989	1,958	87.6	257	6,164	616	9	816	82
10/14/2008	24.0	45,496	1,896	84.8	282	6,774	677	11	894	89
10/15/2008	24.0	43,251	1,802	80.6	327	7,853	785	13	1,031	103
10/16/2008	24.0	44,246	1,844	82.5	306	7,348	735	12	967	97
10/17/2008	24.0	45,212	1,884	84.2	287	6,899	690	11	910	91
10/18/2008	24.0	45,964	1,915	85.7	274	6,574	657	10	868	87
10/19/2008	24.0	39,419	1,642	73.5	429	10,295	1,030	18	1,339	134
10/20/2008	24.0	41,024	1,709	76.4	382	9,163	916	16	1,197	120
10/21/2008	24.0	43,245	1,802	80.6	327	7,856	786	13	1,031	103
10/22/2008	24.0	41,584	1,733	77.5	367	8,807	881	15	1,152	115
10/23/2008	24.0	42,346	1,764	78.9	348	8,352	835	14	1,094	109
10/24/2008	22.4	41,066	1,835	82.1	310	6,946	695	12	980	98
12/11/2008	7.4	6,589	894	40.0	2,534	18,676	1,868	186	7,444	744
12/16/2008	17.7	23,200	1,313	58.7	825	14,575	1,457	43	2,518	252
			min =	0.0		Total lbs =	149,606		Total lbs =	28,943
			max =	89.7		Total TPY =	75		Total TPY =	14

^a Calculated using $Y = 120,564,454.53X^{-2.92}$, where "X" is load (see Figure 1).
^b Using 90-percent control due to the oxidation catalyst system.
^c Calculated using $Y = 244,919,743.15X^{-3.82}$, where "X" is load (see Figure 1).

Checked by: _____
 Reviewed by: _____



TABLE 4
2009 VOC Emissions Based on Load Varying Emissions Profile

Day	2009 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		Controlled VOC ^b (lb/day)
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled VOC ^a		Controlled VOC ^b	Uncontrolled VOC ^c		
					(lb/hr)	(lb/day)	(lb/day)	(lb/hr)	(lb/day)	
01/20/2009	11.5	13,739	1,192	53.3	64	743	446	1	63	38
01/21/2009	24.0	41,016	1,709	76.4	17	403	242	0	11	7
01/22/2009	24.0	41,064	1,711	76.5	17	401	241	0	11	7
01/23/2009	10.5	17,226	1,645	73.6	19	203	122	0	13	8
01/27/2009	23.3	38,584	1,658	74.2	19	438	263	0	13	8
02/04/2009	13.3	12,720	958	42.8	146	1,934	1,160	4	179	108
02/05/2009	24.0	40,588	1,691	75.6	17	419	252	0	12	7
02/06/2009	15.6	27,331	1,752	78.4	15	239	143	0	10	6
02/20/2009	13.0	17,614	1,355	60.6	40	519	311	1	34	20
02/21/2009	24.0	43,590	1,816	81.2	13	321	193	0	8	5
02/22/2009	24.0	44,117	1,838	82.2	13	307	184	0	8	5
02/23/2009	24.0	46,885	1,954	87.4	10	245	147	0	6	4
02/24/2009	24.0	48,275	2,011	90.0	9	220	132	0	5	3
02/25/2009	24.0	44,941	1,873	83.7	12	287	172	0	7	4
02/26/2009	24.0	44,345	1,848	82.6	13	301	181	0	8	5
02/27/2009	24.0	46,029	1,918	85.8	11	262	157	0	6	4
02/28/2009	24.0	46,564	1,940	86.8	10	251	151	0	6	4
03/01/2009	24.0	45,112	1,880	84.1	12	283	170	0	7	4
03/02/2009	24.0	50,609	2,109	94.3	8	184	110	0	4	2
03/03/2009	24.0	49,003	2,042	91.3	9	208	125	0	5	3
03/04/2009	24.0	47,650	1,985	88.8	10	230	138	0	5	3
03/05/2009	24.0	48,950	2,040	91.2	9	208	125	0	5	3
03/06/2009	24.0	48,082	2,003	89.6	9	223	134	0	5	3
03/07/2009	24.0	46,368	1,932	86.4	11	255	153	0	6	4
03/08/2009	24.0	48,246	2,010	89.9	9	220	132	0	5	3
03/09/2009	24.0	47,708	1,988	88.9	10	229	138	0	5	3
03/10/2009	24.0	44,525	1,855	83.0	12	297	178	0	8	5
03/11/2009	24.0	46,546	1,939	86.7	10	252	151	0	6	4
03/12/2009	24.0	48,750	2,031	90.8	9	212	127	0	5	3
03/13/2009	24.0	47,269	1,970	88.1	10	237	142	0	6	3
03/14/2009	24.0	44,177	1,841	82.3	13	306	183	0	8	5
03/15/2009	24.0	43,371	1,807	80.8	14	327	196	0	9	5
03/16/2009	24.0	45,600	1,900	85.0	11	272	163	0	7	4
03/17/2009	24.0	45,680	1,903	85.1	11	270	162	0	7	4
03/18/2009	24.0	46,257	1,927	86.2	11	257	154	0	6	4
03/19/2009	24.0	46,131	1,922	86.0	11	260	156	0	6	4
03/20/2009	24.0	47,371	1,974	88.3	10	236	141	0	6	3
03/21/2009	24.0	45,635	1,901	85.0	11	271	162	0	7	4
03/22/2009	24.0	47,147	1,964	87.9	10	240	144	0	6	3
03/23/2009	24.0	45,007	1,875	83.9	12	285	171	0	7	4
03/24/2009	24.0	46,411	1,934	86.5	11	254	153	0	6	4
03/25/2009	24.0	45,929	1,914	85.6	11	264	159	0	7	4
03/26/2009	24.0	44,914	1,871	83.7	12	287	172	0	7	4
03/27/2009	24.0	45,246	1,885	84.3	12	280	168	0	7	4
03/28/2009	24.0	44,586	1,858	83.1	12	295	177	0	8	5
03/29/2009	16.8	28,659	1,706	76.3	17	284	170	0	11	7
03/30/2009	24.0	47,193	1,966	87.9	10	239	143	0	6	3
03/31/2009	24.0	46,585	1,941	86.8	10	251	150	0	6	4
04/01/2009	24.0	47,161	1,965	87.9	10	239	144	0	6	3
04/02/2009	24.0	46,770	1,949	87.2	10	247	148	0	6	4
04/03/2009	24.0	47,659	1,986	88.8	10	230	138	0	5	3
04/04/2009	24.0	49,998	2,083	93.2	8	193	116	0	4	3
04/05/2009	24.0	49,565	2,065	92.4	8	199	119	0	5	3
04/06/2009	24.0	48,406	2,017	90.2	9	217	130	0	5	3
04/07/2009	24.0	48,139	2,006	89.7	9	222	133	0	5	3
04/08/2009	21.3	44,212	2,076	92.8	8	173	104	0	4	3
04/09/2009	16.9	30,135	1,780	79.6	14	244	147	0	9	6
04/10/2009	24.0	46,664	1,944	87.0	10	249	149	0	6	4
04/11/2009	24.0	46,506	1,938	86.7	11	252	151	0	6	4
04/12/2009	24.0	46,560	1,940	86.8	10	251	151	0	6	4
04/13/2009	24.0	48,097	2,004	89.6	9	223	134	0	5	3
04/14/2009	24.0	48,692	2,029	90.7	9	213	128	0	5	3
04/15/2009	24.0	46,482	1,937	86.6	11	253	152	0	6	4
04/16/2009	24.0	45,529	1,897	84.8	11	273	164	0	7	4
04/17/2009	24.0	46,239	1,927	86.2	11	258	155	0	6	4
04/18/2009	24.0	45,379	1,891	84.6	12	276	166	0	7	4
04/19/2009	24.0	45,498	1,896	84.8	11	274	164	0	7	4
04/20/2009	24.0	45,246	1,885	84.3	12	280	168	0	7	4
04/21/2009	24.0	47,807	1,992	89.1	9	228	137	0	5	3
04/22/2009	24.0	44,084	1,837	82.1	13	308	185	0	8	5
04/23/2009	24.0	39,066	1,628	72.8	20	483	290	0	14	8
04/24/2009	24.0	46,711	1,946	87.0	10	248	149	0	6	4
04/25/2009	24.0	45,030	1,876	83.9	12	285	171	0	7	4
04/26/2009	24.0	45,380	1,891	84.6	12	276	166	0	7	4
04/27/2009	24.0	46,054	1,919	85.8	11	262	157	0	6	4
04/28/2009	24.0	45,603	1,900	85.0	11	271	163	0	7	4
04/29/2009	24.0	46,047	1,919	85.8	11	262	157	0	6	4
04/30/2009	24.0	47,868	1,995	89.2	9	227	136	0	5	3
05/01/2009	24.0	44,449	1,852	82.8	12	299	179	0	8	5
05/02/2009	24.0	45,822	1,909	85.4	11	267	160	0	7	4
05/03/2009	24.0	45,139	1,881	84.1	12	282	169	0	7	4
05/04/2009	24.0	47,167	1,965	87.9	10	239	144	0	6	3
05/05/2009	24.0	46,271	1,928	86.2	11	257	154	0	6	4
05/06/2009	24.0	47,859	1,994	89.2	9	227	136	0	5	3
05/07/2009	24.0	47,713	1,988	88.9	10	229	138	0	5	3
05/08/2009	24.0	46,863	1,953	87.3	10	245	147	0	6	4
05/09/2009	24.0	44,614	1,859	83.1	12	295	177	0	7	4
05/10/2009	24.0	42,882	1,787	79.9	14	341	205	0	9	5
05/11/2009	24.0	44,277	1,845	82.5	13	303	182	0	8	5
05/12/2009	24.0	42,623	1,776	79.4	15	349	210	0	9	6
05/13/2009	24.0	43,585	1,816	81.2	13	321	193	0	8	5
05/14/2009	24.0	43,501	1,813	81.1	13	324	194	0	8	5
05/15/2009	24.0	42,212	1,759	78.7	15	362	217	0	10	6
05/16/2009	24.0	43,767	1,824	81.6	13	316	190	0	8	5
05/17/2009	24.0	43,806	1,825	81.6	13	315	189	0	8	5
05/18/2009	24.0	40,599	1,692	75.7	17	419	251	0	12	7
05/19/2009	24.0	41,880	1,745	78.0	16	373	224	0	10	6
05/20/2009	24.0	44,419	1,851	82.8	12	299	180	0	8	5
05/21/2009	24.0	45,684	1,904	85.1	11	270	162	0	7	4
05/22/2009	24.0	46,411	1,934	86.5	11	254	153	0	6	4

TABLE 4
2009 VOC Emissions Based on Load Varying Emissions Profile

Day	2009 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		Controlled VOC ^b (lb/day)
	Operating Hours	Daily Heat Input	Heat Input Rate	Load (%)	Uncontrolled VOC ^a		Controlled VOC ^b	Uncontrolled VOC ^c		
	(hrs/day)	(MMBtu/yr)	(MMBtu/hr)		(lb/hr)	(lb/day)	(lb/day)	(lb/hr)	(lb/day)	
05/23/2009	24.0	44,643	1,860	83.2	12	294	176	0	7	4
05/24/2009	24.0	41,521	1,730	77.4	16	385	231	0	11	6
05/25/2009	24.0	42,347	1,764	78.9	15	358	215	0	10	6
05/26/2009	24.0	43,575	1,816	81.2	13	322	193	0	8	5
05/27/2009	24.0	43,988	1,833	82.0	13	311	186	0	8	5
05/28/2009	24.0	42,337	1,764	78.9	15	358	215	0	10	6
05/29/2009	19.2	33,346	1,740	77.8	16	301	181	0	10	6
05/30/2009	24.0	42,764	1,782	79.7	14	345	207	0	9	5
05/31/2009	22.8	37,067	1,628	72.8	20	458	275	0	14	8
06/01/2009	17.4	30,040	1,728	77.3	16	280	168	0	11	6
06/02/2009	24.0	40,991	1,708	76.4	17	404	242	0	11	7
06/03/2009	24.0	41,580	1,733	77.5	16	383	230	0	10	6
06/04/2009	24.0	39,503	1,646	73.6	19	464	278	0	13	8
06/05/2009	24.0	40,278	1,678	75.1	18	431	259	0	12	7
06/06/2009	24.0	40,851	1,702	76.1	17	409	246	0	11	7
06/07/2009	24.0	35,706	1,488	66.5	28	676	406	0	22	13
06/08/2009	24.0	39,375	1,641	73.4	20	469	282	0	14	8
06/09/2009	22.5	39,306	1,748	78.2	15	347	208	0	10	6
06/10/2009	16.8	29,908	1,786	79.9	14	239	143	0	9	5
06/11/2009	24.0	48,069	2,003	89.6	9	223	134	0	5	3
06/12/2009	24.0	45,150	1,881	84.1	12	282	169	0	7	4
06/13/2009	24.0	43,763	1,823	81.5	13	317	190	0	8	5
06/14/2009	24.0	39,910	1,663	74.4	19	446	268	0	13	8
06/15/2009	21.4	34,800	1,624	72.6	20	436	261	0	14	9
06/16/2009	17.9	30,153	1,683	75.3	18	319	191	0	12	7
06/17/2009	24.0	40,649	1,694	75.7	17	417	250	0	12	7
06/18/2009	18.8	27,053	1,441	64.4	32	597	358	0	25	15
06/19/2009	17.2	28,864	1,676	75.0	18	311	187	0	12	7
06/20/2009	24.0	41,311	1,721	77.0	16	392	235	0	11	6
06/21/2009	24.0	40,745	1,698	75.9	17	413	248	0	12	7
06/22/2009	22.7	39,881	1,761	78.7	15	340	204	0	10	6
06/23/2009	17.8	28,569	1,608	71.9	21	375	225	0	15	9
06/24/2009	24.0	39,649	1,652	73.9	19	457	274	0	13	8
06/25/2009	17.9	25,341	1,413	63.2	34	613	368	0	28	17
06/26/2009	4.9	4,608	940	42.1	156	764	458	5	196	117
06/27/2009	20.1	29,416	1,466	65.5	30	598	359	0	23	14
06/28/2009	23.7	37,857	1,596	71.4	22	514	309	0	16	9
06/29/2009	17.1	29,256	1,711	76.5	17	286	172	0	11	7
06/30/2009	24.0	36,118	1,505	67.3	27	648	389	0	21	12
07/01/2009	24.0	40,143	1,673	74.8	18	437	262	0	12	7
07/02/2009	24.0	40,964	1,707	76.3	17	405	243	0	11	7
07/03/2009	24.0	42,370	1,765	79.0	15	357	214	0	10	6
07/04/2009	24.0	43,349	1,806	80.8	14	328	197	0	9	5
07/05/2009	24.0	43,539	1,814	81.1	13	323	194	0	8	5
07/06/2009	24.0	44,541	1,856	83.0	12	296	178	0	8	5
07/07/2009	24.0	42,856	1,786	79.9	14	342	205	0	9	5
07/08/2009	24.0	43,582	1,816	81.2	13	321	193	0	8	5
07/09/2009	24.0	44,044	1,835	82.1	13	309	185	0	8	5
07/10/2009	24.0	45,689	1,904	85.1	11	270	162	0	7	4
07/11/2009	24.0	44,971	1,874	83.8	12	286	172	0	7	4
07/12/2009	24.0	44,744	1,864	83.4	12	291	175	0	7	4
07/13/2009	24.0	44,026	1,834	82.0	13	310	186	0	8	5
07/14/2009	24.0	45,135	1,881	84.1	12	282	169	0	7	4
07/15/2009	24.0	46,051	1,919	85.8	11	262	157	0	6	4
07/16/2009	24.0	46,380	1,932	86.4	11	255	153	0	6	4
07/17/2009	24.0	42,818	1,784	79.8	14	343	206	0	9	5
07/18/2009	24.0	38,771	1,615	72.2	21	497	298	0	15	9
07/19/2009	24.0	37,632	1,568	70.1	23	556	333	0	17	10
07/20/2009	21.2	34,170	1,613	72.2	21	441	265	0	15	9
07/21/2009	16.2	27,634	1,706	76.3	17	274	164	0	11	7
07/22/2009	24.0	44,081	1,837	82.1	13	308	185	0	8	5
07/23/2009	24.0	42,526	1,772	79.2	15	352	211	0	9	6
07/24/2009	24.0	41,900	1,746	78.1	16	372	223	0	10	6
07/25/2009	22.5	37,814	1,679	75.1	18	404	242	0	12	7
07/27/2009	16.9	29,307	1,731	77.4	16	271	163	0	11	6
07/28/2009	24.0	44,280	1,845	82.5	13	303	182	0	8	5
07/29/2009	24.0	44,750	1,865	83.4	12	291	175	0	7	4
07/30/2009	16.0	25,021	1,564	69.9	23	374	225	0	17	10
07/31/2009	24.0	46,428	1,934	86.5	11	254	152	0	6	4
08/01/2009	24.0	46,279	1,928	86.2	11	257	154	0	6	4
08/02/2009	24.0	46,129	1,922	86.0	11	260	156	0	6	4
08/03/2009	24.0	45,627	1,901	85.0	11	271	163	0	7	4
08/04/2009	24.0	43,775	1,824	81.6	13	316	190	0	8	5
08/05/2009	24.0	39,862	1,661	74.3	19	448	269	0	13	8
08/06/2009	24.0	40,734	1,697	75.9	17	414	248	0	12	7
08/07/2009	23.6	40,862	1,734	77.5	16	375	225	0	10	6
08/08/2009	16.6	26,916	1,618	72.4	21	342	205	0	15	9
08/09/2009	24.0	41,738	1,739	77.8	16	378	227	0	10	6
08/10/2009	23.3	43,538	1,873	83.7	12	278	167	0	7	4
08/11/2009	17.0	29,791	1,752	78.4	15	260	156	0	10	6
08/12/2009	24.0	41,618	1,734	77.6	16	382	229	0	10	6
08/13/2009	22.8	37,319	1,638	73.3	20	448	269	0	14	8
08/14/2009	17.6	26,874	1,531	68.5	25	444	266	0	19	11
08/15/2009	24.0	41,311	1,721	77.0	16	392	235	0	11	6
08/16/2009	24.0	39,181	1,633	73.0	20	478	287	0	14	8
08/17/2009	24.0	37,247	1,552	69.4	24	577	346	0	18	11
08/18/2009	16.5	23,838	1,449	64.8	31	511	307	0	25	15
08/19/2009	24.0	42,684	1,778	79.5	14	347	208	0	9	6
08/20/2009	23.4	40,921	1,747	78.1	15	362	217	0	10	6
08/21/2009	16.9	25,363	1,498	67.0	27	465	279	0	21	13
08/22/2009	24.0	38,697	1,612	72.1	21	501	301	0	15	9
08/23/2009	22.1	36,203	1,637	73.2	20	437	262	0	14	8
08/24/2009	17.0	28,748	1,691	75.6	17	297	178	0	12	7
08/25/2009	24.0	43,743	1,823	81.5	13	317	190	0	8	5
08/26/2009	22.7	37,807	1,668	74.6	18	417	250	0	13	8
08/27/2009	16.7	28,331	1,698	76.0	17	287	172	0	12	7
08/28/2009	24.0	42,969	1,790	80.1	14	339	203	0	9	5
08/29/2009	23.0	38,074	1,657	74.1	19	433	260	0	13	8
08/30/2009	17.3	29,850	1,727	77.3	16	279	167	0	11	6
08/31/2009	24.0	41,068	1,711	76.5	17	401	241	0	11	7



TABLE 4
2009 VOC Emissions Based on Load Varying Emissions Profile

Day	2009 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		Controlled VOC ^b (lb/day)
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled VOC ^a		Controlled VOC ^b	Uncontrolled VOC ^c		
					(lb/hr)	(lb/day)	(lb/day)	(lb/hr)	(lb/day)	
09/01/2009	23.2	39,370	1,701	76.1	17	396	238	0	11	7
09/02/2009	17.2	27,578	1,603	71.7	21	367	220	0	15	9
09/03/2009	24.0	38,916	1,621	72.5	20	490	294	0	14	9
09/04/2009	23.5	40,269	1,714	76.6	17	391	234	0	11	7
09/05/2009	16.7	24,260	1,455	65.1	31	510	306	0	24	15
09/06/2009	24.0	40,794	1,700	76.0	17	411	247	0	11	7
09/07/2009	22.2	36,122	1,629	72.8	20	446	268	0	14	8
09/08/2009	17.8	31,747	1,789	80.0	14	252	151	0	9	5
09/09/2009	24.0	44,885	1,870	83.6	12	288	173	0	7	4
09/10/2009	24.0	46,622	1,943	86.9	10	250	150	0	6	4
09/11/2009	24.0	46,326	1,930	86.3	11	256	154	0	6	4
09/12/2009	24.0	45,216	1,884	84.3	12	280	168	0	7	4
09/13/2009	24.0	41,894	1,746	78.1	16	373	224	0	10	6
09/14/2009	24.0	45,474	1,895	84.7	11	274	165	0	7	4
09/15/2009	24.0	42,145	1,756	78.5	15	364	219	0	10	6
09/16/2009	24.0	44,757	1,865	83.4	12	291	175	0	7	4
09/17/2009	24.0	44,670	1,861	83.2	12	293	176	0	7	4
09/18/2009	24.0	42,771	1,782	79.7	14	345	207	0	9	5
09/19/2009	23.6	38,642	1,636	73.2	20	467	280	0	14	8
09/20/2009	16.7	26,560	1,589	71.0	22	369	221	0	16	10
09/21/2009	24.0	42,637	1,777	79.5	15	349	209	0	9	6
09/22/2009	24.0	42,709	1,780	79.6	14	347	208	0	9	6
09/23/2009	24.0	44,395	1,850	82.7	13	300	180	0	8	5
09/24/2009	24.0	41,573	1,732	77.5	16	383	230	0	10	6
09/25/2009	21.6	37,678	1,744	78.0	16	336	202	0	10	6
09/26/2009	17.7	29,523	1,668	74.6	18	325	195	0	13	8
09/27/2009	20.9	37,750	1,811	81.0	14	282	169	0	8	5
09/28/2009	19.5	33,828	1,739	77.8	16	306	184	0	10	6
09/29/2009	24.0	44,278	1,845	82.5	13	303	182	0	8	5
09/30/2009	24.0	42,750	1,781	79.7	14	345	207	0	9	6
10/01/2009	21.0	36,288	1,730	77.4	16	336	202	0	11	6
10/03/2009	16.6	27,359	1,650	73.8	19	317	190	0	13	8
10/04/2009	24.0	42,607	1,775	79.4	15	350	210	0	9	6
10/05/2009	24.0	44,733	1,864	83.4	12	292	175	0	7	4
10/06/2009	24.0	43,930	1,830	81.9	13	312	187	0	8	5
10/07/2009	24.0	44,697	1,862	83.3	12	293	176	0	7	4
10/08/2009	24.0	47,148	1,964	87.9	10	240	144	0	6	3
10/09/2009	24.0	45,735	1,906	85.2	11	269	161	0	7	4
10/10/2009	24.0	42,945	1,789	80.0	14	340	204	0	9	5
10/11/2009	24.0	42,255	1,761	78.7	15	361	216	0	10	6
10/12/2009	24.0	44,898	1,871	83.7	12	288	173	0	7	4
10/13/2009	24.0	43,355	1,806	80.8	14	328	197	0	9	5
10/14/2009	24.0	43,791	1,825	81.6	13	316	189	0	8	5
10/15/2009	24.0	42,085	1,754	78.4	15	366	220	0	10	6
10/16/2009	24.0	42,766	1,782	79.7	14	345	207	0	9	5
10/17/2009	2.9	3,511	1,202	53.8	62	182	109	1	60	36
11/16/2009	8.6	8,106	943	42.2	155	1,329	798	5	194	116
11/17/2009	23.2	39,890	1,717	76.8	17	383	230	0	11	7
11/21/2009	21.0	32,322	1,539	68.8	25	521	313	0	18	11
11/22/2009	24.0	40,146	1,673	74.8	18	437	262	0	12	7
11/23/2009	24.0	41,376	1,724	77.1	16	390	234	0	11	6
11/24/2009	8.9	11,558	1,296	57.9	47	421	252	1	42	25
					Total lbs =		51,737			1,850
					Total TPY =		26			0.9

^a Calculated using $Y = 177749982.75X^{-3.73}$, where "X" is load (see Figure 1).

^b Using 40-percent control due to the oxidation catalyst system.

^c Calculated using $Y = 11745575193.07X^{-5.79}$, where "X" is load (see Figure 1).

Checked by: _____
 Reviewed by: _____

TABLE 5
VOC Emissions Based on Load Varying Emissions Profile

Day	2008 CEM Data				Using Current Combustion System Emissions Profile				Using LLT Emissions Profile		
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled VOC ^a		Controlled VOC ^b (lb/day)	Uncontrolled VOC ^c		Controlled VOC ^b (lb/day)	
					(lb/hr)	(lb/day)		(lb/hr)	(lb/day)		
01/01/2008	8.2	7,920	968	43.3	140	1,144	687	4	170	3	
01/02/2008	24.0	32,734	1,364	61.0	39	935	561	1	33	1	
01/03/2008	13.3	22,778	1,709	76.4	17	224	134	0	11	9	
01/09/2008	14.0	15,623	1,116	49.9	82	1,153	692	2	86	1	
01/10/2008	24.0	39,992	1,666	74.5	18	443	266	0	13	10	
01/11/2008	1.0	1,034	1,089	48.7	90	86	51	2	97	3	
03/03/2008	19.2	26,792	1,394	62.3	36	690	414	0	30	1	
03/04/2008	23.2	37,404	1,614	72.2	21	482	289	0	15	39	
03/14/2008	3.2	2,586	813	36.4	268	853	512	11	393	2	
03/15/2008	24.0	37,287	1,554	69.5	24	575	345	0	18	1	
03/16/2008	24.0	48,161	2,007	89.7	9	221	133	0	5	1	
03/17/2008	24.0	42,088	1,754	78.4	15	366	220	0	10	1	
03/18/2008	24.0	41,782	1,741	77.9	16	376	226	0	10	1	
03/19/2008	24.0	41,976	1,749	78.2	15	370	222	0	10	1	
03/20/2008	24.0	43,305	1,804	80.7	14	329	198	0	9	1	
03/21/2008	24.0	39,752	1,656	74.1	19	453	272	0	13	2	
03/22/2008	24.0	36,895	1,537	68.8	25	598	359	0	19	1	
03/23/2008	23.1	37,602	1,628	72.8	20	465	279	0	14	3	
03/29/2008	24.0	33,505	1,396	62.4	36	857	514	0	29	1	
03/30/2008	24.0	40,589	1,691	75.6	17	419	251	0	12	1	
03/31/2008	24.0	42,801	1,783	79.8	14	344	206	0	9	1	
04/01/2008	18.4	32,631	1,773	79.3	15	269	162	0	9	3	
04/02/2008	9.8	13,952	1,424	63.7	33	325	195	0	27	1	
04/03/2008	24.0	41,284	1,720	76.9	16	393	236	0	11	1	
04/04/2008	24.0	42,416	1,767	79.0	15	356	213	0	10	1	
04/05/2008	24.0	42,505	1,771	79.2	15	353	212	0	9	1	
04/06/2008	24.0	40,001	1,667	74.5	18	443	266	0	13	1	
04/07/2008	24.0	39,257	1,636	73.2	20	475	285	0	14	2	
04/08/2008	24.0	37,804	1,575	70.4	23	546	328	0	17	1	
04/09/2008	24.0	39,925	1,664	74.4	19	446	267	0	13	1	
04/10/2008	24.0	41,196	1,716	76.8	17	397	238	0	11	1	
04/11/2008	24.0	43,045	1,794	80.2	14	337	202	0	9	2	
04/12/2008	21.8	34,635	1,587	71.0	22	483	290	0	16	5	
04/19/2008	14.8	18,745	1,267	56.6	51	760	456	1	47	1	
04/20/2008	24.0	38,777	1,616	72.3	21	497	298	0	15	1	
04/21/2008	24.0	41,720	1,738	77.7	16	378	227	0	10	5	
04/22/2008	4.5	5,544	1,246	55.7	55	243	146	1	51	2	
04/25/2008	19.4	29,752	1,534	68.6	25	488	293	0	19	1	
04/26/2008	24.0	41,012	1,709	76.4	17	403	242	0	11	5	
04/27/2008	4.3	5,452	1,259	56.3	52	227	136	1	48	7	
06/16/2008	18.3	21,410	1,170	52.3	69	1,263	758	1	69	1	
06/17/2008	21.6	36,188	1,673	74.8	18	393	236	0	12	3	
06/18/2008	18.8	25,861	1,378	61.6	38	704	422	1	31	2	
06/19/2008	22.9	36,777	1,607	71.9	21	483	290	0	15	2	
06/20/2008	17.4	26,972	1,555	69.5	24	415	249	0	18	4	
06/21/2008	24.0	32,082	1,337	59.8	42	1,008	605	1	36	3	
06/22/2008	17.2	23,771	1,384	61.9	37	633	380	0	31	1	
06/23/2008	19.6	31,945	1,632	73.0	20	391	235	0	14	1	
06/24/2008	23.5	38,264	1,627	72.8	20	475	285	0	14	2	
06/25/2008	17.6	27,445	1,561	69.8	24	414	248	0	17	2	
06/26/2008	24.0	36,070	1,503	67.2	27	651	391	0	21	1	
06/27/2008	24.0	41,055	1,711	76.5	17	402	241	0	11	1	
06/28/2008	24.0	40,410	1,684	75.3	18	426	256	0	12	2	
06/29/2008	22.2	35,026	1,581	70.7	22	497	298	0	16	3	
06/30/2008	15.9	22,680	1,431	64.0	33	516	310	0	26	2	
07/01/2008	24.0	36,592	1,525	68.2	26	617	370	0	19	2	
07/02/2008	21.9	33,881	1,546	69.1	24	536	321	0	18	3	
07/03/2008	14.0	20,218	1,444	64.6	31	441	264	0	25	2	
07/04/2008	21.0	33,411	1,591	71.2	22	461	276	0	16	61	
07/05/2008	1.5	1,127	742	33.2	378	575	345	18	611	2	
07/07/2008	19.8	30,023	1,519	67.9	26	516	310	0	20	2	
07/08/2008	22.1	35,042	1,588	71.0	22	488	293	0	16	1	
07/09/2008	17.4	28,948	1,661	74.3	19	326	195	0	13	1	
07/10/2008	22.7	37,606	1,654	74.0	19	431	259	0	13	2	
07/11/2008	14.8	21,495	1,449	64.8	31	461	276	0	25	185	
07/17/2008	1.0	577	588	26.3	896	878	527	70	1,850	3	
07/18/2008	24.0	32,936	1,372	61.4	38	914	548	1	32	1	
07/19/2008	20.9	37,109	1,774	79.3	15	306	183	0	9	1	
07/20/2008	19.5	34,243	1,761	78.7	15	292	175	0	10	1	
07/21/2008	23.3	40,300	1,727	77.3	16	377	226	0	11	2	
07/22/2008	17.0	25,147	1,481	66.2	29	487	292	0	22	2	
07/23/2008	22.3	35,565	1,593	71.2	22	488	293	0	16	2	
07/24/2008	17.0	24,704	1,453	65.0	31	523	314	0	24	2	
07/25/2008	20.6	31,979	1,556	69.6	24	490	294	0	18	2	
07/28/2008	19.3	29,990	1,558	69.7	24	457	274	0	17	2	
07/29/2008	22.4	35,889	1,602	71.7	21	479	287	0	15	1	
07/30/2008	10.7	17,566	1,642	73.4	20	209	125	0	14	29	
08/01/2008	3.0	2,573	866	38.7	212	629	377	7	290	1	
08/02/2008	24.0	39,723	1,655	74.0	19	454	273	0	13	1	
08/03/2008	23.7	41,831	1,767	79.0	15	352	211	0	10	1	
08/04/2008	16.3	26,538	1,633	73.0	20	323	194	0	14	1	
08/05/2008	23.4	40,877	1,751	78.3	15	359	215	0	10	1	
08/06/2008	17.0	28,641	1,688	75.5	18	299	179	0	12	1	
08/07/2008	24.0	43,752	1,823	81.5	13	317	190	0	8	1	
08/08/2008	21.8	35,094	1,610	72.0	21	458	275	0	15	2	
08/09/2008	17.0	25,825	1,519	67.9	26	443	266	0	20	2	
08/10/2008	21.5	32,904	1,534	68.6	25	539	323	0	19	1	
08/11/2008	15.8	25,424	1,614	72.2	21	327	196	0	15	2	
08/12/2008	21.4	33,270	1,556	69.6	24	509	306	0	18	1	
08/13/2008	17.0	27,414	1,613	72.1	21	355	213	0	15	2	
08/14/2008	21.5	34,251	1,595	71.3	22	466	280	0	16	1	
08/15/2008	18.0	29,444	1,636	73.2	20	356	214	0	14	2	
08/16/2008	23.3	34,497	1,482	66.3	29	664	399	0	22	1	
08/17/2008	17.0	27,569	1,625	72.7	20	344	207	0	14	3	
08/18/2008	20.0	27,893	1,393	62.3	36	722	433	0	30	2	
08/19/2008	19.0	29,847	1,571	70.3	23	437	262	0	17	1	
08/20/2008	24.0	41,222	1,718	76.8	16	396	237	0	11	1	
08/21/2008	24.0	43,176	1,799	80.5	14	333	200	0	9	1	
08/22/2008	24.0	48,193	2,008	89.8	9	221	133	0	5	1	
08/23/2008	24.0	44,378	1,849	82.7	13	300	180	0	8	1	
08/24/2008	24.0	43,050	1,794	80.2	14	337	202	0	9	1	

TABLE 5
VOC Emissions Based on Load Varying Emissions Profile

Day	2008 CEM Data				Using Current Combustion System Emissions Profile			Using LLT Emissions Profile		
	Operating Hours (hrs/day)	Daily Heat Input (MMBtu/yr)	Heat Input Rate (MMBtu/hr)	Load (%)	Uncontrolled VOC ^a		Controlled VOC ^b (lb/day)	Uncontrolled VOC ^c		Controlled VOC ^b (lb/day)
					(lb/hr)	(lb/day)		(lb/hr)	(lb/day)	
08/25/2008	23.8	44,053	1,853	82.8	12	296	177	0	8	1
08/26/2008	16.5	28,238	1,713	76.6	17	274	164	0	11	1
08/27/2008	24.0	42,655	1,777	79.5	15	348	209	0	9	1
08/28/2008	23.2	38,098	1,641	73.4	20	454	272	0	14	1
08/29/2008	16.5	27,874	1,692	75.7	17	287	172	0	12	3
08/30/2008	23.1	31,811	1,379	61.7	37	863	518	1	31	5
08/31/2008	16.8	21,260	1,264	56.5	52	870	522	1	47	2
09/01/2008	23.8	35,960	1,509	67.5	27	637	382	0	20	2
09/02/2008	16.9	26,524	1,567	70.1	23	393	236	0	17	2
09/03/2008	24.0	37,829	1,576	70.5	23	545	327	0	16	1
09/04/2008	16.1	26,020	1,621	72.5	20	328	197	0	14	1
09/05/2008	22.9	37,395	1,637	73.2	20	451	271	0	14	1
09/06/2008	16.6	27,260	1,642	73.4	19	324	194	0	14	1
09/07/2008	24.0	41,454	1,727	77.2	16	387	232	0	11	1
09/08/2008	23.1	41,171	1,786	79.9	14	328	197	0	9	1
09/09/2008	17.0	28,732	1,695	75.8	17	293	176	0	12	1
09/10/2008	22.7	36,662	1,617	72.3	21	468	281	0	15	2
09/11/2008	17.6	28,114	1,600	71.6	21	377	226	0	15	1
09/12/2008	23.2	41,118	1,771	79.2	15	342	205	0	9	1
09/13/2008	17.0	29,311	1,724	77.1	16	276	166	0	11	1
09/14/2008	23.8	40,250	1,693	75.7	17	413	248	0	12	1
09/15/2008	16.5	28,796	1,743	78.0	16	258	155	0	10	1
09/16/2008	23.8	44,085	1,851	82.8	12	297	178	0	8	1
09/17/2008	16.5	27,284	1,652	73.9	19	315	189	0	13	1
09/18/2008	22.7	39,935	1,757	78.6	15	344	207	0	10	1
09/19/2008	16.0	26,780	1,674	74.9	18	290	174	0	12	1
09/20/2008	23.1	42,670	1,850	82.7	13	289	173	0	8	1
09/21/2008	17.0	29,646	1,744	78.0	16	265	159	0	10	1
09/22/2008	21.7	37,368	1,724	77.1	16	353	212	0	11	1
09/23/2008	18.3	30,867	1,690	75.6	18	320	192	0	12	1
09/24/2008	22.8	38,723	1,700	76.0	17	390	234	0	11	1
09/27/2008	21.0	35,673	1,699	76.0	17	361	216	0	12	1
09/28/2008	24.0	43,229	1,801	80.6	14	331	199	0	9	1
09/29/2008	24.0	47,255	1,969	88.1	10	238	143	0	6	1
09/30/2008	24.0	44,872	1,870	83.6	12	288	173	0	7	1
10/01/2008	24.0	44,023	1,834	82.0	13	310	186	0	8	1
10/02/2008	23.9	41,397	1,732	77.5	16	382	229	0	10	1
10/03/2008	16.4	29,005	1,769	79.1	15	242	145	0	10	1
10/04/2008	24.0	41,600	1,733	77.5	16	382	229	0	10	2
10/05/2008	24.0	38,521	1,605	71.8	21	509	306	0	15	1
10/06/2008	24.0	45,059	1,877	84.0	12	284	170	0	7	1
10/07/2008	24.0	46,690	1,945	87.0	10	249	149	0	6	1
10/08/2008	24.0	45,350	1,890	84.5	12	277	166	0	7	1
10/09/2008	24.0	44,747	1,864	83.4	12	291	175	0	7	1
10/10/2008	24.0	44,645	1,860	83.2	12	294	176	0	7	1
10/11/2008	24.0	44,988	1,874	83.8	12	286	171	0	7	1
10/12/2008	24.0	45,376	1,891	84.6	12	277	166	0	7	1
10/13/2008	24.0	46,989	1,958	87.6	10	243	146	0	6	1
10/14/2008	24.0	45,496	1,896	84.8	11	274	164	0	7	1
10/15/2008	24.0	43,251	1,802	80.6	14	331	198	0	9	1
10/16/2008	24.0	44,246	1,844	82.5	13	304	182	0	8	1
10/17/2008	24.0	45,212	1,884	84.2	12	280	168	0	7	1
10/18/2008	24.0	45,964	1,915	85.7	11	264	158	0	6	1
10/19/2008	24.0	39,419	1,642	73.5	19	467	280	0	14	1
10/20/2008	24.0	41,024	1,709	76.4	17	403	242	0	11	1
10/21/2008	24.0	43,245	1,802	80.6	14	331	199	0	9	1
10/22/2008	24.0	41,584	1,733	77.5	16	383	230	0	10	1
10/23/2008	24.0	42,346	1,764	78.9	15	358	215	0	10	1
10/24/2008	22.4	41,066	1,835	82.1	13	288	173	0	8	25
12/11/2008	7.4	6,589	894	40.0	188	1,388	833	6	249	4
12/16/2008	17.7	23,200	1,313	58.7	45	793	476	1	40	0
						Total lbs =	43,048			592
						Total TPY =	22			0.3

^a Calculated using $Y = 177749982.75X^{-3.73}$, where "X" is load (see Figure 1).

^b Using 40-percent control due to the oxidation catalyst system.

^c Calculated using $Y = 11745575193.07X^{-5.79}$, where "X" is load (see Figure 1).

Checked by: _____
 Reviewed by: _____

**TABLE 6
COMPARISON OF 2008-2009 CO AND VOC EMISSIONS CALCULATED USING THE LOW LOAD
TURNDOWN SYSTEM EMISSIONS PROFILE AND THE INITIAL PERMIT APPLICATION EMISSIONS PROFILE**

Year	Carbon Monoxide (CO)		Volatile Organic Compounds (VOC)	
	Using Low Load Turndown Emissions Profile ^a	Using Current Combustion System Emissions Profile ^b	Using Low Load Turndown Emissions Profile ^a	Using Current Combustion System Emissions Profile ^b
	(TPY)	(TPY)	(TPY)	(TPY)
2009	15	98	0.9	26
2008	14	75	0.3	22

^a Estimated using the CEM data for unit load and the equation of the trendline (power) among the load versus mass emissions data points from Table 1. Trendlines are shown in Figure 1. Detailed emissions calculation are shown in Tables 2 through 5.

Checked by: _____
Reviewed by: _____

FIGURES

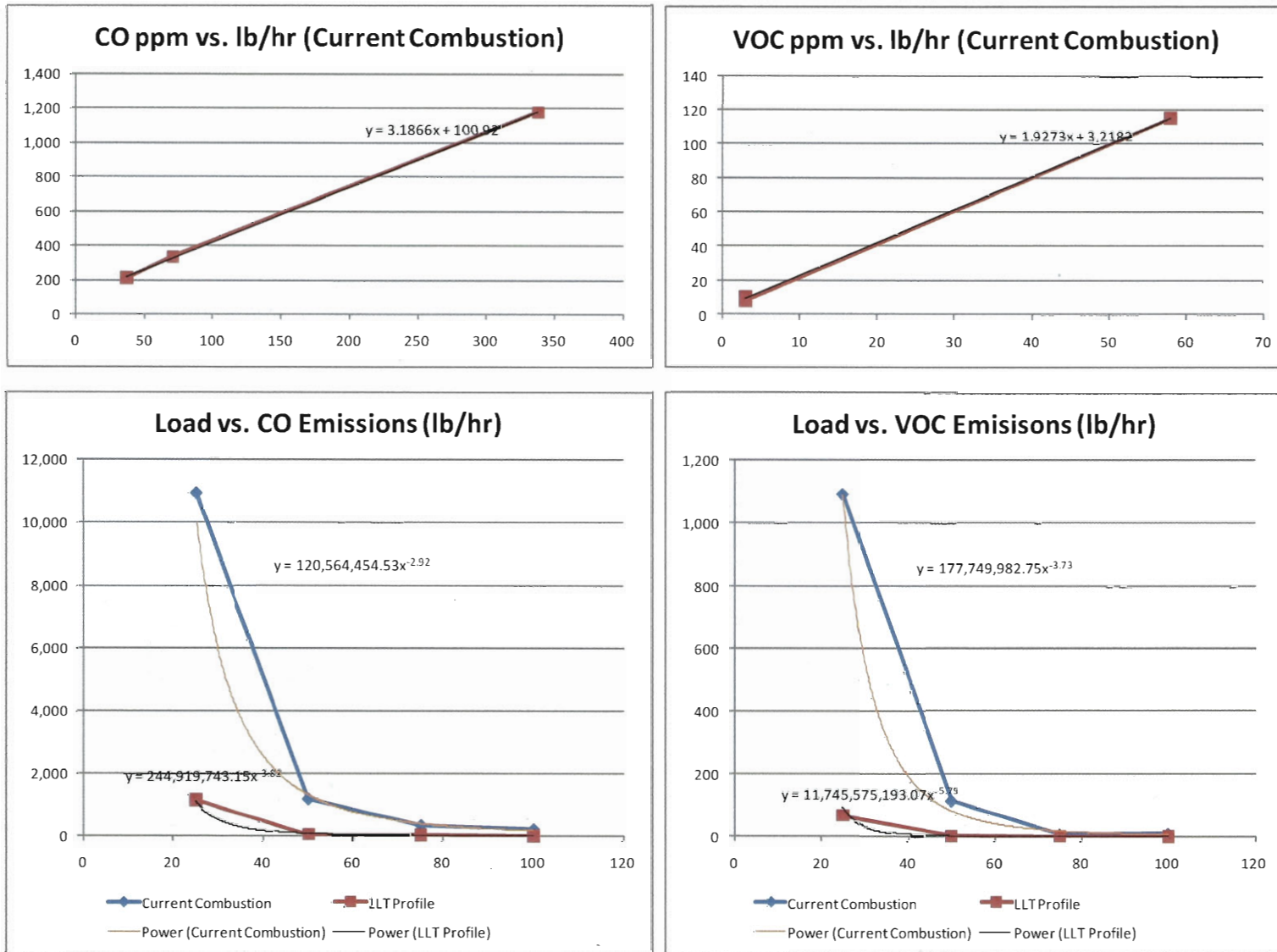


Figure 1
CO and VOC Emission Profiles for the Current Combustion System and the LLT System

Source: Golder, 2010.



ATTACHMENT A

SIEMENS-WESTINGHOUSE LETTER

SIEMENS
Westinghouse

September 28, 2001

SW-LCC-0112

File: 042

Mr. Steve Marshall
City of Lakeland, Florida
Department of Electric & Water Utilities
501 East Lemon Street
Lakeland, Florida 33801-5069

Subject: City of Lakeland - McIntosh #5 Combined Cycle Project
Part Load Emissions Estimates during Combined Cycle Commissioning

Dear Steve:

This is in response to the e-mail request (Mr. Tom Trickey dated 9/14/01) for part load (20%) emissions data for W501G Combustion Turbine at the McIntosh #5 facility.

At this time, we do not have good start-up emissions data for a W501G. However, we can provide part load (20%) emission data (estimated) on a W501 F as follows:

Parameter	Concentration, ppmvd @ 15% O ₂
NOx	45
CO	4000
VOC	665
Particulate Matter	Not available

Please note that this data is estimated and is not guaranteed and we are unable to determine if the data is directly applicable for a W501G installation. However, the data provided is higher and more reliable than the data we do have from the Lakeland SC where the NOX meter pegged at 1,000 at the lower load points.

We are hopeful, however, that the data provided will allow you to proceed with your emissions variance request to the FDEP.

Please feel free to call us if additional discussion is required.

Regards,



Andy Mould
Project Manager

Siemens Westinghouse Power Corporation
A Siemens Company

4400 Alafaya Trail
Orlando, FL 32836-2389

sw-lcc-0112

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