



Farzie Shelton, chE; REM  
Manager of Environmental Affairs

February 16, 2001

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FEB 20 2001

BUREAU OF AIR REGULATION

Mr. Scott Sheplak, P.E., Administrator  
Title V Section  
Division of Air Resources Management  
Florida Department of Environmental Protection  
111 S. Magnolia  
Suite 4  
Tallahassee, FL 32301

Re: C. D. McIntosh, Jr. Power Plant, Unit No. 5  
FDEP File No. 1050004-004-AC (PSD-FL-245)

Attention: Mr. Edward J. Svec

Dear Ed:

We are in receipt of your letter dated August 21, 2000 in response to our request of amendment to the above referenced permit. In your letter you had requested further information, however, due to problems Siemens/Westinghouse has been encountering with this unit it was not possible for us to obtain the necessary information sufficient to address all your questions before this date.

Therefore, enclosed you will find five copies of the application prepared by Ken Kosky of Golder Associates. Attached to this application you will find Ken's explanation and data review fully covering all your questions. Additionally, this application has been certified by Mr. Kosky P. E., and Mr. Roger D. Haar, City Manager (our Responsible Official).

As always, your cooperation in processing our request is much appreciated. If you should have any questions, please do not hesitate to contact me.

Sincerely,

Farzie Shelton

Enc.

City of Lakeland • Department of Electric Utilities

501 East Lemon Street • Lakeland, FL 33801-5050 • (863) 834-6603 • Fax (863) 603-5670 • Message System 834-6592

farzie.shelton@lakelandgov.net

PERMIT APPLICATION FOR UNIT 5  
C.D. MCINTOSH, JR. POWER PLANT  
CITY OF LAKELAND  
DEPARTMENT OF ELECTRIC UTILITIES

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

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

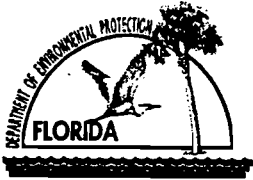
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DISTRIBUTION:  
6 Copies -- Lakeland Electric  
1 Copy-- Golder Associates Inc.



# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

#### I. APPLICATION INFORMATION

##### Identification of Facility

|                                                                                                                                                                  |                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 1. Facility Owner/Company Name:<br><b>City of Lakeland, Department of Electric Utilities</b>                                                                     |                                                   |
| 2. Site Name:<br><b>C.D. McIntosh, Jr. Power Plant.</b>                                                                                                          |                                                   |
| 3. Facility Identification Number: <b>1050004</b> [ ] Unknown                                                                                                    |                                                   |
| 4. Facility Location:<br>Street Address or Other Locator: <b>3030 East Lake Parker Drive</b><br>City: <b>Lakeland</b> County: <b>Polk</b> Zip Code: <b>33805</b> |                                                   |
| 5. Relocatable Facility?<br>[ ] Yes [X] No                                                                                                                       | 6. Existing Permitted Facility?<br>[X] Yes [ ] No |

##### Application Contact

|                                                                                                                                                                                                              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1. Name and Title of Application Contact:<br><b>Ms. Farzie Shelton, Manager of Environmental Affairs</b>                                                                                                     |  |
| 2. Application Contact Mailing Address:<br>Organization/Firm: <b>Lakeland Electric</b><br>Street Address: <b>501 East Lemon Street</b><br>City: <b>Lakeland</b> State: <b>FL</b> Zip Code: <b>33801-5079</b> |  |
| 3. Application Contact Telephone Numbers:<br>Telephone: <b>( 863 ) 834 - 6603</b> Fax: <b>( 863 ) 834 - 6344</b>                                                                                             |  |

##### Application Processing Information (DEP Use)

|                                    |  |
|------------------------------------|--|
| 1. Date of Receipt of Application: |  |
| 2. Permit Number:                  |  |
| 3. PSD Number (if applicable):     |  |
| 4. Siting Number (if applicable):  |  |

**Purpose of Application**

**Air Operation Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

- Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: \_\_\_\_\_

- Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: 1050004-004-AC/PSD-FL-245

Operation permit number to be revised: 1050004-003-AV

- Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: \_\_\_\_\_

- Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: \_\_\_\_\_

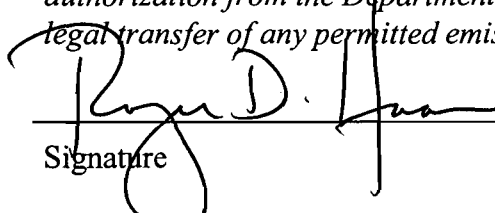
Reason for revision: \_\_\_\_\_

**Air Construction Permit Application**

This Application for Air Permit is submitted to obtain: (Check one)

- Air construction permit to construct or modify one or more emissions units.
- Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- Air construction permit for one or more existing, but unpermitted, emissions units.

**Owner/Authorized Representative or Responsible Official**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Name and Title of Owner/Authorized Representative or Responsible Official:<br><b>Roger D. Haar, City Manager</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. Owner/Authorized Representative or Responsible Official Mailing Address:<br>Organization/Firm: <b>Lakeland Electric</b><br>Street Address: <b>501 East Lemon Street</b><br>City: <b>Lakeland</b> State: <b>FL</b> Zip Code: <b>33801-5079</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3. Owner/Authorized Representative or Responsible Official Telephone Numbers:<br>Telephone: <b>( 863 ) 834 - 6006</b> Fax: <b>( 863 ) 834 - 8402</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 4. Owner/Authorized Representative or Responsible Official Statement:<br><i>I, the undersigned, am the owner or authorized representative*(check here [ ], if so) or the responsible official (check here [ ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i><br><br>Signature _____ Date <u>2-15-01</u> |

\* Attach letter of authorization if not currently on file.

**Professional Engineer Certification**

|                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Professional Engineer Name: <b>Kennard F. Kosky</b><br>Registration Number: <b>14996</b>                                                                                                                                     |
| 2. Professional Engineer Mailing Address:<br>Organization/Firm: <b>Golder Associates Inc.</b><br>Street Address: <b>6241 NW 23rd Street, Suite 500</b><br>City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32653-1500</b> |
| 3. Professional Engineer Telephone Numbers:<br>Telephone: <b>( 352 ) 336 - 5600</b> Fax: <b>( 352 ) 336 - 6603</b>                                                                                                              |

4. Professional Engineer Statement:

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

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

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

*If the purpose of this application is to obtain a Title V source air operation permit (check here [ X ], 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 schedule is submitted with this application.*

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

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

*Kenneth F. Kubly*  
\_\_\_\_\_  
Signature

*Feb 12, 2001*  
\_\_\_\_\_  
Date

Attach any exception to certification statement.





**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

**See attached letters.**

2. Projected or Actual Date of Commencement of Construction:

3. Projected Date of Completion of Construction:

**Application Comment**

**This application is a revision to the PSD and Title V permit issued to the C.D. McIntosh Power Plant to increase the heat input for Unit 5 (simple cycle).**

**See attached letter from Golder Associates.**



## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Location and Type

|                                                                                                                                                                                                                                                                                                                                                                                              |                                         |                                                   |                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------|------------------------------------|
| 1. Facility UTM Coordinates:<br>Zone: <b>17</b> East (km): <b>409.0</b> North (km): <b>3106.2</b>                                                                                                                                                                                                                                                                                            |                                         |                                                   |                                    |
| 2. Facility Latitude/Longitude:<br>Latitude (DD/MM/SS): <b>26 / 4 / 50</b> Longitude (DD/MM/SS): <b>81 / 55 / 32</b>                                                                                                                                                                                                                                                                         |                                         |                                                   |                                    |
| 3. Governmental<br>Facility Code:<br><b>4</b>                                                                                                                                                                                                                                                                                                                                                | 4. Facility Status<br>Code:<br><b>A</b> | 5. Facility Major<br>Group SIC Code:<br><b>49</b> | 6. Facility SIC(s):<br><b>4911</b> |
| 7. Facility Comment (limit to 500 characters):<br><br><b>The McIntosh Power Plant consists of 3 fossil fuel fired-steam generators (FFFSG), 2 diesel powered generators, and 1 gas turbine. FFFSG Units 1 and 2 are fired with No. 6 fuel oil and natural gas (distillate oil is used as an ignitor). FFFSG Unit 3 is primarily fired with coal, refuse derived fuel and petroleum coke.</b> |                                         |                                                   |                                    |

#### Facility Contact

|                                                                                                                                                                                                           |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| 1. Name and Title of Facility Contact:<br><b>Ms. Farzie Shelton, Manager of Environmental Affairs</b>                                                                                                     |  |  |  |
| 2. Facility Contact Mailing Address:<br>Organization/Firm: <b>Lakeland Electric</b><br>Street Address: <b>501 East Lemon Street</b><br>City: <b>Lakeland</b> State: <b>FL</b> Zip Code: <b>33801-5079</b> |  |  |  |
| 3. Facility Contact Telephone Numbers:<br>Telephone: <b>( 863 ) 834 - 6603</b> Fax: <b>( 863 ) 603 - 6335</b>                                                                                             |  |  |  |

**Facility Regulatory Classifications**

**Check all that apply:**

|                                                                                                               |                                  |
|---------------------------------------------------------------------------------------------------------------|----------------------------------|
| 1. <input type="checkbox"/> Small Business Stationary Source?                                                 | <input type="checkbox"/> Unknown |
| 2. <input checked="" type="checkbox"/> Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? |                                  |
| 3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs?                             |                                  |
| 4. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)?                       |                                  |
| 5. <input type="checkbox"/> Synthetic Minor Source of HAPs?                                                   |                                  |
| 6. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS?                           |                                  |
| 7. <input type="checkbox"/> One or More Emission Units Subject to NESHAP?                                     |                                  |
| 8. <input type="checkbox"/> Title V Source by EPA Designation?                                                |                                  |
| 9. Facility Regulatory Classifications Comment (limit to 200 characters):                                     |                                  |
| <p><b>Unit 5 is subject to NSPS Subpart GG.</b></p>                                                           |                                  |

**List of Applicable Regulations**

|                                                                                                     |  |
|-----------------------------------------------------------------------------------------------------|--|
| <b>The facility regulations identified in the Title V permit (Final Permit No. 10150004-003-AV)</b> |  |
| <b>will not change as a result of this application.</b>                                             |  |
|                                                                                                     |  |
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|                                                                                                     |  |

## B. FACILITY POLLUTANTS

### List of Pollutants Emitted

| 1. Pollutant Emitted | 2. Pollutant Classif. | 3. Requested Emissions Cap |           | 4. Basis for Emissions Cap | 5. Pollutant Comment |
|----------------------|-----------------------|----------------------------|-----------|----------------------------|----------------------|
|                      |                       | lb/hour                    | tons/year |                            |                      |
|                      |                       |                            |           |                            |                      |
|                      |                       |                            |           |                            |                      |
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|                      |                       |                            |           |                            |                      |
|                      |                       |                            |           |                            |                      |

**C. FACILITY SUPPLEMENTAL INFORMATION**

**Supplemental Requirements**

|                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Area Map Showing Facility Location:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                |
| 2. Facility Plot Plan:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                                |
| 3. Process Flow Diagram(s):<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                           |
| 4. Precautions to Prevent Emissions of Unconfined Particulate Matter:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested |
| 5. Fugitive Emissions Identification:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                 |
| 6. Supplemental Information for Construction Permit Application:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                |
| 7. Supplemental Requirements Comment:<br><br><b>Area map and facility plot plan submitted with Title V application.</b>                                                                                                     |

**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

|                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8. List of Proposed Insignificant Activities:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                                 |
| 9. List of Equipment/Activities Regulated under Title VI:<br><input type="checkbox"/> Attached, Document ID: _____<br><input type="checkbox"/> Equipment/Activities On site but Not Required to be Individually Listed<br><input checked="" type="checkbox"/> Not Applicable                                                                                                                                              |
| 10. Alternative Methods of Operation:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                                         |
| 11. Alternative Modes of Operation (Emissions Trading):<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                       |
| 12. Identification of Additional Applicable Requirements:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                     |
| 13. Risk Management Plan Verification:<br><input type="checkbox"/> Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____)<br><input type="checkbox"/> Plan to be submitted to CEPPO (Date required: _____)<br><input checked="" type="checkbox"/> Not Applicable |
| 14. Compliance Report and Plan:<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                                               |
| 15. Compliance Certification (Hard-copy Required):<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                                                                                                                                                                                                                            |

**III. EMISSIONS UNIT INFORMATION**

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

**A. GENERAL EMISSIONS UNIT INFORMATION  
(All Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |                                                      |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------|-----------------------------|
| 1. Type of Emissions Unit Addressed in This Section: (Check one)<br><input checked="" type="checkbox"/> 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).<br><input type="checkbox"/> 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.<br><input type="checkbox"/> 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. Regulated or Unregulated Emissions Unit? (Check one)<br><input checked="" type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.<br><input type="checkbox"/> The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |                                                      |                             |
| 3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):<br><br><p style="margin-left: 20px;"><b>McIntosh Unit 5</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |                                                      |                             |
| 4. Emissions Unit Identification Number: <span style="float: right;">[ ] No ID</span><br>ID: <b>028</b> <span style="float: right;">[ ] ID Unknown</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |                                                      |                             |
| 5. Emissions Unit Status Code:<br><b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6. Initial Startup Date: | 7. Emissions Unit Major Group SIC Code:<br><b>49</b> | 8. Acid Rain Unit?<br>[ X ] |
| 9. Emissions Unit Comment: (Limit to 500 Characters)<br><br><p style="margin-left: 20px;"><b>This emission unit is a Westinghouse 501G combustion turbine currently operating in simple cycle on natural gas.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |                                                      |                             |

**Emissions Unit Control Equipment**

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

**Dry Low NO<sub>x</sub> combustion – Natural gas firing**

**Water injection – distillate oil firing**

2. Control Device or Method Code(s): **25, 28**

**Emissions Unit Details**

1. Package Unit:

Manufacturer: **Westinghouse**

Model Number: **501G**

2. Generator Nameplate Rating:

**249 MW**

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Operating Capacity and Schedule**

|                                                                                                                                                                                                                                                   |              |                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|
| 1. Maximum Heat Input Rate:                                                                                                                                                                                                                       | <b>2,407</b> | mmBtu/hr           |
| 2. Maximum Incineration Rate:                                                                                                                                                                                                                     | lb/hr        | tons/day           |
| 3. Maximum Process or Throughput Rate:                                                                                                                                                                                                            |              |                    |
| 4. Maximum Production Rate:                                                                                                                                                                                                                       |              |                    |
| 5. Requested Maximum Operating Schedule:                                                                                                                                                                                                          | <b>24</b>    | hours/day          |
|                                                                                                                                                                                                                                                   |              | <b>7</b> days/week |
|                                                                                                                                                                                                                                                   | <b>52</b>    | weeks/year         |
|                                                                                                                                                                                                                                                   | <b>8,760</b> | hours/year         |
| 6. Operating Capacity/Schedule Comment (limit to 200 characters):                                                                                                                                                                                 |              |                    |
| <p>Maximum heat input at ISO turbine inlet conditions and natural gas firing (LHV) maximum for oil firing is 2,236 mmBtu/hr (ISO-LHV). Heat input a function of turbine inlet temperature.</p> <p>See attached letter from Golder Associates.</p> |              |                    |





## ATTACHMENT LMC-EU1-C

## Applicable Requirements Listing

EMISSION UNIT ID: EU1 – McIntosh Plant

## FDEP Rules:

## Air Pollution Control-General Provisions:

|                                  |                                                               |
|----------------------------------|---------------------------------------------------------------|
| 62-204.800(7)(b)37. (State Only) | NSPS Subpart GG                                               |
| 62-204.800(7)(c) (State Only)    | NSPS authority                                                |
| 62-204.800(7)(d) (State Only)    | NSPS General Provisions                                       |
| 62-204.800(12) (State Only)      | Acid Rain Program                                             |
| 62-204.800(13) (State Only)      | Allowances                                                    |
| 62-204.800(14) (State Only)      | Acid Rain Program Monitoring                                  |
| 62-204.800(16) (State Only)      | Excess Emissions (Potentially applicable over term of permit) |

## Stationary Sources-General:

|               |                                        |
|---------------|----------------------------------------|
| 62-210.650    | Circumvention; EUs with control device |
| 62-210.700(1) | Excess Emissions                       |
| 62-210.700(4) | Excess Emissions; poor maintenance     |
| 62-210.700(6) | Excess Emissions; notification         |

## Acid Rain:

|                                                                  |                                                      |
|------------------------------------------------------------------|------------------------------------------------------|
| 62-214.300                                                       | All Acid Rain Units (Applicability)                  |
| 62-214.320(1)(a),(2)                                             | All Acid Rain Units (Application Shield)             |
| 62-214.330(1)(a)1.                                               | Compliance Options (if 214.430)                      |
| 62-214.340                                                       | Exemptions (new units, retired units)                |
| 62-214.350(2);(3);(6)                                            | All Acid Rain Units (Certification)                  |
| 62-214.370                                                       | All Acid Rain Units                                  |
| (Revisions; correction; potentially applicable if a need arises) |                                                      |
| 62-214.430                                                       | All Acid Rain Units (Compliance Options-if required) |

## Stationary Sources-Emission Standards

|                              |                  |
|------------------------------|------------------|
| 62-296.320(4)(b)(State Only) | CTs/Diesel Units |
|------------------------------|------------------|

## Stationary Sources-Emission Monitoring (where stack test is required):

|                  |                                                                           |
|------------------|---------------------------------------------------------------------------|
| 62-297.310(1)    | All Units (Test Runs-Mass Emission)                                       |
| 62-297.310(2)(b) | All Units (Operating Rate; other than CTs; no CT)                         |
| 62-297.310(3)    | All Units (Calculation of Emission)                                       |
| 62-297.310(4)(a) | All Units (Applicable Test Procedures; Sampling time)                     |
| 62-297.310(4)(b) | All Units (Sample Volume)                                                 |
| 62-297.310(4)(c) | All Units (Required Flow Rate Range-PM/H <sub>2</sub> SO <sub>4</sub> /F) |
| 62-297.310(4)(d) | All Units (Calibration)                                                   |
| 62-297.310(4)(e) | All Units (EPA Method 5-only)                                             |
| 62-297.310(5)    | All Units (Determination of Process Variable)                             |
| 62-297.310(6)(a) | All Units (Permanent Test Facilities-general)                             |
| 62-297.310(6)(c) | All Units (Sampling Ports)                                                |
| 62-297.310(6)(d) | All Units (Work Platforms)                                                |

|                      |                                                   |
|----------------------|---------------------------------------------------|
| 62-297.310(6)(e)     | All Units (Access)                                |
| 62-297.310(6)(f)     | All Units (Electrical Power)                      |
| 62-297.310(6)(g)     | All Units (Equipment Support)                     |
| 62-297.310(7)(a)1.   | Applies mainly to CTs/Diesels                     |
| 62-297.310(7)(a)2.   | FFSG excess emissions                             |
| 62-297.310(7)(a)3.   | Permit Renewal Test Required                      |
| 62-297.310(7)(a)4.a. | Annual Test                                       |
| 62-297.310(7)(a)5.   | PM exemption if < 400 hrs/yr                      |
| 62-297.310(7)(a)6.   | PM FFSG semi annual test required if > 200 hrs/yr |
| 62-297.310(7)(a)7.   | PM quarterly monitoring if > 100hrs/yr            |
| 62-297.310(7)(a)9.   | FDEP Notification – 15 days                       |
| 62-297.310(7)(c)     | Waiver of Compliance Tests (Fuel Sampling)        |
| 62-297.310(8)        | Test Reports                                      |

## Federal Rules:

## NSPS Subpart GG:

|                     |                                                      |
|---------------------|------------------------------------------------------|
| 40 CFR 60.332(a)(1) | NO <sub>x</sub> for Electric Utility CTs             |
| 40 CFR 60.332(a)(3) | NO <sub>x</sub> for Electric Utility CTs             |
| 40 CFR 60.333       | SO <sub>2</sub> limits                               |
| 40 CFR 60.334       | Monitoring of Operations (Custom Monitoring for Gas) |
| 40 CFR 60.335       | Test Methods                                         |

## NSPS General Requirements:

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| 40 CFR 60.7(a)(1)  | Notification of Construction                                 |
| 40 CFR 60.7(a)(2)  | Notification of Initial Start-Up                             |
| 40 CFR 60.7(a)(3)  | Notification of Actual Start-Up                              |
| 40 CFR 60.7(a)(4)  | Notification of Recordkeeping (Physical/Operational Cycle)   |
| 40 CFR 60.7(a)(5)  | Notification of CEM Demonstration                            |
| 40 CFR 60.7(b)     | Notification of Recordkeeping (startup/shutdown/malfunction) |
| 40 CFR 60.7(c)     | Notification of Recordkeeping (startup/shutdown/malfunction) |
| 40 CFR 60.7(d)     | Notification of Recordkeeping (startup/shutdown/malfunction) |
| 40 CFR 60.7(f)     | Notification of Recordkeeping (maintain records-2yrs)        |
| 40 CFR 60.8(a)     | Performance Test Requirements                                |
| 40 CFR 60.8(b)     | Performance Test Notification                                |
| 40 CFR 60.8(c)     | Performance Tests (representative conditions)                |
| 40 CFR 60.8(e)     | Provide Stack Sampling Facilities                            |
| 40 CFR 60.8(f)     | Test Runs                                                    |
| 40 CFR 60.11(a)    | Compliance (ref. S. 60.8 or Subpart; other than opacity)     |
| 40 CFR 60.11(b)    | Compliance (opacity determined by EPA Method 9)              |
| 40 CFR 60.11(c)    | Compliance (opacity; excludes startup/shutdown/malfunction)  |
| 40 CFR 60.11(d)    | Compliance (maintain air pollution control equipment)        |
| 40 CFR 60.11(e)(2) | Compliance (opacity; ref. S. 60.8)                           |
| 40 CFR 60.12       | Circumvention                                                |
| 40 CFR 60.13(a)    | Monitoring (Appendix B; Appendix F)                          |
| 40 CFR 60.13(c)    | Monitoring (Opacity COMS)                                    |
| 40 CFR 60.13(d)(1) | Monitoring (CEMS; span, drift, etc.)                         |
| 40 CFR 60.13(d)(2) | Monitoring (COMS; span, system check)                        |
| 40 CFR 60.13(e)    | Monitoring (frequency of operation)                          |
| 40 CFR 60.13(f)    | Monitoring (frequency of operation)                          |
| 40 CFR 60.13(h)    | Monitoring (COMS; data requirements)                         |

## Acid Rain-Permits:

|                        |                                                           |
|------------------------|-----------------------------------------------------------|
| 40 CFR 72.9(a)         | Permit Requirements                                       |
| 40 CFR 72.9(b)         | Monitoring Requirements                                   |
| 40 CFR 72.9(c)(1)      | SO <sub>2</sub> Allowances-hold allowances                |
| 40 CFR 72.9(c)(2)      | SO <sub>2</sub> Allowances-violation                      |
| 40 CFR 72.9(c)(3)(iii) | SO <sub>2</sub> Allowances-Phase II Units (listed)        |
| 40 CFR 72.9(c)(4)      | SO <sub>2</sub> Allowances-allowances held in ATS         |
| 40 CFR 72.9(c)(5)      | SO <sub>2</sub> Allowances-no deduction for 72.9(c)(1)(i) |
| 40 CFR 72.9(d)         | NO <sub>x</sub> Requirements                              |
| 40 CFR 72.9(e)         | Excess Emission Requirements                              |
| 40 CFR 72.9(f)         | Recordkeeping and Reporting                               |
| 40 CFR 72.9(g)         | Liability                                                 |
| 40 CFR 72.20(a)        | Designated Representative; required                       |
| 40 CFR 72.20(b)        | Designated Representative; legally binding                |
| 40 CFR 72.20(c)        | Designated Representative; certification requirements     |
| 40 CFR 72.21           | Submissions                                               |
| 40 CFR 72.22           | Alternate Designated Representative                       |
| 40 CFR 72.23           | Changing representatives; owners                          |
| 40 CFR 72.24           | Certificate of representation                             |
| 40 CFR 72.30(a)        | Requirements to Apply (operate)                           |
| 40 CFR 72.30(b)(2)     | Requirements to Apply (Phase II-Complete)                 |
| 40 CFR 72.30(c)        | Requirements to Apply (reapply before expiration)         |
| 40 CFR 72.30(d)        | Requirements to Apply (submittal requirements)            |
| 40 CFR 72.31           | Information Requirements; Acid Rain Applications          |
| 40 CFR 72.32           | Permit Application Shield                                 |
| 40 CFR 72.33(b)        | Dispatch System ID; unit/system ID                        |
| 40 CFR 72.33(c)        | Dispatch System ID; ID requirements                       |
| 40 CFR 72.33(d)        | Dispatch System ID; ID change                             |
| 40 CFR 72.40(a)        | General; compliance plan                                  |
| 40 CFR 72.40(b)        | General; multi-unit compliance options                    |
| 40 CFR 72.40(c)        | General; condition approval                               |
| 40 CFR 72.40(d)        | General; termination of compliance options                |
| 40 CFR 72.51           | Permit Shield                                             |
| 40 CFR 72.90           | Annual Compliance Certification                           |

## Allowances:

|                     |                                               |
|---------------------|-----------------------------------------------|
| 40 CFR 73.33(a),(c) | Authorized account representative             |
| 40 CFR 73.35(c)(1)  | Compliance: ID of allowances by serial number |

## Monitoring Part 75:

|                         |                                                               |
|-------------------------|---------------------------------------------------------------|
| 40 CFR 75.4             | Compliance Dates;                                             |
| 40 CFR 75.5             | Prohibitions                                                  |
| 40 CFR 75.10(a)(1)      | Primary Measurement; SO <sub>2</sub>                          |
| 40 CFR 75.10(a)(2)      | Primary Measurement; NO <sub>x</sub>                          |
| 40 CFR 75.10(a)(3)(iii) | Primary Measurement; CO <sub>2</sub> ; O <sub>2</sub> monitor |
| 40 CFR 75.10(b)         | Primary Measurement; Performance Requirements                 |
| 40 CFR 75.10(c)         | Primary Measurement; Heat Input; Appendix F                   |
| 40 CFR 75.10(e)         | Primary Measurement; Optional Backup Monitor                  |
| 40 CFR 75.10(f)         | Primary Measurement; Minimum Measurement                      |
| 40 CFR 75.10(g)         | Primary Measurement; Minimum Recording                        |
| 40 CFR 75.11(d)         | SO <sub>2</sub> Monitoring; Gas- and Oil fired units          |

|                    |                                                                                        |
|--------------------|----------------------------------------------------------------------------------------|
| 40 CFR 75.11(e)    | SO <sub>2</sub> Monitoring; Gaseous firing                                             |
| 40 CFR 75.12(a)    | NO <sub>x</sub> Monitoring; Coal; Non-peaking oil/gas units                            |
| 40 CFR 75.12(b)    | NO <sub>x</sub> Monitoring; Determination of NO <sub>x</sub> emission rate; Appendix F |
| 40 CFR 75.13(b)    | CO <sub>2</sub> Monitoring; Appendix G                                                 |
| 40 CFR 75.13(c)    | CO <sub>2</sub> Monitoring; Appendix F                                                 |
| 40 CFR 75.14(c)    | Opacity Monitoring; Gas units; exemption                                               |
| 40 CFR 75.20(a)    | Initial Certification Approval Process; Loss of Certification                          |
| 40 CFR 75.20(b)    | Recertification Procedures (if recertification necessary)                              |
| 40 CFR 75.20(c)    | Certification Procedures (if recertification necessary)                                |
| 40 CFR 75.20(d)    | Recertification Backup/portable monitor                                                |
| 40 CFR 75.20(f)    | Alternate Monitoring system                                                            |
| 40 CFR 75.21(a)    | QA/QC; CEMS; Appendix B (Suspended 7/17/95-12/31/96)                                   |
| 40 CFR 75.21(c)    | QA/QC; Calibration Gases                                                               |
| 40 CFR 75.21(d)    | QA/QC; Notification of RATA                                                            |
| 40 CFR 75.21(e)    | QA/QC; Audits                                                                          |
| 40 CFR 75.21(f)    | QA/QC; CEMS (Effective 7/17/96-12/31/96)                                               |
| 40 CFR 75.22       | Reference Methods                                                                      |
| 40 CFR 75.24       | Out-of-Control Periods; CEMS                                                           |
| 40 CFR 75.30(a)(3) | General Missing Data Procedures; NO <sub>x</sub>                                       |
| 40 CFR 75.30(a)(4) | General Missing Data Procedures; SO <sub>2</sub>                                       |
| 40 CFR 75.30(b)    | General Missing Data Procedures; certified backup monitor                              |
| 40 CFR 75.30(c)    | General Missing Data Procedures; certified backup monitor                              |
| 40 CFR 75.30(d)    | General Missing Data Procedures; SO <sub>2</sub> (optional before 1/1/97)              |
| 40 CFR 75.30(e)    | General Missing Data Procedures; bypass/multiple stacks                                |
| 40 CFR 75.31       | Initial Missing Data Procedures (new/re-certified CMS)                                 |
| 40 CFR 75.32       | Monitoring Data Availability for Missing Data                                          |
| 40 CFR 75.33       | Standard Missing Data Procedures                                                       |
| 40 CFR 75.36       | Missing Data for Heat Input                                                            |
| 40 CFR 75.40       | Alternate Monitoring Systems-General                                                   |
| 40 CFR 75.41       | Alternate Monitoring Systems-Precision Criteria                                        |
| 40 CFR 75.42       | Alternate Monitoring Systems-Reliability Criteria                                      |
| 40 CFR 75.43       | Alternate Monitoring Systems-Accessibility Criteria                                    |
| 40 CFR 75.44       | Alternate Monitoring Systems-Timeliness Criteria                                       |
| 40 CFR 75.45       | Alternate Monitoring Systems-Daily QA                                                  |
| 40 CFR 75.46       | Alternate Monitoring Systems-Missing data                                              |
| 40 CFR 75.47       | Alternate Monitoring Systems-Criteria for Class                                        |
| 40 CFR 75.48       | Alternate Monitoring Systems-Petition                                                  |
| 40 CFR 75.53       | Monitoring Plan; revisions                                                             |
| 40 CFR 75.54(a)    | Recordkeeping-general                                                                  |
| 40 CFR 75.54(b)    | Recordkeeping-operating parameter                                                      |
| 40 CFR 75.54(c)    | Recordkeeping-SO <sub>2</sub>                                                          |
| 40 CFR 75.54(d)    | Recordkeeping-NO <sub>x</sub>                                                          |
| 40 CFR 75.54(e)    | Recordkeeping-CO <sub>2</sub>                                                          |
| 40 CFR 75.54(f)    | Recordkeeping-Opacity                                                                  |
| 40 CFR 75.55(c)    | General Recordkeeping (Specific Situations)                                            |
| 40 CFR 75.55(e)    | General Recordkeeping (Specific Situations)                                            |
| 40 CFR 75.56       | Certification; QA/QC Provisions                                                        |
| 40 CFR 75.60       | Reporting Requirements-General                                                         |
| 40 CFR 75.61       | Reporting Requirements-Notification cert/recertification                               |

|                                                                     |                                                                           |
|---------------------------------------------------------------------|---------------------------------------------------------------------------|
| 40 CFR 75.62                                                        | Reporting Requirements-Monitoring Plan                                    |
| 40 CFR 75.63                                                        | Reporting Requirements-Certification/Recertification                      |
| 40 CFR 75.64(a)                                                     | Reporting Requirements-Quarterly reports; submission                      |
| 40 CFR 75.64(b)                                                     | Reporting Requirements-Quarterly reports; DR statement                    |
| 40 CFR 75.64(c)                                                     | Rep. Req.; Quarterly reports; Compliance Certification                    |
| 40 CFR 75.64(d)                                                     | Rep. Req.; Quarterly reports; Electronic format                           |
| 40 CFR 75.66                                                        | Petitions to the Administrator (if required)                              |
| Appendix A-1                                                        | Installation and Measurement Locations                                    |
| Appendix A-2                                                        | Equipment Specifications                                                  |
| Appendix A-3                                                        | Performance Specifications                                                |
| Appendix A-4                                                        | Data Handling and Acquisition Systems                                     |
| Appendix A-5                                                        | Calibration Gases                                                         |
| Appendix A-6                                                        | Certification Tests and Procedures                                        |
| Appendix A-7                                                        | Calculations                                                              |
| Appendix B                                                          | QA/QC Procedures                                                          |
| Appendix C-1                                                        | Missing Data; SO <sub>2</sub> /NO <sub>x</sub> for controlled sources     |
| Appendix C-2                                                        | Missing Data; Load-Based Procedure; NO <sub>x</sub> & flow                |
| Appendix D                                                          | Optional SO <sub>2</sub> ; Oil-/gas-fired units                           |
| Appendix F                                                          | Conversion Procedures                                                     |
| Appendix H                                                          | Traceability Protocol                                                     |
| Acid Rain Program-Excess Emissions (these are future requirements): |                                                                           |
| 40 CFR 77.3                                                         | Offset Plans (future)                                                     |
| 40 CFR 77.5(b)                                                      | Deductions of Allowances (future)                                         |
| 40 CFR 77.6                                                         | Excess Emissions Penalties (SO <sub>2</sub> and NO <sub>x</sub> ; future) |

**D. EMISSION POINT (STACK/VENT) INFORMATION  
(Regulated Emissions Units Only)**

**Emission Point Description and Type**

|                                                                                                                                                                                        |                                                          |                                                    |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------|--|
| 1. Identification of Point on Plot Plan or Flow Diagram? <b>N/A</b>                                                                                                                    |                                                          | 2. Emission Point Type Code:<br><b>1</b>           |  |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):<br><br><b>Exhausts through a single stack.</b>                  |                                                          |                                                    |  |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:                                                                                                    |                                                          |                                                    |  |
| 5. Discharge Type Code:<br><b>V</b>                                                                                                                                                    | 6. Stack Height:<br><b>85 feet</b>                       | 7. Exit Diameter:<br><b>28 feet</b>                |  |
| 8. Exit Temperature:<br><b>1,095 °F</b>                                                                                                                                                | 9. Actual Volumetric Flow Rate:<br><b>3,380,011 acfm</b> | 10. Water Vapor:<br><b>12.44 %</b>                 |  |
| 11. Maximum Dry Standard Flow Rate:<br><b>989,685 dscfm</b>                                                                                                                            |                                                          | 12. Nonstack Emission Point Height:<br><b>feet</b> |  |
| 13. Emission Point UTM Coordinates:<br><b>Zone: 17                      East (km): 408.79                      North (km): 3106.66</b>                                                 |                                                          |                                                    |  |
| 14. Emission Point Comment (limit to 200 characters):<br><br><b>Stack parameters for ISO turbine inlet operating condition firing natural gas; for oil 1,051°F and 3,011,513 ACFM.</b> |                                                          |                                                    |  |

**E. SEGMENT (PROCESS/FUEL) INFORMATION  
(All Emissions Units)**

**Segment Description and Rate:** Segment  1  of  2

|                                                                                                                                                                                                                                                               |                                         |                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|
| 1. Segment Description (Process/Fuel Type) (limit to 500 characters):<br><br><b>Distillate (No. 2) Fuel Oil</b>                                                                                                                                               |                                         |                                            |
| 2. Source Classification Code (SCC):<br><b>2-01-001-01</b>                                                                                                                                                                                                    | 3. SCC Units:<br><b>1,000 gallons</b>   |                                            |
| 4. Maximum Hourly Rate:<br><b>17.8</b>                                                                                                                                                                                                                        | 5. Maximum Annual Rate:<br><b>4,251</b> | 6. Estimated Annual Activity Factor:       |
| 7. Maximum % Sulfur:<br><b>0.05</b>                                                                                                                                                                                                                           | 8. Maximum % Ash:                       | 9. Million Btu per SCC Unit:<br><b>132</b> |
| 10. Segment Comment (limit to 200 characters):<br><br><b>mmBtu/SCC = 131.5 (rounded to 132). BASIS: Max. hourly = 30°F turbine inlet &amp; 7.1 lb/gal; 18,500 Btu/lb LHV; Annual: 59°F, 250 hrs/yr operation. Max hourly; function of turbine inlet temp.</b> |                                         |                                            |

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

|                                                                                                                                                                                                                                       |                                            |                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|
| 1. Segment Description (Process/Fuel Type ) (limit to 500 characters):<br><br><b>Natural Gas</b>                                                                                                                                      |                                            |                                            |
| 2. Source Classification Code (SCC):<br><b>2-01-002-01</b>                                                                                                                                                                            | 3. SCC Units:<br><b>Million Cubic Feet</b> |                                            |
| 4. Maximum Hourly Rate:<br><b>2.737</b>                                                                                                                                                                                               | 5. Maximum Annual Rate:<br><b>22,195</b>   | 6. Estimated Annual Activity Factor:       |
| 7. Maximum % Sulfur:                                                                                                                                                                                                                  | 8. Maximum % Ash:                          | 9. Million Btu per SCC Unit:<br><b>950</b> |
| 10. Segment Comment (limit to 200 characters):<br><br><b>Max. based on 30°F; 950 Btu/CF LHV. Annual based on 59°F; 8,760 hrs/yr operation. Max. hourly a function of turbine inlet temperature. See attached chart of heat input.</b> |                                            |                                            |





**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                                                                                                                                |  |                                                      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------|--|
| 1. Pollutant Emitted:<br><b>PM</b>                                                                                                                                                                                             |  | 2. Total Percent Efficiency of Control:              |  |
| 3. Potential Emissions:<br><b>139.6 lb/hour</b>                                                                                                                                                                                |  | 4. Synthetically Limited? [ ]<br><b>49 tons/year</b> |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year                                                                                                                                        |  |                                                      |  |
| 6. Emission Factor:<br>Reference: <b>PSD-FL-245</b>                                                                                                                                                                            |  | 7. Emissions Method Code:<br><b>2</b>                |  |
| 8. Calculation of Emissions (limit to 600 characters):<br><br><b>Tons/year (8,510 hours gas x 8.8 lb/hr + 250 hours oil x 92.8 lb/hour) / 2,000 hours/year = 49.0 Tons/Year.</b>                                               |  |                                                      |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Lb/hr based on oil firing, 50% load, 30°F; tons/year based on 8,510 hours/yr gas firing and 250 hrs/yr oil firing; 59°F conditions.</b> |  |                                                      |  |

**Allowable Emissions** Allowable Emissions 1 of 2

|                                                                                                                                                                               |  |                                                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                        |  | 2. Future Effective Date of Allowable Emissions:                          |  |
| 3. Requested Allowable Emissions and Units:<br><b>10% opacity</b>                                                                                                             |  | 4. Equivalent Allowable Emissions:<br><b>139.6 lb/hour 11.6 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>Annual VE test; EPA Method 9</b>                                                                                  |  |                                                                           |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing - 30°F; 50% load; annual based on 59°F; 100% load, 250 hrs/yr.</b> |  |                                                                           |  |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                         |  |                                         |  |
|-----------------------------------------------------------------------------------------|--|-----------------------------------------|--|
| 1. Pollutant Emitted:<br><b>PM</b>                                                      |  | 2. Total Percent Efficiency of Control: |  |
| 3. Potential Emissions:<br>lb/hour                                                      |  | 4. Synthetically Limited? [ ]           |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year |  |                                         |  |
| 6. Emission Factor:<br>Reference:                                                       |  | 7. Emissions Method Code:               |  |
| 8. Calculation of Emissions (limit to 600 characters):                                  |  |                                         |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):            |  |                                         |  |

**Allowable Emissions** Allowable Emissions  2  of  2

|                                                                                                                                                                              |  |                                                                         |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                       |  | 2. Future Effective Date of Allowable Emissions:                        |  |
| 3. Requested Allowable Emissions and Units:<br><b>10% opacity</b>                                                                                                            |  | 4. Equivalent Allowable Emissions:<br><b>9.1 lb/hour 38.5 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><b>VE Test; EPA Method 9</b>                                                                                            |  |                                                                         |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing - 30°F, 100% load; annual based on 59°F; 100% load, 8,760 hrs/yr.</b> |  |                                                                         |  |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                                                                                                                                                   |  |                                         |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|--|
| 1. Pollutant Emitted:<br><b>SO<sub>2</sub></b>                                                                                                                                                                                                    |  | 2. Total Percent Efficiency of Control: |  |
| 3. Potential Emissions:<br><b>127 lb/hour                      48.5 tons/year</b>                                                                                                                                                                 |  | 4. Synthetically Limited? [ ]           |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1            [ ] 2            [ ] 3            _____ to _____ tons/year                                                                                                                          |  |                                         |  |
| 6. Emission Factor:<br><b>See Comment</b><br>Reference: <b>PSD-FL-245</b>                                                                                                                                                                         |  | 7. Emissions Method Code:<br><b>2</b>   |  |
| 8. Calculation of Emissions (limit to 600 characters):<br><br><b>Tons/year = (8,150 hours-gas x 8 lb/hr + 250 hours-oil x 127 lb/hour) / 2000 lb/ton = 48.5.</b>                                                                                  |  |                                         |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Emission Factor: 1 grain S per 100 CF gas; 0.05% S oil. lb/hr based on oil firing. Tons/yr based on 8,510 hrs/yr gas firing and 250 hrs/yr oil firing.</b> |  |                                         |  |

**Allowable Emissions** Allowable Emissions 1 of 2

|                                                                                                                                             |  |                                                                                              |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                      |  | 2. Future Effective Date of Allowable Emissions:                                             |  |
| 3. Requested Allowable Emissions and Units:<br><b>0.05% Sulfur Oil</b>                                                                      |  | 4. Equivalent Allowable Emissions:<br><b>127 lb/hour                      15.9 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>Fuel Sampling</b>                                                               |  |                                                                                              |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing; annual based on 250 hrs/yr.</b> |  |                                                                                              |  |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                         |  |                                         |  |
|-----------------------------------------------------------------------------------------|--|-----------------------------------------|--|
| 1. Pollutant Emitted:<br><b>SO<sub>2</sub></b>                                          |  | 2. Total Percent Efficiency of Control: |  |
| 3. Potential Emissions:<br>lb/hour                                                      |  | 4. Synthetically Limited? [ ]           |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year |  |                                         |  |
| 6. Emission Factor:<br>Reference:                                                       |  | 7. Emissions Method Code:               |  |
| 8. Calculation of Emissions (limit to 600 characters):                                  |  |                                         |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):            |  |                                         |  |

**Allowable Emissions** Allowable Emissions 2 of 2

|                                                                                                                                            |  |                                                                          |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                     |  | 2. Future Effective Date of Allowable Emissions:                         |  |
| 3. Requested Allowable Emissions and Units:<br><b>1 grain/100 CF</b>                                                                       |  | 4. Equivalent Allowable Emissions:<br><b>8 lb/hour      35 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><b>Fuel Sampling</b>                                                                  |  |                                                                          |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing - annual based on 8,760 hrs/yr.</b> |  |                                                                          |  |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                                                                                                                             |                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>NO<sub>x</sub></b>                                                                                                                                                                              | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br><b>433 lb/hour                      1,166 tons/year</b>                                                                                                                                          | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1            [ ] 2            [ ] 3            _____ to _____ tons/year                                                                                                    |                                         |
| 6. Emission Factor:<br>Reference: <b>PSD-FL-245</b>                                                                                                                                                                         | 7. Emissions Method Code:<br><b>2</b>   |
| 8. Calculation of Emissions (limit to 600 characters):<br><br><b>Tons/year = (8,510 hours-gas x 262 lb/hr + 250 hours-oil x 413 lb/hr) / 2,000 lb/ton = 1,166 tons/year.</b>                                                |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Lb/hr based on oil firing, 100% load, 30°F; tons/yr based on 8,510 hrs/yr gas firing and 250 hrs/yr oil firing; 59°F conditions.</b> |                                         |

**Allowable Emissions** Allowable Emissions 1 of 2

|                                                                                                                                                                                      |                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                               | 2. Future Effective Date of Allowable Emissions:                                             |
| 3. Requested Allowable Emissions and Units:<br><b>413 lb/hr (3hr-avg)</b>                                                                                                            | 4. Equivalent Allowable Emissions:<br><b>431 lb/hour                      51.6 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>CEM-30 Day Rolling Average (corrected to 15% Oxygen)</b>                                                                 |                                                                                              |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing; 30°F; 100% load; annual based on 250 hrs/year at 59°F (413 lb/hour).</b> |                                                                                              |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

|                                                                                         |                                         |
|-----------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>NO<sub>x</sub></b>                                          | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br>lb/hour _____ tons/year _____                                | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year |                                         |
| 6. Emission Factor:<br>Reference:                                                       | 7. Emissions Method Code:               |
| 8. Calculation of Emissions (limit to 600 characters):                                  |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):            |                                         |

Allowable Emissions Allowable Emissions 2 of 2

|                                                                                                                                                                                                |                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                                         | 2. Future Effective Date of Allowable Emissions:                         |
| 3. Requested Allowable Emissions and Units:<br><b>237 lb/hr (24hr-avg)</b>                                                                                                                     | 4. Equivalent Allowable Emissions:<br><b>262 lb/hour 1,148 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><b>CEM 24 hour block average</b>                                                                                                          |                                                                          |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing; 59°F; 100% load, annual based on 8,760 hr/yr at 59°F (262 lb/hr); see Attachments.</b> |                                                                          |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

|                                                                                                                                                                                                                          |                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>CO</b>                                                                                                                                                                                       | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br><b>568</b> lb/hour <b>752</b> tons/year                                                                                                                                                       | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1      [ ] 2      [ ] 3      _____ to _____ tons/year                                                                                                                   |                                         |
| 6. Emission Factor:<br>Reference: <b>PSD-FL-245</b>                                                                                                                                                                      | 7. Emissions Method Code:<br><b>2</b>   |
| 8. Calculation of Emissions (limit to 600 characters):<br><br>$\text{Tons/year} = (8,510 \text{ hours-gas} \times 161 \text{ lb/hour} + 250 \text{ hours-oil} \times 539 \text{ lb/hour}) / 2,000 \text{ lb/ton} = 752.$ |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Lb/hr based on oil firing; 30°F tons/yr based on 8,510 hrs/yr gas firing and 250 hrs/yr oil firing; 59°F conditions.</b>          |                                         |

Allowable Emissions Allowable Emissions 1 of 2

|                                                                                                                                                                                    |                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                             | 2. Future Effective Date of Allowable Emissions:                             |
| 3. Requested Allowable Emissions and Units:<br><b>90 ppmvd @ 15% O<sub>2</sub></b>                                                                                                 | 4. Equivalent Allowable Emissions:<br><b>568 lb/hour      67.4 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>EPA Method 10; annual compliance test &gt; 400 hours/year</b>                                                          |                                                                              |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing; 30°F; annual based on 250 hrs/yr at 59°F and 100% load, 539 lb/hr.</b> |                                                                              |



**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

Potential/Fugitive Emissions

|                                                                                         |                                         |
|-----------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>CO</b>                                                      | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br>lb/hour _____ tons/year _____                                | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year |                                         |
| 6. Emission Factor:<br>Reference:                                                       | 7. Emissions Method Code:               |
| 8. Calculation of Emissions (limit to 600 characters):                                  |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):            |                                         |

Allowable Emissions Allowable Emissions 2 of 2

|                                                                                                                                                                              |                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                       | 2. Future Effective Date of Allowable Emissions:                       |
| 3. Requested Allowable Emissions and Units:<br><b>25 ppmvd @ 15% O<sub>2</sub></b>                                                                                           | 4. Equivalent Allowable Emissions:<br><b>161 lb/hour 705 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><b>EPA Method 10; annual compliance test</b>                                                                            |                                                                        |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing; 59°F; annual based on 8,760 hrs/yr at 59°F 100% load, 157 lb/hr.</b> |                                                                        |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                                                                                           |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>VOC</b>                                                                                                                                                       | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br><b>25 lb/hour                      49.9 tons/year</b>                                                                                                          | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1            [ ] 2            [ ] 3            _____ to _____ tons/year                                                                  |                                         |
| 6. Emission Factor:<br>Reference: <b>PSD-FL-245</b>                                                                                                                                       | 7. Emissions Method Code:<br><b>2</b>   |
| 8. Calculation of Emissions (limit to 600 characters):<br><br><b>Tons/year = (8,510 hours-gas x 11 lb/hr + 250 hours-oil x 25 lb/hr) / 2,000 lb/ton = 49.9).</b>                          |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Lb/hr based on oil firing. Tons/yr based on 8,510 hrs/yr gas firing and 250 hrs/yr oil firing.</b> |                                         |

**Allowable Emissions** Allowable Emissions 1 of 2

|                                                                                                                                             |                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                      | 2. Future Effective Date of Allowable Emissions:                                           |
| 3. Requested Allowable Emissions and Units:<br><b>10 ppmvd</b>                                                                              | 4. Equivalent Allowable Emissions:<br><b>25 lb/hour                      3.1 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>Meeting CO emission limit</b>                                                   |                                                                                            |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing; annual based on 250 hrs/yr.</b> |                                                                                            |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units -**  
**Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                         |                                         |
|-----------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Pollutant Emitted:<br><b>VOC</b>                                                     | 2. Total Percent Efficiency of Control: |
| 3. Potential Emissions:<br>lb/hour _____ tons/year _____                                | 4. Synthetically Limited? [ ]           |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year |                                         |
| 6. Emission Factor:<br>Reference:                                                       | 7. Emissions Method Code:               |
| 8. Calculation of Emissions (limit to 600 characters):                                  |                                         |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):            |                                         |

**Allowable Emissions** Allowable Emissions 2 of 2

|                                                                                                                                           |                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                    | 2. Future Effective Date of Allowable Emissions:                       |
| 3. Requested Allowable Emissions and Units:<br><b>4 ppmvd</b>                                                                             | 4. Equivalent Allowable Emissions:<br><b>11 lb/hour 48.2 tons/year</b> |
| 5. Method of Compliance (limit to 60 characters):<br><b>Meeting CO emission limit</b>                                                     |                                                                        |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing; annual based on 8,760 hrs/yr.</b> |                                                                        |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                                                                                                                              |  |                                         |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|--|
| 1. Pollutant Emitted:<br><b>PM<sub>10</sub></b>                                                                                                                                                                              |  | 2. Total Percent Efficiency of Control: |  |
| 3. Potential Emissions:<br><b>139.6 lb/hour</b>                                                                                                                                                                              |  | 4. Synthetically Limited? [ ]           |  |
|                                                                                                                                                                                                                              |  | <b>49 tons/year</b>                     |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year                                                                                                                                      |  |                                         |  |
| 6. Emission Factor:<br>Reference: <b>PSD-FL-245</b>                                                                                                                                                                          |  | 7. Emissions Method Code:<br><b>2</b>   |  |
| 8. Calculation of Emissions (limit to 600 characters):<br><br><b>Tons/year (8,510 hours-gas x 8.8 lb/hr + 250 hours oil x 92.8 lb/hour) / 2,000 hours/year = 49.0 tons/year.</b>                                             |  |                                         |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):<br><br><b>Lb/hr based on oil firing, 50% load, 30°F; tons/year based on 8,510 hrs/yr gas firing and 250 hrs/yr oil firing; 59°F conditions.</b> |  |                                         |  |

**Allowable Emissions** Allowable Emissions 1 of 2

|                                                                                                                                                                               |  |                                                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                        |  | 2. Future Effective Date of Allowable Emissions:                          |  |
| 3. Requested Allowable Emissions and Units:<br><b>10% opacity</b>                                                                                                             |  | 4. Equivalent Allowable Emissions:<br><b>139.6 lb/hour 11.6 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><br><b>Annual VE test; EPA Method 9</b>                                                                                  |  |                                                                           |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><br><b>Oil firing - 30°F; 50% load; annual based on 59°F; 100% load, 250 hrs/yr.</b> |  |                                                                           |  |

**G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION  
(Regulated Emissions Units -  
Emissions-Limited and Preconstruction Review Pollutants Only)**

**Potential/Fugitive Emissions**

|                                                                                                                          |  |                                         |  |
|--------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------|--|
| 1. Pollutant Emitted:<br><b>PM<sub>10</sub></b>                                                                          |  | 2. Total Percent Efficiency of Control: |  |
| 3. Potential Emissions:<br>lb/hour                                                                                       |  | 4. Synthetically Limited? [ ]           |  |
| 5. Range of Estimated Fugitive Emissions:<br>[ ] 1            [ ] 2            [ ] 3            _____ to _____ tons/year |  |                                         |  |
| 6. Emission Factor:<br>Reference:                                                                                        |  | 7. Emissions Method Code:               |  |
| 8. Calculation of Emissions (limit to 600 characters):                                                                   |  |                                         |  |
| 9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):                                             |  |                                         |  |

**Allowable Emissions** Allowable Emissions 2 of 2

|                                                                                                                                                                              |  |                                                                               |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|
| 1. Basis for Allowable Emissions Code:<br><b>OTHER</b>                                                                                                                       |  | 2. Future Effective Date of Allowable Emissions:                              |  |
| 3. Requested Allowable Emissions and Units:<br><b>10% opacity</b>                                                                                                            |  | 4. Equivalent Allowable Emissions:<br><b>9.1 lb/hour       38.5 tons/year</b> |  |
| 5. Method of Compliance (limit to 60 characters):<br><b>VE Test, EPA Method 9</b>                                                                                            |  |                                                                               |  |
| 6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):<br><b>Gas firing - 30°F, 100% load; annual based on 59°F; 100% load, 8,760 hrs/yr.</b> |  |                                                                               |  |

**H. VISIBLE EMISSIONS INFORMATION**  
 (Only Regulated Emissions Units Subject to a VE Limitation)

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

|                                                                                                                                                             |                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype:<br><b>VE20</b>                                                                                                                | 2. Basis for Allowable Opacity:<br><input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other |
| 3. Requested Allowable Opacity:<br>Normal Conditions: <b>10 %</b> Exceptional Conditions:      %<br>Maximum Period of Excess Opacity Allowed:      min/hour |                                                                                                            |
| 4. Method of Compliance:<br><b>Annual VE Test EPA Method 9</b>                                                                                              |                                                                                                            |
| 5. Visible Emissions Comment (limit to 200 characters):<br><br><br><br>                                                                                     |                                                                                                            |

**I. CONTINUOUS MONITOR INFORMATION**  
 (Only Regulated Emissions Units Subject to Continuous Monitoring)

**Continuous Monitoring System:** Continuous Monitor  1  of  2

|                                                                                                                                                                               |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. Parameter Code: <b>EM</b>                                                                                                                                                  | 2. Pollutant(s): <b>NO<sub>x</sub></b>  |
| 3. CMS Requirement: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other                                                                                   |                                         |
| 4. Monitor Information:<br>Manufacturer: <b>various</b><br>Model Number:      Serial Number: <b>various</b>                                                                   |                                         |
| 5. Installation Date:<br><b>01 Jan 1999</b>                                                                                                                                   | 6. Performance Specification Test Date: |
| 7. Continuous Monitor Comment (limit to 200 characters):<br><br><b>NO<sub>x</sub> CEM proposed to meet requirements of 40 CFR Part 75, Monitoring Plan submitted to FDEP.</b> |                                         |

**H. VISIBLE EMISSIONS INFORMATION**  
 (Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

|                                                                                                                                                                                                       |                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype:<br><b>VE99</b>                                                                                                                                                          | 2. Basis for Allowable Opacity:<br><input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other |
| 3. Requested Allowable Opacity:<br>Normal Conditions:                      %                      Exceptional Conditions: <b>100</b> %<br>Maximum Period of Excess Opacity Allowed: <b>6</b> min/hour |                                                                                                            |
| 4. Method of Compliance:<br><br><b>None</b>                                                                                                                                                           |                                                                                                            |
| 5. Visible Emissions Comment (limit to 200 characters):<br><br><b>FDEP Rule 62-210.700(1). Allowed for 2 hours (120 minutes) per 24 hours for start up, shutdown and malfunction.</b>                 |                                                                                                            |

**I. CONTINUOUS MONITOR INFORMATION**  
 (Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor 2 of 2

|                                                                                                                                             |                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1. Parameter Code: <b>EM</b>                                                                                                                | 2. Pollutant(s): <b>NO<sub>x</sub></b>                                  |
| 3. CMS Requirement:                                                                                                                         | <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other |
| 4. Monitor Information:<br>Manufacturer: <b>Westinghouse</b><br>Model Number:                      Serial Number:                           |                                                                         |
| 5. Installation Date:<br><b>01 Jan 1999</b>                                                                                                 | 6. Performance Specification Test Date:                                 |
| 7. Continuous Monitor Comment (limit to 200 characters):<br><br><b>Parameter Code: WTF. Required by 40 CFR part 60; subpart GG; 60.334.</b> |                                                                         |

**J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION  
(Regulated Emissions Units Only)****Supplemental Requirements**

|                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Process Flow Diagram<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                              |
| 2. Fuel Analysis or Specification<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                    |
| 3. Detailed Description of Control Equipment<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                         |
| 4. Description of Stack Sampling Facilities<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                          |
| 5. Compliance Test Report<br><input checked="" type="checkbox"/> Attached, Document ID: <b><u>Attachments</u></b><br><input type="checkbox"/> Previously submitted, Date: _____<br><input type="checkbox"/> Not Applicable |
| 6. Procedures for Startup and Shutdown<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                               |
| 7. Operation and Maintenance Plan<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested                                    |
| 8. Supplemental Information for Construction Permit Application<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                |
| 9. Other Information Required by Rule or Statute<br><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable                                                               |
| 10. Supplemental Requirements Comment:<br><br><br><br><br><br><br><br><br><br>                                                                                                                                             |



**Additional Supplemental Requirements for Title V Air Operation Permit Applications**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11. Alternative Methods of Operation<br>[ ] Attached, Document ID: _____ [ X ] Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 12. Alternative Modes of Operation (Emissions Trading)<br>[ ] Attached, Document ID: _____ [ X ] Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 13. Identification of Additional Applicable Requirements<br>[ ] Attached, Document ID: _____ [ X ] Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 14. Compliance Assurance Monitoring Plan<br>[ ] Attached, Document ID: _____ [ X ] Not Applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 15. Acid Rain Part Application (Hard-copy Required)<br>[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))<br>Attached, Document ID: _____<br>[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)<br>Attached, Document ID: _____<br>[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)<br>Attached, Document ID: _____<br>[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)<br>Attached, Document ID: _____<br>[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)<br>Attached, Document ID: _____<br>[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)<br>Attached, Document ID: _____<br>[ X ] Not Applicable |

ATTACHMENTS

Golder Associates Letter of February 12, 2001  
Siemens Westinghouse Maximum Heat  
Input Curve for McIntosh Unit 5  
Compliance Test Results

**Golder Associates Inc.**

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



February 12, 2001

9937510

Mr. Scott Sheplak, P.E., Administrator  
Title V Section  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, Florida 32399

Attention: Mr. Edward J. Svec

RE: C.D. McIntosh, Jr. Power Plant, Unit No. 5  
FDEP File No. 1050004-004-AC (PSD-FL-245)  
Amendment to Heat Input and Emissions-Tested Performance for Unit 5  
Request for Additional Information

Dear Ed:

This correspondence provides the additional information requested by the Department regarding the request for an increase in the heat input for McIntosh Unit 5 when firing natural gas.

I have reviewed the information in the compliance test report as well as additional performance test data taken by Siemens Westinghouse for the purpose of demonstrating the thermal efficiency of Unit 5. The later tests only became recently available and because they contain sensitive performance information, they are proprietary. My professional engineering certification was taken in mechanical engineering.

The heat-input curve supplied in Ms. Shelton's July 27, 2000 letter was prepared by Siemens Westinghouse to initially account for the results obtained from the emission rate compliance tests taken in March 2000. Attached is a complete copy of the emission rate compliance tests.

The results of compliance tests found a heat-input rate of 2,171 mmBtu/hr [low heating value (LHV) basis] at a turbine inlet temperature of 80°F. (Note: turbine inlet refers to compressor inlet temperature; with a unit equipped with an evaporative cooler, like McIntosh Unit 5, the ambient temperature and turbine inlet temperature will be different depending upon the relative humidity and operating conditions of the evaporative cooler.) The original air construction and PSD permit application submitted to the Department contained expected performance data for the Siemens Westinghouse Frame 501G combustion turbine. At the time, this model of combustion turbine had not been constructed nor operated, and therefore, performance was based on expectations of the technology from the engineering design. It should be noted that McIntosh Unit 5 is the first Siemens Westinghouse Frame 501G to be constructed and operated.

Since the compliance tests performed in March 2000, thermal performance tests were conducted in August 2000 and additional tuning has been performed. As a result of these activities Siemens Westinghouse has provided a final heat input curve which is attached. Siemens Westinghouse, in its guarantees, provides adjustment to account for various factors

including test methods, instrumentation, and tolerances. The heat input curve is linear with an equation of:

$$\text{Heat Input (mmBtu/hr)} = -6.667 \times (\text{Turbine Inlet Temperature } ^\circ\text{F}) + 2,800$$

Attached as Table 1 is a comparison of the data from the original permit application and the compliance and thermal performance tests. The table includes information on net power and heat input from the original air construction and PSD permit application for turbine inlet temperatures of 52.5°F and 87.5°F. These temperatures represent the operation of the evaporative cooler at ambient temperatures of 59°F and 90°F, respectively. The predicted performance at a turbine inlet temperature of 80°F under the original information provided by Siemens Westinghouse and included in the application was calculated based on the data for turbine inlet temperatures of 52.5 and 87.5°F. Since combustion turbine curves related to power and heat input are typically linear as shown by the current heat input curve, the information for 80°F was calculated as a proportional relationship from the data at turbine inlet temperatures of 52.5 and 87.5°F.

During the emission rate compliance tests in March 2000, the reported turbine inlet temperature was 80°F with a reported heat input of 2,171 mmBtu/hr. The expected maximum heat input is 2,048 mmBtu/hr for a turbine inlet temperature of 80°F. The test data indicate a heat input about 6 percent higher than what would be expected. The ratio of actual to expected is presented in the far right column. Note that 1.06 indicates a 6-percent difference. Note that power [in units of kilowatt (kW)] when multiplied by heat rate (in units of Btu/kW-hour), are heat input (i.e., kW x Btu/kW-hr = Btu/hr). The current Siemens Westinghouse curve for the unit has a maximum heat input of 2,288 mmBtu/hour for a turbine inlet temperature of 80°F.

The thermal performance tests were conducted in August 2000. During these tests the reported turbine inlet temperature was 76.8°F with a reported heat input of 2,145 mmBtu/hr. The expected maximum heat input for a turbine, based on the original Siemens Westinghouse data, is 2,063 mmBtu/hr for an inlet temperature of 76.8°F. The current maximum heat input based on the Siemens Westinghouse curve is 2,288 mmBtu/hr for a turbine inlet temperature of 76.8°F.

Thus, two independent tests indicate that the current heat-input curve supplied by Siemens Westinghouse envelopes the observed heat input during the tests and provides a margin necessary for the operation of the unit. The margin is necessary in establishing a heat input limit, since the City of Lakeland must rely on the terms of its contract with Siemens Westinghouse as the basis for turbine performance. The attached curve should be included as part of the permit and the maximum heat input when firing gas with a turbine inlet of 59°F, 60-percent relative humidity, and 100-percent load should be 2,407 mmBtu/hr (LHV).

The reason for the requested increase in mass emission rate was based directly on the maximum heat input curves developed by Siemens Westinghouse. With higher heat input, the turbine is capable of greater mass flow of air, which increases the power output. The increased power is a direct result of greater mass flow. Emissions are directly proportional to the mass flow. In addition, the maximum emission limits in the permit, which were listed at ISO, were actually for ambient air conditions at ISO and not for the turbine inlet conditions

noted in the Siemens Westinghouse performance sheets. These data included the operation of an evaporative cooler. For the ISO ambient condition, the evaporative cooling decreases the turbine inlet temperature to 52.5°F.

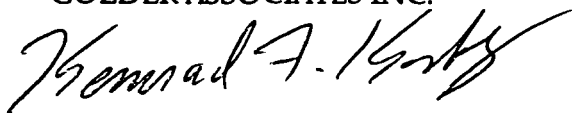
The requested emission rates and heat input based on the current Siemens Westinghouse heat input curve are shown in Table 2. For CO, the requested increase would account for higher emissions at lower loads. As noted from Table 3-2 in the compliance test report, the CO emissions at 70-percent load were about 61 lb/hour. The current conditions in the permit do not distinguish between the emission limits for high and low loads. An adjustment to the CO emission limit to 161 lb/hour would cover the operating range of the turbine.

Regarding the General Condition in Section II.7., this condition is applicable to the combined-cycle portion of the project as a phased construction project. The emission limits in the original PSD approval contemplated the conversion to combined-cycle operation. Indeed, this portion of the project has been approved this year under the Power Plant Siting Act with full Florida Department of Environmental Protection (FDEP) participation. Review of the original BACT determination was not required. The request for an increase in heat input is considered to not be a "modification" under the FDEP's definition in 62-210.200 Florida Administrative Code (F.A.C.). The request to increase the heat input is neither a "physical change" nor "change in the method of operation" of Unit 5. The performance basis, including heat input, for the McIntosh Unit 5 was based on data supplied by Siemens Westinghouse as the first frame 501G combustion turbine. The turbine actually constructed had better performance than expected. Moreover, there is no request to change the emission rates established as BACT, which were established as pollutant concentrations (e.g., ppmvd corrected to 15-percent oxygen). These are listed on Page BD-10 of FDEP's BACT Determination. Heat input and mass emissions were not the basis of the BACT determination.

If you have any questions or need any further information to complete your review, please call me at 352-336-5600.

Sincerely,

GOLDER ASSOCIATES INC.



Kennard F. Kosky, P.E.  
Principal  
Florida Professional Engineer No. 14996

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SEAL

KFK/nav/nav

Enclosures

cc: Ronald Tomlin, Lakeland Electric  
Farzie Shelton, Lakeland Electric

Table 1. Comparison of Data from the PSD Permit Application and Recent Testing

**Comparison of Expected Data from PSD Permit and  
 March 2000 Emission Compliance Tests**

|                           | PSD Application<br>Turbine Inlet Temperature <sup>a</sup> |       |        | Compliance<br>Test | Ratio of<br>Actual/Expected |
|---------------------------|-----------------------------------------------------------|-------|--------|--------------------|-----------------------------|
|                           | 52.5°F                                                    | 80°F  | 87.5°F | 80°F               |                             |
| Power (MW-Net)            | 249.09                                                    | 229   | 223.68 | 238.2              | 1.040                       |
| Heat Input (MMBtu/hr-LHV) | 2,174                                                     | 2,048 | 2,014  | 2,171              | 1.060                       |

**Comparison of Expected Data from PSD Permit and  
 August 2000 Thermal Performance Tests**

|                           | PSD Application<br>Turbine Inlet Temperature <sup>a</sup> |        |        | Power<br>Test | Ratio of<br>Actual/Expected |
|---------------------------|-----------------------------------------------------------|--------|--------|---------------|-----------------------------|
|                           | 52.5°F                                                    | 76.8°F | 87.5°F | 76.8°F        |                             |
| Power (MW-Net)            | 249.09                                                    | 231    | 223.68 | 236.629       | 1.022                       |
| Heat Input (mmBtu/hr-LHV) | 2,174                                                     | 2,063  | 2,014  | 2,145         | 1.040                       |

<sup>a</sup> The turbine inlet temperatures of 52.5 and 87.5 °F are turbine inlet temperatures with evaporative cooling. The ambient air temperatures are 59 and 90 °F.

Table 2. Comparison of the Permitted and Current Turbine Data for City of Lakeland  
 Unit 5 Simple Cycle (Siemens/Westinghouse 501G)

|                                             | Turbine Inlet Temperature (°F) <sup>a</sup> |           |           |           |
|---------------------------------------------|---------------------------------------------|-----------|-----------|-----------|
|                                             | 87.5                                        | 59        | 52.5      | 30        |
| <u>Original Siemens Westinghouse Data</u>   |                                             |           |           |           |
| Heat Input (mmBtu/hr-LHV)                   | 2,014                                       | 2,144     | 2,174     | 2,279     |
| Mass Flow (lb/hr)                           | 4,166,368                                   | 4,452,616 | 4,518,595 | 4,725,245 |
| Mass Flow/Heat Input                        | 2,069                                       | 2,077     | 2,078     | 2,073     |
| Delta (Heat Input/°F)                       |                                             | 4.61      | 4.61      | 4.63      |
| <u>Data based on New Heat Input</u>         |                                             |           |           |           |
| Heat Input (mmBtu/hr-LHV)                   | 87.2                                        | 59        | 52.5      | 30        |
| Heat Input (mmBtu/hr-LHV)                   | 2,219                                       | 2,407     | 2,450     | 2,600     |
| Mass Flow (lb/hr)                           | 4,589,702                                   | 4,998,086 | 5,092,217 | 5,390,781 |
| Delta (Heat Input/°F)                       |                                             | 6.67      | 6.67      | 6.67      |
| <u>Increase</u>                             |                                             |           |           |           |
| Heat Input                                  | 10.16%                                      | 12.25%    | 12.69%    | 14.08%    |
| Mass Flow                                   | 10.16%                                      | 12.25%    | 12.69%    | 14.08%    |
| <u>Permitted Emission Rates:</u>            |                                             |           |           |           |
| NO <sub>x</sub> (lb/hr – ISO Ambient)       |                                             |           | 237       |           |
| CO (lb/hr – ISO Ambient)                    |                                             |           | 145       |           |
| SO <sub>2</sub> (lb/hr - 30 °F)             |                                             |           |           | 7.2       |
| VOC (lb/hr – ISO Ambient)                   |                                             |           | 10        |           |
| <u>Requested Changes:</u>                   |                                             |           |           |           |
| Heat Input (mmBtu/hr)                       |                                             | 2,407     |           |           |
| NO <sub>x</sub> (lb/hr – ISO Turbine Inlet) |                                             | 262       |           |           |
| CO (lb/hr – ISO Turbine Inlet)              |                                             | 161       |           |           |
| SO <sub>2</sub> (lb/hr - 30 °F)             |                                             |           |           | 8         |
| VOC (lb/hr – ISO Turbine Inlet)             |                                             | 11        |           |           |

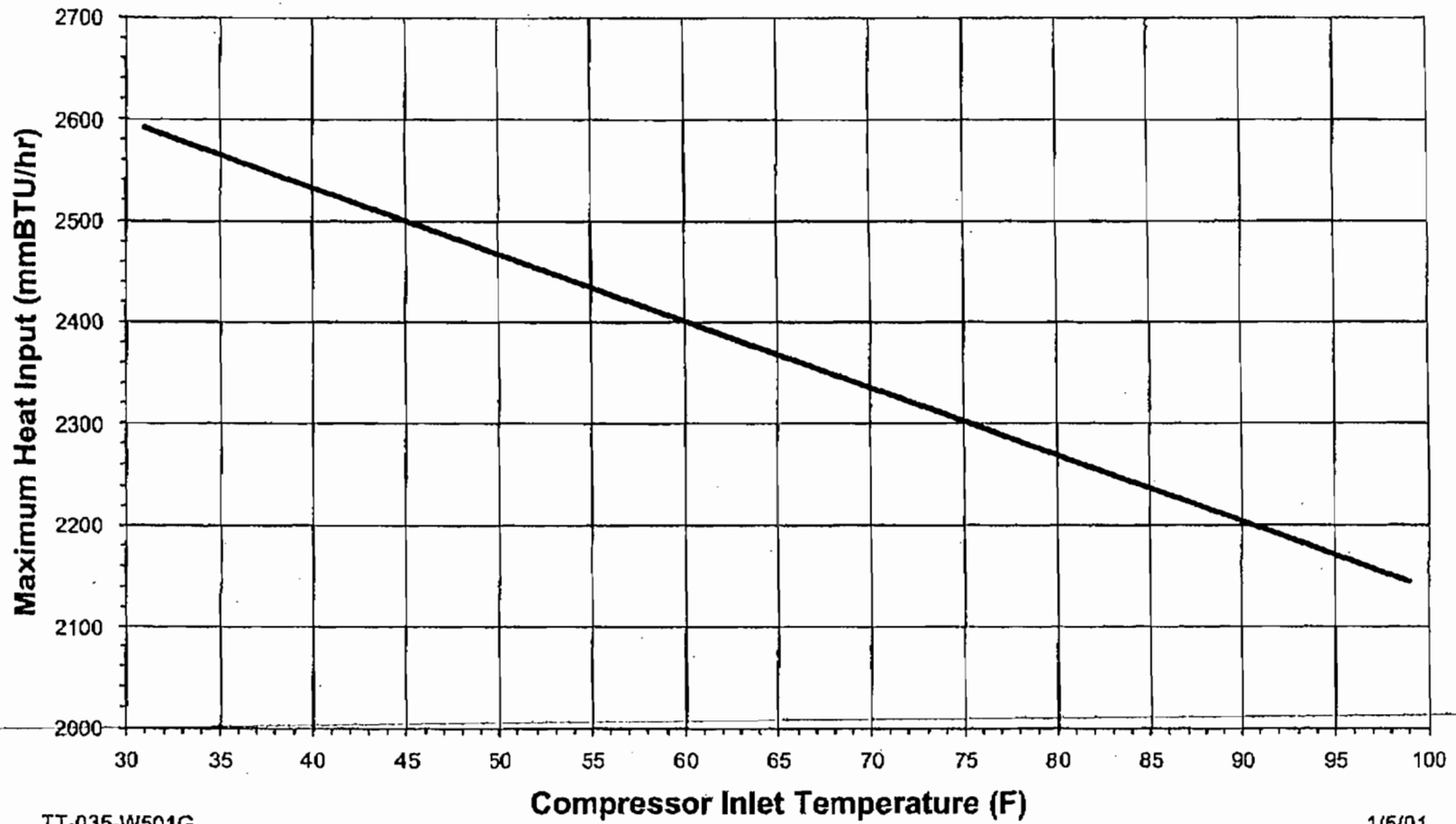
<sup>a</sup> The turbine inlet temperatures of 52.5 and 87.5 °F are turbine inlet temperatures with evaporative cooling. The ambient air temperatures are 59 and 90 °F.

ATTACHMENTS

Siemens Westinghouse Maximum Heat  
Input Curve for McIntosh Unit 5



### W501G McIntosh #5, Lakeland, FL Maximum Heat Input as a Function of Compressor Inlet Temperature



TT-035-W501G

1/5/01

**EMISSIONS COMPLIANCE  
TEST REPORT  
FOR THE  
LAKELAND UTILITIES  
McINTOSH POWER PLANT  
COMBUSTION TURBINE UNIT #5  
LAKELAND, FLORIDA**

**FDEP PERMIT NO. PSD-FL-245/1050004-004-AC**

**Prepared for:**

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**Prepared by:**

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### APPENDICES

APPENDIX A--DATA SUMMARIES AND SAMPLE CALCULATIONS  
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## 1.0 INTRODUCTION

Source Testing And Consulting Services, Inc. (STACS) is under contract to Siemens - Westinghouse Power Corporation (Siemens-Westinghouse) to conduct a series of emissions tests for Unit #5 at the McIntosh Power Plant in Lakeland, Florida. Unit #5 is a simple cycle Siemens-Westinghouse 501G combustion turbine and has recently completed construction. The facility is owned and operated by Lakeland Utilities.

Unit #5 is rated at a nominal electrical output capacity of 250 MW. The unit is the first of it's kind constructed in the United States. Emissions from the unit are controlled by good combustion practices and dry-low-NO<sub>x</sub> burner technology. The unit is capable of firing natural gas or distillate fuel oil.

This document is the initial emissions compliance test report for the facility while firing natural gas. Emissions testing was conducted for visible emissions (VE), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), volatile organic compounds (VOC) and for diluent oxygen as part of the permit compliance tests. Testing was conducted at two discrete load conditions (nominally 70% load and base load) for nitrogen oxides in order to comply with Federal Regulations contained in 40CFR60, Subpart GG. While Subpart GG requires testing at four load levels, it was only possible to conduct the sampling at two load conditions during this field effort due to an interruption in testing, caused by an equipment malfunction that prevented the test from being completed. The additional two load conditions (nominally 80% and 90% of base load) will be tested at a later date.

### 1.1 TEST DESCRIPTION AND PURPOSE

There are two phases to the scope of work for this project:

- 1) To demonstrate that the unit meets the emissions limits for VE, NO<sub>x</sub>, CO and VOC as stated in the air permit for natural gas at base load; and,

- 2) to comply with the federal emissions regulations contained in the Code of Federal Regulations, Title 40, Part 60, Subpart GG (40CFR60, Subpart GG) for combustion turbines, which requires testing for NO<sub>x</sub> at four discrete load points.

This document contains the results of the test program as completed to date. An addendum to this report will be issued when the additional two load point tests have been completed.

The following test procedures were conducted during the gas emissions performance and compliance testing:

- EPA Method 9: Determination of opacity as visible emissions by a qualified and certified observer.
- EPA Method 10: Continuous determination of CO using a gas filter correlation/nondispersive infrared analyzer (GFC/NDIR).
- EPA Method 20: Oxides of Nitrogen (NO<sub>x</sub>) analysis with a chemiluminescent continuous emission monitor and continuous determination of oxygen content in the flue gas. A fuel cell analyzer was used for O<sub>2</sub> determination.
- EPA Method 25A Continuous determination of volatile organic compounds as total hydrocabons using a flame ionization detector. Analysis is on a wet basis.

All procedures and quality control guidelines specified in the appropriate methods and the EPA Quality Assurance Handbook for Air Pollution Measurement Systems - Volume III

were strictly followed during the test program, in addition to STACS' more stringent internal quality control standards.

## **1.2 TEST SCHEDULE**

Emissions testing for the facility took place on March 2, 2000. The additional two load conditions will be tested as soon as possible after any necessary repairs are completed.

## **1.3 EXECUTIVE SUMMARY**

Table 1-1 presents a summary of the emissions test results conducted for the unit on natural gas at 70% load. Table 1-2 provides a summary of the test results at base load. All pollutant data is presented in the units of the emissions standard as provided in the emissions limits (ppmV@15% oxygen) as well as emission rates in lb/MMBtu and as mass emission rates in lb/hr. The values provided are the average of three valid test runs for each pollutant. More detail is given for each test in Section 3.0 and supporting data is presented in the appendices.

## **1.4 TEST REPORT ORGANIZATION**

Section 2.0 of this document provides a brief description of the processes and the sampling locations. Section 3.0 presents the emissions test results. Section 4.0 outlines the procedures and test methods used, and Section 5.0 discusses the quality assurance/quality control measures followed during sampling and analysis. Sample calculations, field data sheets, calibration and certification data, process data and a list of project participants are included in the appendices to this document.

Table 1-1. Summary of Emissions Test Results - Lakeland Utilities CT Unit #5  
 Natural Gas Firing - 70% Load Condition

Date: 02 March 2000

| Parameter                         | Units                                     | 70% Load      | Emiss. Limit         |
|-----------------------------------|-------------------------------------------|---------------|----------------------|
| <b>Operating Parameters:</b>      |                                           |               |                      |
| Load:                             | MW                                        | 163.0         |                      |
| Load (%)                          | (%)                                       | 70.0          |                      |
| Fuel Flow:                        | kpph                                      | 76.8          |                      |
| Lower Heating Value:              | Btu/lb                                    | 21034.0       |                      |
| Heat Input (LHV):                 | MMBtu/hr                                  | 1616.1        | 2174<br>@ ISO        |
| Volumetric Flow (Method 19 based) | dscfm                                     | 691100.2      | (c)                  |
| <b>Ambient Data:</b>              |                                           |               |                      |
| Ambient Temperature               | degrees F                                 | 77.68         |                      |
| Barometric Pressure:              | "Hg                                       | 29.88         |                      |
| Specific Humidity (Hobs):         | # H2O/# DA                                | 0.01101       |                      |
| <b>Emissions Data:</b>            |                                           |               |                      |
| Oxygen:                           | %V, dry                                   | 13.0          |                      |
| Nitrogen Oxides:                  | ppmV, dry                                 | 36.3          |                      |
|                                   | lb/MMBtu                                  | 0.1002        |                      |
|                                   | ppmV@15% O2                               | 27.2          |                      |
|                                   | ppmV@15% O2 & ISO Conditions<br>lb/hr (c) | 28.2<br>179.6 | 117.4 (b)<br>237 (a) |
| Carbon Monoxide:                  | ppmV, dry                                 | 20.2          | (d)                  |
|                                   | lb/MMBtu                                  | 0.0339        |                      |
|                                   | ppmV@15% O2                               | 15.1          | 25 (a)               |
|                                   | lb/hr (c)                                 | 60.8          | 145 (a)              |

Notes:

Combustion Turbine Model: SWPC 501G - Simple Cycle

Fuel Factor (Fd) = 8710scf@0%O2/MMBtu from 40CFR60 Appendix A, Method 19

Y = 9.197 Kilojoules/Watt-Hour (8725 Btu/kwh) for Natural Gas for NSPS limit calculation

(a) - BACT/FDEP Permit Emissions Limit (value at 15% O2 is for base load only - lb/hr applies at all load conditions)

(b) - 40CFR60, Subpart GG - NSPS Emissions Limit. Note that the ratio of standard pressure to observed ambient pressure was used in the ISO correction since curves of combustor inlet pressure vs. unit load are not available for this type of unit.

This ratio is known to closely track the ratio of reference combustor inlet pressure to observed combustor inlet pressure for combustion turbines.

(c) - Mass Emission Rates Calculated using the Volumetric Flowrate determined from the Method 19 approach.

(d) - CO emissions testing not required at this load point, but is presented for completeness. Testing at this load was conducted using the Method 20 test times.

Table 1-2. Summary of Emissions Test Results - Lakeland Utilities CT Unit #5  
Natural Gas Firing - Base Load

Date: 02 March 2000

| Parameter                                        | Units                        | Base Load | Emiss. Limit |
|--------------------------------------------------|------------------------------|-----------|--------------|
| <b>Operating Parameters:</b>                     |                              |           |              |
| Load:                                            | MW                           | 238.2     |              |
| Load (%)                                         | (%)                          | 100.0     |              |
| Fuel Flow:                                       | kpph                         | 103.2     |              |
| Lower Heating Value:                             | Btu/lb                       | 21034.0   |              |
| Heat Input (LHV):                                | MMBtu/hr                     | 2171.1    | 2174 @ ISO   |
| Volumetric Flow (Method 19 based)                | dscfm                        | 891459.4  | (c)          |
| <b>Ambient Data:</b>                             |                              |           |              |
| Ambient Temperature                              | degrees F                    | 80.11     |              |
| Barometric Pressure:                             | "Hg                          | 29.82     |              |
| Specific Humidity (Hobs):                        | # H2O/# DA                   | 0.01006   |              |
| <b>Emissions Data:</b>                           |                              |           |              |
| Oxygen:                                          | %V, dry                      | 12.7      |              |
| Nitrogen Oxides:                                 | ppmV, dry                    | 31.4      |              |
|                                                  | lb/MMBtu                     | 0.0832    |              |
|                                                  | ppmV@15% O2                  | 22.6      | 25 (a)       |
|                                                  | ppmV@15% O2 & ISO Conditions | 22.8      | 117.4 (b)    |
| Carbon Monoxide:                                 | lb/hr (c)                    | 200.3     | 237 (a)      |
|                                                  | ppmV, dry                    | 1.8       |              |
|                                                  | lb/MMBtu                     | 0.0029    |              |
|                                                  | ppmV@15% O2                  | 1.3       | 25 (a)       |
| Volatile Organic Compounds (VOC):<br>(as carbon) | lb/hr (c)                    | 7.0       | 145 (a)      |
|                                                  | ppmC,w                       | 0.0       | 4            |
|                                                  | lb/MMBtu                     | 0.0000    |              |
| Visible Emissions:                               | lb/hr (c)                    | 0.0       |              |
|                                                  | % Opacity                    | 0.0       | 10           |

Notes:

Combustion Turbine Model: SWPC 501G - Simple Cycle

Fuel Factor (Fd) = 8710scf@0%O2/MMBtu from 40CFR60 Appendix A, Method 19

Y = 9.197 Kilojoules/Watt-Hour (8725 Btu/kwh) for Natural Gas for NSPS limit calculation

The first base load test was split between three periods with calibration checks between (14:12-14:36, 14:56-15:20, 15:35-15:59)

(a) - BACT/FDEP Permit Emissions Limit (value at 15% O2 is for base load only - lb/hr applies at all load conditions)

(b) - 40CFR60, Subpart GG - NSPS Emissions Limit. Note that the ratio of standard pressure to observed ambient pressure was used in the ISO correction since curves of combustor inlet pressure vs. unit load are not available for this type of unit.

This ratio is known to closely track the ratio of reference combustor inlet pressure to observed combustor inlet pressure for combustion turbines.

(c) - Mass Emission Rates Calculated using the Volumetric Flowrate determined from the Method 19 approach.

(d) - Heat Input during the Base Load test was between 95% and 105% of the permitted rate.



## 2.0 PROCESS DESCRIPTION AND SAMPLING LOCATION

Unit #5 at the McIntosh Power Plant is a Siemens-Westinghouse 501G combustion turbine. The unit is rated at a nominal load electrical output of 250 MW. The unit is the first in its class to be constructed in the United States. The unit is permitted to fire natural gas or No. 2 distillate fuel oil. All testing during this effort was conducted on natural gas.

### 2.1 PROCESS DESCRIPTION

Unit #5 includes a compressor, combustor, turbine and electric generator and has a nominal load capacity of 250 MW. The turbine is capable of firing natural gas or distillate fuel oil. The rated maximum heat input of the unit at ISO conditions (59 °F, 14.7 psi, 60%RH) is 2174 MMBtu/hr on natural gas and 2236 MMBtu/hr for distillate fuel. Exhaust gases from the turbine are discharged into the atmosphere through a circular stack approximately 70 feet above grade.

The combustion turbine utilizes good combustion practices as a preliminary control for NO<sub>x</sub>, CO and VOC. The emissions of NO<sub>x</sub> are further controlled by dry low NO<sub>x</sub> technology while firing natural gas and by water injection in the combustion zone to lower flame temperature while firing distillate fuel. Sulfur emissions are limited by the use of low sulfur fuels: natural gas and distillate fuel oil.

Emissions from the units are restricted under the New Source Performance Standards (NSPS) of 40CFR60, Subpart GG, and the FDEP air quality permit (PSD-FL-245/1050004-004-AC).

The following parameters were monitored during the sampling the document the tested conditions: electrical load, exhaust temperature, inlet guide vane (IGV) position, fuel

flow, exhaust flow, ambient (barometric) pressure, ambient temperature, and ambient humidity.

Emissions testing was performed at two discrete load conditions (70% and base) during this mobilization. Two additional conditions will be tested during a subsequent mobilization. Minimally, triplicate tests were/will be performed at each of the following nominal load and operating conditions:

- 70% Load Condition (~164 MW)
  - 80% Load Condition (~190 MW)\*\*
  - 90% Load Condition (~214 MW)\*\*
  - 100% (Base) Load Condition (~238 MW)
- (\* \* to be tested at a later date)

The percentages above are expressed as a percent of base load. It is important to note that base load (100%) is a function of ambient temperature and may be different for different days.

## **2.2 REFERENCE METHOD SAMPLING LOCATIONS**

The inside diameter of the circular stack is 22' 2" (266) inches. The nipple length is 16". Four sampling ports are located around the stack at 90° intervals. EPA Method 20 (40 CFR 60, Appendix A) requires that 48 sampling points be used for a preliminary oxygen traverse for this duct based on the geometry and cross sectional area. Twelve sampling points were used in each port for the preliminary oxygen traverse. The sampling points were determined according to EPA Method 1 (40 CFR 60, Appendix A) guidelines so that each sample point was located in the center of an equal area section of the duct. The following distances were used for the sampling points for a given port:

| Point | Distance (inches) |
|-------|-------------------|
| 1     | 18.93             |
| 2     | 24.51             |
| 3     | 30.63             |

|    |        |
|----|--------|
| 4  | 37.01  |
| 5  | 43.91  |
| 6  | 51.11  |
| 7  | 58.83  |
| 8  | 67.60  |
| 9  | 77.18  |
| 10 | 88.35  |
| 11 | 101.91 |
| 12 | 121.86 |

(Note that the traverse point distances above include the nipple length.)

Eight (8) traverse points were used for all subsequent sampling (after the preliminary oxygen traverse) as described in EPA Method 20.

### 3.0 EMISSIONS TEST RESULTS

Emissions testing was performed for the Combustion Turbine (Unit #5) at Lakeland Utilities McIntosh Power Plant on March 2, 2000. The tests were conducted to demonstrate that the unit meets the emissions limits provided in the facility air permit and also meets the Federal New Source Performance Standard (NSPS) emission limits given in 40CFR60, Subpart GG. The air permit test requirements include sampling for visible emissions, nitrogen oxides, carbon monoxide, and volatile organic compounds at base load. The NSPS requirements also require testing for nitrogen oxides to be conducted at three additional reduced loads spaced over the normal operating range of the combustion turbine. As stated previously, it was not possible to complete the 80% and 90% load conditions during this test effort. These tests will be completed at a later date. This section presents the results of the 70% and base load test conditions.

Three test runs were performed for each parameter at each condition. Test run times were based on the Method 20 test time requirements (each run consists of sampling at each of eight traverse points for one minute plus the system response time) except for the base load tests which were one hour in duration for each run.

#### 3.1 PRELIMINARY OXYGEN TRAVERSE

A preliminary oxygen traverse was performed for the combustion turbine prior to additional testing as prescribed in EPA Method 20 to determine the eight lowest points of oxygen concentration in the duct which would be used for subsequent emissions testing. The traverse was performed while firing natural gas at the lowest percent load tested (Approximately 164 MW while firing natural gas).

The emissions sampling location for the unit consists of a circular stack with an inside diameter of 266 inches with four ports located at 90° angles around the circumference of the stack. The cross sectional area of the stack at the sampling platform is 385.9 ft<sup>2</sup>.

Method 20 requires that a minimum of 48 traverse points be used for the oxygen traverse in stacks of this size. The traverse points were located using EPA Method 1 criteria (40 CFR 60, Appendix A). Twelve points were sampled in each of the four ports for at least 1 minute plus the system response time (30 seconds) each during the oxygen traverse.

The results of the preliminary oxygen traverse for are presented in Table 3-1. Oxygen concentrations are presented as percent by volume on a dry basis (%V, dry). Because the oxygen concentration was consistent throughout the traverses (maximum deviation  $\leq 0.4\% \text{ O}_2$ ), eight convenient sampling points were selected for the remainder of the test program. In addition, calibration drift checks for  $\text{NO}_x$  and  $\text{O}_2$  were conducted after sampling in each port so that the data collected during the oxygen traverse could be used toward the demonstration of NSPS compliance at the 70% load condition.

### **3.2. NATURAL GAS EMISSIONS TEST RESULTS**

Tables 3-2 through 3-3 summarize the test results for natural gas testing. The low load test results are given in Table 3-2. Table 3-3 presents the test results for the base load tests.  $\text{NO}_x$  and CO emissions are presented as measured native concentrations in parts per million by volume (ppmV) on a dry basis and as concentrations normalized to 15 percent oxygen (ppmV @ 15%  $\text{O}_2$ ). Emissions are also presented as emission rates in pounds per million Btu (lb/MMBtu) and as pounds per hour (lb/hr). Mass emissions of nitrogen oxides are expressed as pounds of  $\text{NO}_2$ . VOC data is expressed as total hydrocarbons as carbon. Emission rates in pounds per million Btu (lb/MMBtu) are calculated using the published dry fuel factor ( $F_d = 8710 \text{ dscf}@0\% \text{ O}_2/\text{MMBtu}$  for natural gas) from EPA Method 19 (40CFR60, Appendix A). Mass emission rates in pounds per hour (lb/hr) are calculated using the Method 19 approach and the heat input to the unit. Visible emissions are provided as percent opacity.

Example calculations and data summaries are provided in Appendix A. Raw field data and process data is included in Appendix B. Calibration data and certifications are included in Appendix C.

Table 3-1. Preliminary Oxygen Traverse - Test Results  
 Lakeland Utilities McIntosh Unit #5  
 Values in percent oxygen on a dry basis (%V,d)

| Point       | Port:       | A    | B    | C    | D    |
|-------------|-------------|------|------|------|------|
| 1           |             | 13.2 | 12.9 | 13.1 | 13.1 |
| 2           |             | 13.1 | 12.9 | 13.1 | 13.1 |
| 3           |             | 13.0 | 12.9 | 13.1 | 13.1 |
| 4           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 5           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 6           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 7           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 8           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 9           |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 10          |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 11          |             | 13.0 | 13.0 | 13.1 | 13.1 |
| 12          |             | 12.9 | 13.0 | 13.1 | 13.1 |
| Average:    |             | 13.0 | 13.0 | 13.1 | 13.1 |
| Maximum:    |             | 13.2 | 13.0 | 13.1 | 13.1 |
| Minimum:    |             | 12.9 | 12.9 | 13.1 | 13.1 |
| Difference: |             | 0.3  | 0.1  | 0.0  | 0.0  |
| Overall     | Average:    | 13.0 |      |      |      |
|             | Maximum:    | 13.2 |      |      |      |
|             | Minimum:    | 12.9 |      |      |      |
|             | Difference: | 0.3  |      |      |      |

Table 3-2. Emissions Test Results - Lakeland Utilities CT Unit #5  
 Natural Gas Firing  
 70% Load Test Point Data  
 Date: 02 March 2000

| Parameter                         | Units                        | Run #1   | Run #2   | Run #3   | Average  | Emiss. Limit |
|-----------------------------------|------------------------------|----------|----------|----------|----------|--------------|
| Start Time:                       |                              | 10:12    | 10:48    | 12:50    |          |              |
| Stop Time:                        |                              | 10:36    | 11:12    | 13:14    |          |              |
| Operating Parameters:             |                              |          |          |          |          |              |
| Load:                             | MW                           | 163.7    | 163.4    | 162.0    | 163.0    |              |
| Load (%)                          | (%)                          | 70       | 70       | 70       | 70       |              |
| Fuel Flow:                        | kpph                         | 76.83    | 77.08    | 76.60    | 76.83    |              |
| Lower Heating Value:              | Btu/lb                       | 21034    | 21034    | 21034    | 21034    |              |
| Heat Input (LHV):                 | MMBtu/hr                     | 1616.0   | 1621.2   | 1611.2   | 1616.1   | 2174 @ ISO   |
| Turbine Exhaust Temperature:      | degrees F                    | 1157.6   | 1172.1   | 1155.7   | 1161.8   |              |
| Volumetric Flow (Method 19 based) | dscfm                        | 689967.9 | 688003.6 | 695329.0 | 691100.2 | (c)          |
| Ambient Data:                     |                              |          |          |          |          |              |
| Ambient Temperature               | degrees F                    | 76.11    | 76.98    | 79.97    | 77.68    |              |
| Barometric Pressure:              | "Hg                          | 29.84    | 29.84    | 29.96    | 29.88    |              |
| Specific Humidity (Hobs):         | # H2O/# DA                   | 0.01192  | 0.01100  | 0.01012  | 0.01101  |              |
| Emissions Data:                   |                              |          |          |          |          |              |
| Oxygen:                           | %V, dry                      | 13.0     | 13.0     | 13.1     | 13.0     |              |
| Nitrogen Oxides:                  | ppmV, dry                    | 35.6     | 37.6     | 35.7     | 36.3     |              |
|                                   | lb/MMBtu                     | 0.0981   | 0.1029   | 0.0996   | 0.1002   |              |
|                                   | ppmV@15% O2                  | 26.6     | 27.9     | 27.0     | 27.2     |              |
|                                   | ppmV@15% O2 ; ISO Conditions | 28.2     | 29.0     | 27.3     | 28.2     | 117.4 (b)    |
|                                   | lb/hr (c)                    | 175.8    | 185.1    | 178.1    | 179.6    | 237 (a)      |
| Carbon Monoxide:                  | ppmV, dry                    | 22.7     | 16.1     | 21.7     | 20.2     | 25 (d)       |
|                                   | lb/MMBtu                     | 0.0380   | 0.0268   | 0.0368   | 0.0339   | 145 (a)      |
|                                   | ppmV@15% O2                  | 17.0     | 12.0     | 16.4     | 15.1     |              |
|                                   | lb/hr (c)                    | 68.3     | 48.3     | 65.9     | 60.8     |              |

Notes:

Combustion Turbine Model: SWPC 501G - Simple Cycle  
 Fuel Factor (Fd) = 8710scf@0%O2/MMBtu from 40CFR60 Appendix A, Method 19  
 Y = 9.197 Kilojoules/Watt-Hour (8725 Btu/kwh) for Natural Gas for NSPS limit calculation

(a) - BACT/FDEP Permit Emissions Limit

(b) - 40CFR60, Subpart GG - NSPS Emissions Limit. Note that the ratio of standard pressure to observed ambient pressure was used in the ISO correction since curves of combustor inlet pressure vs. unit load are not available for this type of unit. This ratio is known to closely track the ratio of reference combustor inlet pressure to observed combustor inlet pressure for combustion turbines.

(c) - Mass Emission Rates Calculated using the Volumetric Flowrate determined from the Method 19 approach.

(d) - CO emissions testing not required at this load point, but is presented for completeness. Testing at this load was conducted using the Method 20 test times.



Table 3-3. Emissions Test Results - Lakeland Utilities CT Unit #5

Natural Gas Firing  
 Base Load Test Point Data  
 Date: 02 March 2000

| Parameter                                        | Units                        | Run #5, 5a, & 6 | Run #7   | Run #8   | Average  | Emiss. Limit |
|--------------------------------------------------|------------------------------|-----------------|----------|----------|----------|--------------|
| Start Time:                                      |                              | 14:12           | 16:17    | 17:37    |          |              |
| Stop Time:                                       |                              | 15:59           | 17:17    | 18:37    |          |              |
| Operating Parameters:                            |                              |                 |          |          |          |              |
| Load:                                            | MW                           | 237.3           | 237.5    | 239.9    | 238.2    |              |
| Load (%)                                         | (%)                          | 100             | 100      | 100      | 100      |              |
| Fuel Flow:                                       | kpph                         | 102.83          | 102.99   | 103.83   | 103.22   |              |
| Lower Heating Value:                             | Btu/lb                       | 21034           | 21034    | 21034    | 21034    |              |
| Heat Input (LHV):                                | MMBtu/hr                     | 2162.9          | 2166.4   | 2183.9   | 2171.1   | 2174 @ ISO   |
| Turbine Exhaust Temperature:                     | degrees F                    | 1135.0          | 1135.0   | 1132.8   | 1134.3   |              |
| Volumetric Flow (Method 19 based)                | dscfm                        | 888184.3        | 889664.7 | 896529.2 | 891459.4 |              |
| Ambient Data:                                    |                              |                 |          |          |          |              |
| Ambient Temperature                              | degrees F                    | 81.61           | 80.72    | 78.00    | 80.11    | (c)          |
| Barometric Pressure:                             | "Hg                          | 29.75           | 29.74    | 29.96    | 29.82    |              |
| Specific Humidity (Hobs):                        | # H2O/# DA                   | 0.00968         | 0.01020  | 0.01031  | 0.01006  |              |
| Emissions Data:                                  |                              |                 |          |          |          |              |
| Oxygen:                                          | %V, dry                      | 12.7            | 12.7     | 12.7     | 12.7     |              |
| Nitrogen Oxides:                                 | ppmV, dry                    | 31.9            | 31.1     | 31.1     | 31.4     |              |
|                                                  | lb/MMBtu                     | 0.0845          | 0.0825   | 0.0825   | 0.0832   |              |
|                                                  | ppmV@15% O2                  | 22.9            | 22.4     | 22.4     | 22.6     | 25           |
|                                                  | ppmV@15% O2 & ISO Conditions | 23.0            | 22.7     | 22.8     | 22.8     | 117.4 (a)(d) |
| Carbon Monoxide:                                 | lb/hr (c)                    | 202.7           | 198.3    | 199.8    | 200.3    |              |
|                                                  | ppmV, dry                    | 1.7             | 1.8      | 1.9      | 1.8      |              |
|                                                  | lb/MMBtu                     | 0.0027          | 0.0030   | 0.0030   | 0.0029   |              |
|                                                  | ppmV@15% O2                  | 1.2             | 1.3      | 1.3      | 1.3      | 25 (a)       |
| Volatile Organic Compounds (VOC):<br>(as carbon) | lb/hr (c)                    | 6.5             | 7.1      | 7.3      | 7.0      | 145 (a)      |
|                                                  | ppmC,w                       | 0.0             | 0.0      | 0.0      | 0.0      | 4            |
|                                                  | lb/MMBtu                     | 0.0000          | 0.0000   | 0.0000   | 0.0000   |              |
| Visible Emissions:                               | lb/hr (c)                    | 0.0             | 0.0      | 0.0      | 0.0      |              |
|                                                  | % Opacity                    | 0.0             | 0.0      | 0.0      | 0.0      | 10           |

Notes:

Combustion Turbine Model: SWPC 501G - Simple Cycle

Fuel Factor (Fd) = 8710scf@0%O2/MMBtu from 40CFR60 Appendix A, Method 19

Y = 9.197 Kilojoules/Watt-Hour (8725 Btu/kwh) for Natural Gas for NSPS limit calculation

The first base load test was split between three periods with calibration checks between (14:12-14:36, 14:56-15:20, 15:35-15:59)

(a) - BACT/FDEP Permit Emissions Limit

(b) - 40CFR60, Subpart GG - NSPS Emissions Limit. Note that the ratio of standard pressure to observed ambient pressure was used in the ISO correction since curves of combustor inlet pressure vs. unit load are not available for this type of unit. This ratio is known to closely track the ratio of reference combustor inlet pressure to observed combustor inlet pressure for combustion turbines.

(c) - Mass Emission Rates Calculated using the Volumetric Flowrate determined from the Method 19 approach.

(d) - Heat Input during the Base Load test was between 95% and 105% of the permitted rate.

## 4.0 EPA TEST PROCEDURES

This section includes a brief description of the test methods used for sampling and analysis at the Lakeland Utilities McIntosh Unit #5 facility. Any deviations from standard procedures are clearly noted below.

### 4.1 METHOD 1: LOCATION OF SAMPLING POINTS

The locations of the traverse points used for the preliminary oxygen traverse were determined using the criteria of EPA Method 1, Appendix A, 40 CFR 60. For this test program, twelve sampling points were tested in each of four test ports located at 90° angles around the circumference of the circular stack. The sampling points are located at equal area sections of the duct.

### 4.2 INSTRUMENTAL SAMPLING PROCEDURES

Stack gas emissions of oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), and volatile organic compounds (VOC) were measured using continuous instrumental techniques. Diluent oxygen concentration was also measured using continuous instrumental techniques. These tests were performed in accordance with EPA Methods 20 for oxygen, 10 for CO, 20 for NO<sub>x</sub> and 25A for VOC as outlined in Title 40, Part 60, Appendix A of the Code of Federal Regulations. Copies of all on-line instrumental reference method data collected during the testing are included in Appendix B of this document.

Calibration records are provided in Appendix C.

Flue gas sample is withdrawn from the stack at a constant rate via a heated stainless steel sample probe. The sample probe was equipped with an additional stainless steel line to enable probe tip calibrations. The probe was of sufficient length to allow traversing the duct as required by the applicable test methods. Extracted sample was passed from the probe through a filter and a heated teflon sample line to the moisture removal system.

The moisture removal system (gas conditioner) was designed for minimal contact

between condensate and sample gas in order to prevent any reaction between the moisture and the measured pollutants. All components of the sampling and gas conditioning system were fabricated from glass, teflon, or stainless steel. The gas conditioning system consisted of Baldwin two stage thermoelectric chiller. Moisture was continuously removed from the traps by an external peristaltic pump. Dry gas sample from the gas conditioner then passed through an unheated 1/4-inch O.D. teflon tube to a teflon-lined diaphragm pump which delivered positive pressure sample to the instrument system. The sample for the Method 25A analyzer bypassed the gas conditioner and was injected to the instrument on a hot wet basis. Flow control valves were used to deliver the gas sample at a regulated positive pressure to the reference method analytical instruments through a teflon and stainless steel manifold delivery network. Flow and pressure to all monitors was held constant by monitoring sample and bypass rotameters. A diagram of the instrumental reference method sampling and analysis system used for the test program is given in Figure 4-1.

The sampling system was leak checked by passing known calibration gas standards up through a calibration line to the end of the probe. The gas standards are then pulled back through the sampling probe at stack pressure and subsequently through the entire sampling system to the instrument system. An oxygen analyzer response of less than or equal to 0.5% V to a zero oxygen standard was considered an acceptable leak check. Analyzer calibration error was calculated by the difference between the known calibration gas concentration and the concentration exhibited by the analyzer. Bias checks were performed by comparing calibration responses through the entire sampling system to those exhibited at the analyzer. EPA Protocol #1, NIST traceable standard calibration gases were used to calibrate the analyzers.

Acceptable system performance checks did not exceed +/-2% of scale initial calibration error (+/-5% of the gas value for Method 25A), +/-5% of scale system bias check, or the

method specific drift requirements (+/-2% of scale for Method 20, +/-10% of scale in 8 hours for Method 10, and +/- 3% of scale for Method 25A).

Instrument response time was found by alternating zero nitrogen and upscale span gases through the bias check line and recording the upscale and down scale time for a 95% response. The response time of the CEM sampling system was performed to determine the length of time for the reference method system to respond to changes in the stack gas exhaust stream. Known, Protocol 1 reference gases and zero nitrogen were passed through the heated sample line, sample conditioning system and the manifold delivery network to the continuous emission monitors.

#### **4.3 STRATIFICATION TESTS**

A preliminary oxygen traverse was performed on each turbine exhaust for the purpose of selecting the eight points of lowest oxygen concentration which were subsequently used for emissions sampling. The traverse was performed at the lowest load to be tested. For the preliminary oxygen traverse, the minimum number of traverse points are:

- 8 for stacks with area less than 16.1 ft<sup>2</sup>;
- $8 + (\text{Area of Stack (ft}^2\text{)})/2.2$ , for stacks with areas between 16.1 to 107.6 ft<sup>2</sup>; or
- 48 or 49 for stacks greater than 107.6 ft<sup>2</sup>.

The minimum sampling time at each point is one minute plus the average system response time. Based on the results of the traverses, if all of the points were within 0.4% oxygen of each other (i.e. no significant stratification exists), then 8 convenient sample points were used for the subsequent testing.

All instrumental sampling runs at the base load conditions were conducted for a minimum of 1 hour. Test runs at the reduced load conditions are required for O<sub>2</sub> and NO<sub>x</sub>

only by Method 20 and were conducted for the test durations prescribed in EPA Method 20, which is 1 minute plus the system response time (30 seconds) at each of the eight points of lowest oxygen concentration.

#### **4.4 DATA ACQUISITION**

The data system used for this test program is a PLC based data acquisition system which interfaces with an Enertec software package designed for emissions testing. The system includes automatic calibration capabilities. The system operates in a Windows NT PC environment.

#### **4.5 REFERENCE METHOD ANALYZER PRINCIPLES OF OPERATION**

##### **4.5.1 METHOD 3A: OXYGEN ANALYSIS**

Flue gas sample is continuously analyzed for oxygen by a Servomex Model 1400A paramagnetic instrument. The Servomex 1400A analyzer uses electron paramagnetic resonance to detect the presence of oxygen molecules. Unlike most substances, oxygen has a triplet electron ground state which leaves one electron unpaired, making it a paramagnetic molecule. This electron may have one of two quantum spin states ( $m_s = +/- \frac{1}{2}$ ). By applying an alternating electromagnetic field of the proper frequency, the Servomex 1400A O<sub>2</sub> analyzer induces resonance between the two spin quantum states. In effect, the O<sub>2</sub> analyzer measures the electromagnetic energy absorbed by O<sub>2</sub> molecules at the resonant frequency.

##### **4.5.3 METHOD 20: OXIDES OF NITROGEN ANALYSIS**

A Thermo Electron Model 42H instrument was used to analyze NO<sub>x</sub>. The principle of operation of this instrument is a chemiluminescent reaction in which ozone (O<sub>3</sub>) reacts with nitric oxide (NO) to form oxygen (O<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>). During this reaction, a photon with a specific ultraviolet wavelength is emitted which is detected by a photomultiplier tube. The instrument is capable of analyzing total oxides of nitrogen (NO + NO<sub>2</sub>) by thermally converting NO<sub>2</sub> to NO in a separate reaction chamber prior to the

photomultiplier tube, if desired. The analyzer is operated in the NO<sub>x</sub> mode during sampling.

A convertor efficiency test is performed on the Thermoelectron Model 42H during the test series. (See Section 5.2 for a description of the converter efficiency test.)

#### **4.5.4 METHOD 10: CARBON MONOXIDE ANALYSIS**

A TECO 48 Gas Filter Correlation Non-Dispersive Infrared (GFC/NDIR) analyzer was used for continuous CO analysis. The principle of operation of this analyzer is similar to traditional NDIR analyzers in that it relies on selective absorption; whereby, particular band widths of infrared energy are absorbed by a species based on its molecular orbital structure. Gas filter correlation NDIR differs from NDIR in the detection mechanism and because the GFC/NDIR does not require a reference cell. Infrared radiation passes through a rotating filter, through the sample cell and to the detector. The chopper wheel of the GFC/NDIR is a rotating disk separated into two chambers where one half is filled with nitrogen and the other half is filled with pure CO. These gas filled partitions act as alternating optical filters for the incident IR radiation from the IR source. The CO gas filter side acts to produce a signal which cannot be further attenuated by CO in the sample cell and is used as a reference signal. The nitrogen filter allows all incident radiation to pass. Carbon monoxide in the sample cell, therefore, attenuates the signal proportionally to concentration. This is considered the measurement cycle. Any other gases which absorb infrared radiation are absorbed equally during both the measurement and reference cycles, providing a real-time reference and minimal interferences. The detector for this analyzer is a lead-selenium photo detector.

It should be noted that EPA Method 10 prescribes the use of an ascarite trap to absorb carbon dioxide and excess moisture prior to introduction of the sample gas into the analyzer. The ascarite trap is prescribed since older technology dual cell NDIR carbon monoxide analyzers were subject to positive biases from carbon dioxide and water vapor.

The single cell, gas filter correlation technology of the Teco Model 48, however, virtually eliminates this phenomenon since the sample gas itself is used as an optical attenuator during the reference cycle. Therefore, the ascarite traps were not be used for this test effort. Interference tests were conducted prior to and during the testing to demonstrate that carbon dioxide at stack concentrations and water vapor at the levels introduced to the analyzer do not generate a signal that represents a CO value of more than 10% of the CO emission limit. Interference test results are provided in Appendix C.

#### **4.5.5 METHOD 25A: TOTAL HYDROCARBONS**

EPA Method 25A is used to measure VOC expressed as total hydrocarbons on a hot, wet basis. The results are reported as parts per million by volume as methane basis (ppmC). Methane in air is the calibration standard. A gas sample is extracted from the source through a heated sample line and a glass fiber filter, directly into a hydrocarbon analyzer. The analyzer uses the flame ionization detector (FID) principle to detect hydrocarbons on a continuous basis. A TECO Model 51 FID analyzer was used for this test program.

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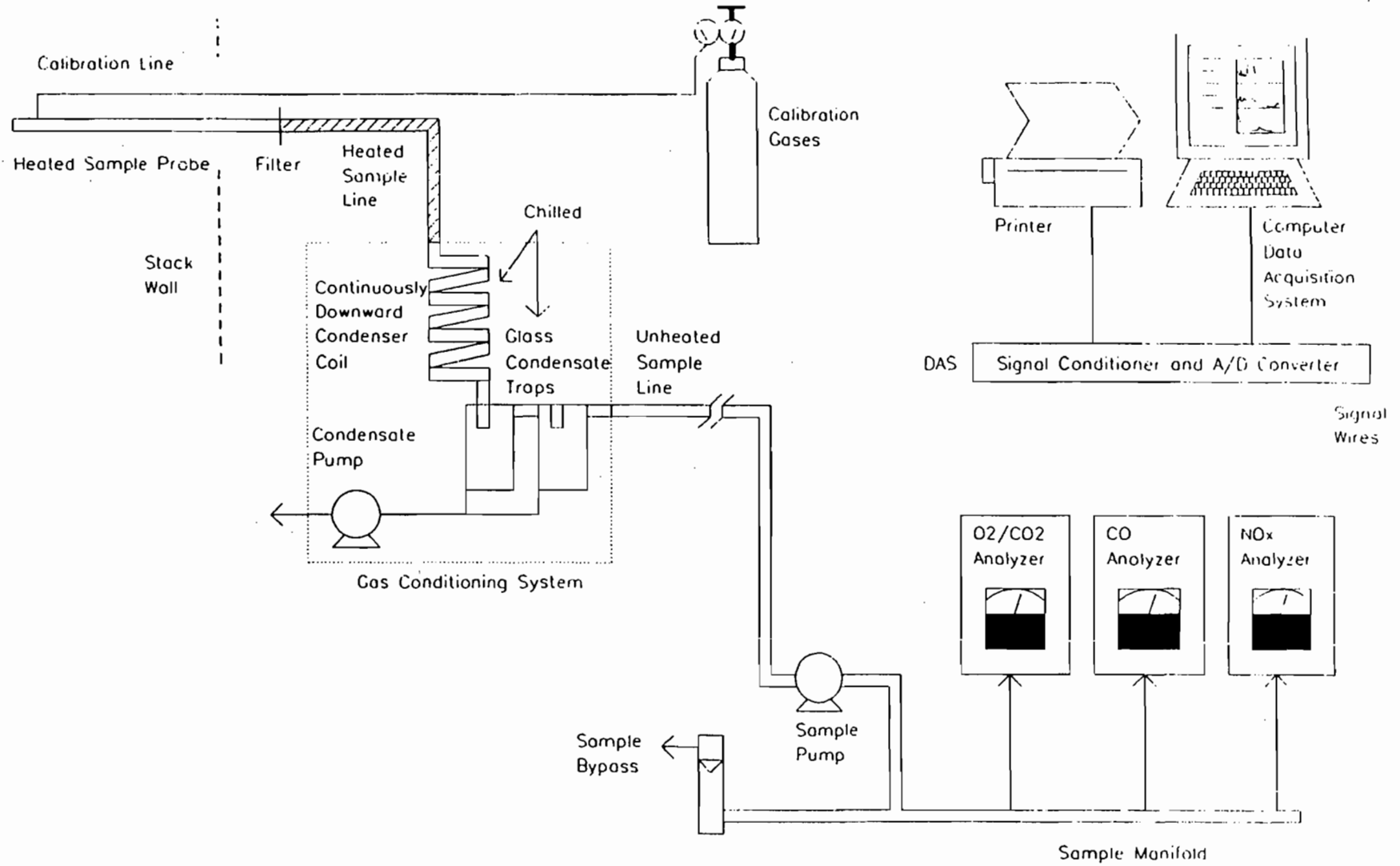


Figure 4-1. Schematic Diagram of STACS Reference Method System.



## 5.0 QUALITY ASSURANCE/QUALITY CONTROL

Strict Quality Assurance/Quality Control (QA/QC) measures were observed for all sampling and analysis performed for the Lakeland McIntosh Unit #5 Combustion Turbine emissions test program. The STACS QA/QC program is designed to provide the highest quality data in terms of the accuracy and precision of the measurements as well as the completeness, representativeness and comparability of the results.

Accuracy is the degree to which a measurement agrees to the true value or to an accepted reference value. Precision is the degree of reproducibility (or agreement) of a set of individual measurements of an identical property.

The objective of the overall QA/QC program is to provide guidelines in terms of accuracy and precision which can be used to assess the uncertainty in the results and to substantiate the data in terms of the use of accepted procedures. Quality Control can be defined as the use of operational techniques and activities which sustain good quality data. Adherence to accepted sampling and analytical methods and procedures (and specifically noting any aberrations or exceptions to these procedures) is an example of quality control. Quality Assurance includes all those planned and systematic activities necessary to ensure that the accuracy and precision of the results meets the needs of the testing program. Quality Assurance programs can be internal or external.

Both internal and external programs are important to the overall integrity of the data. The internal QA program includes the activities planned by routine operators and analysts to provide an assessment of test data precision (and accuracy). Examples of implementation of an internal QA measure is routine calibration checks to assess the bias and drift of an analyzer after each test run. The measurement system bias is an indicator of the accuracy of the system and the drift is an indication of the precision of the measurements. External QA programs are those activities planned or conducted by an outside party or agency

(such as FDEP, Siemens-Westinghouse, Lakeland Utilities or independent consultants) which ensure that QC guidelines are followed and provide an indicator of the accuracy of the data. Examples of external QA procedures implemented by an outside entity would include review of the test matrix, observation of selected testing to ensure proper techniques are followed, submission of independent performance audits, and review of the final testing data.

The quality assurance/quality control measures for sampling and analysis included in the following documents were strictly followed during the emissions test program, except as noted below and elsewhere in this document. The procedures are incorporated by reference into the quality assurance program for this effort as they apply to the collection, analysis, and calculation of pollutant concentrations and mass emission rates from the unit.

The Code of Federal Regulations, Title 40, Part 60, Appendix A., EPA Methods 3A, 6C, 7E, and 10.

The Quality Assurance Handbook for Air Pollution Measurement Systems - Volume III - Stationary Source Specific Methods (EPA-600/4-77-027b) Sections 3.0-3.4.

The following sections provide a brief synopsis of the internal QA program that was used for this test effort.

Experienced air quality personnel conducted the emissions testing project. Mr. Bill Mayhew of STACS was the project director and principal coordinator for the program. Mr. Mayhew has a B.S. in Chemical Engineering and is a Senior Project Engineer with over 15 years experience in emissions testing. Mr. Mayhew reviewed all data collected and calculations performed and participated in the production of the final report. Mr. Jamie Clark conducted the tests and reviewed the data and test report prior to submission.

Mr. Clark has over 12 years experience in emissions testing and has a background in Mechanical Engineering. Mr. Clark was assisted on site by Mr. Charles Reshard., a chief technician with approximately 20 years experience in emissions testing and a current visible emissions certification. Mr. Ramesh Kagolanu and Mr. Jason Kraus of SWPC environmental engineering staff also observed and participated in the testing.

### **5.1 CALIBRATIONS AND DRIFT ASSESSMENTS**

At the beginning of each test day, the EPA Reference Method 20, 10 and 25A test equipment is calibrated, and adjusted as required, on a two-point basis. EPA Protocol #1, NIST traceable standard calibration gases are used to calibrate the analyzers.

Subsequently, additional calibration standards are introduced to the analyzers to check the linearity of the instrument response. If the linearity of the instrument is within +/-2% of full scale of the calibration standard value, the calibration is accepted (5% absolute of the gas value for Method 25A). Otherwise, corrective maintenance is performed, and the instrument is re-calibrated. During this time, bias checks are also performed by introducing calibration standards directly to the instrument manifold and through the entire sampling system and comparing the results.

Calibration checks are performed through the entire sampling system at the conclusion of each test run to determine calibration drift and any change in sample system bias.

Sampling system bias is assessed by introducing a mid-range or high-range gas through the sampling system and back to the analyzers. The maximum allowable bias is 5% of the value the analyzer read for the same gas when introduced to the probe tip as a percent of the span of the analyzer.

Sampling system drift checks are subsequently performed at the conclusion of each test run. Corrective actions are taken if the drift checks exceeds the method specific drift

requirements after any test run (see section 4.2 for the requirements). All calibration gases were EPA Protocol 1, NIST traceable standards with a rated accuracy of +/- 1%.

### **5.2. NO<sub>2</sub> CONVERTER EFFICIENCY**

An NO<sub>2</sub> to NO converter efficiency test is performed prior to sampling as prescribed in EPA Methods 7E and 20. The procedure used for testing the converter efficiency is given below:

- Fill a leak-free Tedlar bag approximately half full with an NO in N<sub>2</sub> blend.
- Fill the remainder of the bag with 0.1 UHP grade air.
- Immediately attach the NO/Air mixture to the inlet of the NO<sub>x</sub> monitor being used.
- Allow the monitor to sample the gas in the bag for 30 minutes.

As the O<sub>2</sub> and NO in the bag are exposed to each other a reaction occurs which changes the NO to NO<sub>2</sub>. An attenuation in response over time of less than two percent absolute indicates that the converter efficiency is acceptable. Appendix C contains the NO<sub>x</sub> convertor efficiency test results.

### **5.3 INSTRUMENT RESPONSE TIME**

Maximum instrument system response time is determined by alternately passing zero and span gas through the entire sampling system and noting the time required for the monitors to achieve a change of 95% of the final concentrations. Both upscale and down scale response times are recorded. The instrument response time for this test program was determined to be 60 seconds.

#### 5.4 LEAK CHECKS

Since all calibrations are performed through the entire sampling system, leak-checks are incorporated in each calibration. The criterion used for this test is an oxygen response to a zero gas of less than 0.5% O<sub>2</sub>. Leak checks are also incorporated into the zero and span drift checks at the end of each run since the calibration gas is passed through the entire sampling system for each post test drift check. STACS also conducts a vacuum leak check of the system prior to sampling.

## SAMPLE CALCULATIONS

### NO<sub>x</sub> Emissions Corrected to 15% Oxygen

$$\text{NO}_x @ 15\% \text{O}_2 = \text{NO}_x * ((20.9-15)/(20.9-\text{O}_2))$$

Where:

NO<sub>x</sub> = NO<sub>x</sub> concentration as measured in the sample gas in parts per million by volume (ppmV).

O<sub>2</sub> = Oxygen concentration as measured in the sample gas by volume (%V).

NO<sub>x</sub> @ 15% O<sub>2</sub> = NO<sub>x</sub> concentration (ppmV) corrected to 15% oxygen.

### NO<sub>x</sub> Emissions at 15% Oxygen and ISO Conditions

$$\text{NO}_{x\text{ISO}} = \text{NO}_x @ 15\% \text{O}_2 * (\text{Pref}/\text{Pobs})^{0.5} * e^{19(\text{Hobs}-0.00633)} * (288/\text{Tamb})^{1.53}$$

Where:

NO<sub>x</sub> @ 15% O<sub>2</sub> = NO<sub>x</sub> concentration (ppmV) corrected to 15% oxygen.

NO<sub>xISO</sub> = NO<sub>x</sub> concentration (ppmV) at 15% oxygen and ISO conditions.

Pref = Reference compressor discharge pressure (PSIA).

Pobs = Observed compressor discharge pressure (PSIA).

Hobs = Specific humidity of ambient air (lb H<sub>2</sub>O/lb Dry) air determined from the wet bulb and dry bulb readings and psychometric chart.

Tamb = Ambient temperature (K).

## SAMPLE CALCULATIONS

### Volumetric Flow Rate by EPA Method 19 Approach

$$Q_{std} = H \text{ (MMBtu/hr)} \times F_d \text{ (scf @ 0\% O}_2\text{/MMBtu)} \times 1\text{hr}/60\text{min} \times 20.9/(20.9 - O_2)$$

Where:

$Q_{std}$  = Volumetric Flow Rate (dry standard cubic feet per minute or dscfm)

H = Heat Input Rate (MMBtu/hr)

$F_d$  = Dry Oxygen based F-factor (scf @ 0% O<sub>2</sub>/MMBtu)

O<sub>2</sub> = Measured Oxygen concentration (%V)

## SAMPLE CALCULATIONS

Heat input rate:

$$H = \text{HHV} \times Q_{\text{fuel}} \times 3600 / 10^6$$

Where:

H = Heat Input Rate (Gross) to unit in MMBtu/hr.

HHV = Higher Heating Value of the fuel in Btu/lb (aka Gross Calorific Value).

$Q_{\text{fuel}}$  = Flow rate of fuel in lb/sec.

$10^6$  = Conversion factor (Btu/MMBtu)

3600 = Conversion factor (seconds/hours).



Port A for O<sub>2</sub> TRA v

| Time                 | CO<br>ppm | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO@15%O2<br>ppm | NOx@15%O2<br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dscfh) | Exh. Flow<br>CT (bsec) | Amb. Press.<br>(psia) | Amb. Temp.<br>(F) | Ret. Humidity<br>(%) | Specific Humidity<br>(lb2o/lb air) |
|----------------------|-----------|------------|---------|------------|----------|-----------------|------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|---------------------------|------------------------|-----------------------|-------------------|----------------------|------------------------------------|
| Run 1: 10:12 - 10:36 |           |            |         |            |          |                 |                  |                |               |              |             |                  |                       |                     |                           |                        |                       |                   |                      |                                    |
| 10:12                | 39.3      | 32.0       | 13.2    | 0          | 4.24     | 30.1            | 24.5             | 160.9          | 120.3         | 163.7        | 68%         | 1139             | 28.2                  | 76.45               | 42110124                  | 968.8                  | 14.65                 | 74                | 64.83                | .0117                              |
| 10:13                | 41.3      | 31.6       | 13.2    | 0          | 4.23     | 31.6            | 24.2             | 158.9          | 126.4         | 163.8        | 68%         | 1137             | 28.1                  | 76.47               | 42123539                  | 966.4                  | 14.65                 | 75                | 65.37                | .0119                              |
| 10:14                | 40.4      | 31.4       | 13.2    | 0          | 4.24     | 31.0            | 24.1             | 157.8          | 123.6         | 163.7        | 68%         | 1137             | 28.1                  | 76.42               | 42092893                  | 966.6                  | 14.66                 | 75                | 65.49                | .0121                              |
| 2 10:15              | 37.5      | 31.4       | 13.1    | 0          | 4.26     | 28.4            | 23.8             | 156.0          | 113.4         | 163.8        | 68%         | 1139             | 28.1                  | 76.51               | 41608108                  | 964.3                  | 14.66                 | 75                | 64.89                | .0121                              |
| 3 10:16              | 24.2      | 32.4       | 13.0    | 0          | 4.33     | 18.1            | 24.2             | 159.7          | 72.6          | 164.4        | 69%         | 1149             | 28.5                  | 76.89               | 41281872                  | 963.6                  | 14.66                 | 76                | 64.74                | .0123                              |
| 10:17                | 21.6      | 35.7       | 13.0    | 0          | 4.32     | 16.1            | 26.7             | 175.7          | 64.7          | 162.9        | 68%         | 1153             | 28.5                  | 76.79               | 41227699                  | 954.1                  | 14.66                 | 77                | 64.02                | .0125                              |
| 10:18                | 22.6      | 35.7       | 13.0    | 0          | 4.33     | 16.9            | 26.7             | 175.7          | 67.7          | 164.1        | 68%         | 1155             | 28.6                  | 76.76               | 41211155                  | 953.2                  | 14.66                 | 76                | 63.21                | .0122                              |
| 4 10:19              | 21.9      | 35.4       | 13.0    | 0          | 4.34     | 16.4            | 26.4             | 174.6          | 65.7          | 163.6        | 68%         | 1158             | 28.5                  | 76.92               | 41300964                  | 958.5                  | 14.66                 | 76                | 62.17                | .0120                              |
| 10:20                | 21.6      | 35.7       | 13.0    | 0          | 4.34     | 16.1            | 26.7             | 175.7          | 64.7          | 164.0        | 68%         | 1157             | 28.5                  | 76.76               | 41214669                  | 957.4                  | 14.66                 | 76                | 61.77                | .0120                              |
| 5 10:21              | 21.5      | 35.8       | 13.0    | 0          | 4.34     | 16.1            | 26.7             | 176.1          | 64.4          | 163.9        | 68%         | 1158             | 28.5                  | 76.75               | 41206157                  | 954.1                  | 14.66                 | 76                | 61.22                | .0119                              |
| 10:22                | 21.4      | 35.8       | 13.0    | 0          | 4.34     | 16.0            | 26.7             | 176.5          | 64.2          | 162.9        | 68%         | 1159             | 28.5                  | 76.92               | 41296860                  | 952.1                  | 14.66                 | 76                | 61.33                | .0116                              |
| 6 10:23              | 20.9      | 35.8       | 13.0    | 0          | 4.35     | 15.6            | 26.7             | 176.5          | 62.7          | 163.8        | 68%         | 1160             | 28.6                  | 76.91               | 41294983                  | 952.5                  | 14.66                 | 76                | 61.78                | .0119                              |
| 10:24                | 20.8      | 35.9       | 13.0    | 0          | 4.35     | 15.4            | 26.8             | 176.7          | 61.7          | 164.0        | 68%         | 1160             | 28.8                  | 76.76               | 41215079                  |                        | 14.66                 |                   |                      |                                    |
| 7 10:25              | 19.7      | 36.0       | 13.0    | 0          | 4.36     | 14.7            | 26.9             | 177.4          | 59.1          | 163.4        | 68%         | 1161             | 28.5                  | 76.87               | 41272843                  |                        | 14.66                 |                   |                      |                                    |
| 10:26                | 19.2      | 36.4       | 13.0    | 0          | 4.35     | 14.3            | 27.2             | 179.5          | 57.6          | 163.4        | 68%         | 1162             | 28.5                  | 76.94               | 41309189                  |                        | 14.66                 |                   |                      |                                    |
| 8 10:27              | 18.6      | 36.5       | 13.0    | 0          | 4.36     | 13.9            | 27.3             | 180.1          | 55.9          | 164.2        | 68%         | 1162             | 28.5                  | 76.97               | 41326377                  |                        | 14.66                 |                   |                      |                                    |
| 9 10:28              | 18.6      | 36.9       | 13.0    | 0          | 4.36     | 13.9            | 27.6             | 182.1          | 55.9          | 163.6        | 68%         | 1162             | 28.6                  | 76.98               | 41332844                  |                        | 14.66                 |                   |                      |                                    |
| 10:29                | 17.8      | 36.8       | 13.0    | 0          | 4.37     | 13.3            | 27.5             | 181.4          | 53.4          | 163.7        | 68%         | 1163             | 28.5                  | 76.88               | 41276903                  | 947.2                  | 14.66                 | 77                | 60.47                | .0119                              |
| 10:30                | 17.7      | 37.1       | 13.0    | 0          | 4.38     | 13.2            | 27.7             | 183.0          | 53.1          | 163.5        | 68%         | 1164             | 28.6                  | 76.95               | 41316247                  | 948.3                  | 14.66                 | 77                | 59.83                | .0118                              |
| 10:31                | 17.7      | 37.2       | 13.0    | 0          | 4.37     | 13.2            | 27.8             | 183.5          | 53.1          | 164.0        | 68%         | 1165             | 28.5                  | 76.94               | 41306825                  | 949.6                  | 14.66                 | 77                | 59.50                | .0117                              |
| 10:32                | 17.6      | 37.4       | 13.0    | 0          | 4.37     | 13.1            | 27.9             | 184.4          | 52.8          | 163.8        | 68%         | 1166             | 28.5                  | 76.93               | 41304827                  | 950.0                  | 14.66                 | 77                | 59.42                | .0117                              |
| 10:33                | 17.4      | 37.1       | 13.0    | 0          | 4.38     | 13.0            | 27.7             | 183.1          | 52.3          | 163.3        | 68%         | 1167             | 28.6                  | 77.01               | 41344467                  | 948.6                  | 14.66                 | 77                | 59.67                | .0117                              |
| 10:34                | 16.5      | 37.5       | 12.9    | 0          | 4.38     | 12.2            | 27.7             | 182.7          | 48.9          | 163.3        | 68%         | 1167             | 28.5                  | 76.98               | 40814769                  | 948.0                  | 14.66                 | 78                | 59.57                | .0113                              |
| 10:35                | 16.4      | 37.7       | 12.9    | 0          | 4.39     | 12.1            | 27.8             | 183.6          | 48.6          | 163.6        | 68%         | 1168             | 28.6                  | 76.92               | 40779569                  | 941.1                  | 14.65                 | 77                | 60.45                | .0119                              |
| 10:36                | 15.4      | 38.0       | 12.9    | 0          | 4.39     | 11.4            | 28.0             | 185.2          | 45.7          | 164.2        | 68%         | 1169             | 28.6                  | 77.00               | 40826819                  | 943.3                  | 14.65                 | 77                | 60.42                | .0119                              |
| Averages:            | 22.7      | 35.8       | 13.0    | 0.0        | 4.3      | 17.0            | 26.6             | 175.5          | 68.3          | 163.7        | 68%         | 1157.6           | 28.5                  | 76.8                | 41335736                  | 954.1                  | 14.7                  | 76                | 62.01                | 0.012                              |

Part B for O<sub>2</sub> trans

| Time                | CO<br>ppm   | NOx<br>ppm  | O <sub>2</sub><br>% | THC<br>ppm | CO <sub>2</sub><br>% | CO@15%O <sub>2</sub><br>ppm | NOx@15%O <sub>2</sub><br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dsctf) | Exh. Flow<br>CT (b/sec) | Amb. Press.<br>(psia) | Amb. Temp.<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb/20lb air) |
|---------------------|-------------|-------------|---------------------|------------|----------------------|-----------------------------|------------------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|---------------------------|-------------------------|-----------------------|-------------------|----------------------|------------------------------------|
| Run 2 10:48 - 11:12 |             |             |                     |            |                      |                             |                              |                |               |              |             |                  |                       |                     |                           |                         |                       |                   |                      |                                    |
| 10:48               | 14.4        | 38.5        | 12.9                | 0          | 4.36                 | 10.6                        | 28.4                         | 187.7          | 42.7          | 163.5        | 68%         | 1174             | 28.7                  | 77.03               | 40839124                  | 939.0                   | 14.66                 | 78                | 57.08                | .0115                              |
| 10:49               | 14.6        | 38.0        | 12.9                | 0          | 4.36                 | 10.8                        | 28.0                         | 185.7          | 43.4          | 163.2        | 68%         | 1174             | 28.7                  | 77.21               | 40938137                  | 943.0                   | 14.66                 | 78                | 56.67                | .0116                              |
| 10:50               | 14.3        | 38.0        | 12.9                | 0          | 4.36                 | 10.5                        | 28.0                         | 185.4          | 42.5          | 164.3        | 68%         | 1173             | 28.6                  | 77.06               | 40853892                  | 940.1                   | 14.66                 | 78                | 56.23                | .0113                              |
| 10:51               | 15.1        | 37.8        | 12.9                | 0          | 4.37                 | 11.1                        | 27.9                         | 184.4          | 44.8          | 163.8        | 68%         | 1173             | 28.7                  | 77.06               | 40854050                  | 940.7                   | 14.66                 | 77                | 56.59                | .0110                              |
| 10:52               | 14.8        | 38.0        | 12.9                | 0          | 4.36                 | 10.9                        | 28.0                         | 185.5          | 44.0          | 163.9        | 68%         | 1173             | 28.7                  | 77.09               | 40873458                  | 943.5                   | 14.66                 | 77                | 57.43                | .0114                              |
| 10:53               | 14.8        | 37.9        | 12.9                | 0          | 4.37                 | 10.9                        | 28.0                         | 184.8          | 43.9          | 163.4        | 68%         | 1173             | 28.7                  | 77.03               | 40838011                  | 943.7                   | 14.66                 | 77                | 57.15                | .0113                              |
| 10:54               | 15.0        | 37.9        | 13.0                | 0          | 4.37                 | 11.2                        | 28.3                         | 187.3          | 45.1          | 162.8        | 68%         | 1173             | 28.7                  | 77.09               | 41387009                  | 944.3                   | 14.66                 | 77                | 57.01                | .0111                              |
| 10:55               | 14.5        | 38.1        | 12.9                | 0          | 4.37                 | 10.7                        | 28.1                         | 185.9          | 43.1          | 163.5        | 68%         | 1173             | 28.6                  | 77.06               | 40854208                  | 940.8                   | 14.66                 | 77                | 56.38                | .0112                              |
| 10:56               | 14.4        | 38.1        | 13.0                | 0          | 4.37                 | 10.8                        | 28.5                         | 188.2          | 43.3          | 163.3        | 68%         | 1173             | 28.6                  | 77.05               | 41366311                  | 942.6                   | 14.66                 | 77                | 55.24                | .0110                              |
| 10:57               | 15.1        | 38.1        | 13.0                | 0          | 4.37                 | 11.3                        | 28.5                         | 188.4          | 45.5          | 162.6        | 68%         | 1174             | 28.7                  | 77.14               | 41417805                  | 942.0                   | 14.66                 | 78                | 55.45                | .0112                              |
| 10:58               | 15.5        | 37.8        | 13.0                | 0          | 4.37                 | 11.6                        | 28.2                         | 186.9          | 46.7          | 164.0        | 68%         | 1173             | 28.7                  | 77.15               | 41421409                  | 942.5                   | 14.66                 | 77                | 55.36                | .0110                              |
| 10:59               | 15.6        | 37.9        | 12.9                | 0          | 4.37                 | 11.5                        | 28.0                         | 164.9          | 46.3          | 163.6        | 68%         | 1172             | 28.8                  | 77.08               | 40869291                  | 943.0                   | 14.66                 | 76                | 54.90                | .0105                              |
| 11:00               | 15.5        | 37.7        | 13.0                | 0          | 4.37                 | 11.6                        | 28.2                         | 186.4          | 46.7          | 163.2        | 68%         | 1172             | 28.7                  | 77.13               | 41412487                  | 943.6                   | 14.66                 | 77                | 55.49                | .0109                              |
| 11:01               | 14.5        | 38.0        | 13.0                | 0          | 4.37                 | 10.8                        | 28.4                         | 187.7          | 43.6          | 164.3        | 68%         | 1173             | 28.6                  | 77.04               | 41361269                  | 945.5                   | 14.66                 | 78                | 55.81                | .0114                              |
| 11:02               | 16.2        | 36.2        | 13.0                | 0          | 4.36                 | 12.1                        | 28.5                         | 188.7          | 48.7          | 163.4        | 66%         | 1172             | 28.7                  | 77.06               | 41373869                  | 944.8                   | 14.66                 | 78                | 53.31                | .0110                              |
| 11:03               | 17.4        | 37.5        | 13.0                | 0          | 4.35                 | 13.0                        | 28.0                         | 185.2          | 52.3          | 162.0        | 67%         | 1174             | 28.7                  | 77.04               | 41365332                  | 947.2                   | 14.65                 | 78                | 52.94                | .0109                              |
| 11:04               | 16.1        | 37.0        | 13.0                | 0          | 4.35                 | 13.5                        | 27.6                         | 182.7          | 54.4          | 163.4        | 68%         | 1172             | 28.7                  | 77.03               | 41357611                  | 945.3                   | 14.66                 | 77                | 53.63                | .0106                              |
| 11:05               | 18.5        | 36.6        | 13.0                | 0          | 4.35                 | 13.8                        | 27.3                         | 180.8          | 55.6          | 163.1        | 68%         | 1171             | 28.7                  | 77.06               | 41373242                  | 941.4                   | 14.66                 | 75                | 54.71                | .0102                              |
| 11:06               | 18.1        | 36.4        | 13.0                | 0          | 4.36                 | 13.5                        | 27.2                         | 179.9          | 54.4          | 163.3        | 68%         | 1170             | 28.7                  | 77.09               | 41388025                  | 945.9                   | 14.65                 | 75                | 55.50                | .0103                              |
| 11:07               | 17.8        | 38.9        | 13.0                | 0          | 4.36                 | 13.3                        | 27.6                         | 182.1          | 53.5          | 163.3        | 68%         | 1170             | 28.7                  | 77.00               | 41341496                  | 943.7                   | 14.66                 | 75                | 56.46                | .0106                              |
| 11:08               | 17.7        | 38.9        | 13.0                | 0          | 4.36                 | 13.2                        | 27.6                         | 182.3          | 53.2          | 163.5        | 88%         | 1170             | 28.7                  | 77.04               | 41365431                  | 945.4                   | 14.65                 | 76                | 56.70                | .0110                              |
| 11:09               | 17.7        | 37.0        | 13.0                | 0          | 4.36                 | 13.2                        | 27.6                         | 182.8          | 53.2          | 163.5        | 68%         | 1170             | 28.7                  | 77.06               | 41376109                  | 946.8                   | 14.66                 | 78                | 56.27                | .0114                              |
| 11:10               | 17.7        | 36.8        | 13.0                | 0          | 4.36                 | 13.2                        | 27.5                         | 181.9          | 53.3          | 163.9        | 88%         | 1171             | 28.7                  | 77.12               | 41405299                  | 944.3                   | 14.65                 | 77                | 54.97                | .0110                              |
| 11:11               | 17.7        | 36.8        | 13.0                | 0          | 4.36                 | 13.2                        | 27.5                         | 181.8          | 53.2          | 163.3        | 68%         | 1170             | 28.7                  | 77.06               | 41375691                  | 946.1                   | 14.65                 | 76                | 55.57                | .0108                              |
| 11:12               | 17.6        | 36.9        | 13.0                | 0          | 4.36                 | 13.1                        | 27.6                         | 182.4          | 53.0          | 163.8        | 68%         | 1170             | 28.7                  | 77.10               | 41396001                  | 943.8                   | 14.66                 | 76                | 55.24                | .0107                              |
| <b>Averages:</b>    | <b>16.1</b> | <b>37.6</b> | <b>13.0</b>         | <b>0.0</b> | <b>4.4</b>           | <b>12.0</b>                 | <b>27.9</b>                  | <b>184.8</b>   | <b>48.3</b>   | <b>163.4</b> | <b>68%</b>  | <b>1172.1</b>    | <b>28.7</b>           | <b>77.1</b>         | <b>41216182</b>           | <b>943.6</b>            | <b>14.7</b>           | <b>77</b>         | <b>55.68</b>         | <b>0.011</b>                       |

Port C O<sub>2</sub> Trav.

| Time                 | CO<br>ppm | NOx<br>ppm | O <sub>2</sub><br>% | THC<br>ppm | CO <sub>2</sub><br>% | CO@15%O <sub>2</sub><br>ppm | NOx@15%O <sub>2</sub><br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dsct) | Exh Flow<br>CT (blsec) | Amb. Press<br>(psia) | Amb Temp.<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb2o/lb air) |
|----------------------|-----------|------------|---------------------|------------|----------------------|-----------------------------|------------------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|--------------------------|------------------------|----------------------|------------------|----------------------|------------------------------------|
| Run 3: 12:50 - 13:14 |           |            |                     |            |                      |                             |                              |                |               |              |             |                  |                       |                     |                          |                        |                      |                  |                      |                                    |
| 12:50                | 19.4      | 38.8       | 13.1                | 0          | 4.28                 | 14.7                        | 29.3                         | 189.8          | 57.8          | 157.5        | 66%         | 1156             | 30.0                  | 75.3                | 40962477                 | 942.5                  | 14.84                | 80               | 46.87                | .0102                              |
| 12:51                | 21.1      | 36.7       | 13.1                | 0          | 4.28                 | 16.0                        | 27.8                         | 181.7          | 63.6          | 160.5        | 67%         | 1161             | 29.7                  | 76.3                | 41466279                 | 943.6                  | 14.64                | 80               | 47.47                | .0102                              |
| 12:52                | 21.6      | 36.3       | 13.1                | 0          | 4.28                 | 16.3                        | 27.5                         | 181.5          | 65.7          | 163.8        | 68%         | 1155             | 28.6                  | 77.0                | 41866786                 | 954.7                  | 14.64                | 79               | 47.34                | .0100                              |
| 12:53                | 21.3      | 36.0       | 13.1                | 0          | 4.28                 | 16.1                        | 27.2                         | 179.8          | 64.8          | 163.9        | 88%         | 1154             | 28.8                  | 78.9                | 41827999                 | 955.0                  | 14.64                | 79               | 47.83                | .0101                              |
| 12:54                | 21.3      | 36.0       | 13.1                | 0          | 4.28                 | 16.1                        | 27.2                         | 180.0          | 64.8          | 162.8        | 68%         | 1153             | 28.5                  | 77.0                | 41864658                 | 954.2                  | 14.64                | 79               | 48.20                | .0103                              |
| 12:55                | 20.8      | 36.0       | 13.1                | 0          | 4.27                 | 15.7                        | 27.2                         | 180.0          | 63.3          | 164.0        | 68%         | 1154             | 28.5                  | 77.0                | 41883497                 | 952.7                  | 14.64                | 80               | 48.52                | .0104                              |
| 12:56                | 24.1      | 35.5       | 13.1                | 0          | 4.28                 | 18.2                        | 26.9                         | 177.4          | 73.3          | 163.1        | 68%         | 1154             | 28.5                  | 77.0                | 41859372                 | 954.6                  | 14.64                | 79               | 48.05                | .0102                              |
| 12:57                | 23.4      | 34.6       | 13.1                | 0          | 4.26                 | 17.7                        | 26.2                         | 172.9          | 71.2          | 182.6        | 68%         | 1154             | 28.5                  | 77.0                | 41852431                 | 954.0                  | 14.64                | 80               | 47.75                | .0103                              |
| 12:58                | 23.7      | 34.9       | 13.1                | 0          | 4.26                 | 17.9                        | 26.4                         | 173.7          | 71.8          | 181.9        | 67%         | 1153             | 28.5                  | 76.7                | 41690647                 | 948.2                  | 14.64                | 80               | 48.29                | .0106                              |
| 12:59                | 23.4      | 34.8       | 13.1                | 0          | 4.26                 | 17.7                        | 26.3                         | 172.8          | 70.7          | 161.5        | 67%         | 1153             | 28.5                  | 76.5                | 41598653                 | 947.5                  | 14.64                | 81               | 47.16                | .0105                              |
| 13:00                | 23.8      | 34.9       | 13.1                | 0          | 4.25                 | 17.9                        | 26.4                         | 173.4          | 71.4          | 162.0        | 67%         | 1154             | 28.5                  | 76.5                | 41609245                 | 949.0                  | 14.64                | 81               | 48.75                | .0104                              |
| 13:01                | 23.9      | 34.7       | 13.1                | 0          | 4.26                 | 18.1                        | 26.2                         | 172.8          | 72.4          | 161.6        | 67%         | 1155             | 28.5                  | 78.6                | 41655354                 | 946.8                  | 14.64                | 81               | 46.12                | .0104                              |
| 13:02                | 23.5      | 34.8       | 13.1                | 0          | 4.26                 | 17.8                        | 26.3                         | 172.9          | 71.1          | 161.5        | 67%         | 1155             | 28.5                  | 76.5                | 41811967                 | 948.5                  | 14.64                | 80               | 45.95                | .0101                              |
| 13:03                | 23.0      | 35.0       | 13.1                | 0          | 4.26                 | 17.4                        | 26.5                         | 173.8          | 69.5          | 162.0        | 67%         | 1155             | 28.5                  | 78.5                | 41588082                 | 947.9                  | 14.63                | 80               | 46.45                | .0101                              |
| 13:04                | 22.8      | 35.2       | 13.1                | 0          | 4.26                 | 17.2                        | 26.6                         | 175.0          | 69.0          | 161.8        | 67%         | 1155             | 28.5                  | 78.8                | 41837216                 | 949.8                  | 14.64                | 80               | 45.08                | .0100                              |
| 13:05                | 23.6      | 35.1       | 13.1                | 0          | 4.26                 | 17.9                        | 26.6                         | 174.5          | 71.4          | 161.8        | 67%         | 1155             | 28.5                  | 76.6                | 41633469                 | 950.1                  | 14.63                | 80               | 44.96                | .0099                              |
| 13:06                | 22.9      | 34.8       | 13.1                | 0          | 4.26                 | 17.3                        | 26.3                         | 173.0          | 69.3          | 161.7        | 67%         | 1156             | 28.5                  | 76.5                | 41824027                 | 947.3                  | 14.63                | 80               | 45.01                | .0097                              |
| 13:07                | 22.1      | 35.2       | 13.1                | 0          | 4.28                 | 16.7                        | 26.6                         | 174.9          | 68.8          | 181.9        | 67%         | 1155             | 28.5                  | 76.5                | 41606328                 | 946.7                  | 14.63                | 78               | 45.27                | .0094                              |
| 13:08                | 21.9      | 35.4       | 13.1                | 0          | 4.27                 | 16.3                        | 26.8                         | 178.2          | 65.1          | 161.9        | 67%         | 1155             | 28.4                  | 78.7                | 41687602                 | 949.0                  | 14.63                | 79               | 45.36                | .0096                              |
| 13:09                | 20.5      | 35.8       | 13.1                | 0          | 4.27                 | 15.5                        | 27.1                         | 178.1          | 62.1          | 181.9        | 67%         | 1156             | 28.5                  | 76.6                | 41667858                 | 946.3                  | 14.63                | 79               | 45.35                | .0096                              |
| 13:10                | 20.6      | 36.0       | 13.1                | 0          | 4.27                 | 15.6                        | 27.2                         | 178.9          | 62.3          | 161.9        | 67%         | 1157             | 28.5                  | 76.6                | 41630391                 | 946.9                  | 14.63                | 80               | 45.64                | .0099                              |
| 13:11                | 19.9      | 36.1       | 13.1                | 0          | 4.29                 | 15.1                        | 27.3                         | 179.5          | 60.2          | 161.8        | 67%         | 1158             | 28.5                  | 76.8                | 41649973                 | 948.0                  | 14.63                | 79               | 45.89                | .0098                              |
| 13:12                | 18.0      | 36.7       | 13.1                | 0          | 4.29                 | 13.8                        | 27.8                         | 182.5          | 54.5          | 162.5        | 68%         | 1159             | 28.5                  | 76.8                | 41650015                 | 949.0                  | 14.63                | 80               | 45.90                | .0100                              |
| 13:13                | 18.4      | 37.3       | 13.1                | 0          | 4.28                 | 13.9                        | 28.2                         | 185.4          | 55.7          | 162.1        | 68%         | 1160             | 28.5                  | 76.6                | 41633951                 | 948.5                  | 14.63                | 82               | 46.25                | .0107                              |
| 13:14                | 18.7      | 37.1       | 13.1                | 0          | 4.28                 | 14.1                        | 28.1                         | 184.2          | 56.5          | 161.2        | 67%         | 1162             | 28.5                  | 76.5                | 41581647                 | 948.8                  | 14.63                | 83               | 43.82                | .0105                              |
| Averages:            | 21.7      | 35.7       | 13.1                | 0.0        | 4.3                  | 16.4                        | 27.0                         | 177.8          | 65.8          | 162.0        | 67%         | 1155.7           | 28.6                  | 76.6                | 41653597                 | 949.2                  | 14.6                 | 80               | 46.45                | 0.010                              |

| Time                 | CO<br>ppm | NOx<br>ppm | O <sub>2</sub><br>% | THC<br>ppm | CO <sub>2</sub><br>% | CO@15%O <sub>2</sub><br>ppm | NOx@15%O <sub>2</sub><br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dsch) | Exh. Flow<br>CT (btsec) | Amb. Press.<br>(psia) | Amb. Temp<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb H <sub>2</sub> O/lb air) |
|----------------------|-----------|------------|---------------------|------------|----------------------|-----------------------------|------------------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|--------------------------|-------------------------|-----------------------|------------------|----------------------|---------------------------------------------------|
| Run 4: 13:26 - 13:49 |           |            |                     |            |                      |                             |                              |                |               |              |             |                  |                       |                     |                          |                         |                       |                  |                      |                                                   |
| 13:25                | 21.5      | 36.1       | 13.1                | 0          | 4.23                 | 16.3                        | 27.3                         | 179.2          | 65.0          | 162.4        | 68%         | 1161             | 28.5                  | 76.5                | 41584236                 | 948.2                   | 14.63                 | 82               | 40.15                | .0094                                             |
| 13:26                | 21.4      | 35.1       | 13.1                | 0          | 4.24                 | 16.2                        | 26.6                         | 174.3          | 64.7          | 181.6        | 67%         | 1160             | 28.4                  | 76.5                | 41582207                 | 948.4                   | 14.63                 | 82               | 40.81                | .0095                                             |
| 13:27                | 21.6      | 35.0       | 13.1                | 0          | 4.24                 | 16.3                        | 26.5                         | 173.8          | 65.3          | 161.8        | 67%         | 1161             | 28.4                  | 76.5                | 41596844                 | 947.5                   | 14.63                 | 82               | 41.24                | .0097                                             |
| 13:28                | 22.5      | 34.9       | 13.1                | 0          | 4.24                 | 17.0                        | 26.4                         | 173.4          | 68.0          | 161.8        | 67%         | 1159             | 28.2                  | 76.5                | 41600416                 | 951.1                   | 14.63                 | 82               | 41.85                | .0098                                             |
| 13:29                | 23.4      | 34.5       | 13.1                | 0          | 4.24                 | 17.7                        | 26.1                         | 171.2          | 70.7          | 161.3        | 67%         | 1158             | 28.2                  | 76.4                | 41554228                 | 953.2                   | 14.63                 | 82               | 42.89                | .0098                                             |
| 13:30                | 24.4      | 34.2       | 13.1                | 0          | 4.24                 | 18.5                        | 25.9                         | 170.0          | 73.8          | 161.9        | 67%         | 1158             | 28.2                  | 76.6                | 41631216                 | 952.7                   | 14.63                 | 83               | 43.08                | .0102                                             |
| 13:31                | 23.5      | 34.0       | 13.1                | 0          | 4.24                 | 17.8                        | 25.7                         | 169.0          | 71.1          | 161.9        | 67%         | 1158             | 28.2                  | 76.6                | 41635635                 | 945.0                   | 14.63                 | 82               | 44.01                | .0101                                             |
| 13:32                | 22.4      | 34.3       | 13.1                | 0          | 4.25                 | 16.9                        | 25.9                         | 170.3          | 67.7          | 161.8        | 67%         | 1157             | 28.2                  | 76.5                | 41577308                 | 950.1                   | 14.63                 | 81               | 44.21                | .0098                                             |
| 13:33                | 23.5      | 34.6       | 13.1                | 0          | 4.24                 | 17.8                        | 26.2                         | 172.1          | 71.1          | 162.6        | 68%         | 1156             | 28.2                  | 76.8                | 41647484                 | 951.4                   | 14.82                 | 80               | 44.84                | .0098                                             |
| 13:34                | 22.1      | 34.5       | 13.1                | 0          | 4.25                 | 16.7                        | 26.1                         | 171.4          | 66.8          | 161.5        | 67%         | 1154             | 28.2                  | 76.5                | 41603101                 | 951.5                   | 14.63                 | 79               | 44.91                | .0096                                             |
| 13:35                | 21.5      | 34.9       | 13.1                | 0          | 4.25                 | 16.3                        | 26.4                         | 173.2          | 64.9          | 161.7        | 67%         | 1155             | 28.2                  | 76.4                | 41555241                 | 950.3                   | 14.62                 | 80               | 45.11                | .0099                                             |
| 13:36                | 20.8      | 35.3       | 13.1                | 0          | 4.26                 | 15.7                        | 26.7                         | 175.2          | 62.8          | 161.8        | 67%         | 1156             | 28.2                  | 76.4                | 41559688                 | 950.0                   | 14.63                 | 81               | 45.63                | .0104                                             |
| 13:37                | 19.4      | 35.7       | 13.1                | 0          | 4.26                 | 14.7                        | 27.0                         | 177.3          | 58.7          | 161.6        | 67%         | 1156             | 28.2                  | 76.5                | 41605755                 | 950.5                   | 14.62                 | 80               | 44.47                | .0096                                             |
| 13:38                | 19.5      | 36.0       | 13.1                | 0          | 4.28                 | 14.8                        | 27.2                         | 178.7          | 58.9          | 162.8        | 68%         | 1157             | 28.2                  | 76.4                | 41570246                 | 951.7                   | 14.63                 | 81               | 44.10                | .0100                                             |
| 13:39                | 19.8      | 36.0       | 13.1                | 0          | 4.26                 | 14.8                        | 27.2                         | 178.7          | 59.2          | 161.9        | 67%         | 1158             | 28.2                  | 76.5                | 41573474                 | 948.0                   | 14.62                 | 81               | 43.52                | .0097                                             |
| 13:40                | 19.7      | 35.8       | 13.1                | 0          | 4.27                 | 14.9                        | 27.1                         | 177.9          | 59.6          | 161.8        | 67%         | 1159             | 28.2                  | 76.5                | 41623433                 | 951.7                   | 14.62                 | 82               | 43.49                | .0101                                             |
| 13:41                | 19.2      | 36.2       | 13.1                | 0          | 4.27                 | 14.5                        | 27.4                         | 180.0          | 58.1          | 162.0        | 67%         | 1161             | 28.2                  | 76.6                | 41834142                 | 949.9                   | 14.62                 | 82               | 41.34                | .0098                                             |
| 13:42                | 19.4      | 36.2       | 13.1                | 0          | 4.27                 | 14.7                        | 27.4                         | 180.1          | 58.7          | 161.9        | 67%         | 1161             | 28.2                  | 76.6                | 41665165                 | 951.0                   | 14.62                 | 82               | 41.67                | .0098                                             |
| 13:43                | 19.5      | 36.1       | 13.1                | 0          | 4.27                 | 14.8                        | 27.3                         | 179.4          | 59.0          | 161.9        | 67%         | 1161             | 28.2                  | 76.5                | 41618583                 | 949.3                   | 14.62                 | 82               | 41.52                | .0096                                             |
| 13:44                | 19.6      | 35.9       | 13.1                | 0          | 4.27                 | 14.8                        | 27.2                         | 178.5          | 59.3          | 162.1        | 68%         | 1162             | 28.2                  | 76.6                | 41654246                 | 948.6                   | 14.62                 | 83               | 41.32                | .0100                                             |
| 13:45                | 20.5      | 36.1       | 13.1                | 0          | 4.26                 | 15.5                        | 27.3                         | 179.9          | 62.2          | 162.8        | 68%         | 1162             | 28.2                  | 76.8                | 41747277                 | 951.5                   | 14.62                 | 83               | 40.59                | .0097                                             |
| 13:46                | 21.3      | 35.7       | 13.1                | 0          | 4.26                 | 16.1                        | 27.0                         | 177.7          | 64.5          | 181.7        | 67%         | 1162             | 28.2                  | 76.7                | 41690166                 | 952.0                   | 14.62                 | 82               | 41.43                | .0098                                             |
| 13:47                | 21.7      | 35.3       | 13.1                | 0          | 4.26                 | 16.4                        | 26.7                         | 175.7          | 65.7          | 161.7        | 67%         | 1162             | 28.2                  | 76.7                | 41681985                 | 948.9                   | 14.62                 | 82               | 42.17                | .0099                                             |
| 13:48                | 21.2      | 35.5       | 13.1                | 0          | 4.26                 | 16.0                        | 26.9                         | 176.9          | 64.3          | 162.2        | 68%         | 1163             | 28.2                  | 76.8                | 41743672                 | 947.6                   | 14.62                 | 82               | 42.25                | .0099                                             |
| 13:49                | 20.3      | 35.8       | 13.1                | 0          | 4.27                 | 15.4                        | 27.1                         | 178.1          | 61.5          | 162.2        | 68%         | 1162             | 28.2                  | 76.6                | 41662427                 | 945.4                   | 14.62                 | 81               | 42.75                | .0096                                             |
| Averages:            | 21.2      | 35.3       | 13.1                | 0.0        | 4.3                  | 16.0                        | 26.7                         | 175.7          | 64.1          | 161.9        | 67%         | 1159.2           | 28.2                  | 76.5                | 41623927                 | 949.8                   | 14.6                  | 82               | 42.77                | 0.010                                             |

| Time                        | CO ppm | NOx ppm | O2 % | THC ppm | CO2 % | CO@15%O2 ppm | NOx@15%O2 ppm | NOx (lb/hr) | CO (lb/hr) | Load (MW) | Load (%) | Exh. Temp (F) | IGV Pos. (degrees) | Fuel Flow (KPPH) | Exh. Flow M-19 (dsch) | Exh. Flow CT (lb/sec) | Amb. Press. (psia) | Amb. Temp. (F) | Rel. Humidity (%) | Specific Humidity (lb H2O/lb air) |
|-----------------------------|--------|---------|------|---------|-------|--------------|---------------|-------------|------------|-----------|----------|---------------|--------------------|------------------|-----------------------|-----------------------|--------------------|----------------|-------------------|-----------------------------------|
| <b>Run 5: 14:12 - 14:36</b> |        |         |      |         |       |              |               |             |            |           |          |               |                    |                  |                       |                       |                    |                |                   |                                   |
| 14:12                       | 1.6    | 31.3    | 12.8 | 0       | 4.43  | 1.2          | 22.8          | 200.0       | 6.2        | 238.4     | 99%      | 1128          | 0.8                | 102.2            | 53516518              | 1236.6                | 14.62              | 82             | 41.70             | .0098                             |
| 14:13                       | 1.5    | 31.4    | 12.8 | 0       | 4.43  | 1.1          | 22.9          | 200.2       | 5.8        | 235.3     | 98%      | 1128          | 0.8                | 102.0            | 53409178              | 1227.3                | 14.62              | 82             | 41.76             | .0098                             |
| 14:14                       | 1.3    | 31.8    | 12.7 | 0       | 4.45  | 0.9          | 22.9          | 200.5       | 5.0        | 236.1     | 98%      | 1130          | 0.8                | 102.1            | 52818190              | 1227.0                | 14.62              | 82             | 41.56             | .0097                             |
| 14:15                       | 1.1    | 32.4    | 12.7 | 0       | 4.45  | 0.8          | 23.3          | 204.5       | 4.2        | 236.9     | 99%      | 1131          | 0.8                | 102.2            | 52863187              | 1227.5                | 14.62              | 82             | 40.70             | .0094                             |
| 14:16                       | 0.8    | 32.6    | 12.7 | 0       | 4.46  | 0.6          | 23.5          | 208.2       | 3.1        | 236.4     | 99%      | 1131          | 0.8                | 102.4            | 52985571              |                       | 14.61              |                |                   |                                   |
| 14:17                       | 0.9    | 32.5    | 12.7 | 0       | 4.45  | 0.8          | 23.4          | 206.5       | 3.5        | 237.9     | 99%      | 1130          | 0.8                | 102.9            | 53205881              |                       | 14.62              |                |                   |                                   |
| 14:18                       | 1.2    | 32.5    | 12.7 | 0       | 4.46  | 0.9          | 23.4          | 207.1       | 4.7        | 238.9     | 100%     | 1132          | 0.8                | 103.2            | 53363214              |                       | 14.62              |                |                   |                                   |
| 14:19                       | 1.2    | 32.2    | 12.7 | 0       | 4.46  | 0.9          | 23.2          | 205.1       | 4.7        | 238.6     | 99%      | 1133          | 0.8                | 103.1            | 53340274              |                       | 14.61              |                |                   |                                   |
| 14:20                       | 1.4    | 32.0    | 12.7 | 0       | 4.46  | 1.0          | 23.0          | 203.9       | 5.4        | 239.3     | 100%     | 1133          | 0.8                | 103.2            | 53360641              | 1226.7                | 14.61              | 81             | 40.76             | .0091                             |
| 14:21                       | 1.6    | 32.0    | 12.7 | 0       | 4.45  | 1.2          | 23.0          | 203.5       | 6.2        | 238.2     | 99%      | 1134          | 0.8                | 103.0            | 53269804              | 1226.4                | 14.62              | 81             | 40.94             | .0092                             |
| 14:22                       | 0.8    | 31.8    | 12.7 | 0       | 4.46  | 0.6          | 22.9          | 202.1       | 3.1        | 238.3     | 99%      | 1135          | 0.8                | 102.9            | 53239457              | 1228.3                | 14.62              | 81             | 41.04             | .0093                             |
| 14:23                       | 1.7    | 31.7    | 12.7 | 0       | 4.45  | 1.2          | 22.8          | 201.7       | 6.6        | 238.5     | 99%      | 1134          | 0.8                | 103.0            | 53292341              | 1226.2                | 14.62              | 80             | 41.87             | .0092                             |
| 14:24                       | 1.3    | 31.8    | 12.7 | 0       | 4.46  | 0.9          | 22.9          | 202.3       | 5.0        | 237.6     | 99%      | 1135          | 0.8                | 103.0            | 53286288              | 1228.0                | 14.62              | 81             | 43.19             | .0096                             |
| 14:25                       | 1.7    | 32.2    | 12.7 | 0       | 4.46  | 1.2          | 23.2          | 204.5       | 6.6        | 237.6     | 99%      | 1135          | 0.8                | 102.8            | 53177514              | 1223.7                | 14.61              | 81             | 43.94             | .0099                             |
| 14:26                       | 1.6    | 32.3    | 12.7 | 0       | 4.46  | 1.2          | 23.2          | 205.3       | 6.2        | 236.8     | 99%      | 1135          | 0.8                | 102.9            | 53232692              | 1221.7                | 14.61              | 81             | 43.99             | .0098                             |
| 14:27                       | 1.7    | 32.3    | 12.7 | 0       | 4.46  | 1.2          | 23.2          | 205.4       | 6.6        | 238.8     | 100%     | 1135          | 0.8                | 103.0            | 53261141              | 1218.8                | 14.61              | 80             | 43.74             | .0096                             |
| 14:28                       | 1.7    | 32.4    | 12.7 | 0       | 4.47  | 1.2          | 23.3          | 206.2       | 6.6        | 238.3     | 99%      | 1135          | 0.8                | 103.1            | 53308600              | 1225.7                | 14.62              | 81             | 43.92             | .0098                             |
| 14:29                       | 1.4    | 32.7    | 12.7 | 0       | 4.48  | 1.0          | 23.5          | 208.2       | 5.4        | 238.9     | 100%     | 1135          | 0.8                | 103.1            | 53328079              | 1222.4                | 14.62              | 81             | 43.81             | .0097                             |
| 14:30                       | 1.4    | 32.7    | 12.7 | 0       | 4.47  | 1.0          | 23.5          | 208.3       | 5.4        | 238.7     | 99%      | 1135          | 0.8                | 103.1            | 53338076              | 1225.1                | 14.61              | 80             | 44.30             | .0097                             |
| 14:31                       | 1.6    | 32.7    | 12.7 | 0       | 4.46  | 1.2          | 23.5          | 208.6       | 8.2        | 238.2     | 99%      | 1135          | 0.8                | 103.3            | 53439797              | 1220.6                | 14.62              | 80             | 44.68             | .0096                             |
| 14:32                       | 1.7    | 32.7    | 12.7 | 0       | 4.46  | 1.2          | 23.5          | 208.6       | 6.8        | 237.5     | 99%      | 1135          | 0.6                | 103.3            | 53438178              | 1224.2                | 14.61              | 80             | 44.94             | .0099                             |
| 14:33                       | 1.8    | 32.5    | 12.7 | 0       | 4.46  | 1.2          | 23.4          | 207.2       | 8.2        | 238.6     | 99%      | 1138          | 0.8                | 103.2            | 53397962              |                       | 14.61              |                |                   |                                   |
| 14:34                       | 1.7    | 32.5    | 12.7 | 0       | 4.46  | 1.2          | 23.4          | 207.0       | 6.6        | 237.8     | 99%      | 1136          | 0.8                | 103.1            | 53331835              |                       | 14.62              |                |                   |                                   |
| 14:35                       | 1.7    | 32.5    | 12.7 | 0       | 4.46  | 1.2          | 23.4          | 206.9       | 6.6        | 237.4     | 99%      | 1136          | 0.8                | 103.1            | 53322458              | 1224.0                | 14.62              | 82             | 42.05             | .0096                             |
| 14:36                       | 1.7    | 32.3    | 12.7 | 0       | 4.45  | 1.2          | 23.2          | 205.2       | 6.6        | 237.3     | 99%      | 1136          | 0.8                | 102.9            | 53214969              | 1222.8                | 14.62              | 81             | 42.28             | .0096                             |
| <b>Averages:</b>            | 1.4    | 32.2    | 12.7 | 0.0     | 4.5   | 1.0          | 23.2          | 205.0       | 5.6        | 237.8     | 99%      | 1133.5        | 0.8                | 102.9            | 53269506              | 1225.4                | 14.6               | 81             | 42.69             | 0.010                             |

| Time                         | CO<br>ppm | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO@15%O2<br>ppm | NOx@15%O2<br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dscfh) | Exh. Flow<br>CT (lb/sec) | Amb. Press<br>(psia) | Amb. Temp.<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb h2o/lb air) |
|------------------------------|-----------|------------|---------|------------|----------|-----------------|------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|---------------------------|--------------------------|----------------------|-------------------|----------------------|--------------------------------------|
| <b>Run 6a: 14:56 - 15:20</b> |           |            |         |            |          |                 |                  |                |               |              |             |                  |                       |                     |                           |                          |                      |                   |                      |                                      |
| 14:56                        | 1.7       | 32.0       | 12.7    | 0          | 4.43     | 1.2             | 23.0             | 203.1          | 6.6           | 237.0        | 99%         | 1136             | 0.1                   | 102.8               | 53158335                  | 1220.4                   | 14.61                | 82                | 41.50                | .0097                                |
| 14:57                        | 1.8       | 31.7       | 12.7    | 0          | 4.44     | 1.3             | 22.8             | 201.0          | 6.9           | 236.4        | 99%         | 1136             | 0.2                   | 102.7               | 53104278                  | 1225.0                   | 14.61                | 82                | 41.78                | .0096                                |
| 14:58                        | 1.8       | 31.8       | 12.7    | 0          | 4.45     | 1.3             | 22.9             | 201.5          | 6.9           | 236.9        | 99%         | 1137             | 0.1                   | 102.6               | 53067328                  | 1228.3                   | 14.61                | 83                | 41.41                | .0100                                |
| 14:59                        | 1.8       | 32.1       | 12.7    | 0          | 4.45     | 1.3             | 23.1             | 203.2          | 6.9           | 235.4        | 98%         | 1136             | 0.1                   | 102.5               | 53014273                  | 1223.5                   | 14.61                | 83                | 40.73                | .0097                                |
| 15:00                        | 1.8       | 32.1       | 12.7    | 0          | 4.45     | 1.3             | 23.1             | 203.4          | 6.9           | 237.1        | 99%         | 1135             | 0.1                   | 102.6               | 53064605                  | 1225.3                   | 14.61                | 82                | 40.31                | .0093                                |
| 15:01                        | 1.6       | 32.1       | 12.7    | 0          | 4.45     | 1.2             | 23.1             | 203.8          | 6.2           | 237.5        | 99%         | 1135             | 0.1                   | 102.8               | 53161737                  | 1222.0                   | 14.61                | 82                | 40.65                | .0093                                |
| 15:02                        | 1.7       | 32.0       | 12.7    | 0          | 4.45     | 1.2             | 23.0             | 203.6          | 6.6           | 237.7        | 99%         | 1135             | 0.1                   | 103.0               | 53280558                  | 1224.2                   | 14.61                | 81                | 40.98                | .0093                                |
| 15:03                        | 1.8       | 32.0       | 12.7    | 0          | 4.45     | 1.3             | 23.0             | 203.6          | 7.0           | 237.8        | 99%         | 1135             | 0.1                   | 103.0               | 53276875                  | 1223.1                   | 14.61                | 81                | 41.45                | .0094                                |
| 15:04                        | 1.7       | 32.0       | 12.7    | 0          | 4.45     | 1.2             | 23.0             | 203.5          | 6.6           | 236.9        | 99%         | 1135             | 0.1                   | 103.0               | 53256579                  | 1227.0                   | 14.61                | 82                | 41.77                | .0096                                |
| 15:05                        | 1.9       | 31.7       | 12.7    | 0          | 4.45     | 1.4             | 22.8             | 201.7          | 7.4           | 237.6        | 99%         | 1135             | 0.1                   | 103.0               | 53277456                  | 1225.3                   | 14.61                | 81                | 42.16                | .0096                                |
| 15:06                        | 1.8       | 31.4       | 12.7    | 0          | 4.45     | 1.3             | 22.6             | 199.8          | 7.0           | 237.4        | 99%         | 1135             | 0.1                   | 103.0               | 53291059                  | 1228.3                   | 14.61                | 82                | 43.07                | .0099                                |
| 15:07                        | 1.8       | 31.7       | 12.7    | 0          | 4.45     | 1.3             | 22.8             | 201.5          | 7.0           | 237.7        | 99%         | 1136             | 0.1                   | 102.9               | 53244117                  | 1227.4                   | 14.61                | 82                | 42.70                | .0098                                |
| 15:08                        | 1.8       | 31.7       | 12.7    | 0          | 4.46     | 1.3             | 22.8             | 201.1          | 7.0           | 236.6        | 99%         | 1136             | 0.1                   | 102.7               | 53130257                  | 1221.9                   | 14.61                | 82                | 42.42                | .0098                                |
| 15:09                        | 1.7       | 32.0       | 12.7    | 0          | 4.46     | 1.2             | 23.0             | 203.1          | 6.8           | 237.5        | 99%         | 1135             | 0.1                   | 102.8               | 53148185                  | 1222.8                   | 14.61                | 81                | 41.83                | .0093                                |
| 15:10                        | 1.8       | 31.9       | 12.7    | 0          | 4.45     | 1.3             | 23.0             | 202.9          | 7.0           | 237.5        | 99%         | 1135             | 0.2                   | 103.0               | 53276931                  | 1228.4                   | 14.61                | 81                | 42.56                | .0094                                |
| 15:11                        | 1.9       | 31.6       | 12.7    | 0          | 4.46     | 1.4             | 22.9             | 202.2          | 7.4           | 237.6        | 99%         | 1135             | 0.1                   | 103.0               | 53255096                  | 1224.8                   | 14.61                | 81                | 42.70                | .0096                                |
| 15:12                        | 1.7       | 32.1       | 12.7    | 0          | 4.46     | 1.2             | 23.1             | 204.2          | 8.6           | 237.8        | 99%         | 1136             | 0.1                   | 103.0               | 53288040                  | 1229.0                   | 14.81                | 82                | 42.69                | .0098                                |
| 15:13                        | 1.8       | 32.0       | 12.7    | 0          | 4.46     | 1.3             | 23.0             | 203.2          | 7.0           | 236.6        | 99%         | 1135             | 0.1                   | 102.8               | 53181531                  | 1226.5                   | 14.61                | 82                | 41.94                | .0096                                |
| 15:14                        | 1.7       | 31.9       | 12.7    | 0          | 4.45     | 1.2             | 23.0             | 202.8          | 6.6           | 236.4        | 99%         | 1135             | 0.1                   | 102.9               | 53240131                  | 1225.9                   | 14.61                | 81                | 42.15                | .0094                                |
| 15:15                        | 1.7       | 31.7       | 12.7    | 0          | 4.46     | 1.2             | 22.8             | 201.5          | 6.8           | 236.7        | 99%         | 1136             | 0.1                   | 102.9               | 53236536                  | 1224.6                   | 14.61                | 83                | 43.05                | .0101                                |
| 15:16                        | 1.9       | 32.1       | 12.7    | 0          | 4.45     | 1.4             | 23.1             | 203.9          | 7.3           | 236.8        | 99%         | 1136             | 0.1                   | 102.8               | 53194989                  | 1220.6                   | 14.61                | 83                | 42.48                | .0101                                |
| 15:17                        | 1.8       | 31.7       | 12.7    | 0          | 4.45     | 1.3             | 22.8             | 200.8          | 6.9           | 236.0        | 98%         | 1136             | 0.1                   | 102.8               | 53052064                  | 1226.8                   | 14.61                | 83                | 39.95                | .0095                                |
| 15:18                        | 1.8       | 31.5       | 12.7    | 0          | 4.45     | 1.3             | 22.7             | 199.5          | 6.9           | 236.8        | 99%         | 1136             | 0.1                   | 102.5               | 53044155                  | 1221.9                   | 14.61                | 82                | 39.61                | .0092                                |
| 15:19                        | 1.6       | 31.8       | 12.7    | 0          | 4.45     | 1.3             | 22.9             | 201.8          | 6.9           | 237.0        | 99%         | 1137             | 0.2                   | 102.6               | 53091823                  | 1222.9                   | 14.61                | 84                | 40.27                | .0101                                |
| 15:20                        | 1.9       | 31.9       | 12.7    | 0          | 4.45     | 1.4             | 23.0             | 201.7          | 7.3           | 236.3        | 98%         | 1137             | 0.1                   | 102.4               | 52948314                  | 1220.8                   | 14.61                | 83                | 39.08                | .0093                                |
| <b>Averages:</b>             | 1.8       | 31.9       | 12.7    | 0.0        | 4.5      | 1.3             | 22.9             | 202.3          | 6.9           | 237.0        | 99%         | 1135.7           | 0.1                   | 102.8               | 53171410                  | 1224.7                   | 14.6                 | 82                | 41.57                | 0.010                                |

| Time                        | CO<br>ppm | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO@15%O2<br>ppm | NOx@15%O2<br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh Flow<br>M-19 (dsch) | Exh. Flow<br>CT (l/sec) | Amb. Press.<br>(psia) | Amb Temp<br>(F) | Rel Humidity<br>(%) | Specific Humidity<br>(lb2wt/air) |
|-----------------------------|-----------|------------|---------|------------|----------|-----------------|------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|-------------------------|-------------------------|-----------------------|-----------------|---------------------|----------------------------------|
| <b>Run 8: 15:35 - 15:59</b> |           |            |         |            |          |                 |                  |                |               |              |             |                  |                       |                     |                         |                         |                       |                 |                     |                                  |
| 15:35                       | 1.8       | 31.7       | 12.7    | 0          | 4.45     | 1.3             | 22.8             | 201.6          | 7.0           | 237.0        | 99%         | 1135             | 0.1                   | 103.0               | 53251958                | 1227.2                  | 14.61                 | 82              | 43.36               | 0099                             |
| 15:36                       | 1.9       | 31.7       | 12.7    | 0          | 4.45     | 1.4             | 22.8             | 201.6          | 7.4           | 237.0        | 99%         | 1135             | 0.1                   | 103.0               | 53262846                | 1226.7                  | 14.61                 | 82              | 43.16               | .0099                            |
| 15:37                       | 1.8       | 31.6       | 12.7    | 0          | 4.45     | 1.3             | 22.7             | 200.9          | 7.0           | 236.5        | 99%         | 1135             | 0.1                   | 102.9               | 53240214                | 1221.9                  | 14.61                 | 82              | 43.43               | .0100                            |
| 15:38                       | 1.8       | 31.7       | 12.7    | 0          | 4.45     | 1.3             | 22.8             | 201.5          | 7.0           | 237.0        | 99%         | 1135             | 0.2                   | 102.9               | 53230881                | 1224.9                  | 14.61                 | 81              | 43.06               | .0097                            |
| 15:39                       | 1.8       | 31.8       | 12.7    | 0          | 4.46     | 1.3             | 22.9             | 202.3          | 7.0           | 237.1        | 99%         | 1136             | 0.1                   | 103.0               | 53285100                | 1225.8                  | 14.61                 | 81              | 43.45               | .0099                            |
| 15:40                       | 1.8       | 31.6       | 12.7    | 0          | 4.45     | 1.3             | 22.7             | 200.8          | 7.0           | 236.2        | 98%         | 1136             | 0.1                   | 102.9               | 53209389                | 1224.1                  | 14.61                 | 83              | 43.35               | .0103                            |
| 15:41                       | 1.8       | 31.0       | 12.7    | 0          | 4.45     | 1.3             | 22.3             | 196.5          | 6.9           | 235.5        | 98%         | 1138             | 0.1                   | 102.6               | 53075615                | 1228.1                  | 14.61                 | 84              | 42.88               | .0107                            |
| 15:42                       | 1.8       | 31.1       | 12.7    | 0          | 4.45     | 1.3             | 22.4             | 198.7          | 6.9           | 235.4        | 98%         | 1136             | 0.1                   | 102.4               | 52974561                | 1216.2                  | 14.61                 | 83              | 40.77               | .0097                            |
| 15:43                       | 1.7       | 31.4       | 12.7    | 0          | 4.45     | 1.2             | 22.6             | 199.2          | 6.6           | 236.9        | 99%         | 1138             | 0.1                   | 102.7               | 53141515                | 1221.1                  | 14.61                 | 82              | 41.65               | .0098                            |
| 15:44                       | 1.8       | 31.4       | 12.7    | 0          | 4.45     | 1.3             | 22.6             | 199.2          | 7.0           | 237.0        | 99%         | 1136             | 0.1                   | 102.7               | 53133177                | 1222.2                  | 14.61                 | 82              | 41.64               | .0097                            |
| 15:45                       | 1.8       | 31.3       | 12.7    | 0          | 4.45     | 1.3             | 22.5             | 198.5          | 6.9           | 236.6        | 99%         | 1136             | 0.1                   | 102.7               | 53109613                |                         | 14.61                 |                 |                     |                                  |
| 15:46                       | 1.8       | 31.4       | 12.7    | 0          | 4.45     | 1.3             | 22.6             | 199.0          | 6.9           | 237.9        | 99%         | 1136             | 0.2                   | 102.8               | 53085035                | 1225.3                  | 14.61                 | 82              | 41.68               | .0098                            |
| 15:47                       | 1.8       | 31.6       | 12.7    | 0          | 4.45     | 1.3             | 22.7             | 200.8          | 7.0           | 237.1        | 99%         | 1135             | 0.1                   | 102.9               | 53220798                |                         | 14.61                 |                 |                     |                                  |
| 15:48                       | 1.8       | 31.8       | 12.7    | 0          | 4.46     | 1.3             | 22.7             | 201.0          | 7.0           | 236.9        | 99%         | 1135             | 0.2                   | 103.0               | 53278423                |                         | 14.61                 |                 |                     |                                  |
| 15:49                       | 1.8       | 31.4       | 12.7    | 0          | 4.45     | 1.3             | 22.6             | 199.5          | 7.0           | 237.0        | 99%         | 1136             | 0.2                   | 102.9               | 53202719                |                         | 14.61                 |                 |                     |                                  |
| 15:50                       | 1.8       | 31.3       | 12.7    | 0          | 4.45     | 1.3             | 22.5             | 199.0          | 7.0           | 237.0        | 99%         | 1136             | 0.1                   | 102.9               | 53246832                |                         | 14.61                 |                 |                     |                                  |
| 15:51                       | 1.8       | 31.3       | 12.7    | 0          | 4.45     | 1.3             | 22.5             | 198.6          | 7.0           | 237.2        | 99%         | 1136             | 0.2                   | 102.7               | 53140971                |                         | 14.61                 |                 |                     |                                  |
| 15:52                       | 1.8       | 31.2       | 12.7    | 0          | 4.45     | 1.3             | 22.4             | 198.2          | 7.0           | 237.7        | 99%         | 1136             | 0.2                   | 102.9               | 53214973                |                         | 14.61                 |                 |                     |                                  |
| 15:53                       | 1.8       | 31.4       | 12.7    | 0          | 4.45     | 1.3             | 22.6             | 199.3          | 7.0           | 236.9        | 99%         | 1136             | 0.2                   | 102.8               | 53162159                |                         | 14.61                 |                 |                     |                                  |
| 15:54                       | 1.8       | 31.4       | 12.7    | 0          | 4.46     | 1.3             | 22.6             | 199.5          | 7.0           | 236.9        | 99%         | 1136             | 0.1                   | 102.9               | 53206571                |                         | 14.61                 |                 |                     |                                  |
| 15:55                       | 1.8       | 31.6       | 12.7    | 0          | 4.46     | 1.3             | 22.7             | 200.4          | 6.9           | 236.1        | 98%         | 1136             | 0.1                   | 102.7               | 53120580                |                         | 14.61                 |                 |                     |                                  |
| 15:56                       | 1.8       | 31.5       | 12.7    | 0          | 4.45     | 1.3             | 22.7             | 200.1          | 7.0           | 236.8        | 99%         | 1138             | 0.1                   | 102.9               | 53200292                | 1230.3                  | 14.61                 | 82              | 42.50               | .0097                            |
| 15:57                       | 1.9       | 31.5       | 12.7    | 0          | 4.45     | 1.4             | 22.7             | 199.9          | 7.3           | 237.4        | 99%         | 1136             | 0.2                   | 102.7               | 53144692                | 1226.7                  | 14.61                 | 82              | 42.73               | .0098                            |
| 15:58                       | 1.8       | 31.7       | 12.7    | 0          | 4.46     | 1.3             | 22.8             | 201.1          | 7.0           | 237.5        | 99%         | 1135             | 0.2                   | 102.7               | 53138027                | 1225.4                  | 14.61                 | 81              | 42.59               | .0096                            |
| 15:59                       | 1.8       | 31.7       | 12.7    | 0          | 4.46     | 1.3             | 22.8             | 201.4          | 7.0           | 237.6        | 99%         | 1135             | 0.1                   | 102.8               | 53198824                | 1225.7                  | 14.61                 | 81              | 43.11               | .0098                            |
| <b>Averages:</b>            | 1.8       | 31.5       | 12.7    | 0.0        | 4.5      | 1.3             | 22.6             | 199.9          | 7.0           | 237.0        | 99%         | 1135.7           | 0.1                   | 102.8               | 53179031                | 1224.8                  | 14.6                  | 82              | 42.62               | 0.010                            |

| Time                 | CO<br>ppm | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO2<br>ppm | NOx @15% O2<br>ppm | NOx @15% O2<br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dsch) | Exh. Flow<br>CT (lb/sec) | Amb. Press.<br>(psia) | Amb. Temp<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb H2O/lb air) |  |
|----------------------|-----------|------------|---------|------------|----------|------------|--------------------|--------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|--------------------------|--------------------------|-----------------------|------------------|----------------------|--------------------------------------|--|
| Run 7: 16:17 - 17:17 |           |            |         |            |          |            |                    |                    |                |               |              |             |                  |                       |                     |                          |                          |                       |                  |                      |                                      |  |
| 16:17                | 1.8       | 30.9       | 12.8    | 0          | 4.44     | 1.3        | 22.5               | 198.9              | 7.1            | 236.4         | 99%          | 1136        | 0.1              | 103.0                 | 53915131            |                          |                          | 14.61                 |                  |                      |                                      |  |
| 16:18                | 1.8       | 31.0       | 12.8    | 0          | 4.44     | 1.3        | 22.6               | 199.6              | 7.1            | 237.7         | 99%          | 1136        | 0.1              | 103.0                 | 53919785            | 1225.1                   | 14.61                    | 81                    | 46.34            | .0104                |                                      |  |
| 16:19                | 1.8       | 30.8       | 12.7    | 0          | 4.45     | 1.3        | 22.2               | 195.6              | 7.0            | 236.7         | 99%          | 1135        | 0.2              | 102.8                 | 53190008            | 1223.7                   | 14.61                    | 81                    | 45.37            | .0103                |                                      |  |
| 16:20                | 1.9       | 30.9       | 12.7    | 0          | 4.45     | 1.4        | 22.2               | 196.2              | 7.3            | 236.8         | 99%          | 1135        | 0.1              | 102.8                 | 53169014            | 1223.6                   | 14.61                    | 81                    | 45.10            | .0103                |                                      |  |
| 16:21                | 1.8       | 31.1       | 12.7    | 0          | 4.45     | 1.3        | 22.4               | 197.4              | 7.0            | 237.2         | 99%          | 1135        | 0.1              | 102.8                 | 53159242            | 1224.6                   | 14.61                    | 81                    | 45.13            | .0101                |                                      |  |
| 16:22                | 1.8       | 31.1       | 12.7    | 0          | 4.45     | 1.3        | 22.4               | 197.5              | 7.0            | 237.7         | 99%          | 1135        | 0.1              | 102.8                 | 53176930            | 1226.2                   | 14.61                    | 81                    | 45.20            | .0101                |                                      |  |
| 16:23                | 1.9       | 31.2       | 12.7    | 0          | 4.45     | 1.4        | 22.4               | 198.3              | 7.3            | 237.0         | 99%          | 1135        | 0.2              | 102.9                 | 53221031            | 1226.2                   | 14.61                    | 81                    | 45.20            | .0101                |                                      |  |
| 16:24                | 1.8       | 31.3       | 12.7    | 0          | 4.45     | 1.3        | 22.5               | 198.8              | 7.0            | 237.0         | 99%          | 1135        | 0.2              | 102.9                 | 53206634            | 1224.4                   | 14.61                    | 81                    | 45.59            | .0103                |                                      |  |
| 16:25                | 1.8       | 31.2       | 12.7    | 0          | 4.45     | 1.3        | 22.4               | 198.3              | 7.0            | 235.9         | 98%          | 1136        | 0.2              | 102.9                 | 53220525            | 1225.9                   | 14.61                    | 81                    | 45.16            | .0103                |                                      |  |
| 16:26                | 1.8       | 31.1       | 12.7    | 0          | 4.45     | 1.3        | 22.4               | 197.3              | 7.0            | 236.9         | 99%          | 1135        | 0.2              | 102.7                 | 53138441            |                          |                          |                       |                  |                      |                                      |  |
| 16:27                | 1.8       | 31.3       | 12.7    | 0          | 4.46     | 1.3        | 22.5               | 199.2              | 7.0            | 237.2         | 99%          | 1135        | 0.2              | 103.0                 | 53292763            |                          |                          |                       |                  |                      |                                      |  |
| 16:28                | 1.8       | 31.1       | 12.7    | 0          | 4.45     | 1.3        | 22.4               | 197.6              | 7.0            | 238.0         | 99%          | 1135        | 0.1              | 102.9                 | 53219725            | 1226.6                   | 14.61                    | 81                    | 45.15            | .0100                |                                      |  |
| 16:29                | 1.9       | 31.1       | 12.7    | 0          | 4.45     | 1.4        | 22.4               | 198.1              | 7.4            | 238.3         | 99%          | 1135        | 0.1              | 103.1                 | 53336067            | 1223.3                   | 14.61                    | 81                    | 45.36            | .0100                |                                      |  |
| 16:30                | 1.9       | 31.1       | 12.7    | 0          | 4.45     | 1.4        | 22.4               | 198.3              | 7.4            | 238.3         | 99%          | 1135        | 0.1              | 103.2                 | 53405653            | 1230.0                   | 14.61                    | 81                    | 45.61            | .0102                |                                      |  |
| 16:31                | 1.8       | 31.0       | 12.7    | 0          | 4.45     | 1.3        | 22.3               | 197.4              | 7.0            | 237.5         | 99%          | 1135        | 0.2              | 103.1                 | 53323013            | 1229.2                   | 14.61                    | 81                    | 45.53            | .0101                |                                      |  |
| 16:32                | 1.8       | 31.2       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.3              | 7.0            | 237.9         | 99%          | 1135        | 0.1              | 102.9                 | 53238892            | 1226.7                   | 14.61                    | 81                    | 46.05            | .0102                |                                      |  |
| 16:33                | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4        | 22.4               | 197.5              | 7.3            | 237.7         | 99%          | 1135        | 0.1              | 102.8                 | 53194014            | 1226.5                   | 14.61                    | 81                    | 46.28            | .0102                |                                      |  |
| 16:34                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 197.5              | 7.0            | 237.8         | 99%          | 1135        | 0.1              | 102.8                 | 53190589            | 1225.1                   | 14.61                    | 80                    | 46.33            | .0103                |                                      |  |
| 16:35                | 1.8       | 31.3       | 12.7    | 0          | 4.48     | 1.3        | 22.5               | 199.0              | 7.0            | 238.3         | 99%          | 1135        | 0.1              | 102.9                 | 53236011            | 1226.8                   | 14.61                    | 80                    | 46.30            | .0102                |                                      |  |
| 16:36                | 1.9       | 31.2       | 12.7    | 0          | 4.46     | 1.4        | 22.4               | 198.5              | 7.4            | 237.8         | 99%          | 1134        | 0.1              | 103.0                 | 53294386            | 1227.6                   | 14.61                    | 80                    | 46.14            | .0101                |                                      |  |
| 16:37                | 1.9       | 31.3       | 12.7    | 0          | 4.46     | 1.4        | 22.5               | 199.4              | 7.4            | 238.0         | 99%          | 1134        | 0.2              | 103.2                 | 53356355            | 1229.5                   | 14.60                    | 80                    | 47.08            | .0101                |                                      |  |
| 16:38                | 1.8       | 31.2       | 12.7    | 0          | 4.48     | 1.3        | 22.4               | 199.0              | 7.0            | 238.8         | 99%          | 1134        | 0.2              | 103.3                 | 53411174            | 1228.6                   | 14.61                    | 80                    | 47.81            | .0104                |                                      |  |
| 16:39                | 1.7       | 31.0       | 12.7    | 0          | 4.46     | 1.2        | 22.3               | 197.7              | 6.6            | 238.3         | 99%          | 1135        | 0.2              | 103.3                 | 53417713            | 1228.1                   | 14.61                    | 80                    | 47.90            | .0105                |                                      |  |
| 16:40                | 1.9       | 31.0       | 12.7    | 0          | 4.45     | 1.4        | 22.3               | 197.6              | 7.4            | 237.8         | 99%          | 1135        | 0.2              | 103.2                 | 53379197            | 1227.7                   | 14.61                    | 80                    | 47.94            | .0105                |                                      |  |
| 16:41                | 1.9       | 30.9       | 12.7    | 0          | 4.46     | 1.4        | 22.2               | 196.9              | 7.4            | 238.6         | 99%          | 1135        | 0.1              | 103.2                 | 53366588            | 1224.7                   | 14.61                    | 80                    | 47.83            | .0105                |                                      |  |
| 16:42                | 1.8       | 30.9       | 12.7    | 0          | 4.46     | 1.3        | 22.2               | 196.6              | 7.0            | 238.1         | 99%          | 1135        | 0.2              | 103.0                 | 53296730            | 1226.2                   | 14.61                    | 80                    | 47.58            | .0104                |                                      |  |
| 16:43                | 1.9       | 31.0       | 12.7    | 0          | 4.46     | 1.4        | 22.3               | 197.5              | 7.4            | 237.9         | 99%          | 1135        | 0.1              | 103.2                 | 53364232            | 1226.4                   | 14.61                    | 80                    | 47.52            | .0103                |                                      |  |
| 16:44                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.2              | 7.0            | 238.1         | 99%          | 1135        | 0.2              | 103.2                 | 53365546            | 1226.4                   | 14.61                    | 80                    | 47.52            | .0103                |                                      |  |
| 16:45                | 1.8       | 31.2       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.7              | 7.0            | 238.5         | 99%          | 1135        | 0.1              | 103.1                 | 53336517            | 1226.4                   | 14.61                    | 80                    | 47.52            | .0103                |                                      |  |
| 16:46                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 197.8              | 7.0            | 238.2         | 99%          | 1135        | 0.2              | 103.0                 | 53277239            | 1228.3                   | 14.61                    | 80                    | 47.71            | .0104                |                                      |  |
| 16:47                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.1              | 7.0            | 238.1         | 99%          | 1135        | 0.1              | 103.1                 | 53342965            | 1227.0                   | 14.61                    | 80                    | 47.99            | .0105                |                                      |  |
| 16:48                | 1.9       | 31.2       | 12.7    | 0          | 4.46     | 1.4        | 22.4               | 198.8              | 7.4            | 238.7         | 99%          | 1134        | 0.1              | 103.1                 | 53352160            | 1226.0                   | 14.61                    | 80                    | 48.38            | .0104                |                                      |  |
| 16:49                | 1.9       | 31.3       | 12.7    | 0          | 4.46     | 1.4        | 22.5               | 199.4              | 7.4            | 238.3         | 99%          | 1135        | 0.2              | 103.1                 | 53349074            | 1227.1                   | 14.61                    | 80                    | 48.64            | .0106                |                                      |  |
| 16:50                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.3              | 7.0            | 237.7         | 99%          | 1134        | 0.2              | 103.2                 | 53398850            | 1228.8                   | 14.61                    | 80                    | 47.88            | .0105                |                                      |  |
| 16:51                | 1.8       | 30.9       | 12.7    | 0          | 4.46     | 1.3        | 22.2               | 196.9              | 7.0            | 237.4         | 99%          | 1134        | 0.1              | 103.2                 | 53377018            | 1228.4                   | 14.61                    | 80                    | 48.04            | .0103                |                                      |  |
| 16:52                | 1.8       | 30.9       | 12.7    | 0          | 4.46     | 1.3        | 22.2               | 197.1              | 7.0            | 238.2         | 99%          | 1134        | 0.2              | 103.3                 | 53433828            | 1230.4                   | 14.61                    | 80                    | 48.47            | .0106                |                                      |  |
| 16:53                | 1.8       | 30.9       | 12.7    | 0          | 4.46     | 1.3        | 22.2               | 197.2              | 7.0            | 238.6         | 99%          | 1134        | 0.2              | 103.3                 | 53442327            | 1230.0                   | 14.61                    | 80                    | 48.28            | .0104                |                                      |  |
| 16:54                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.2              | 7.0            | 237.2         | 99%          | 1135        | 0.2              | 103.2                 | 53370854            | 1229.9                   | 14.61                    | 81                    | 47.63            | .0106                |                                      |  |
| 16:55                | 2.0       | 31.3       | 12.7    | 0          | 4.46     | 1.4        | 22.5               | 199.3              | 7.8            | 237.8         | 99%          | 1135        | 0.2              | 103.1                 | 53318865            | 1226.1                   | 14.60                    | 81                    | 46.40            | .0103                |                                      |  |
| 16:56                | 1.9       | 31.2       | 12.7    | 0          | 4.45     | 1.4        | 22.4               | 198.6              | 7.4            | 238.0         | 99%          | 1135        | 0.1              | 103.0                 | 53301312            | 1227.2                   | 14.61                    | 81                    | 45.12            | .0102                |                                      |  |
| 16:57                | 1.8       | 30.8       | 12.7    | 0          | 4.45     | 1.3        | 22.2               | 195.6              | 7.0            | 238.0         | 99%          | 1135        | 0.1              | 102.8                 | 53198805            |                          |                          |                       |                  |                      |                                      |  |
| 16:58                | 1.8       | 31.0       | 12.7    | 0          | 4.46     | 1.3        | 22.3               | 197.0              | 7.0            | 237.4         | 99%          | 1135        | 0.1              | 102.9                 | 53228513            |                          |                          |                       |                  |                      |                                      |  |
| 16:59                | 1.8       | 31.1       | 12.7    | 0          | 4.47     | 1.3        | 22.4               | 197.6              | 7.0            | 236.7         | 99%          | 1136        | 0.2              | 102.9                 | 53212581            |                          |                          |                       |                  |                      |                                      |  |
| 17:00                | 1.8       | 31.7       | 12.7    | 0          | 4.45     | 1.3        | 22.8               | 201.0              | 6.9            | 236.5         | 99%          | 1136        | 0.2              | 102.7                 | 53117368            | 1223.6                   | 14.61                    | 83                    | 43.59            | .0105                |                                      |  |
| 17:01                | 1.7       | 31.1       | 12.7    | 0          | 4.45     | 1.2        | 22.4               | 196.5              | 6.5            | 234.9         | 98%          | 1138        | 0.2              | 102.3                 | 52906182            | 1219.8                   | 14.60                    | 85                    | 41.49            | .0104                |                                      |  |
| 17:02                | 1.9       | 31.0       | 12.7    | 0          | 4.45     | 1.4        | 22.3               | 196.0              | 7.3            | 234.9         | 98%          | 1136        | 0.1              | 102.4                 | 52957915            | 1215.3                   | 14.60                    | 83                    | 40.05            | .0095                |                                      |  |
| 17:03                | 1.8       | 31.0       | 12.7    | 0          | 4.46     | 1.3        | 22.3               | 196.4              | 6.9            | 235.8         | 98%          | 1135        | 0.1              | 102.6                 | 53070240            | 1223.9                   | 14.60                    | 82                    | 41.81            | .0096                |                                      |  |
| 17:04                | 1.9       | 30.9       | 12.7    | 0          | 4.46     | 1.4        | 22.2               | 196.6              | 7.4            | 237.1         | 99%          | 1135        | 0.1              | 103.0                 | 53279970            | 1226.5                   | 14.61                    | 80                    | 43.36            | .0095                |                                      |  |
| 17:05                | 1.8       | 31.0       | 12.7    | 0          | 4.45     | 1.3        | 22.3               | 197.2              | 7.0            | 238.0         | 99%          | 1136        | 0.1              | 103.0                 | 53289449            | 1224.9                   | 14.60                    | 82                    | 44.73            | .0104                |                                      |  |
| 17:06                | 1.9       | 30.8       | 12.7    | 0          | 4.46     | 1.4        | 22.2               | 195.0              | 7.3            | 235.0         | 98%          | 1137        | 0.2              | 102.5                 | 53015792            | 1221.1                   | 14.61                    | 83                    | 43.03            | .0104                |                                      |  |
| 17:07                | 1.9       | 31.0       | 12.7    | 0          | 4.45     | 1.4        | 22.3               | 196.3              | 7.3            | 236.9         | 99%          | 1136        | 0.2              | 102.5                 | 53036953            | 1219.6                   | 14.61                    | 81                    | 42.56            | .0097                |                                      |  |
| 17:08                | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4        | 22.4               | 197.1              | 7.3            | 236.2         | 98%          | 1136        | 0.1              | 102.6                 | 53080130            | 1221.2                   | 14.61                    | 82                    | 42.87            | .0098                |                                      |  |
| 17:09                | 1.9       | 31.6       | 12.7    | 0          | 4.46     | 1.4        | 22.7               | 200.5              | 7.3            | 237.3         | 99%          | 1135        | 0.1              | 102.7                 | 53143228            | 1226.1                   | 14.61                    | 80                    | 43.56            | .0096                |                                      |  |
| 17:10                | 1.8       | 31.3       | 12.7    | 0          | 4.46     | 1.3        | 22.5               | 198.8              | 7.0            | 236.2         | 98%          | 1136        | 0.2              | 102.9                 | 53202065            | 1224.6                   | 14.61                    | 81                    | 45.07            | .0101                |                                      |  |
| 17:11                | 1.8       | 31.5       | 12.7    | 0          | 4.46     | 1.3        | 22.7               | 200.3              | 7.0            | 238.0         | 99%          | 1135        | 0.2              | 102.9                 | 53250348            | 1224.7                   | 14.61                    | 80                    | 44.59            | .0098                |                                      |  |
| 17:12                | 1.8       | 31.5       | 12.7    | 0          | 4.48     | 1.3        | 22.7               | 200.7              | 7.0            | 238.1         | 99%          | 1135        | 0.2              | 103.2                 | 53361785            | 1226.8                   | 14.60                    | 80                    | 45.21            | .0100                |                                      |  |
| 17:13                | 1.9       | 31.4       | 12.7    | 0          | 4.46     | 1.4        | 22.6               | 200.3              | 7.4            | 238.2         | 99%          | 1134        | 0.2              | 103.3                 | 53413116            | 1229.2                   | 14.60                    | 79                    | 46.80            | .0099                |                                      |  |
| 17:14                | 1.8       | 31.3       | 12.7    | 0          | 4.46     | 1.3        | 22.5               | 200.0              | 7.0            | 238.8         | 100%         | 1134        | 0.1              | 103.5                 | 53516530            | 1232.7                   | 14.60                    | 80                    | 47.46            | .0103                |                                      |  |
| 17:15                | 1.8       | 31.2       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 199.2              | 7.0            | 238.4         | 99%          | 1134        | 0.2              | 103.4                 | 53469008            | 1226.2                   | 14.61                    | 80                    | 46.38            | .0100                |                                      |  |
| 17:16                | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3        | 22.4               | 198.5              | 7.0            | 237.5         | 99%          | 1134        | 0.2              | 103.3                 | 53454871            | 1229.0                   | 14.60                    | 80                    | 46.27            | .0100                |                                      |  |
| 17:17                | 1.9       | 31.0       | 12.7    | 0          | 4.48     | 1.4        | 22.3               | 198.1              | 7.4            |               |              |             |                  |                       |                     |                          |                          |                       |                  |                      |                                      |  |



| Time                        | CO<br>ppm | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO@15%O2<br>ppm | NOx@15%O2<br>ppm | NOx<br>(lb/hr) | CO<br>(lb/hr) | Load<br>(MW) | Load<br>(%) | Exh. Temp<br>(F) | IGV Pos.<br>(degrees) | Fuel Flow<br>(KPPH) | Exh. Flow<br>M-19 (dscfh) | Exh. Flow<br>CT (dscfh) | Amb. Press<br>(psia) | Amb. Temp.<br>(F) | Rel. Humidity<br>(%) | Specific Humidity<br>(lb H2O/lb air) |
|-----------------------------|-----------|------------|---------|------------|----------|-----------------|------------------|----------------|---------------|--------------|-------------|------------------|-----------------------|---------------------|---------------------------|-------------------------|----------------------|-------------------|----------------------|--------------------------------------|
| <b>Run 8: 17:37 - 18:37</b> |           |            |         |            |          |                 |                  |                |               |              |             |                  |                       |                     |                           |                         |                      |                   |                      |                                      |
| 17:37                       | 1.9       | 31.1       | 12.7    | 0          | 4.45     | 1.4             | 22.4             | 198.7          | 7.4           | 239.9        | 100%        | 1133             | 0.1                   | 103.4               | 53503925                  |                         | 14.61                |                   |                      |                                      |
| 17:38                       | 1.8       | 31.0       | 12.7    | 0          | 4.45     | 1.3             | 22.3             | 198.0          | 7.0           | 238.4        | 99%         | 1134             | 0.2                   | 103.4               | 53494438                  |                         | 14.61                |                   |                      |                                      |
| 17:39                       | 1.9       | 30.9       | 12.7    | 0          | 4.45     | 1.4             | 22.2             | 197.7          | 7.4           | 238.6        | 99%         | 1133             | 0.2                   | 103.6               | 53594881                  |                         | 14.60                |                   |                      |                                      |
| 17:40                       | 1.9       | 30.9       | 12.7    | 0          | 4.46     | 1.4             | 22.2             | 197.7          | 7.4           | 239.2        | 100%        | 1133             | 0.1                   | 103.6               | 53571653                  | 1230.2                  | 14.60                | 79                | 48.90                | .0102                                |
| 17:41                       | 1.8       | 31.0       | 12.7    | 0          | 4.46     | 1.3             | 22.3             | 198.4          | 7.0           | 240.0        | 100%        | 1134             | 0.1                   | 103.6               | 53610327                  | 1230.9                  | 14.60                | 79                | 49.10                | .0103                                |
| 17:42                       | 2.0       | 31.0       | 12.7    | 0          | 4.46     | 1.4             | 22.3             | 198.5          | 7.8           | 239.8        | 100%        | 1133             | 0.1                   | 103.7               | 53636373                  | 1233.7                  | 14.60                | 79                | 49.18                | .0103                                |
| 17:43                       | 1.8       | 31.0       | 12.7    | 0          | 4.46     | 1.3             | 22.3             | 198.3          | 7.0           | 239.5        | 100%        | 1134             | 0.1                   | 103.6               | 53568527                  | 1235.5                  | 14.60                | 79                | 49.25                | .0103                                |
| 17:44                       | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.3          | 7.4           | 238.1        | 99%         | 1134             | 0.2                   | 103.8               | 53669996                  | 1235.5                  | 14.60                | 79                | 49.25                | .0103                                |
| 17:45                       | 1.9       | 31.2       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.6          | 7.4           | 239.6        | 100%        | 1134             | 0.2                   | 103.6               | 53590375                  | 1235.5                  | 14.60                | 79                | 49.25                | .0103                                |
| 17:46                       | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.0          | 7.4           | 238.8        | 100%        | 1134             | 0.2                   | 103.6               | 53603993                  | 1232.7                  | 14.60                | 79                | 49.21                | .0102                                |
| 17:47                       | 1.8       | 31.3       | 12.7    | 0          | 4.46     | 1.3             | 22.5             | 200.2          | 7.0           | 239.0        | 100%        | 1133             | 0.2                   | 103.6               | 53571736                  | 1232.9                  | 14.60                | 78                | 49.26                | .0102                                |
| 17:48                       | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3             | 22.4             | 198.9          | 7.0           | 239.4        | 100%        | 1133             | 0.1                   | 103.6               | 53566625                  | 1235.9                  | 14.60                | 79                | 49.79                | .0104                                |
| 17:49                       | 1.9       | 31.0       | 12.7    | 0          | 4.46     | 1.4             | 22.3             | 198.2          | 7.4           | 238.5        | 99%         | 1133             | 0.1                   | 103.5               | 53544028                  | 1233.0                  | 14.60                | 79                | 49.80                | .0104                                |
| 17:50                       | 1.9       | 31.0       | 12.7    | 0          | 4.46     | 1.4             | 22.3             | 198.2          | 7.4           | 238.5        | 99%         | 1133             | 0.1                   | 103.5               | 53544028                  | 1233.0                  | 14.60                | 79                | 49.80                | .0104                                |
| 17:51                       | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.1          | 7.4           | 239.3        | 100%        | 1133             | 0.2                   | 103.6               | 53608879                  | 1234.6                  | 14.60                | 79                | 49.85                | .0104                                |
| 17:52                       | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3             | 22.4             | 199.2          | 7.0           | 239.3        | 100%        | 1133             | 0.2                   | 103.7               | 53641405                  | 1232.4                  | 14.60                | 79                | 49.99                | .0104                                |
| 17:53                       | 1.9       | 31.0       | 12.7    | 0          | 4.46     | 1.4             | 22.3             | 198.7          | 7.4           | 239.8        | 100%        | 1133             | 0.2                   | 103.8               | 53679768                  | 1235.1                  | 14.60                | 78                | 49.94                | .0103                                |
| 17:54                       | 1.9       | 31.0       | 12.7    | 0          | 4.47     | 1.4             | 22.3             | 198.6          | 7.4           | 239.7        | 100%        | 1133             | 0.1                   | 103.7               | 53661626                  |                         | 14.60                |                   |                      |                                      |
| 17:55                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.2          | 7.4           | 239.5        | 100%        | 1133             | 0.1                   | 103.7               | 53654783                  | 1233.8                  | 14.60                | 79                | 49.18                | .0102                                |
| 17:56                       | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3             | 22.4             | 199.4          | 7.0           | 239.4        | 100%        | 1133             | 0.2                   | 103.8               | 53694582                  | 1235.6                  | 14.60                | 79                | 48.71                | .0101                                |
| 17:57                       | 1.9       | 31.2       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 200.1          | 7.4           | 238.7        | 99%         | 1133             | 0.2                   | 103.8               | 53703513                  | 1232.2                  | 14.60                | 79                | 49.32                | .0102                                |
| 17:58                       | 1.8       | 31.3       | 12.7    | 0          | 4.47     | 1.3             | 22.5             | 200.8          | 7.0           | 239.4        | 100%        | 1133             | 0.2                   | 103.9               | 53718145                  | 1234.0                  | 14.60                | 78                | 49.86                | .0102                                |
| 17:59                       | 1.8       | 31.3       | 12.7    | 0          | 4.47     | 1.3             | 22.5             | 200.7          | 7.0           | 239.8        | 100%        | 1133             | 0.1                   | 103.8               | 53698074                  |                         | 14.60                |                   |                      |                                      |
| 18:00                       | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3             | 22.4             | 199.3          | 7.0           | 239.7        | 100%        | 1134             | 0.1                   | 103.8               | 53665517                  |                         | 14.60                |                   |                      |                                      |
| 18:01                       | 1.8       | 31.1       | 12.7    | 0          | 4.46     | 1.3             | 22.4             | 199.3          | 7.0           | 239.6        | 100%        | 1133             | 0.2                   | 103.7               | 53657917                  |                         | 14.60                |                   |                      |                                      |
| 18:02                       | 1.8       | 31.2       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 199.7          | 7.0           | 239.2        | 100%        | 1133             | 0.2                   | 103.6               | 53608780                  |                         | 14.60                |                   |                      |                                      |
| 18:03                       | 1.9       | 31.2       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.8          | 7.4           | 239.7        | 100%        | 1133             | 0.1                   | 103.7               | 53644613                  |                         | 14.60                |                   |                      |                                      |
| 18:04                       | 1.9       | 31.1       | 12.7    | 0          | 4.46     | 1.4             | 22.4             | 199.4          | 7.4           | 240.2        | 100%        | 1133             | 0.1                   | 103.8               | 53693678                  |                         | 14.60                |                   |                      |                                      |
| 18:05                       | 1.8       | 31.1       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 199.4          | 7.0           | 240.0        | 100%        | 1133             | 0.2                   | 103.8               | 53698398                  | 1234.5                  | 14.60                | 78                | 50.89                | .0104                                |
| 18:06                       | 1.9       | 31.2       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.1          | 7.4           | 239.5        | 100%        | 1133             | 0.2                   | 103.8               | 53716607                  | 1233.7                  | 14.60                | 78                | 51.01                | .0104                                |
| 18:07                       | 1.8       | 31.2       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 200.3          | 7.0           | 239.9        | 100%        | 1133             | 0.1                   | 104.0               | 53771086                  |                         | 14.60                |                   |                      |                                      |
| 18:08                       | 1.9       | 31.2       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.4          | 7.4           | 240.0        | 100%        | 1133             | 0.2                   | 104.0               | 53798695                  | 1231.0                  | 14.60                | 78                | 51.48                | .0103                                |
| 18:09                       | 1.8       | 31.4       | 12.7    | 0          | 4.46     | 1.3             | 22.6             | 201.8          | 7.0           | 240.3        | 100%        | 1133             | 0.1                   | 104.1               | 53827724                  | 1231.3                  | 14.60                | 78                | 51.25                | .0103                                |
| 18:10                       | 1.9       | 31.2       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.2          | 7.4           | 240.5        | 100%        | 1133             | 0.1                   | 103.9               | 53741248                  | 1232.8                  | 14.60                | 78                | 51.23                | .0103                                |
| 18:11                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.9          | 7.4           | 240.4        | 100%        | 1132             | 0.1                   | 104.1               | 53825344                  |                         | 14.60                |                   |                      |                                      |
| 18:12                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.2          | 7.4           | 239.8        | 100%        | 1133             | 0.1                   | 103.7               | 53656022                  |                         | 14.60                |                   |                      |                                      |
| 18:13                       | 1.8       | 31.0       | 12.7    | 0          | 4.47     | 1.3             | 22.3             | 198.5          | 7.0           | 240.2        | 100%        | 1132             | 0.2                   | 103.7               | 53639037                  | 1233.7                  | 14.60                | 78                | 50.63                | .0102                                |
| 18:14                       | 1.9       | 31.0       | 12.7    | 0          | 4.47     | 1.4             | 22.3             | 198.8          | 7.4           | 240.4        | 100%        | 1132             | 0.1                   | 103.8               | 53712858                  | 1233.4                  | 14.60                | 78                | 51.17                | .0103                                |
| 18:15                       | 1.9       | 31.2       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.3          | 7.4           | 240.7        | 100%        | 1132             | 0.1                   | 103.9               | 53766114                  | 1233.2                  | 14.60                | 78                | 51.79                | .0104                                |
| 18:16                       | 2.0       | 31.0       | 12.7    | 0          | 4.46     | 1.4             | 22.3             | 199.1          | 7.8           | 240.9        | 100%        | 1132             | 0.1                   | 104.0               | 53799176                  | 1235.0                  | 14.60                | 77                | 51.59                | .0103                                |
| 18:17                       | 1.9       | 30.7       | 12.7    | 0          | 4.47     | 1.4             | 22.1             | 197.5          | 7.4           | 240.8        | 100%        | 1132             | 0.2                   | 104.2               | 53891576                  | 1234.8                  | 14.60                | 77                | 51.95                | .0103                                |
| 18:18                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.8          | 7.4           | 240.4        | 100%        | 1132             | 0.2                   | 104.0               | 53815743                  | 1238.3                  | 14.60                | 78                | 52.62                | .0107                                |
| 18:19                       | 1.9       | 31.0       | 12.7    | 0          | 4.47     | 1.4             | 22.3             | 199.0          | 7.4           | 240.4        | 100%        | 1132             | 0.1                   | 104.0               | 53769938                  | 1234.4                  | 14.60                | 77                | 51.09                | .0102                                |
| 18:20                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.1          | 7.4           | 240.7        | 100%        | 1132             | 0.2                   | 104.2               | 53875049                  | 1235.9                  | 14.60                | 77                | 51.91                | .0104                                |
| 18:21                       | 1.9       | 31.3       | 12.7    | 0          | 4.47     | 1.4             | 22.5             | 201.1          | 7.4           | 240.3        | 100%        | 1132             | 0.2                   | 104.0               | 53808454                  | 1235.9                  | 14.60                | 77                | 51.89                | .0103                                |
| 18:22                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.6          | 7.4           | 240.4        | 100%        | 1132             | 0.1                   | 103.9               | 53764385                  | 1237.9                  | 14.60                | 77                | 51.96                | .0103                                |
| 18:23                       | 1.9       | 31.2       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 200.4          | 7.4           | 240.4        | 100%        | 1132             | 0.1                   | 104.0               | 53803320                  | 1234.9                  | 14.60                | 77                | 52.56                | .0104                                |
| 18:24                       | 1.8       | 31.1       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 199.0          | 7.0           | 239.5        | 100%        | 1134             | 0.2                   | 103.6               | 53592793                  | 1234.1                  | 14.60                | 79                | 51.24                | .0109                                |
| 18:25                       | 1.8       | 31.0       | 12.7    | 0          | 4.46     | 1.3             | 22.3             | 198.0          | 7.0           | 238.5        | 99%         | 1134             | 0.2                   | 103.4               | 53496253                  | 1234.0                  | 14.60                | 80                | 49.24                | .0108                                |
| 18:26                       | 1.8       | 31.2       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 199.6          | 7.0           | 239.1        | 100%        | 1132             | 0.1                   | 103.6               | 53575287                  | 1231.2                  | 14.60                | 78                | 47.99                | .0097                                |
| 18:27                       | 1.8       | 31.2       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 200.5          | 7.0           | 240.0        | 100%        | 1132             | 0.2                   | 104.0               | 53809610                  | 1236.1                  | 14.60                | 77                | 50.09                | .0099                                |
| 18:28                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.9          | 7.4           | 240.3        | 100%        | 1132             | 0.2                   | 104.1               | 53825140                  | 1233.6                  | 14.60                | 77                | 51.28                | .0101                                |
| 18:29                       | 1.9       | 31.3       | 12.7    | 0          | 4.47     | 1.4             | 22.5             | 201.3          | 7.4           | 240.9        | 100%        | 1132             | 0.1                   | 104.1               | 53867069                  | 1237.8                  | 14.60                | 77                | 52.03                | .0102                                |
| 18:30                       | 1.9       | 31.4       | 12.7    | 0          | 4.47     | 1.4             | 22.6             | 202.1          | 7.4           | 240.5        | 100%        | 1133             | 0.1                   | 104.2               | 53900550                  | 1231.3                  | 14.60                | 77                | 52.72                | .0103                                |
| 18:31                       | 2.0       | 31.3       | 12.7    | 0          | 4.47     | 1.4             | 22.5             | 201.5          | 7.8           | 241.1        | 100%        | 1132             | 0.2                   | 104.2               | 53911592                  | 1233.5                  | 14.60                | 77                | 53.28                | .0104                                |
| 18:32                       | 1.9       | 31.2       | 12.7    | 0          | 4.48     | 1.4             | 22.4             | 200.6          | 7.4           | 240.4        | 100%        | 1133             | 0.1                   | 104.1               | 53854824                  |                         | 14.60                |                   |                      |                                      |
| 18:33                       | 1.9       | 31.3       | 12.7    | 0          | 4.47     | 1.4             | 22.5             | 201.0          | 7.4           | 240.4        | 100%        | 1133             | 0.2                   | 103.99              | 53788205                  | 1235.3                  | 14.60                | 77                | 53.44                | .0104                                |
| 18:34                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.9          | 7.4           | 240.7        | 100%        | 1132             | 0.2                   | 104.07              | 53831919                  |                         | 14.60                |                   |                      |                                      |
| 18:35                       | 1.9       | 31.1       | 12.7    | 0          | 4.47     | 1.4             | 22.4             | 199.8          | 7.4           | 240.5        | 100%        | 1133             | 0.2                   | 104.03              | 53811651                  |                         | 14.60                |                   |                      |                                      |
| 18:36                       | 1.8       | 31.1       | 12.7    | 0          | 4.47     | 1.3             | 22.4             | 200.1          | 7.0           | 241.1        | 100%        | 1132             | 0.2                   | 104.18              | 53885302                  |                         | 14.60                |                   |                      |                                      |
| 18:37                       | 1.9       | 31.0       | 12.7    | 0          | 4.47     | 1.4             | 22.3             | 199.4          | 7.4           | 241.1        | 100%        | 1132             | 0.1                   | 104.13              | 53861229                  | 1235.6                  | 14.60                | 76                | 53.60                | .0103                                |
| <b>Averages:</b>            | 1.9       | 31.1       | 12.7    | 0.0        | 4.5      | 1.3             | 22.4             | 199.5          | 7.3           | 239.9        | 1.0         | 1132.8           | 0.2                   | 103.8               | 53706465.4                | 1234.1                  | 14.6                 | 78                | 50.67                | 0.010                                |

# RAW Field Data

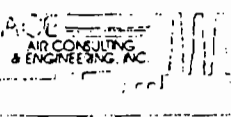
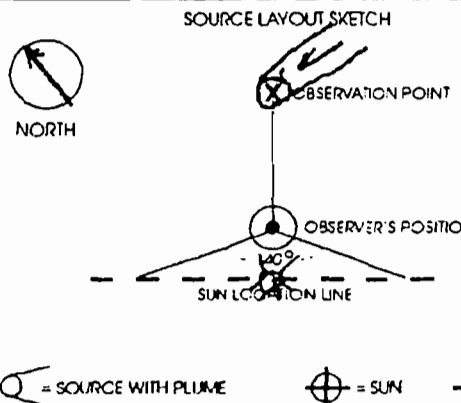
| Time  | CO    | NOx  | O2   | THC | CO2   | CO@15%O2 | NOx@15%O2 | NOx     | CO      | Load  | Exh. Temp | IGV Pos   | Fuel Flow | Exh. Flow    | Exh. Flow   | Amb. Press. | Amb. Temp. | Rel. Humidity | Specific Humidity |
|-------|-------|------|------|-----|-------|----------|-----------|---------|---------|-------|-----------|-----------|-----------|--------------|-------------|-------------|------------|---------------|-------------------|
|       | ppm   | ppm  | %    | ppm | ppm   | ppm      | ppm       | (lb/hr) | (lb/hr) | (MW)  | (F)       | (degrees) | (KPPH)    | M-19 (dsch)  | cf (bblsec) | (psia)      | (F)        | (%)           | (lb/dm3)          |
| 9:00  | 0.7   | 0.0  | 20.8 | 2   | -0.02 | 41.3     | 0.0       | 0.0     | 0.0     | 0     | 93        | 45.0      | 0.00      | 424.15       | 1.0         | 14.65       | 78         | 64.96         | 0.128             |
| 9:01  | 0.6   | 0.0  | 20.8 | 2   | -0.02 | 35.4     | 0.0       | 0.0     | 0.0     | 0     | 93        | 45.0      | 0.00      | 424.15       | 1.0         | 14.65       | 78         | 64.58         | 0.126             |
| 9:02  | 0.6   | 0.0  | 20.8 | 2   | -0.02 | 35.4     | 0.0       | 0.0     | 0.0     | 0     | 94        | 45.0      | 0.00      | 424.15       | 1.0         | 14.65       | 78         | 63.92         | 0.124             |
| 9:03  | 0.6   | 0.0  | 20.8 | 2   | -0.02 | 35.4     | 0.0       | 0.0     | 0.0     | 0     | 101       | 45.0      | 0.00      | 424.15       | 1.0         | 14.65       | 77         | 63.49         | 0.121             |
| 9:04  | 2.1   | 0.0  | 20.4 | 51  | 0.12  | 24.8     | 0.0       | 0.0     | 7.8     | 0     | 112       | 45.0      | 8.04      | 51248444.54  | 1.0         | 14.65       | 76         | 63.17         | 0.118             |
| 9:05  | 119.3 | 0.7  | 18.7 | 99  | 1.03  | 319.9    | 1.9       | 0.5     | 56.6    | 0     | 203       | 45.0      | 3.39      | 6529336.06   | 1.0         | 14.65       | 76         | 63.43         | 0.117             |
| 9:06  | 210.7 | 5.1  | 18.1 | 99  | 1.39  | 444.0    | 10.7      | 5.2     | 129.8   | 0     | 308       | 45.0      | 5.60      | 6477130.79   | 1.0         | 14.65       | 75         | 63.72         | 0.118             |
| 9:07  | 292.8 | 8.2  | 18.4 | 99  | 1.23  | 691.0    | 19.4      | 12.5    | 272.6   | 0     | 418       | 45.0      | 7.55      | 12809607.37  | 473.5       | 14.66       | 75         | 64.38         | 0.115             |
| 9:08  | 337.4 | 7.9  | 18.5 | 99  | 1.08  | 865.5    | 20.3      | 15.4    | 400.3   | 0     | 465       | 45.0      | 8.55      | 16324615.41  | 473.0       | 14.66       | 74         | 65.49         | 0.118             |
| 9:09  | 330.2 | 8.1  | 18.3 | 99  | 1.26  | 749.3    | 18.4      | 20.3    | 502.8   | 0     | 536       | 45.0      | 12.84     | 20949437.91  | 571.8       | 14.66       | 74         | 66.70         | 0.115             |
| 9:10  | 231.7 | 11.8 | 19.1 | 34  | 0.5   | 759.5    | 38.0      | 53.2    | 846.8   | 0.0   | 593       | 45.0      | 16.30     | 38406726.96  | 665.4       | 14.66       | 73         | 65.02         | 0.115             |
| 9:11  | 2.8   | 0.5  | 19.8 | 0   | -0.06 | 15.0     | 34.9      | 67.3    | 17.7    | 0.0   | 674       | 45.0      | 22.49     | 86738018.18  | 770.6       | 14.66       | 73         | 67.47         | 0.115             |
| 9:12  | 0.7   | 0.9  | 19.8 | 0   | -0.06 | 3.8      | 4.8       | 11.8    | 5.6     | 0.0   | 690       | 30.4      | 28.40     | 109500481.35 | 911.4       | 14.66       | 73         | 67.28         | 0.115             |
| 9:13  | 0.7   | 0.1  | 19.8 | 0   | -0.06 | 3.8      | 0.5       | 1.4     | 5.8     | 0.3   | 625       | 30.3      | 29.58     | 114074852.08 | 1085.2      | 14.66       | 72         | 67.41         | 0.114             |
| 9:14  | 0.6   | -0.3 | 19.8 | 0   | -0.06 | 3.2      | -1.8      | -4.0    | 4.9     | 0.2   | 612       | 30.2      | 29.08     | 112146781.76 | 1099.9      | 14.66       | 72         | 68.49         | 0.115             |
| 9:15  | 0.6   | -0.1 | 19.8 | 0   | -0.06 | 3.2      | -0.5      | -1.3    | 4.8     | 0.2   | 606       | 30.2      | 28.62     | 110348567.16 | 1097.3      | 14.66       | 72         | 66.76         | 0.114             |
| 9:16  | 178.4 | 0.1  | 11.1 | 70  | 0.52  | 106.2    | 0.1       | 0.1     | 157.3   | 0.2   | 601       | 30.1      | 28.35     | 11268825.78  | 1101.5      | 14.66       | 72         | 69.52         | 0.116             |
| 9:17  | 20.9  | 8.4  | 0.1  | 34  | -0.06 | 5.9      | 2.4       | 5.7     | 8.7     | 0.1   | 598       | 30.1      | 28.07     | 5723463.50   | 1102.9      | 14.66       | 72         | 69.67         | 0.116             |
| 9:18  | 0.5   | 0.3  | 0.0  | 34  | -0.06 | 0.1      | 0.1       | 0.2     | 0.2     | 0.3   | 596       | 30.1      | 28.22     | 5727763.59   | 1104.6      | 14.66       | 72         | 69.78         | 0.116             |
| 9:19  | 0.5   | 0.0  | 0.0  | 27  | -0.06 | 0.1      | 0.0       | 0.0     | 0.2     | 0.3   | 594       | 30.1      | 27.75     | 5632067.29   | 1080.8      | 14.66       | 72         | 69.97         | 0.117             |
| 9:20  | 40.9  | -0.2 | 8.0  | 55  | 0.43  | 18.7     | -0.1      | -0.2    | 30.3    | 3.9   | 570       | 14.7      | 30.96     | 10179270.05  | 1253.1      | 14.66       | 72         | 69.58         | 0.116             |
| 9:21  | 77.2  | 10.3 | 0.1  | 0   | -0.05 | 21.9     | 2.9       | 7.8     | 35.7    | 4.5   | 544       | 10.9      | 31.19     | 6381134.97   | 1329.6      | 14.66       | 71         | 69.55         | 0.114             |
| 9:22  | 0.8   | 81.6 | 0.0  | 0   | -0.06 | 0.2      | 23.0      | 62.7    | 0.3     | 7.0   | 540       | 10.8      | 31.71     | 6435345.67   | 1346.9      | 14.67       | 72         | 70.31         | 0.116             |
| 9:23  | 0.7   | 72.5 | 0.0  | 0   | -0.06 | 0.2      | 20.5      | 58.0    | 0.3     | 11.4  | 543       | 10.7      | 33.02     | 6701767.82   |             | 14.67       |            |               |                   |
| 9:24  | 0.8   | 72.0 | 0.0  | 0   | -0.06 | 0.2      | 20.3      | 59.8    | 0.3     | 16.3  | 550       | 10.7      | 34.28     | 8957178.96   |             | 14.67       |            |               |                   |
| 9:25  | 0.8   | 86.3 | 0.0  | 0   | -0.06 | 0.2      | 24.4      | 75.0    | 0.3     | 21.8  | 559       | 10.6      | 35.85     | 7278137.91   | 1357.3      | 14.67       | 72         | 69.82         | 0.118             |
| 9:26  | 0.7   | 89.2 | 0.0  | 0   | -0.06 | 0.2      | 25.2      | 80.4    | 0.4     | 25.6  | 568       | 10.6      | 37.19     | 7547202.99   | 1365.4      | 14.67       | 73         | 69.45         | 0.119             |
| 9:27  | 0.5   | 89.3 | 1.2  | 17  | -0.06 | 0.1      | 26.7      | 89.3    | 0.3     | 30.7  | 579       | 10.5      | 38.91     | 8377434.19   | 1378.8      | 14.67       | 73         | 69.49         | 0.120             |
| 9:28  | 289.5 | 86.6 | 8.8  | 50  | 0.65  | 138.9    | 41.5      | 146.5   | 298.1   | 36.3  | 591       | 10.5      | 41.08     | 14166832.51  | 1413.5      | 14.66       | 73         | 68.86         | 0.120             |
| 9:29  | 99.5  | 30.2 | 0.0  | 0   | -0.06 | 28.1     | 8.5       | 31.8    | 63.7    | 41.4  | 602       | 10.4      | 43.42     | 6810852.54   |             | 14.67       |            |               |                   |
| 9:30  | 87.4  | 2.0  | 0.0  | 0   | -0.06 | 24.7     | 0.6       | 2.2     | 58.3    | 46.2  | 614       | 10.4      | 45.20     | 9172632.12   |             | 14.66       |            |               |                   |
| 9:31  | 88.9  | 0.3  | 0.0  | 0   | -0.06 | 25.1     | 0.1       | 0.3     | 59.6    | 47.0  | 620       | 10.4      | 45.47     | 9227494.11   |             | 14.67       |            |               |                   |
| 9:32  | 89.0  | 0.0  | 0.0  | 0   | -0.06 | 25.1     | 0.0       | 0.0     | 59.6    | 47.3  | 624       | 10.3      | 45.42     | 9218581.87   | 1407.1      | 14.67       | 73         | 68.32         | 0.119             |
| 9:33  | 278.1 | 0.0  | 11.8 | 83  | 0.92  | 180.3    | 0.0       | 0.0     | 425.8   | 47.4  | 624       | 10.3      | 45.18     | 21057600.70  | 1405.1      | 14.66       | 73         | 68.29         | 0.119             |
| 9:34  | 237.9 | 17.7 | 0.1  | 0   | -0.04 | 67.5     | 5.0       | 19.5    | 159.5   | 47.8  | 628       | 10.3      | 45.24     | 9225082.60   | 1401.4      | 14.67       | 74         | 68.90         | 0.121             |
| 9:35  | 21.9  | 18.3 | 0.0  | 0   | -0.06 | 6.1      | 5.2       | 20.0    | 14.3    | 47.4  | 627       | 10.2      | 45.16     | 9165363.31   | 1406.5      | 14.67       | 73         | 68.29         | 0.120             |
| 9:36  | 21.7  | 19.5 | 0.0  | 0   | -0.06 | 6.1      | 5.5       | 21.3    | 14.4    | 47.2  | 627       | 10.2      | 45.04     | 9140837.70   | 1409.8      | 14.66       | 74         | 67.95         | 0.121             |
| 9:37  | 21.7  | 19.5 | 0.0  | 0   | -0.06 | 6.1      | 5.1       | 20.3    | 15.8    | 46.8  | 631       | 11.5      | 44.74     | 9987591.26   | 1397.6      | 14.66       | 73         | 67.84         | 0.119             |
| 9:38  | 263.7 | 19.8 | 3.7  | 16  | 0.42  | 90.5     | 8.8       | 26.0    | 210.4   | 47.0  | 643       | 16.3      | 44.52     | 10977755.15  | 1357.8      | 14.66       | 74         | 68.01         | 0.120             |
| 9:39  | 47.7  | 37.5 | 0.0  | 0   | -0.06 | 13.5     | 10.6      | 40.0    | 31.0    | 47.5  | 663       | 21.3      | 44.04     | 8937059.54   | 1301.5      | 14.66       | 74         | 68.65         | 0.122             |
| 9:40  | 46.2  | 44.3 | 0.0  | 0   | -0.06 | 13.0     | 12.5      | 46.2    | 30.6    | 63.0  | 699       | 26.5      | 44.90     | 9111960.69   |             | 14.66       |            |               |                   |
| 9:41  | 46.3  | 44.7 | 0.0  | 0   | -0.06 | 13.1     | 12.6      | 49.8    | 31.4    | 67.2  | 735       | 28.3      | 45.97     | 9329769.26   | 1170.8      | 14.67       | 74         | 68.65         | 0.122             |
| 9:42  | 254.1 | 44.9 | 9.9  | 83  | 1.34  | 136.3    | 24.1      | 94.3    | 324.7   | 62.1  | 759       | 28.7      | 45.60     | 17582832.30  | 1132.3      | 14.66       | 74         | 68.93         | 0.122             |
| 9:43  | 120.7 | 38.8 | 13.8 | 0   | 4.64  | 100.3    | 32.2      | 128.0   | 242.3   | 64.6  | 779       | 29.0      | 46.23     | 27619425.63  | 1104.8      | 14.66       | 74         | 68.06         | 0.122             |
| 9:44  | -0.1  | 2.8  | 13.8 | 0   | 4.88  | -0.1     | 2.2       | 8.8     | -0.2    | 69.8  | 800       | 29.2      | 47.49     | 28373221.18  | 1083.0      | 14.66       | 74         | 67.40         | 0.120             |
| 9:45  | -0.4  | 0.2  | 13.9 | 0   | 4.9   | -0.3     | 0.2       | 0.7     | -0.9    | 71.8  | 817       | 29.4      | 48.99     | 30292660.63  | 1131.4      | 14.66       | 74         | 68.14         | 0.124             |
| 9:46  | -0.4  | -0.1 | 13.9 | 0   | 4.93  | -0.3     | -0.1      | -0.4    | -0.9    | 74.1  | 831       | 29.5      | 50.45     | 30659628.73  | 1081.4      | 14.66       | 74         | 67.92         | 0.122             |
| 9:47  | 172.9 | -0.1 | 5.5  | 18  | 1.53  | 66.2     | 0.0       | -0.2    | 179.5   | 78.8  | 850       | 29.7      | 51.85     | 14281384.26  | 1065.6      | 14.66       | 74         | 68.12         | 0.123             |
| 9:48  | 55.3  | 28.8 | 0.0  | 0   | -0.04 | 16.8     | 8.1       | 37.1    | 43.4    | 82.7  | 869       | 29.8      | 53.22     | 10800707.23  | 1058.7      | 14.66       | 74         | 67.90         | 0.124             |
| 9:49  | 46.7  | 44.7 | 2.0  | 17  | -0.04 | 14.6     | 14.0      | 65.0    | 41.3    | 88.9  | 889       | 29.8      | 54.25     | 12174082.65  | 1044.0      | 14.66       | 74         | 67.33         | 0.119             |
| 9:50  | 440.1 | 45.3 | 15.2 | 99  | 2.86  | 455.5    | 46.9      | 225.3   | 1332.4  | 93.3  | 907       | 29.8      | 55.98     | 41655866.71  | 1042.5      | 14.66       | 74         | 67.63         | 0.120             |
| 9:51  | 517.0 | 54.9 | 15.1 | 99  | 2.99  | 525.9    | 58.8      | 275.0   | 1578.1  | 98.5  | 928       | 29.8      | 57.36     | 41946300.10  | 1026.8      | 14.66       | 74         | 67.85         | 0.123             |
| 9:52  | 488.0 | 50.0 | 14.9 | 99  | 3.11  | 479.9    | 49.2      | 247.1   | 1488.1  | 103.7 | 948       | 29.9      | 58.55     | 41383268.47  | 1022.8      | 14.66       | 74         | 67.50         | 0.122             |
| 9:53  | 469.6 | 45.3 | 14.8 | 99  | 3.21  | 454.2    | 43.8      | 224.8   | 1418.2  | 109.5 | 965       | 29.9      | 58.78     | 41554572.50  | 1008.8      | 14.66       | 75         | 67.45         | 0.124             |
| 9:54  | 424.4 | 38.3 | 14.6 | 99  | 3.36  | 397.5    | 36.9      | 187.8   | 1266.7  | 114.3 | 983       | 29.9      | 61.00     | 41068563.41  | 993.7       | 14.66       | 74         | 66.78         | 0.121             |
| 9:55  | 381.6 | 33.7 | 14.4 | 99  | 3.47  | 346.4    | 30.6      | 163.6   | 1127.4  | 116.5 | 1000      | 29.9      | 62.30     | 40651981.88  | 974.8       | 14.66       | 74         | 67.16         | 0.121             |
| 9:56  | 341.4 | 31.9 | 14.3 | 99  | 3.59  | 305.2    | 28.5      | 159.9   | 1015.8  | 123.6 | 1017      | 29.9      | 63.70     | 40940155.69  | 975.1       | 14.66       | 75         | 67.35         | 0.123             |
| 9:57  | 297.5 | 31.9 | 14.1 | 85  | 3.7   | 258.1    | 27.7      | 154.3   | 881.6   | 129.3 | 1038      | 30.0      | 65.37     | 40774879.99  | 965.3       | 14.66       | 74         | 67.17         | 0.121             |
| 9:58  | 244.3 | 31.4 | 13.9 | 51  | 3.81  | 205.9    | 26.5      | 151.5   | 717.4   | 133.2 | 1052      | 30.0      | 66.68     | 40405892.21  | 961.8       | 14.66       | 74         | 67.35         | 0.122             |
| 9:59  | 191.6 | 31.2 | 13.7 | 27  | 3.92  | 157.0    | 25.6      | 150.1   | 560.9   | 138.6 | 1070      | 30.0      | 68.38     | 40261744.79  | 961.1       | 14.66       | 74         | 68.85         | 0.119             |
| 10:00 | 145.1 | 31.4 | 13.5 | 12  | 4.03  | 115.7    | 25.0      | 150.3   | 422.8   | 142.8 | 1088      | 30.0      | 69.95     | 40094300.81  | 956.4       | 14.66       | 74         | 67.47         | 0.122             |
| 10:01 | 99.2  | 32.2 | 13.4 | 4   | 4.14  | 78.0     | 25.3      | 150.5   | 291.6   | 147.5 | 1104      | 30.0      | 71.53     | 40450680.22  | 956.8       | 14.66       | 74         | 67.40         | 0.121             |
| 10:02 | 56.1  | 34.3 | 13.0 | 0   | 4.24  | 42.4     | 25.9      | 162.9   | 162.2   | 153.8 | 1120      | 30.0      | 73.15     | 39775266.60  | 956.0       | 14.66       | 74         | 67.00         | 0.121             |
| 10:03 | 30.6  | 37.4 | 13.0 | 0   | 4.32  | 23.0     | 27.9      | 179.2   | 89.8    | 158.1 | 1137      | 30.0      | 74.74     | 401          |             |             |            |               |                   |

| Time  | CO    | NOx  | O2   | THC | CO2   | COG15% | NOx15% | NOx2   | NOx15% | NOx    | CO   | Load | Ex. Temp  | IGV Pos. | Fuel Flow     | En. Flow | Exh. Flow | Amb. Press. | Amb. Temp. | Rel. Humidity | Specific Humidity |
|-------|-------|------|------|-----|-------|--------|--------|--------|--------|--------|------|------|-----------|----------|---------------|----------|-----------|-------------|------------|---------------|-------------------|
|       | ppm   | ppm  | %    | ppm | %     | ppm    | ppm    | (b/hr) | (b/hr) | (b/hr) | (MW) | (F)  | (degrees) | (KPPH)   | M-112(acfh)   | CF(2000) | (psi)     | (F)         | (%)        | (lb/lbm)      |                   |
| 11:00 | 15.5  | 37.7 | 13.0 | 0   | 4.37  | 11.8   | 28.2   | 186.4  | 46.7   | 183.2  | 1172 | 28.7 | 27.7      | 77.13    | 41.19         | 1487.36  | 943.6     | 14.86       | 77         | 55.49         | 0.09              |
| 11:01 | 14.5  | 38.0 | 13.0 | 0   | 4.37  | 10.8   | 28.4   | 187.7  | 43.8   | 184.3  | 1173 | 28.8 | 27.04     | 77.04    | 41361268.59   | 945.5    | 14.68     | 78          | 55.61      | 0.114         |                   |
| 11:02 | 16.2  | 38.2 | 13.0 | 0   | 4.36  | 12.1   | 28.5   | 188.7  | 48.7   | 183.4  | 1172 | 28.7 | 77.06     | 77.06    | 41373868.56   | 944.8    | 14.66     | 78          | 53.31      | 0.114         |                   |
| 11:03 | 17.4  | 37.5 | 13.0 | 0   | 4.35  | 13.0   | 28.0   | 185.2  | 52.3   | 182.0  | 1174 | 28.7 | 77.04     | 77.04    | 41363332.39   | 947.2    | 14.65     | 78          | 52.94      | 0.109         |                   |
| 11:04 | 18.1  | 37.0 | 13.0 | 0   | 4.35  | 13.5   | 27.6   | 182.7  | 54.4   | 183.4  | 1172 | 28.7 | 77.03     | 77.03    | 41357810.69   | 945.3    | 14.66     | 77          | 53.63      | 0.106         |                   |
| 11:05 | 18.5  | 36.6 | 13.0 | 0   | 4.35  | 13.8   | 27.3   | 180.8  | 55.6   | 183.1  | 1171 | 28.7 | 77.05     | 77.05    | 41373242.00   | 941.4    | 14.66     | 75          | 54.70      | 0.102         |                   |
| 11:06 | 18.1  | 36.4 | 13.0 | 0   | 4.36  | 13.5   | 27.2   | 179.9  | 54.4   | 183.3  | 1170 | 28.7 | 77.09     | 77.09    | 41388025.00   | 945.9    | 14.65     | 75          | 55.50      | 0.103         |                   |
| 11:07 | 17.8  | 36.9 | 13.0 | 0   | 4.36  | 13.3   | 27.8   | 182.1  | 53.5   | 183.3  | 1170 | 28.7 | 77.00     | 77.00    | 41341496.18   | 943.7    | 14.66     | 75          | 56.48      | 0.106         |                   |
| 11:08 | 17.7  | 36.9 | 13.0 | 0   | 4.36  | 13.2   | 27.8   | 182.3  | 53.2   | 183.5  | 1170 | 28.7 | 77.04     | 77.04    | 41365430.64   | 945.4    | 14.65     | 76          | 56.70      | 0.110         |                   |
| 11:09 | 17.7  | 37.0 | 13.0 | 0   | 4.36  | 13.2   | 27.8   | 182.8  | 53.2   | 183.5  | 1170 | 28.7 | 77.06     | 77.06    | 41378109.04   | 946.8    | 14.66     | 78          | 56.27      | 0.114         |                   |
| 11:10 | 17.7  | 36.8 | 13.0 | 0   | 4.36  | 13.2   | 27.5   | 181.9  | 53.3   | 183.9  | 1171 | 28.7 | 77.12     | 77.12    | 41405299.21   | 944.3    | 14.65     | 77          | 54.97      | 0.110         |                   |
| 11:11 | 17.7  | 36.8 | 13.0 | 0   | 4.36  | 13.2   | 27.5   | 181.8  | 53.2   | 183.3  | 1170 | 28.7 | 77.06     | 77.06    | 41375691.33   | 946.1    | 14.65     | 78          | 55.57      | 0.108         |                   |
| 11:12 | 17.6  | 36.9 | 13.0 | 0   | 4.36  | 13.1   | 27.6   | 182.4  | 53.0   | 183.8  | 1170 | 28.7 | 77.10     | 77.10    | 41398000.64   | 943.8    | 14.66     | 76          | 55.24      | 0.107         |                   |
| 11:13 | 18.9  | 37.3 | 13.0 | 0   | 4.36  | 13.1   | 27.6   | 182.4  | 53.0   | 183.8  | 1170 | 28.7 | 77.10     | 77.10    | 41398000.64   | 943.8    | 14.66     | 76          | 55.24      | 0.107         |                   |
| 11:14 | 40.5  | 39.2 | 0.1  | 0   | 0     | 11.5   | 11.1   | 73.6   | 46.3   | 163.7  | 1170 | 28.7 | 77.10     | 77.10    | 15722569.23   | 945.4    | 14.65     | 78          | 53.09      | 0.110         |                   |
| 11:15 | 46.3  | 45.6 | 0.0  | 0   | -0.03 | 13.1   | 12.9   | 85.2   | 52.7   | 163.8  | 1171 | 28.7 | 77.12     | 77.12    | 15631139.71   | 945.3    | 14.65     | 77          | 52.08      | 0.103         |                   |
| 11:16 | 46.4  | 46.0 | 1.7  | 0   | 0.13  | 14.3   | 14.1   | 93.4   | 57.4   | 164.0  | 1170 | 28.6 | 77.01     | 77.01    | 17011420.49   | 946.3    | 14.65     | 76          | 52.64      | 0.100         |                   |
| 11:17 | 15.8  | 37.3 | 13.7 | 0   | 4.83  | 12.9   | 30.6   | 202.4  | 52.2   | 164.2  | 1170 | 28.7 | 77.15     | 77.15    | 45449371.60   | 943.0    | 14.66     | 76          | 54.40      | 0.104         |                   |
| 11:18 | -0.3  | 3.8  | 13.8 | 0   | 4.89  | -0.2   | 3.2    | 20.9   | -1.0   | 183.8  | 1171 | 28.6 | 77.09     | 77.09    | 46052987.19   | 944.2    | 14.65     | 77          | 54.88      | 0.109         |                   |
| 11:19 | -0.2  | 1.0  | 13.8 | 0   | 4.9   | -0.2   | 0.8    | 5.5    | -0.7   | 183.0  | 1171 | 28.7 | 77.05     | 77.05    | 46027978.42   | 947.6    | 14.65     | 77          | 53.77      | 0.106         |                   |
| 11:20 | 1.8   | 0.5  | 13.5 | 0   | 4.73  | 1.4    | 0.4    | 2.6    | 5.8    | 163.7  | 1171 | 28.7 | 77.00     | 77.00    | 44134490.68   | 947.8    | 14.65     | 76          | 53.82      | 0.110         |                   |
| 11:21 | 18.5  | 14.1 | 13.0 | 0   | 4.33  | 13.8   | 10.5   | 89.6   | 55.8   | 163.9  | 1170 | 28.7 | 76.96     | 76.96    | 41320146.90   | 944.1    | 14.65     | 78          | 53.26      | 0.111         |                   |
| 11:22 | 20.4  | 34.1 | 13.0 | 0   | 4.32  | 15.2   | 25.5   | 168.6  | 61.4   | 162.4  | 1170 | 28.7 | 77.13     | 77.13    | 41409735.08   | 945.0    | 14.65     | 79          | 53.35      | 0.110         |                   |
| 11:23 | 21.8  | 34.7 | 13.1 | 0   | 4.31  | 16.5   | 28.2   | 173.8  | 66.5   | 163.8  | 1171 | 28.7 | 77.15     | 77.15    | 41961801.69   | 950.9    | 14.66     | 79          | 53.26      | 0.111         |                   |
| 11:24 | 21.8  | 34.5 | 13.1 | 0   | 4.31  | 18.5   | 26.1   | 172.7  | 68.4   | 163.2  | 1170 | 28.8 | 77.09     | 77.09    | 41919006.12   | 943.6    | 14.66     | 79          | 52.13      | 0.109         |                   |
| 11:25 | 24.7  | 34.2 | 13.1 | 0   | 4.3   | 18.7   | 25.9   | 171.0  | 75.2   | 163.6  | 1167 | 28.7 | 77.02     | 77.02    | 41853808.13   | 949.4    | 14.66     | 79          | 52.21      | 0.110         |                   |
| 11:26 | 46.4  | 33.7 | 18.0 | 66  | 1.64  | 94.4   | 68.8   | 452.7  | 379.4  | 163.3  | 1167 | 28.7 | 76.92     | 76.92    | 112508160.96  | 948.5    | 14.65     | 79          | 51.56      | 0.108         |                   |
| 11:27 | 3.6   | 12.2 | 20.7 | 99  | 0.01  | 106.2  | 359.9  | 2378.3 | 427.2  | 163.4  | 1166 | 28.7 | 76.99     | 76.99    | 163288184.34  | 949.8    | 14.65     | 79          | 52.30      | 0.109         |                   |
| 11:28 | 0.7   | 1.1  | 20.7 | 98  | 0     | 20.7   | 32.5   | 214.8  | 83.1   | 163.9  | 1164 | 28.6 | 77.04     | 77.04    | 1633851334.33 | 950.8    | 14.65     | 78          | 52.23      | 0.107         |                   |
| 11:29 | 0.6   | 0.5  | 20.7 | 81  | 0     | 17.7   | 14.8   | 97.4   | 71.1   | 163.2  | 1181 | 28.5 | 78.92     | 78.92    | 1631239392.07 | 951.2    | 14.65     | 77          | 53.06      | 0.104         |                   |
| 11:30 | 0.6   | 0.3  | 20.7 | 73  | 0     | 17.7   | 8.9    | 58.4   | 71.1   | 163.5  | 1161 | 28.5 | 78.86     | 78.86    | 1629963481.34 | 950.7    | 14.65     | 78          | 52.97      | 0.108         |                   |
| 11:31 | 0.6   | 0.3  | 20.7 | 84  | 0     | 17.7   | 8.9    | 0.0    | 0.0    | 0.0    | 979  | 46.0 | 0.00      | 0.00     | 212.08        | 2.2      | 14.65     | 78          | 52.97      | 0.108         |                   |
| 11:32 | 0.6   | 0.1  | 20.7 | 68  | 0     | 17.7   | 3.0    | 0.0    | 0.0    | 0.0    | 964  | 45.0 | 0.00      | 0.00     | 212.08        | 1.3      | 14.65     | 78          | 53.01      | 0.110         |                   |
| 11:33 | 0.7   | 0.1  | 20.7 | 36  | 0     | 20.7   | 3.0    | 0.0    | 0.0    | 0.0    | 951  | 45.4 | 0.00      | 0.00     | 212.08        | 1.3      | 14.65     | 79          | 52.35      | 0.110         |                   |
| 11:34 | 0.8   | 0.1  | 20.7 | 29  | 0     | 17.7   | 3.0    | 0.0    | 0.0    | 0.0    | 938  | 45.2 | 0.00      | 0.00     | 212.08        | 1.3      | 14.65     | 79          | 52.03      | 0.110         |                   |
| 12:00 | 0.8   | -0.2 | 20.8 | 15  | -0.02 | 35.4   | -11.8  | 0.0    | 0.0    | 0.0    | 766  | 45.0 | 0.0       | 0.0      | 424.15        | 1.3      | 14.65     | 81          | 47.74      | 0.107         |                   |
| 12:01 | 16.9  | -0.2 | 19.3 | 96  | 0.65  | 69.7   | -0.7   | -0.2   | 11.1   | 0      | 756  | 45.0 | 0.0       | 0.0      | 8067023.48    | 1.0      | 14.86     | 81          | 48.15      | 0.107         |                   |
| 12:02 | 202.9 | 5.0  | 18.2 | 59  | 1.29  | 443.4  | 10.9   | 3.6    | 89.9   | 0      | 784  | 45.0 | 3.9       | 3.9      | 906652.78     | 1.8      | 14.65     | 81          | 48.42      | 0.107         |                   |
| 12:03 | 288.1 | 9.4  | 18.3 | 99  | 1.27  | 653.8  | 21.3   | 9.5    | 177.0  | 0      | 832  | 44.9 | 5.2       | 5.2      | 8454972.87    | 2.5      | 14.85     | 80          | 48.83      | 0.106         |                   |
| 12:04 | 371.8 | 9.3  | 18.8 | 99  | 1.11  | 953.2  | 23.9   | 15.6   | 378.4  | 0      | 864  | 44.8 | 7.6       | 7.6      | 14009297.63   | 211.0    | 14.65     | 79          | 48.95      | 0.104         |                   |
| 12:05 | 349.9 | 8.5  | 18.4 | 99  | 1.18  | 825.8  | 20.1   | 18.2   | 406.9  | 0      | 882  | 44.8 | 9.4       | 9.4      | 15999970.12   | 239.5    | 14.65     | 79          | 49.62      | 0.103         |                   |
| 12:06 | 320.9 | 11.0 | 18.2 | 99  | 1.31  | 701.2  | 24.0   | 28.2   | 500.1  | 0      | 923  | 44.8 | 13.7      | 13.7     | 21443819.10   | 476.5    | 14.65     | 78          | 49.98      | 0.104         |                   |
| 12:07 | 304.9 | 15.4 | 18.1 | 99  | 1.35  | 642.5  | 32.5   | 47.0   | 566.0  | 0      | 927  | 44.8 | 16.9      | 16.9     | 25541124.75   | 473.3    | 14.65     | 78          | 50.71      | 0.103         |                   |
| 12:08 | 369.0 | 20.0 | 17.7 | 99  | 1.54  | 880.3  | 36.9   | 71.3   | 800.4  | 0      | 945  | 44.8 | 22.5      | 22.5     | 29844214.85   | 489.3    | 14.64     | 78          | 51.36      | 0.105         |                   |
| 12:09 | 420.5 | 21.6 | 18.2 | 99  | 1.24  | 918.9  | 47.2   | 124.8  | 1479.2 | 0      | 923  | 29.7 | 30.8      | 30.8     | 48401715.76   | 770.2    | 14.64     | 78          | 51.45      | 0.105         |                   |
| 12:10 | 403.7 | 23.5 | 18.4 | 99  | 1.16  | 952.7  | 55.6   | 138.9  | 1452.5 | 0.2    | 739  | 29.7 | 29.2      | 29.2     | 49506547.53   | 924.2    | 14.66     | 78          | 51.50      | 0.105         |                   |
| 12:11 | 402.8 | 26.2 | 18.4 | 99  | 1.15  | 980.6  | 61.8   | 148.5  | 1398.8 | 0.2    | 699  | 29.7 | 28.2      | 28.2     | 47774014.38   | 951.7    | 14.65     | 78          | 51.44      | 0.104         |                   |
| 12:12 | 402.4 | 26.4 | 18.4 | 99  | 1.17  | 948.7  | 62.3   | 148.4  | 1376.9 | 0.3    | 678  | 29.7 | 27.7      | 27.7     | 47079552.18   | 978.1    | 14.65     | 78          | 51.09      | 0.105         |                   |
| 12:13 | 395.7 | 27.0 | 18.6 | 99  | 1.06  | 1015.1 | 69.3   | 162.5  | 1627.8 | 3.8    | 634  | 14.3 | 30.7      | 30.7     | 58802277.09   | 1119.4   | 14.65     | 78          | 51.18      | 0.106         |                   |
| 12:14 | 367.8 | 26.5 | 18.6 | 99  | 1.05  | 994.8  | 68.0   | 160.8  | 1608.1 | 4.6    | 800  | 10.7 | 30.9      | 30.9     | 57054770.48   | 1233.7   | 14.65     | 78          | 51.03      | 0.106         |                   |
| 12:15 | 398.8 | 26.3 | 18.5 | 99  | 1.1   | 980.4  | 64.7   | 171.4  | 1581.6 | 4.8    | 599  | 10.7 | 30.9      | 30.9     | 45464366.71   | 1233.7   | 14.65     | 78          | 51.03      | 0.106         |                   |
| 12:16 | 416.3 | 28.2 | 18.3 | 99  | 1.18  | 944.7  | 64.0   | 169.7  | 1524.5 | 4.7    | 598  | 10.7 | 30.9      | 30.9     | 50388069.50   | 1231.4   | 14.65     | 79          | 50.88      | 0.106         |                   |
| 12:17 | 435.8 | 31.3 | 18.2 | 99  | 1.26  | 952.3  | 68.4   | 189.0  | 1802.1 | 9.9    | 591  | 10.6 | 32.2      | 32.2     | 50581510.34   | 1270.5   | 14.84     | 78          | 50.15      | 0.104         |                   |
| 12:18 | 463.1 | 34.7 | 18.0 | 99  | 1.34  | 942.2  | 70.6   | 1690.5 | 1690.5 | 17.7   | 595  | 10.5 | 34.3      | 34.3     | 50227802.69   | 1295.8   | 14.64     | 79          | 49.37      | 0.105         |                   |
| 12:19 | 379.8 | 38.7 | 8.8  | 56  | 0.87  | 156.7  | 15.1   | 47.1   | 297.0  | 23.7   | 602  | 10.5 | 36.3      | 36.3     | 10759645.16   | 1301.4   | 14.64     | 79          | 48.66      | 0.103         |                   |
| 12:20 | 5.0   | 19.5 | 0.1  | 32  | -0.04 | 1.4    | 5.5    | 18.2   | 2.8    | 29.6   | 610  | 10.5 | 38.3      | 38.3     | 7809213.57    | 1324.4   | 14.65     | 78          | 48.58      | 0.110         |                   |
| 12:21 | 0.7   | 5.8  | 0.0  | 24  | -0.05 | 0.2    | 1.6    | 5.6    | 0.4    | 36.8   | 822  | 10.4 | 41.4      | 41.4     | 8407043.86    | 1370.3   | 14.64     | 80          | 46.72      | 0.100         |                   |
| 12:22 | 0.6   | 3.6  | 0.0  | 24  | -0.05 | 0.2    | 1.1    | 4.1    | 0.4    | 45.4   | 837  | 10.3 | 44.5      | 44.5     | 9030815.56    | 1408.9   | 14.64     | 80          | 45.47      | 0.100         |                   |
| 12:23 | 0.4   | 2.8  | 0.0  | 24  | -0.06 | 0.1    | 0.8    | 3.     |        |        |      |      |           |          |               |          |           |             |            |               |                   |

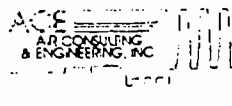
| Time  | CO   | NOx  | O2   | THC   | CO2   | CO@15%O2 | NOx@15%O2 | NOx    | CO     | Load  | Exh. Temp | IGV Pos.  | Fuel Flow | Exh. Flow     | Exh. Flow    | Amb. Press. | Amb. Temp | Rel. Humidity | Specific Humidity |
|-------|------|------|------|-------|-------|----------|-----------|--------|--------|-------|-----------|-----------|-----------|---------------|--------------|-------------|-----------|---------------|-------------------|
|       | ppm  | ppm  | %    | ppm   | %     | ppm      | ppm       | (b/hr) | (b/hr) | (MW)  | (F)       | (degrees) | (KPPH)    | M-19 (dacth)  | CT (btu/sec) | (psia)      | (F)       | (%)           | (lb/2.046 m)      |
| 13:25 | 21.5 | 36.1 | 13.1 | 0     | 4.23  | 16.3     | 27.3      | 179.2  | 65.0   | 162.4 | 1161      | 28.5      | 76.5      | 41584236.35   | 948.2        | 14.63       | 82        | 40.15         | .0094             |
| 13:26 | 21.4 | 35.0 | 13.1 | 0     | 4.24  | 16.2     | 27.3      | 174.3  | 64.7   | 161.8 | 1160      | 28.4      | 76.5      | 41588207.49   | 948.4        | 14.63       | 82        | 40.81         | .0095             |
| 13:27 | 21.6 | 35.0 | 13.1 | 0     | 4.24  | 16.3     | 27.3      | 173.8  | 65.3   | 161.8 | 1161      | 28.4      | 76.5      | 41596843.96   | 947.5        | 14.63       | 82        | 41.24         | .0097             |
| 13:28 | 22.5 | 34.9 | 13.1 | 0     | 4.24  | 17.0     | 27.4      | 173.4  | 68.0   | 161.8 | 1159      | 28.2      | 76.5      | 41600416.07   | 951.1        | 14.63       | 82        | 41.85         | .0098             |
| 13:29 | 23.4 | 34.5 | 13.1 | 0     | 4.24  | 17.5     | 27.4      | 171.2  | 70.7   | 161.3 | 1158      | 28.2      | 76.4      | 41584228.22   | 950.3        | 14.63       | 82        | 42.89         | .0098             |
| 13:30 | 23.5 | 34.2 | 13.1 | 0     | 4.24  | 17.5     | 27.5      | 170.0  | 73.6   | 161.9 | 1158      | 28.2      | 76.6      | 41631216.50   | 952.7        | 14.63       | 82        | 43.08         | .0102             |
| 13:31 | 23.5 | 34.0 | 13.1 | 0     | 4.24  | 17.8     | 27.5      | 169.0  | 71.1   | 161.9 | 1158      | 28.2      | 76.6      | 41635634.73   | 952.1        | 14.63       | 82        | 44.01         | .0101             |
| 13:32 | 22.4 | 34.3 | 13.1 | 0     | 4.25  | 16.9     | 27.5      | 170.3  | 67.7   | 161.8 | 1157      | 28.2      | 76.5      | 41577303.01   | 951.1        | 14.63       | 81        | 44.21         | .0098             |
| 13:33 | 23.5 | 34.8 | 13.1 | 0     | 4.24  | 17.8     | 27.6      | 172.1  | 71.1   | 162.6 | 1156      | 28.2      | 76.8      | 41647483.77   | 951.4        | 14.62       | 80        | 44.64         | .0098             |
| 13:34 | 22.1 | 34.5 | 13.1 | 0     | 4.25  | 16.7     | 27.6      | 171.4  | 66.6   | 161.5 | 1154      | 28.2      | 76.5      | 41603100.73   | 951.5        | 14.63       | 79        | 44.91         | .0096             |
| 13:35 | 21.5 | 34.9 | 13.1 | 0     | 4.25  | 16.3     | 27.6      | 173.2  | 64.9   | 161.7 | 1155      | 28.2      | 76.4      | 41555240.74   | 950.3        | 14.62       | 80        | 45.11         | .0099             |
| 13:36 | 20.8 | 35.3 | 13.1 | 0     | 4.26  | 15.7     | 27.6      | 175.2  | 62.8   | 161.8 | 1156      | 28.2      | 76.4      | 41595688.35   | 950.0        | 14.63       | 81        | 45.63         | .0104             |
| 13:37 | 19.4 | 35.7 | 13.1 | 0     | 4.26  | 14.7     | 27.0      | 177.3  | 58.7   | 161.8 | 1156      | 28.2      | 76.5      | 41605795.48   | 950.5        | 14.62       | 80        | 44.47         | .0096             |
| 13:38 | 19.5 | 36.0 | 13.1 | 0     | 4.26  | 14.8     | 27.2      | 178.7  | 58.9   | 162.8 | 1157      | 28.2      | 76.4      | 41570248.44   | 951.7        | 14.63       | 81        | 44.10         | .0100             |
| 13:39 | 19.6 | 36.0 | 13.1 | 0     | 4.26  | 14.8     | 27.2      | 176.7  | 59.2   | 161.9 | 1158      | 28.2      | 76.5      | 41573474.34   | 948.0        | 14.62       | 81        | 43.52         | .0097             |
| 13:40 | 19.7 | 35.8 | 13.1 | 0     | 4.27  | 14.9     | 27.1      | 177.9  | 59.6   | 161.8 | 1159      | 28.2      | 76.5      | 41623433.33   | 951.7        | 14.62       | 82        | 43.49         | .0101             |
| 13:41 | 19.2 | 36.2 | 13.1 | 0     | 4.27  | 14.5     | 27.4      | 180.0  | 58.1   | 162.0 | 1161      | 28.2      | 76.8      | 41634141.51   | 949.9        | 14.62       | 82        | 41.34         | .0098             |
| 13:42 | 19.4 | 36.2 | 13.1 | 0     | 4.27  | 14.7     | 27.4      | 180.1  | 58.7   | 161.9 | 1161      | 28.2      | 76.6      | 41665165.42   | 951.0        | 14.62       | 82        | 41.87         | .0098             |
| 13:43 | 19.5 | 36.1 | 13.1 | 0     | 4.27  | 14.8     | 27.3      | 179.4  | 59.0   | 161.9 | 1161      | 28.2      | 76.5      | 41616583.33   | 949.3        | 14.62       | 82        | 41.52         | .0096             |
| 13:44 | 19.6 | 35.9 | 13.1 | 0     | 4.27  | 14.8     | 27.2      | 178.5  | 59.3   | 162.1 | 1162      | 28.2      | 76.8      | 41654248.26   | 948.6        | 14.62       | 83        | 41.32         | .0100             |
| 13:45 | 20.5 | 36.1 | 13.1 | 0     | 4.26  | 15.5     | 27.3      | 179.9  | 62.2   | 162.8 | 1162      | 28.2      | 76.8      | 41747277.22   | 951.5        | 14.62       | 83        | 40.59         | .0097             |
| 13:46 | 21.3 | 35.7 | 13.1 | 0     | 4.26  | 16.1     | 27.0      | 177.7  | 64.5   | 161.7 | 1162      | 28.2      | 76.7      | 41690165.85   | 952.0        | 14.62       | 82        | 41.43         | .0098             |
| 13:47 | 21.7 | 35.3 | 13.1 | 0     | 4.26  | 16.4     | 26.7      | 175.7  | 65.7   | 161.7 | 1162      | 28.2      | 76.7      | 41681984.64   | 948.9        | 14.62       | 82        | 42.17         | .0099             |
| 13:48 | 21.2 | 35.5 | 13.1 | 0     | 4.26  | 16.0     | 26.9      | 176.9  | 64.3   | 162.2 | 1163      | 28.2      | 76.8      | 41743671.94   | 947.6        | 14.62       | 82        | 42.25         | .0099             |
| 13:49 | 20.3 | 35.8 | 13.1 | 0     | 4.27  | 15.4     | 27.1      | 178.1  | 61.5   | 162.2 | 1162      | 28.2      | 76.8      | 41662427.47   | 945.4        | 14.62       | 81        | 42.75         | .0096             |
| 13:50 | 19.5 | 36.3 | 13.1 | 3     | 4.28  | 14.8     | 27.5      | 180.6  | 59.0   | 162.0 | 1162      | 28.2      | 76.6      | 41659846.68   | 947.9        | 14.62       | 80        | 43.23         | .0095             |
| 13:51 | 38.4 | 36.0 | 0.3  | 0     | 4.42  | 11.0     | 10.3      | 87.8   | 44.0   | 161.4 | 1181      | 28.2      | 76.8      | 15756404.73   | 947.4        | 14.62       | 81        | 44.16         | .0098             |
| 13:52 | 46.3 | 44.0 | 0.0  | -0.03 | 13.1  | 12.4     | 12.4      | 81.6   | 52.3   | 162.0 | 1161      | 28.2      | 76.5      | 15534743.78   | 950.2        | 14.62       | 81        | 44.15         | .0098             |
| 13:53 | 46.4 | 45.7 | 0.0  | -0.04 | 13.1  | 12.9     | 12.9      | 85.0   | 52.5   | 162.0 | 1162      | 28.2      | 76.7      | 15571908.28   | 948.2        | 14.62       | 82        | 43.79         | .0101             |
| 13:54 | 46.3 | 45.7 | 0.0  | -0.04 | 13.1  | 12.9     | 12.9      | 84.9   | 52.3   | 161.9 | 1163      | 28.2      | 76.6      | 15592168.96   | 947.5        | 14.62       | 82        | 42.82         | .0096             |
| 13:55 | 22.9 | 45.6 | 12.8 | 0     | 3.47  | 16.7     | 33.2      | 218.8  | 66.9   | 161.7 | 1163      | 28.2      | 76.8      | 40190734.59   | 950.3        | 14.62       | 82        | 42.05         | .0096             |
| 13:56 | -0.5 | 8.8  | 13.8 | 0     | 4.88  | -0.4     | 7.3       | 48.1   | -1.7   | 162.4 | 1163      | 28.2      | 76.7      | 45795218.17   | 946.7        | 14.62       | 82        | 42.09         | .0097             |
| 13:57 | -0.3 | 1.2  | 13.8 | 0     | 4.87  | -0.2     | 1.0       | 6.6    | -1.0   | 162.0 | 1164      | 28.2      | 76.7      | 45815021.23   | 947.5        | 14.62       | 82        | 41.82         | .0096             |
| 13:58 | -0.5 | 0.6  | 13.8 | 0     | 4.87  | -0.4     | 0.5       | 3.3    | -1.7   | 161.8 | 1164      | 28.2      | 76.8      | 45852909.85   | 949.4        | 14.62       | 81        | 41.52         | .0096             |
| 13:59 | -0.3 | 0.4  | 13.8 | 0     | 4.88  | -0.2     | 0.3       | 2.2    | -1.0   | 162.6 | 1165      | 28.2      | 76.8      | 45898348.57   | 947.0        | 14.62       | 82        | 41.56         | .0096             |
| 14:00 | 9.4  | 0.1  | 13.2 | 0     | 4.45  | 7.2      | 0.1       | 0.5    | 28.9   | 163.1 | 1166      | 28.2      | 76.9      | 42366374.65   | 946.2        | 14.62       | 82        | 41.79         | .0095             |
| 14:01 | 17.8 | 25.8 | 15.4 | 8     | 3.54  | 18.9     | 27.7      | 183.2  | 76.1   | 163.5 | 1168      | 28.2      | 77.1      | 59482697.45   | 947.6        | 14.62       | 82        | 40.98         | .0095             |
| 14:02 | 2.4  | 22.0 | 20.6 | 25    | -0.01 | 47.2     | 432.7     | 2917.7 | 193.7  | 168.0 | 1166      | 27.5      | 76.6      | 1110761816.50 | 968.1        | 14.62       | 82        | 40.85         | .0095             |
| 14:03 | 0.5  | 1.5  | 20.7 | 25    | -0.03 | 14.8     | 44.3      | 305.7  | 62.0   | 174.0 | 1159      | 25.3      | 80.5      | 1707005652.84 | 982.9        | 14.62       | 82        | 40.42         | .0093             |
| 14:04 | 0.6  | 0.4  | 20.7 | 24    | -0.04 | 17.7     | 11.8      | 83.9   | 76.8   | 181.9 | 1150      | 22.8      | 82.8      | 1756802419.96 | 1018.3       | 14.62       | 82        | 40.46         | .0094             |
| 14:05 | 0.9  | 0.3  | 18.4 | 24    | -0.04 | 2.1      | 0.1       | 5.2    | 9.4    | 187.5 | 1142      | 20.6      | 84.7      | 143774601.94  | 1034.2       | 14.61       | 81        | 40.51         | .0091             |
| 14:06 | 3.9  | 8.7  | 13.1 | 0     | 4.27  | 3.0      | 3.0       | 7.1    | 13.4   | 194.3 | 1135      | 18.3      | 87.2      | 47393487.02   | 1066.8       | 14.61       | 81        | 41.21         | .0092             |
| 14:07 | 2.4  | 23.4 | 12.9 | 0     | 4.36  | 1.8      | 17.3      | 132.8  | 8.3    | 202.1 | 1130      | 15.5      | 89.7      | 47848283.30   | 1069.4       | 14.61       | 81        | 42.90         | .0095             |
| 14:08 | 1.6  | 28.4 | 12.8 | 0     | 4.43  | 1.2      | 20.7      | 164.7  | 5.6    | 210.2 | 1124      | 11.4      | 92.7      | 4851315.97    | 1131.6       | 14.62       | 80        | 43.82         | .0095             |
| 14:09 | 1.4  | 31.2 | 12.8 | 0     | 4.42  | 1.0      | 22.7      | 185.8  | 5.1    | 216.5 | 1120      | 8.3       | 96.3      | 48859493.41   | 1162.7       | 14.62       | 81        | 43.72         | .0095             |
| 14:10 | 1.5  | 30.5 | 12.8 | 0     | 4.43  | 1.1      | 22.2      | 185.5  | 5.8    | 223.3 | 1115      | 4.1       | 97.3      | 50934562.00   | 1183.1       | 14.62       | 82        | 43.16         | .0100             |
| 14:11 | 1.4  | 31.2 | 12.8 | 0     | 4.44  | 1.0      | 22.7      | 195.8  | 5.3    | 231.6 | 1116      | 0.8       | 100.4     | 52565666.06   | 1227.9       | 14.62       | 82        | 42.36         | .0098             |
| 14:12 | 1.6  | 31.3 | 12.8 | 0     | 4.43  | 1.2      | 22.8      | 200.0  | 8.2    | 238.4 | 1128      | 0.8       | 102.2     | 53516517.58   | 1236.6       | 14.62       | 82        | 41.70         | .0098             |
| 14:13 | 1.5  | 31.4 | 12.8 | 0     | 4.43  | 1.1      | 22.9      | 200.2  | 5.8    | 235.3 | 1128      | 0.8       | 102.0     | 53409178.09   | 1227.3       | 14.62       | 82        | 41.76         | .0098             |
| 14:14 | 1.3  | 31.8 | 12.7 | 0     | 4.45  | 0.9      | 22.9      | 200.5  | 5.0    | 236.1 | 1130      | 0.8       | 102.1     | 52818196.39   | 1227.0       | 14.62       | 82        | 41.56         | .0097             |
| 14:15 | 1.1  | 32.4 | 12.7 | 0     | 4.45  | 0.8      | 23.3      | 204.5  | 4.2    | 236.9 | 1131      | 0.8       | 102.2     | 52863186.59   | 1227.5       | 14.62       | 82        | 40.70         | .0094             |
| 14:16 | 0.8  | 32.6 | 12.7 | 0     | 4.46  | 0.6      | 23.5      | 206.2  | 3.1    | 236.4 | 1131      | 0.8       | 102.4     | 52985571.18   | 1227.0       | 14.61       | 81        | 41.56         | .0097             |
| 14:17 | 0.9  | 32.5 | 12.7 | 0     | 4.45  | 0.6      | 23.4      | 206.5  | 3.5    | 237.9 | 1130      | 0.8       | 102.9     | 53205880.83   | 1226.2       | 14.62       | 81        | 41.52         | .0096             |
| 14:18 | 1.2  | 32.5 | 12.7 | 0     | 4.46  | 0.9      | 23.4      | 207.1  | 4.7    | 238.9 | 1132      | 0.8       | 103.2     | 53363213.91   | 1226.2       | 14.62       | 81        | 41.56         | .0097             |
| 14:19 | 1.2  | 32.2 | 12.7 | 0     | 4.46  | 0.9      | 23.2      | 206.1  | 4.7    | 238.6 | 1133      | 0.8       | 103.1     | 53340274.07   | 1226.1       | 14.61       | 81        | 41.52         | .0096             |
| 14:20 | 1.4  | 32.0 | 12.7 | 0     | 4.46  | 1.0      | 23.0      | 203.9  | 5.4    | 239.3 | 1133      | 0.8       | 103.2     | 53360641.07   | 1226.7       | 14.61       | 81        | 40.76         | .0091             |
| 14:21 | 1.8  | 32.0 | 12.7 | 0     | 4.45  | 1.2      | 23.0      | 203.5  | 6.2    | 240.2 | 1134      | 0.8       | 103.0     | 53269603.99   | 1226.4       | 14.61       | 81        | 40.94         | .0092             |
| 14:22 | 0.8  | 31.8 | 12.7 | 0     | 4.46  | 0.6      | 22.9      | 202.1  | 3.1    | 238.3 | 1135      | 0.8       | 102.9     | 53239458.51   | 1228.3       | 14.62       | 81        | 41.04         | .0093             |
| 14:23 | 1.7  | 31.7 | 12.7 | 0     | 4.45  | 1.2      | 22.8      | 201.7  | 6.6    | 238.5 | 1134      | 0.8       | 103.0     | 53292341.40   | 1226.2       | 14.62       | 80        | 41.87         | .0093             |
| 14:24 | 1.3  | 31.8 | 12.7 | 0     | 4.46  | 0.9      | 22.9      | 202.3  | 5.0    | 237.6 | 1135      | 0.8       | 103.0     | 53285287.44   | 1228.0       | 14.62       | 81        | 43.19         | .0096             |
| 14:25 | 1.7  | 32.2 | 12.7 | 0     | 4.46  | 1.2      | 23.2      | 204.5  | 6.6    | 237.6 | 1135      | 0.8       | 103.8     | 53177514.45   | 1223.7       | 14.61       | 81        | 43.94         | .0096             |
| 14:26 | 1.6  | 32.3 | 12.7 | 0     | 4.46  | 1.2      | 23.2      | 206.3  | 6.2    | 236.8 | 1136      | 0.8       | 102.9     | 53232692.34   | 1221.7       | 14.61       | 81        | 43.99         | .0098             |
| 14:27 | 1.7  | 32.3 | 12.7 | 0     | 4.46  | 1.2      | 23.2      | 205.4  | 6.8    | 236.8 |           |           |           |               |              |             |           |               |                   |

| me  | CO   | NOx  | O2   | THC | CO2   | CO@15% | NO2   | NOx@15% | NOx  | CO    | Load      | Exh. Temp | IGV Pos.    | Fuel Flow     | Exh. Flow | Amb. Press. | Amb. Temp. | Rel. Humidity   | Specific Humidity |
|-----|------|------|------|-----|-------|--------|-------|---------|------|-------|-----------|-----------|-------------|---------------|-----------|-------------|------------|-----------------|-------------------|
| ppm | ppm  | %    | ppm  | %   | ppm   | ppm    | ppm   | (b/hr)  | (MW) | (F)   | (degrees) | (KPPH)    | M-19 (dsch) | CF (scms)     | (psia)    | (F)         | (%)        | (lb/lb-dry air) |                   |
| 525 | 0.6  | 0.4  | 13.8 | 0   | 4.9   | 0.3    | 0.3   | 2.9     | 2.7  | 238.1 | 1135      | 0.1       | 103.0       | 61558121.54   | 1229.3    | 14.81       | 81         | 42.94           | 0096              |
| 526 | 18.7 | 1.1  | 4.6  | 0   | 1.71  | 8.8    | 0.4   | 3.5     | 36.4 | 237.8 | 1135      | 0.1       | 103.0       | 26415081.56   | 1225.4    | 14.51       | 81         | 43.69           | 0097              |
| 527 | 47.7 | 3.17 | 0.0  | 0   | 0     | 13.5   | 8.9   | 79.2    | 72.5 | 237.7 | 1135      | 0.1       | 103.1       | 20920999.75   | 1226.2    | 14.61       | 81         | 44.16           | 0099              |
| 528 | 47.6 | 44.4 | 0.0  | 0   | -0.02 | 13.4   | 12.5  | 110.8   | 72.3 | 238.0 | 1135      | 0.1       | 103.0       | 20907750.82   | 1222.2    | 14.61       | 80         | 44.14           | 0097              |
| 529 | 47.7 | 45.1 | 0.0  | 0   | -0.02 | 13.5   | 12.7  | 112.8   | 72.6 | 237.8 | 1135      | 0.2       | 103.2       | 20944470.92   | 1226.7    | 14.61       | 81         | 44.85           | 0099              |
| 530 | 47.8 | 45.3 | 0.0  | 0   | -0.03 | 13.4   | 12.8  | 113.0   | 72.3 | 237.2 | 1136      | 0.1       | 102.9       | 20849977.48   | 1227.0    | 14.61       | 82         | 44.33           | 0101              |
| 31  | 38.9 | 45.2 | 5.5  | 0   | 1.41  | 14.9   | 17.3  | 152.8   | 80.0 | 237.2 | 1135      | 0.1       | 102.8       | 28309710.20   | 1226.7    | 14.61       | 81         | 43.11           | 0098              |
| 12  | 3.2  | 39.8 | 12.7 | 0   | 4.42  | 2.3    | 28.8  | 252.8   | 12.4 | 237.8 | 1135      | 0.1       | 102.9       | 53200229.28   | 1228.5    | 14.61       | 82         | 43.28           | 0099              |
| 33  | 1.8  | 31.9 | 12.7 | 0   | 4.44  | 1.3    | 23.0  | 202.5   | 7.0  | 238.0 | 1135      | 0.1       | 102.8       | 53165550.30   |           | 14.61       |            |                 |                   |
| 534 | 1.8  | 31.6 | 12.7 | 0   | 4.44  | 1.3    | 22.7  | 200.9   | 7.0  | 238.0 | 1136      | 0.2       | 102.9       | 53247495.21   |           | 14.61       |            |                 |                   |
| 535 | 1.8  | 31.7 | 12.7 | 0   | 4.45  | 1.3    | 22.8  | 201.6   | 7.0  | 237.0 | 1135      | 0.1       | 103.0       | 53251958.10   | 1227.2    | 14.61       | 82         | 43.36           | 0099              |
| 536 | 1.9  | 31.7 | 12.7 | 0   | 4.45  | 1.4    | 22.8  | 201.8   | 7.4  | 237.0 | 1135      | 0.1       | 103.0       | 53262846.37   | 1226.7    | 14.61       | 82         | 43.16           | 0099              |
| 537 | 1.8  | 31.6 | 12.7 | 0   | 4.45  | 1.3    | 22.7  | 200.9   | 7.0  | 238.5 | 1135      | 0.1       | 102.9       | 53240213.78   | 1221.9    | 14.61       | 82         | 43.43           | 0100              |
| 538 | 1.8  | 31.7 | 12.7 | 0   | 4.45  | 1.3    | 22.8  | 201.5   | 7.0  | 237.0 | 1135      | 0.2       | 102.9       | 53230880.91   | 1224.9    | 14.61       | 81         | 43.06           | 0097              |
| 539 | 1.8  | 31.8 | 12.7 | 0   | 4.46  | 1.3    | 22.9  | 202.3   | 7.0  | 237.1 | 1136      | 0.1       | 103.0       | 53285099.80   | 1225.8    | 14.61       | 81         | 43.45           | 0099              |
| 540 | 1.8  | 31.8 | 12.7 | 0   | 4.45  | 1.3    | 22.7  | 200.8   | 7.0  | 236.2 | 1136      | 0.1       | 102.9       | 53209388.87   | 1224.1    | 14.61       | 83         | 43.35           | 0103              |
| 541 | 1.8  | 31.0 | 12.7 | 0   | 4.45  | 1.3    | 22.3  | 196.5   | 6.9  | 235.5 | 1136      | 0.1       | 102.6       | 53075615.31   | 1226.1    | 14.61       | 84         | 42.88           | 0107              |
| 542 | 1.8  | 31.1 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 196.7   | 6.9  | 235.4 | 1136      | 0.1       | 102.4       | 52974560.85   | 1216.2    | 14.61       | 83         | 40.77           | 0097              |
| 543 | 1.7  | 31.4 | 12.7 | 0   | 4.45  | 1.2    | 22.6  | 199.2   | 6.8  | 236.9 | 1136      | 0.1       | 102.7       | 53141515.42   | 1221.1    | 14.61       | 82         | 41.65           | 0096              |
| 544 | 1.8  | 31.4 | 12.7 | 0   | 4.45  | 1.3    | 22.6  | 199.2   | 7.0  | 237.0 | 1136      | 0.1       | 102.7       | 53133178.72   | 1222.2    | 14.61       | 82         | 41.64           | 0097              |
| 545 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3    | 22.5  | 198.5   | 6.9  | 236.8 | 1136      | 0.1       | 102.7       | 53109613.07   |           | 14.61       |            |                 |                   |
| 546 | 1.8  | 31.4 | 12.7 | 0   | 4.45  | 1.3    | 22.5  | 199.0   | 6.9  | 237.9 | 1136      | 0.2       | 102.6       | 53085035.08   | 1225.3    | 14.61       | 82         | 41.68           | 0096              |
| 547 | 1.8  | 31.6 | 12.7 | 0   | 4.46  | 1.3    | 22.7  | 200.8   | 7.0  | 237.1 | 1135      | 0.1       | 102.9       | 53220798.01   |           | 14.61       |            |                 |                   |
| 548 | 1.8  | 31.6 | 12.7 | 0   | 4.46  | 1.3    | 22.7  | 201.0   | 7.0  | 238.9 | 1135      | 0.2       | 103.0       | 53278422.53   |           | 14.61       |            |                 |                   |
| 549 | 1.8  | 31.4 | 12.7 | 0   | 4.45  | 1.3    | 22.8  | 199.5   | 7.0  | 237.0 | 1136      | 0.2       | 102.9       | 53220719.36   |           | 14.61       |            |                 |                   |
| 550 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3    | 22.5  | 199.0   | 7.0  | 237.0 | 1136      | 0.1       | 102.9       | 53248832.08   |           | 14.61       |            |                 |                   |
| 551 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3    | 22.3  | 198.8   | 7.0  | 237.2 | 1136      | 0.2       | 102.7       | 53140970.75   |           | 14.61       |            |                 |                   |
| 552 | 1.8  | 31.2 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 198.2   | 7.0  | 237.7 | 1136      | 0.2       | 102.9       | 53214973.16   |           | 14.61       |            |                 |                   |
| 553 | 1.8  | 31.4 | 12.7 | 0   | 4.45  | 1.3    | 22.8  | 199.3   | 7.0  | 236.9 | 1136      | 0.2       | 102.8       | 53167159.16   |           | 14.61       |            |                 |                   |
| 554 | 1.8  | 31.4 | 12.7 | 0   | 4.46  | 1.3    | 22.8  | 199.5   | 7.0  | 236.9 | 1136      | 0.1       | 102.9       | 53206571.37   |           | 14.61       |            |                 |                   |
| 555 | 1.8  | 31.6 | 12.7 | 0   | 4.46  | 1.3    | 22.7  | 200.4   | 6.9  | 236.1 | 1136      | 0.1       | 102.7       | 53120879.96   |           | 14.61       |            |                 |                   |
| 556 | 1.8  | 31.5 | 12.7 | 0   | 4.46  | 1.3    | 22.7  | 200.1   | 7.0  | 236.8 | 1136      | 0.1       | 102.9       | 53200292.39   | 1230.3    | 14.61       | 82         | 42.50           | 0097              |
| 557 | 1.9  | 31.5 | 12.7 | 0   | 4.46  | 1.4    | 22.7  | 199.9   | 7.3  | 237.4 | 1136      | 0.2       | 102.7       | 53144692.42   | 1226.7    | 14.61       | 82         | 42.73           | 0096              |
| 558 | 1.8  | 31.7 | 12.7 | 0   | 4.46  | 1.3    | 22.8  | 201.1   | 7.0  | 237.5 | 1135      | 0.2       | 102.7       | 53138027.04   | 1225.4    | 14.61       | 81         | 42.59           | 0096              |
| 559 | 1.8  | 31.7 | 12.7 | 0   | 4.46  | 1.3    | 22.8  | 201.4   | 7.0  | 237.6 | 1135      | 0.1       | 102.8       | 53198824.41   | 1225.7    | 14.61       | 81         | 43.11           | 0096              |
| 600 | 1.8  | 31.6 | 11.9 | 1   | 4.46  | 1.2    | 20.7  | 182.8   | 6.3  | 236.1 | 1135      | 0.1       | 102.8       | 48441681.76   | 1225.7    | 14.61       | 81         | 43.75           | 0098              |
| 601 | 34.3 | 31.5 | 0.2  | 0   | 0.3   | 9.8    | 9.0   | 79.3    | 52.8 | 238.2 | 1135      | 0.1       | 102.9       | 21086221.19   | 1225.5    | 14.61       | 81         | 43.81           | 0098              |
| 602 | 47.6 | 43.2 | 0.0  | 0   | -0.01 | 13.4   | 12.2  | 107.7   | 72.2 | 237.1 | 1135      | 0.2       | 102.9       | 20883390.78   | 1223.3    | 14.61       | 81         | 44.06           | 0098              |
| 603 | 47.8 | 45.4 | 0.0  | 0   | -0.02 | 13.4   | 12.8  | 113.4   | 72.4 | 236.9 | 1136      | 0.1       | 103.1       | 20921168.60   |           | 14.61       |            |                 |                   |
| 604 | 47.5 | 45.5 | 0.0  | 0   | -0.03 | 13.4   | 12.8  | 113.5   | 72.1 | 237.1 | 1136      | 0.1       | 103.0       | 20889179.12   |           | 14.61       |            |                 |                   |
| 605 | 19.5 | 45.4 | 12.8 | 0   | 3.48  | 14.2   | 33.1  | 292.2   | 76.4 | 236.8 | 1136      | 0.1       | 103.0       | 53912797.55   |           | 14.61       |            |                 |                   |
| 606 | 0.6  | 8.4  | 13.7 | 0   | 4.87  | 0.7    | 6.9   | 60.8    | 3.5  | 238.6 | 1135      | 0.2       | 103.0       | 60653411.82   |           | 14.61       |            |                 |                   |
| 607 | 0.7  | 0.9  | 13.7 | 0   | 4.88  | 0.6    | 0.7   | 6.5     | 3.1  | 237.2 | 1135      | 0.2       | 102.8       | 60656728.28   |           | 14.61       |            |                 |                   |
| 608 | 0.8  | 0.3  | 13.8 | 0   | 4.89  | 0.7    | 0.2   | 2.2     | 3.6  | 237.4 | 1135      | 0.1       | 103.0       | 61524330.46   |           | 14.61       |            |                 |                   |
| 609 | 0.8  | 0.1  | 13.2 | 0   | 4.88  | 0.6    | 0.1   | 0.7     | 3.3  | 237.9 | 1135      | 0.2       | 103.1       | 56792164.93   |           | 14.61       |            |                 |                   |
| 610 | 1.7  | 14.3 | 12.7 | 0   | 4.46  | 1.2    | 10.4  | 92.3    | 8.6  | 238.4 | 1135      | 0.2       | 103.1       | 53310681.44   |           | 14.61       |            |                 |                   |
| 611 | 1.0  | 30.8 | 19.3 | 22  | 0.86  | 3.7    | 113.8 | 1004.4  | 19.8 | 237.7 | 1135      | 0.2       | 103.0       | 273121309.20  | 1223.8    | 14.61       | 80         | 45.96           | 0101              |
| 612 | 0.9  | 5.8  | 20.6 | 24  | -0.01 | 17.7   | 11.1  | 1010.5  | 96.4 | 237.4 | 1135      | 0.1       | 103.2       | 1459213024.47 | 1226.1    | 14.61       | 80         | 48.19           | 0101              |
| 613 | 1.0  | 0.5  | 20.8 | 24  | -0.02 | 19.7   | 11.4  | 106.0   | 87.1 | 238.5 | 1135      | 0.2       | 103.1       | 1458212452.57 | 1223.3    | 14.61       | 81         | 48.18           | 0102              |
| 614 | 1.1  | 0.2  | 16.4 | 8   | 2.11  | 1.4    | 0.3   | 2.3     | 7.8  | 237.9 | 1135      | 0.1       | 103.2       | 97229800.92   | 1230.9    | 14.60       | 81         | 48.18           | 0103              |
| 615 | 1.8  | 14.5 | 12.8 | 0   | 4.42  | 1.3    | 10.8  | 83.5    | 7.1  | 236.1 | 1134      | 0.1       | 103.1       | 54000629.77   | 1225.8    | 14.61       | 80         | 46.69           | 0102              |
| 616 | 1.8  | 30.9 | 12.8 | 0   | 4.44  | 1.3    | 21.9  | 193.4   | 7.1  | 238.1 | 1135      | 0.1       | 103.1       | 54000477.92   |           | 14.61       |            |                 |                   |
| 617 | 1.8  | 30.9 | 12.8 | 0   | 4.44  | 1.3    | 22.5  | 198.9   | 7.1  | 238.4 | 1136      | 0.1       | 103.0       | 53915130.91   |           | 14.61       |            |                 |                   |
| 618 | 1.8  | 31.0 | 12.8 | 0   | 4.44  | 1.3    | 22.8  | 199.6   | 7.1  | 237.7 | 1136      | 0.1       | 103.0       | 53919785.05   | 1225.1    | 14.61       | 81         | 46.34           | 0104              |
| 619 | 1.8  | 30.8 | 12.7 | 0   | 4.45  | 1.3    | 22.2  | 196.6   | 7.0  | 238.7 | 1136      | 0.2       | 102.8       | 53190008.28   | 1223.7    | 14.61       | 81         | 46.37           | 0103              |
| 620 | 1.9  | 30.9 | 12.7 | 0   | 4.45  | 1.4    | 22.2  | 196.2   | 7.3  | 236.8 | 1135      | 0.1       | 102.8       | 53189013.85   | 1223.8    | 14.61       | 81         | 45.10           | 0103              |
| 621 | 1.6  | 31.1 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 197.4   | 7.0  | 237.2 | 1135      | 0.1       | 102.8       | 53159242.34   | 1224.8    | 14.61       | 81         | 45.13           | 0101              |
| 622 | 1.8  | 31.1 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 197.5   | 7.0  | 237.7 | 1135      | 0.1       | 102.8       | 53176829.95   | 1226.2    | 14.61       | 81         | 45.20           | 0101              |
| 623 | 1.9  | 31.2 | 12.7 | 0   | 4.45  | 1.4    | 22.4  | 198.3   | 7.3  | 237.0 | 1135      | 0.2       | 102.9       | 53221030.78   | 1226.2    | 14.61       | 61         | 45.20           | 0101              |
| 624 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3    | 22.5  | 198.8   | 7.0  | 237.0 | 1136      | 0.2       | 102.9       | 53206634.46   | 1224.4    | 14.61       | 81         | 45.59           | 0103              |
| 625 | 1.8  | 31.2 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 198.3   | 7.0  | 235.9 | 1136      | 0.2       | 102.9       | 53220525.42   | 1225.9    | 14.61       | 81         | 45.16           | 0103              |
| 626 | 1.8  | 31.1 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 197.3   | 7.0  | 236.9 | 1136      | 0.2       | 102.7       | 53138441.36   |           | 14.61       |            |                 |                   |
| 627 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3    | 22.5  | 199.2   | 7.0  | 237.2 | 1135      | 0.2       | 103.0       | 53292763.48   |           | 14.61       |            |                 |                   |
| 628 | 1.8  | 31.1 | 12.7 | 0   | 4.45  | 1.3    | 22.4  | 197.8   | 7.0  | 238.0 | 1135      | 0.1       | 102.9       | 53219724.71   | 1228.8    | 14.61       | 81         | 45.15           | 0100              |
| 629 | 1.9  | 31.1 | 12.7 | 0   | 4.45  | 1.4    | 22.4  | 198.1   | 7.4  | 238.3 | 1135      | 0.1       | 103.1       | 53343887.22   | 1233.3    | 14.61       | 81         | 45.36           | 0100              |
| 630 | 1.9  | 31.1 | 12.7 | 0   | 4.45  | 1.4    | 22.4  | 198.3   | 7.4  | 238.3 | 1135      | 0.1       | 103.2       | 53005653.31   | 1230.0    | 14.61       | 81         | 45.81           | 0102              |
| 631 | 1.8  | 31.0 | 12.7 |     |       |        |       |         |      |       |           |           |             |               |           |             |            |                 |                   |

| ve | CO   | NOx  | O2   | THC | CO2   | CO@15%O2 | NOx@15%O2 | NOx    | CO    | Load | Exh. Temp | IGV Pos. | Fuel Flow    | Exh. Flow  | Exh. Flow | Amb. Press. | Amb. Temp. | Rel. Humidity   | Specific Humidity |
|----|------|------|------|-----|-------|----------|-----------|--------|-------|------|-----------|----------|--------------|------------|-----------|-------------|------------|-----------------|-------------------|
|    | ppm  | ppm  | %    | ppm | %     | ppm      | ppm       | (b/hr) | (MW)  | (F)  | (degrees) | (KPPH)   | M-19 (dscfh) | CT (dscfh) | (psia)    | (F)         | (%)        | (lb H2O/lb air) |                   |
| 25 | 0.9  | 0.1  | 13.8 | 0   | 4.88  | 0.7      | 0.1       | 4.0    | 237.7 | 1134 | 0.1       | 103.4    | 61783866.30  | 1225.4     | 14.60     | 79          | 47.78      | .0101           |                   |
| 26 | 0.9  | 0.1  | 11.9 | 0   | 4.84  | 0.6      | 0.1       | 3.2    | 238.8 | 1134 | 0.1       | 103.4    | 48746896.55  | 1227.4     | 14.60     | 80          | 48.31      | .0104           |                   |
| 27 | 35.2 | 6.0  | 0.1  | 0   | 0.02  | 10.0     | 1.7       | 53.9   | 238.5 | 1134 | 0.2       | 103.3    | 21071618.44  | 1228.2     | 14.60     | 79          | 47.27      | .0101           |                   |
| 28 | 47.8 | 41.2 | 0.0  | 0   | -0.01 | 13.5     | 11.6      | 72.8   | 238.6 | 1133 | 0.1       | 103.3    | 20961956.29  |            | 14.60     |             |            |                 |                   |
| 29 | 47.7 | 44.9 | 0.0  | 0   | -0.02 | 13.5     | 12.7      | 72.8   | 238.5 | 1134 | 0.1       | 103.5    | 21008742.36  | 1229.3     | 14.61     | 79          | 47.50      | .0100           |                   |
| 30 | 47.6 | 45.4 | 0.0  | 0   | -0.03 | 13.6     | 12.8      | 73.4   | 238.1 | 1134 | 0.1       | 103.5    | 21007280.10  | 1227.2     | 14.61     | 79          | 47.23      | .0100           |                   |
| 31 | 47.6 | 45.5 | 0.0  | 0   | -0.03 | 13.4     | 12.8      | 72.8   | 238.1 | 1134 | 0.1       | 103.4    | 20991133.20  | 1231.4     | 14.60     | 79          | 47.95      | .0102           |                   |
| 32 | 22.3 | 45.7 | 11.3 | 0   | 3.58  | 13.7     | 28.1      | 74.0   | 238.2 | 1134 | 0.1       | 103.3    | 45639967.48  | 1230.4     | 14.60     | 79          | 47.65      | .0101           |                   |
| 33 | 1.9  | 33.9 | 12.7 | 0   | 4.44  | 1.4      | 24.4      | 7.4    | 238.5 | 1134 | 0.1       | 103.3    | 53426998.96  | 1228.8     | 14.60     | 79          | 48.13      | .0101           |                   |
| 34 | 1.8  | 31.3 | 12.7 | 0   | 4.45  | 1.3      | 22.5      | 7.0    | 238.7 | 1133 | 0.2       | 103.4    | 53479710.57  | 1229.8     | 14.61     | 79          | 48.68      | .0102           |                   |
| 35 | 2.0  | 31.1 | 12.7 | 0   | 4.45  | 1.4      | 22.4      | 7.8    | 238.7 | 1133 | 0.2       | 103.5    | 53564620.27  | 1231.7     | 14.61     | 79          | 49.11      | .0103           |                   |
| 36 | 1.9  | 31.0 | 12.7 | 0   | 4.45  | 1.4      | 22.3      | 7.4    | 238.8 | 1133 | 0.1       | 103.4    | 53477220.49  | 1231.1     | 14.61     | 79          | 49.28      | .0104           |                   |
| 37 | 1.9  | 31.1 | 12.7 | 0   | 4.45  | 1.4      | 22.4      | 7.4    | 238.9 | 1133 | 0.1       | 103.4    | 53503925.44  |            | 14.61     |             |            |                 |                   |
| 38 | 1.8  | 31.0 | 12.7 | 0   | 4.45  | 1.3      | 22.3      | 7.0    | 238.4 | 1134 | 0.2       | 103.4    | 53494438.43  |            | 14.60     |             |            |                 |                   |
| 39 | 1.9  | 30.9 | 12.7 | 0   | 4.45  | 1.4      | 22.2      | 7.4    | 238.8 | 1133 | 0.2       | 103.6    | 53594680.98  |            | 14.60     |             |            |                 |                   |
| 40 | 1.9  | 30.9 | 12.7 | 0   | 4.46  | 1.4      | 22.2      | 7.4    | 239.2 | 1133 | 0.1       | 103.6    | 53571653.03  | 1230.2     | 14.60     | 79          | 48.90      | .0102           |                   |
| 41 | 1.8  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.0    | 240.0 | 1134 | 0.1       | 103.6    | 53810327.31  | 1230.9     | 14.60     | 79          | 49.10      | .0103           |                   |
| 42 | 2.0  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.8    | 239.8 | 1133 | 0.1       | 103.7    | 53636373.28  | 1233.7     | 14.60     | 79          | 49.18      | .0103           |                   |
| 43 | 1.8  | 31.0 | 12.7 | 0   | 4.46  | 1.3      | 22.3      | 7.0    | 239.5 | 1134 | 0.1       | 103.6    | 53568527.24  | 1235.5     | 14.60     | 79          | 49.25      | .0103           |                   |
| 44 | 1.9  | 31.1 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 238.1 | 1134 | 0.2       | 103.8    | 53669996.03  | 1235.5     | 14.60     | 79          | 49.25      | .0103           |                   |
| 45 | 1.9  | 31.2 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 238.6 | 1134 | 0.2       | 103.8    | 53592374.63  | 1235.5     | 14.60     | 79          | 49.25      | .0103           |                   |
| 46 | 1.9  | 31.1 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 238.8 | 1134 | 0.2       | 103.8    | 53603993.50  | 1232.7     | 14.60     | 79          | 49.21      | .0102           |                   |
| 47 | 1.8  | 31.3 | 12.7 | 0   | 4.46  | 1.3      | 22.5      | 7.0    | 239.0 | 1133 | 0.2       | 103.6    | 53571735.79  | 1232.9     | 14.60     | 78          | 49.26      | .0102           |                   |
| 48 | 1.8  | 31.1 | 12.7 | 0   | 4.46  | 1.3      | 22.4      | 7.0    | 239.4 | 1133 | 0.1       | 103.8    | 53566625.29  | 1235.9     | 14.60     | 79          | 49.79      | .0104           |                   |
| 49 | 1.9  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.4    | 238.5 | 1133 | 0.1       | 103.5    | 53544028.39  | 1233.0     | 14.60     | 79          | 49.80      | .0104           |                   |
| 50 | 1.9  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.4    | 238.5 | 1133 | 0.1       | 103.5    | 53544028.39  | 1233.0     | 14.60     | 79          | 49.80      | .0104           |                   |
| 51 | 1.9  | 31.1 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 239.3 | 1133 | 0.2       | 103.6    | 53606878.99  | 1234.8     | 14.60     | 79          | 49.85      | .0104           |                   |
| 52 | 1.8  | 31.1 | 12.7 | 0   | 4.46  | 1.3      | 22.4      | 7.0    | 239.3 | 1133 | 0.2       | 103.7    | 53641404.64  | 1232.4     | 14.60     | 79          | 49.99      | .0104           |                   |
| 53 | 1.9  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.4    | 239.8 | 1133 | 0.2       | 103.8    | 53759767.53  | 1235.1     | 14.60     | 78          | 49.94      | .0103           |                   |
| 54 | 1.9  | 31.0 | 12.7 | 0   | 4.47  | 1.4      | 22.3      | 7.4    | 239.7 | 1133 | 0.1       | 103.7    | 53661625.77  |            | 14.60     |             |            |                 |                   |
| 55 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 239.5 | 1133 | 0.1       | 103.7    | 53654782.98  | 1233.8     | 14.60     | 79          | 49.18      | .0102           |                   |
| 56 | 1.8  | 31.1 | 12.7 | 0   | 4.46  | 1.3      | 22.4      | 7.0    | 239.4 | 1133 | 0.2       | 103.6    | 53694581.78  | 1236.6     | 14.60     | 79          | 48.71      | .0101           |                   |
| 57 | 1.9  | 31.2 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 238.7 | 1133 | 0.2       | 103.8    | 53703512.74  | 1232.2     | 14.60     | 79          | 49.32      | .0102           |                   |
| 58 | 1.8  | 31.3 | 12.7 | 0   | 4.47  | 1.3      | 22.5      | 7.0    | 239.4 | 1133 | 0.2       | 103.9    | 53718145.43  | 1234.0     | 14.60     | 78          | 49.86      | .0102           |                   |
| 59 | 1.8  | 31.3 | 12.7 | 0   | 4.47  | 1.3      | 22.5      | 7.0    | 239.8 | 1133 | 0.1       | 103.8    | 53698074.30  |            | 14.60     |             |            |                 |                   |
| 60 | 1.8  | 31.1 | 12.7 | 0   | 4.46  | 1.3      | 22.4      | 7.0    | 239.7 | 1134 | 0.1       | 103.8    | 53666517.10  |            | 14.60     |             |            |                 |                   |
| 61 | 1.8  | 31.1 | 12.7 | 0   | 4.46  | 1.3      | 22.4      | 7.0    | 239.6 | 1133 | 0.2       | 103.7    | 53657918.52  |            | 14.60     |             |            |                 |                   |
| 62 | 1.8  | 31.2 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 239.2 | 1133 | 0.2       | 103.8    | 53608780.19  |            | 14.60     |             |            |                 |                   |
| 63 | 1.9  | 31.2 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 239.7 | 1133 | 0.1       | 103.7    | 53644813.18  |            | 14.60     |             |            |                 |                   |
| 64 | 1.9  | 31.1 | 12.7 | 0   | 4.46  | 1.4      | 22.4      | 7.4    | 240.2 | 1133 | 0.1       | 103.8    | 53693678.13  |            | 14.60     |             |            |                 |                   |
| 65 | 1.8  | 31.1 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 240.0 | 1133 | 0.2       | 103.8    | 53698398.10  | 1234.5     | 14.60     | 78          | 50.89      | .0104           |                   |
| 66 | 1.9  | 31.2 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 239.5 | 1133 | 0.2       | 103.8    | 53718606.59  | 1233.7     | 14.60     | 78          | 51.01      | .0104           |                   |
| 67 | 1.8  | 31.2 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 239.9 | 1133 | 0.1       | 104.0    | 53771086.18  |            | 14.60     |             |            |                 |                   |
| 68 | 1.9  | 31.2 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.0 | 1133 | 0.2       | 104.0    | 53798694.78  | 1231.0     | 14.60     | 78          | 51.48      | .0103           |                   |
| 69 | 1.8  | 31.4 | 12.7 | 0   | 4.46  | 1.3      | 22.8      | 7.0    | 240.3 | 1133 | 0.1       | 104.1    | 53827724.29  | 1231.3     | 14.60     | 78          | 51.25      | .0103           |                   |
| 70 | 1.9  | 31.2 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.5 | 1133 | 0.1       | 103.9    | 53741247.88  | 1232.8     | 14.60     | 78          | 51.23      | .0103           |                   |
| 71 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.4 | 1132 | 0.1       | 104.1    | 53825344.39  |            | 14.60     |             |            |                 |                   |
| 72 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 239.8 | 1133 | 0.1       | 103.7    | 53669022.32  |            | 14.60     |             |            |                 |                   |
| 73 | 1.8  | 31.0 | 12.7 | 0   | 4.47  | 1.3      | 22.3      | 7.0    | 240.2 | 1132 | 0.2       | 103.7    | 53639037.15  | 1233.7     | 14.60     | 78          | 50.63      | .0102           |                   |
| 74 | 1.9  | 31.0 | 12.7 | 0   | 4.47  | 1.4      | 22.3      | 7.4    | 240.4 | 1132 | 0.1       | 103.8    | 53712857.51  | 1233.4     | 14.60     | 78          | 51.17      | .0103           |                   |
| 75 | 1.9  | 31.2 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.7 | 1132 | 0.1       | 103.9    | 53786113.79  | 1233.2     | 14.60     | 78          | 51.79      | .0104           |                   |
| 76 | 2.0  | 31.0 | 12.7 | 0   | 4.46  | 1.4      | 22.3      | 7.8    | 240.9 | 1132 | 0.1       | 104.0    | 53799178.36  | 1235.0     | 14.60     | 77          | 51.59      | .0103           |                   |
| 77 | 1.9  | 30.7 | 12.7 | 0   | 4.47  | 1.4      | 22.1      | 7.4    | 240.6 | 1132 | 0.2       | 104.2    | 53891576.06  | 1234.8     | 14.60     | 77          | 51.96      | .0103           |                   |
| 78 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.4 | 1132 | 0.2       | 104.0    | 53818743.06  | 1238.3     | 14.60     | 78          | 52.82      | .0107           |                   |
| 79 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.4 | 1132 | 0.1       | 104.0    | 53789937.87  | 1234.4     | 14.60     | 77          | 51.09      | .0102           |                   |
| 80 | 1.9  | 31.0 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.7 | 1132 | 0.2       | 104.2    | 53875049.18  | 1235.9     | 14.60     | 77          | 51.91      | .0104           |                   |
| 81 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.3 | 1132 | 0.2       | 104.0    | 53808454.39  | 1235.9     | 14.60     | 77          | 51.89      | .0103           |                   |
| 82 | 1.9  | 31.3 | 12.7 | 0   | 4.47  | 1.4      | 22.5      | 7.4    | 240.4 | 1132 | 0.1       | 103.9    | 53784385.11  | 1237.9     | 14.60     | 77          | 51.96      | .0103           |                   |
| 83 | 1.9  | 31.2 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.4 | 1132 | 0.1       | 104.0    | 53803200.09  | 1234.9     | 14.60     | 77          | 52.58      | .0104           |                   |
| 84 | 1.8  | 31.1 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 239.5 | 1134 | 0.2       | 103.6    | 53582793.33  | 1234.1     | 14.60     | 79          | 51.24      | .0109           |                   |
| 85 | 1.8  | 31.0 | 12.7 | 0   | 4.46  | 1.3      | 22.3      | 7.0    | 238.5 | 1134 | 0.2       | 103.4    | 53496253.49  | 1234.0     | 14.60     | 80          | 49.24      | .0108           |                   |
| 86 | 1.8  | 31.2 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 239.1 | 1132 | 0.1       | 103.8    | 53575287.28  | 1231.2     | 14.60     | 78          | 47.99      | .0097           |                   |
| 87 | 1.8  | 31.2 | 12.7 | 0   | 4.47  | 1.3      | 22.4      | 7.0    | 240.0 | 1132 | 0.2       | 104.0    | 53809610.48  | 1236.1     | 14.60     | 77          | 50.09      | .0099           |                   |
| 88 | 1.9  | 31.1 | 12.7 | 0   | 4.47  | 1.4      | 22.4      | 7.4    | 240.3 | 1132 | 0.2       | 104.1    | 53825139.56  | 1233.8     | 14.60     | 77          | 51.28      | .0101           |                   |
| 89 | 1.9  | 31.3 | 12.7 | 0   | 4.47  | 1.4      | 22.5      | 7.4    | 240.9 | 1132 | 0.1       | 104.1    | 53687069.45  | 1237.8     | 14.60     | 77          | 52.03      | .0102           |                   |
| 90 | 1.9  | 31.4 | 12.7 | 0   | 4.47  | 1.4      | 22.6      | 7.4    | 240.5 | 1133 | 0.1       | 104.2    | 53900650.47  | 1231.3     | 14.60     | 77          | 52.72      | .0103           |                   |
| 91 | 2.0  | 31.3 | 12.7 | 0   | 4.47  | 1.4      | 22.5      | 7.8    | 241.1 | 1132 | 0.2       | 104.2    | 53811592.36  | 1233.5     | 14.60     | 77          | 53.28      | .0104           |                   |
| 92 | 1.9  | 31.2 | 12.7 | 0   | 4.48  | 1.4      | 22.4      | 7.4    | 240.4 | 1133 | 0.1       | 104.1    | 53854823.91  |            | 14.60     |             |            |                 |                   |
| 93 | 1.9  | 31.3 | 12.7 | 0   | 4.47  | 1.4      | 22.5      | 7.4    | 240.4 | 1133 | 0.2       | 103.99   | 53788205.32  | 1236.3     | 14.60     | 77          | 53.44      | .0104           |                   |
| 94 | 1.9  |      |      |     |       |          |           |        |       |      |           |          |              |            |           |             |            |                 |                   |

|  VISIBLE EMISSION OBSERVATION FORM                                                             |                                 | START TIME       | 1410   |    |    |    | END TIME  | 1510 |    |    |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------|--------|----|----|----|-----------|------|----|----|----|
|                                                                                                                                                                                 |                                 | OBSERVATION DATE | 3-2-00 |    |    |    | TIME ZONE | EST  |    |    |    |
|                                                                                                                                                                                 |                                 | PAGE             | 1      |    |    |    | OF        | 1    |    |    |    |
|                                                                                                                                                                                 |                                 | SEC              | 0      | 15 | 30 | 45 | SEC       | 0    | 15 | 30 | 45 |
|                                                                                                                                                                                 |                                 | MIN              |        |    |    |    | MIN       |      |    |    |    |
| COMPANY NAME                                                                                                                                                                    |                                 | 1                | 0      | 0  | 0  | 0  | 31        | 0    | 0  | 0  | 0  |
| LAKELAND ELECTRIC                                                                                                                                                               |                                 | 2                | 0      | 0  | 0  | 0  | 32        | 0    | 0  | 0  | 0  |
| SOURCE                                                                                                                                                                          |                                 | 3                | 0      | 0  | 0  | 0  | 33        | 0    | 0  | 0  | 0  |
| ADDRESS                                                                                                                                                                         |                                 | 4                | 0      | 0  | 0  | 0  | 34        | 0    | 0  | 0  | 0  |
| CITY LAKELAND STATE FL. ZIP                                                                                                                                                     |                                 | 5                | 0      | 0  | 0  | 0  | 35        | 0    | 0  | 0  | 0  |
| PHONE SOURCE ID NO.                                                                                                                                                             |                                 | 6                | 0      | 0  | 0  | 0  | 36        | 0    | 0  | 0  | 0  |
| PROCESS                                                                                                                                                                         | OPERATING MODE                  | 7                | 0      | 0  | 0  | 0  | 37        | 0    | 0  | 0  | 0  |
| GAS TURBINE                                                                                                                                                                     | BASELOAD                        | 8                | 0      | 0  | 0  | 0  | 38        | 0    | 0  | 0  | 0  |
| CONTROL EQUIPMENT                                                                                                                                                               | OPERATING MODE                  | 9                | 0      | 0  | 0  | 0  | 39        | 0    | 0  | 0  | 0  |
| DESCRIBE EMISSION POINT                                                                                                                                                         |                                 | 10               | 0      | 0  | 0  | 0  | 40        | 0    | 0  | 0  | 0  |
| 278" dia. METAL STACK                                                                                                                                                           |                                 | 11               | 0      | 0  | 0  | 0  | 41        | 0    | 0  | 0  | 0  |
| HEIGHT OF EMISSION POINT                                                                                                                                                        | HEIGHT RELATIVE TO OBSERVER     | 12               | 0      | 0  | 0  | 0  | 42        | 0    | 0  | 0  | 0  |
| START ~ 80' END SAME                                                                                                                                                            | START ~ 80' END SAME            | 13               | 0      | 0  | 0  | 0  | 43        | 0    | 0  | 0  | 0  |
| DISTANCE TO EMISSION POINT                                                                                                                                                      | DIRECTION TO EM. PT. (DEGREES)  | 14               | 0      | 0  | 0  | 0  | 44        | 0    | 0  | 0  | 0  |
| START ~ 250' END SAME                                                                                                                                                           | START ~ 48° END SAME            | 15               | 0      | 0  | 0  | 0  | 45        | 0    | 0  | 0  | 0  |
| VERTICAL ANGLE TO OBS. PT.                                                                                                                                                      | DIRECTION TO OBS. PT. (DEGREES) | 16               | 0      | 0  | 0  | 0  | 46        | 0    | 0  | 0  | 0  |
| START ~ 20° END SAME                                                                                                                                                            | START ~ 49° END SAME            | 17               | 0      | 0  | 0  | 0  | 47        | 0    | 0  | 0  | 0  |
| DISTANCE AND DIRECTION TO OBS. PT. FROM EM. PT.                                                                                                                                 |                                 | 18               | 0      | 0  | 0  | 0  | 48        | 0    | 0  | 0  | 0  |
| START ~ 6' ABOVE STREET END SAME                                                                                                                                                |                                 | 19               | 0      | 0  | 0  | 0  | 49        | 0    | 0  | 0  | 0  |
| DESCRIBE EMISSIONS                                                                                                                                                              |                                 | 20               | 0      | 0  | 0  | 0  | 50        | 0    | 0  | 0  | 0  |
| START NONE END SAME                                                                                                                                                             |                                 | 21               | 0      | 0  | 0  | 0  | 51        | 0    | 0  | 0  | 0  |
| EMISSION COLOR                                                                                                                                                                  | WATER DROPLET PLUME <u>NONE</u> | 22               | 0      | 0  | 0  | 0  | 52        | 0    | 0  | 0  | 0  |
| START NONE END SAME                                                                                                                                                             | ATTACHED DETACHED               | 23               | 0      | 0  | 0  | 0  | 53        | 0    | 0  | 0  | 0  |
| DESCRIBE PLUME BACKGROUND                                                                                                                                                       |                                 | 24               | 0      | 0  | 0  | 0  | 54        | 0    | 0  | 0  | 0  |
| START SKY/Clouds END SAME                                                                                                                                                       |                                 | 25               | 0      | 0  | 0  | 0  | 55        | 0    | 0  | 0  | 0  |
| BACKGROUND COLOR                                                                                                                                                                | SKY CONDITIONS                  | 26               | 0      | 0  | 0  | 0  | 56        | 0    | 0  | 0  | 0  |
| START GRAY END SAME                                                                                                                                                             | START Sc. Cls END SAME          | 27               | 0      | 0  | 0  | 0  | 57        | 0    | 0  | 0  | 0  |
| WIND SPEED                                                                                                                                                                      | WIND DIRECTION                  | 28               | 0      | 0  | 0  | 0  | 58        | 0    | 0  | 0  | 0  |
| START 5-8 END SAME                                                                                                                                                              | START W END SAME                | 29               | 0      | 0  | 0  | 0  | 59        | 0    | 0  | 0  | 0  |
| AMBIENT TEMPERATURE                                                                                                                                                             | WET BULB TEMP.                  | 30               | 0      | 0  | 0  | 0  | 60        | 0    | 0  | 0  | 0  |
| START 84 END 85                                                                                                                                                                 | 72                              | %RH              |        | 56 |    |    |           |      |    |    |    |
| SOURCE LAYOUT SKETCH                                                                                                                                                            |                                 |                  |        |    |    |    |           |      |    |    |    |
|                                                                                              |                                 |                  |        |    |    |    |           |      |    |    |    |
| OBSERVER'S NAME (PRINT) CHARLES RESHARD<br>OBSERVER'S SIGNATURE Charles Reshard DATE 3-2-00<br>ORGANIZATION AIR CONSULTING + Eng.<br>CERTIFIED BY E.T.A. DATE 12-99<br>COMMENTS |                                 |                  |        |    |    |    |           |      |    |    |    |
| ○ = SOURCE WITH PLUME      ⊕ = SUN      → = WIND                                                                                                                                |                                 |                  |        |    |    |    |           |      |    |    |    |





**VISIBLE EMISSION  
OBSERVATION FORM**

START TIME: 1512      END TIME: 1612

OBSERVATION DATE: 3-2-00      TIME ZONE: EST      PAGE: 1 OF 1

| MIN | SEC |    |    |    | MIN | SEC |    |    |    |
|-----|-----|----|----|----|-----|-----|----|----|----|
|     | 0   | 15 | 30 | 45 |     | 0   | 15 | 30 | 45 |
| 1   | D   | D  | D  | D  | 31  | D   | D  | D  | D  |
| 2   | D   | D  | D  | D  | 32  | D   | D  | D  | D  |
| 3   | D   | D  | D  | D  | 33  | D   | D  | D  | D  |
| 4   | D   | D  | D  | D  | 34  | D   | D  | D  | D  |
| 5   | D   | D  | D  | D  | 35  | D   | D  | D  | D  |
| 6   | D   | D  | D  | D  | 36  | D   | D  | D  | D  |
| 7   | D   | D  | D  | D  | 37  | D   | D  | D  | D  |
| 8   | D   | D  | D  | D  | 38  | D   | D  | D  | D  |
| 9   | D   | D  | D  | D  | 39  | D   | D  | D  | D  |
| 10  | D   | D  | D  | D  | 40  | D   | D  | D  | D  |
| 11  | D   | D  | D  | D  | 41  | D   | D  | D  | D  |
| 12  | D   | D  | D  | D  | 42  | D   | D  | D  | D  |
| 13  | D   | D  | D  | D  | 43  | D   | D  | D  | D  |
| 14  | D   | D  | D  | D  | 44  | D   | D  | D  | D  |
| 15  | D   | D  | D  | D  | 45  | D   | D  | D  | D  |
| 16  | D   | D  | D  | D  | 46  | D   | D  | D  | D  |
| 17  | D   | D  | D  | D  | 47  | D   | D  | D  | D  |
| 18  | D   | D  | D  | D  | 48  | D   | D  | D  | D  |
| 19  | D   | D  | D  | D  | 49  | D   | D  | D  | D  |
| 20  | D   | D  | D  | D  | 50  | D   | D  | D  | D  |
| 21  | D   | D  | D  | D  | 51  | D   | D  | D  | D  |
| 22  | D   | D  | D  | D  | 52  | D   | D  | D  | D  |
| 23  | D   | D  | D  | D  | 53  | D   | D  | D  | D  |
| 24  | D   | D  | D  | D  | 54  | D   | D  | D  | D  |
| 25  | D   | D  | D  | D  | 55  | D   | D  | D  | D  |
| 26  | D   | D  | D  | D  | 56  | D   | D  | D  | D  |
| 27  | D   | D  | D  | D  | 57  | D   | D  | D  | D  |
| 28  | D   | D  | D  | D  | 58  | D   | D  | D  | D  |
| 29  | D   | D  | D  | D  | 59  | D   | D  | D  | D  |
| 30  | D   | D  | D  | D  | 60  | D   | D  | D  | D  |

COMPANY NAME: LAKELAND ELECTRIC

SOURCE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: LAKELAND STATE: FL. ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ SOURCE ID NO.: \_\_\_\_\_

PROCESS: GAS TURBINE      OPERATING MODE: BASELOAD

CONTROL EQUIPMENT: \_\_\_\_\_      OPERATING MODE: \_\_\_\_\_

DESCRIBE EMISSION POINT: 278" dia. METAL STACK

HEIGHT OF EMISSION POINT: START ~ 80' END SAME      HEIGHT RELATIVE TO OBSERVER: START ~ 80' END SAME

DISTANCE TO EMISSION POINT: START ~ 250' END \_\_\_\_\_      DIRECTION TO EM. PT. (DEGREES): START ~ 48° END SAME

VERTICAL ANGLE TO OBS. PT.: START ~ 20° END SAME      DIRECTION TO OBS. PT. (DEGREES): START ~ 48° END SAME

DISTANCE AND DIRECTION TO OBS. PT. FROM EM. PT.: START ~ 6' ABOVE STACK EXITE END SAME

DESCRIBE EMISSIONS: START NONE      END SAME

EMISSION COLOR: START NONE      WATER DROPLET PLUME: NONE

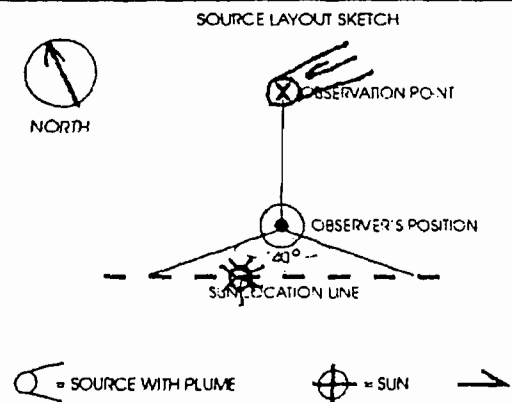
DESCRIBE PLUME BACKGROUND: START SKY/CLOUDS      END SAME

BACKGROUND COLOR: START GRAY      SKY CONDITIONS: START SC, CW      END SAME

WIND SPEED: START 5-8      END SAME      WIND DIRECTION: START W      END SAME

AMBIENT TEMPERATURE: START 85      END 83      WET BULB TEMP.: 74      %RH: 60

SOURCE LAYOUT SKETCH



Legend: = SOURCE WITH PLUME      = SUN      = WIND

OBSERVER'S NAME (PRINT): CHARLES REBHARD


OBSERVER'S SIGNATURE: *Charles Rebhard*      DATE: 3-2-00

ORGANIZATION: AIR CONSULTING & ENG

CERTIFIED BY: E.T.A.      DATE: 12-99

COMMENTS: \_\_\_\_\_





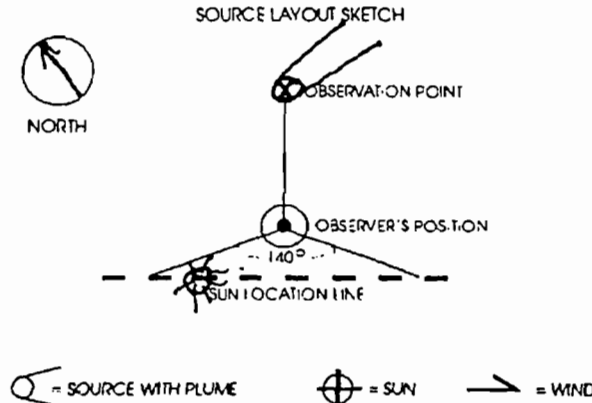
## VISIBLE EMISSION OBSERVATION FORM

START TIME **1614**      END TIME **1714**

OBSERVATION DATE **3-2-00**      TIME ZONE **EST**      PAGE **1** OF **1**

|                                                                        | SEC |   |    |    | SEC |     |   |    |    |    |
|------------------------------------------------------------------------|-----|---|----|----|-----|-----|---|----|----|----|
|                                                                        | MIN | 0 | 15 | 30 | 45  | MIN | 0 | 15 | 30 | 45 |
| COMPANY NAME <b>LAKELAND ELECTRIC</b>                                  | 1   | 0 | 0  | 0  | 0   | 31  | 0 | 0  | 0  | 0  |
| SOURCE                                                                 | 2   | 0 | 0  | 0  | 0   | 32  | 0 | 0  | 0  | 0  |
| ADDRESS                                                                | 3   | 0 | 0  | 0  | 0   | 33  | 0 | 0  | 0  | 0  |
| CITY <b>LAKELAND</b> STATE <b>FL.</b> ZIP                              | 4   | 0 | 0  | 0  | 0   | 34  | 0 | 0  | 0  | 0  |
| PHONE      SOURCE ID NO.                                               | 5   | 0 | 0  | 0  | 0   | 35  | 0 | 0  | 0  | 0  |
| PROCESS <b>GAS TURBINE</b> OPERATING MODE <b>BASELOAD</b>              | 6   | 0 | 0  | 0  | 0   | 36  | 0 | 0  | 0  | 0  |
| CONTROL EQUIPMENT      OPERATING MODE                                  | 7   | 0 | 0  | 0  | 0   | 37  | 0 | 0  | 0  | 0  |
| DESCRIBE EMISSION POINT                                                | 8   | 0 | 0  | 0  | 0   | 38  | 0 | 0  | 0  | 0  |
| <b>278" dia. METAL STACK</b>                                           | 9   | 0 | 0  | 0  | 0   | 39  | 0 | 0  | 0  | 0  |
| HEIGHT OF EMISSION POINT      HEIGHT RELATIVE TO OBSERVER              | 10  | 0 | 0  | 0  | 0   | 40  | 0 | 0  | 0  | 0  |
| START <b>~80'</b> END <b>SAME</b> START <b>~80'</b> END <b>SAME</b>    | 11  | 0 | 0  | 0  | 0   | 41  | 0 | 0  | 0  | 0  |
| DISTANCE TO EMISSION POINT      DIRECTION TO EM. PT. (DEGREES)         | 12  | 0 | 0  | 0  | 0   | 42  | 0 | 0  | 0  | 0  |
| START <b>~250'</b> END <b>SAME</b> START <b>~48°</b> END <b>SAME</b>   | 13  | 0 | 0  | 0  | 0   | 43  | 0 | 0  | 0  | 0  |
| VERTICAL ANGLE TO OBS. PT.      DIRECTION TO OBS. PT. (DEGREES)        | 14  | 0 | 0  | 0  | 0   | 44  | 0 | 0  | 0  | 0  |
| START <b>~20°</b> END <b>SAME</b> START <b>~48°</b> END <b>SAME</b>    | 15  | 0 | 0  | 0  | 0   | 45  | 0 | 0  | 0  | 0  |
| DISTANCE AND DIRECTION TO OBS. PT. FROM EM. PT.                        | 16  | 0 | 0  | 0  | 0   | 46  | 0 | 0  | 0  | 0  |
| START <b>~6' above STACK EXIT</b> END <b>SAME</b>                      | 17  | 0 | 0  | 0  | 0   | 47  | 0 | 0  | 0  | 0  |
| DESCRIBE EMISSIONS                                                     | 18  | 0 | 0  | 0  | 0   | 48  | 0 | 0  | 0  | 0  |
| START <b>NONE</b> END <b>SAME</b>                                      | 19  | 0 | 0  | 0  | 0   | 49  | 0 | 0  | 0  | 0  |
| EMISSION COLOR      WATER DROPLET PLUME <b>NONE</b>                    | 20  | 0 | 0  | 0  | 0   | 50  | 0 | 0  | 0  | 0  |
| START <b>NONE</b> END <b>SAME</b> ATTACHED      DETACHED               | 21  | 0 | 0  | 0  | 0   | 51  | 0 | 0  | 0  | 0  |
| DESCRIBE PLUME BACKGROUND                                              | 22  | 0 | 0  | 0  | 0   | 52  | 0 | 0  | 0  | 0  |
| START <b>SKY/CLOUDS</b> END <b>SAME</b>                                | 23  | 0 | 0  | 0  | 0   | 53  | 0 | 0  | 0  | 0  |
| BACKGROUND COLOR      SKY CONDITIONS                                   | 24  | 0 | 0  | 0  | 0   | 54  | 0 | 0  | 0  | 0  |
| START <b>GRAY</b> END <b>SAME</b> START <b>Sc Clds</b> END <b>SAME</b> | 25  | 0 | 0  | 0  | 0   | 55  | 0 | 0  | 0  | 0  |
| WIND SPEED      WIND DIRECTION                                         | 26  | 0 | 0  | 0  | 0   | 56  | 0 | 0  | 0  | 0  |
| START <b>5-8</b> END <b>SAME</b> START <b>W</b> END <b>SAME</b>        | 27  | 0 | 0  | 0  | 0   | 57  | 0 | 0  | 0  | 0  |
| AMBIENT TEMPERATURE      WET BULB TEMP.      %RH                       | 28  | 0 | 0  | 0  | 0   | 58  | 0 | 0  | 0  | 0  |
| START <b>83</b> END <b>81</b> <b>72</b> <b>59</b>                      | 29  | 0 | 0  | 0  | 0   | 59  | 0 | 0  | 0  | 0  |
| 30                                                                     | 0   | 0 | 0  | 0  | 0   | 60  | 0 | 0  | 0  | 0  |

SOURCE LAYOUT SKETCH



☉ = SOURCE WITH PLUME
☀ = SUN
→ = WIND

OBSERVER'S NAME (PRINT) **CHARLES RESHARD**

OBSERVER'S SIGNATURE *Charles Reshard* DATE **3-2-00**

ORGANIZATION **AIR CONSULTING + ENG.**

CERTIFIED BY **E.T.A.**      DATE **12-99**

COMMENTS \_\_\_\_\_

McIntosh Unit #5 - SWPC 501G

Calibration Record

| Time  | Measured Values |            |         |            |          | Certified Concentrations |            |         |            |          | Difference (% of Scale) |            |          |           |           |                                         |
|-------|-----------------|------------|---------|------------|----------|--------------------------|------------|---------|------------|----------|-------------------------|------------|----------|-----------|-----------|-----------------------------------------|
|       | CO<br>ppm       | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO<br>ppm                | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO<br>100               | NOx<br>100 | O2<br>25 | THC<br>50 | CO2<br>20 |                                         |
| 9:12  | 0.7             | 0.9        | 19.8    | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:13  | 0.7             | 0.1        | 19.8    | 1          | -0.05    |                          |            | 20      |            |          |                         |            | -0.8%    |           |           | Initial Cal/Cal Error                   |
| 9:14  | 0.6             | -0.3       | 19.8    | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:26  | 0.7             | 89.2       | 0.0     | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:27  | 0.5             | 89.3       | 1.2     | 17         | -0.06    |                          | 88.7       |         |            |          |                         | 0.6%       |          |           |           | Initial Cal/Cal Error                   |
| 9:28  | 289.5           | 86.6       | 8.6     | 50         | 0.65     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:31  | 88.9            | 0.3        | 0.0     | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:32  | 89.0            | 0.0        | 0.0     | 0          | -0.06    | 91                       |            |         |            |          | -2.0%                   |            |          |           |           | Initial Cal/Cal Error                   |
| 9:33  | 278.1           | 0.0        | 11.8    | 83         | 0.92     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:34  | 237.9           | 17.7       | 0.1     | 0          | -0.04    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:35  | 21.5            | 18.3       | 0.0     | 0          | -0.06    | 20                       | 20.3       |         |            |          | 1.5%                    | -2.0%      | 0.0%     |           |           | -0.3% Initial Cal/Cal Error             |
| 9:36  | 21.7            | 19.5       | 0.0     | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:39  | 47.7            | 37.5       | 0.0     | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:40  | 46.2            | 44.3       | 0.0     | 0          | -0.06    | 45.3                     | 46         |         |            |          | 0.9%                    | -1.7%      | 0.0%     |           |           | -0.3% Initial Cal/Cal Error             |
| 9:41  | 46.3            | 44.7       | 0.0     | 0          | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:44  | -0.1            | 2.6        | 13.8    | 0          | 4.88     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:45  | -0.4            | 0.2        | 13.9    | 0          | 4.9      | 0                        | 0          | 13.9    |            | 5.06     | -0.4%                   | 0.2%       | 0.0%     |           |           | -0.8% Initial Cal/Cal Error             |
| 9:46  | -0.4            | -0.1       | 13.9    | 0          | 4.93     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:48  | 55.3            | 28.8       | 0.0     | 0          | -0.04    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 9:49  | 46.7            | 44.7       | 2.0     | 17         | -0.04    | 45.3                     | 46         |         |            |          | 1.4%                    | -1.3%      |          |           |           | Bias                                    |
| 9:50  | 440.1           | 45.3       | 15.2    | 99         | 2.86     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 10:39 | -0.3            | 2.9        | 13.8    | 0          | 4.91     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 10:40 | -0.5            | 1.3        | 13.8    | 0          | 4.91     | 0                        | 0          | 13.9    |            | 5.06     | -0.5%                   | 1.3%       | -0.4%    |           |           | -0.7% Bias                              |
| 10:41 | 0.5             | 1.0        | 10.3    | 0          | 4.1      |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 10:42 | 38.9            | 11.3       | 0.0     | 0          | 0        |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 10:43 | 46.3            | 43.5       | 0.0     | 0          | -0.02    | 45.3                     | 46         | 0       |            | 0        | 1.0%                    | -2.5%      | 0.0%     |           |           | -0.1% Drift/Bias                        |
| 10:44 | 46.4            | 45.1       | 0.0     | 0          | -0.03    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 11:14 | 40.5            | 39.2       | 0.1     | 0          | 0        |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 11:15 | 46.3            | 45.6       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       |            | 0        | 1.0%                    | -0.4%      | 0.0%     |           |           | -0.2% Drift/Bias                        |
| 11:16 | 46.4            | 46.0       | 1.7     | 0          | 0.13     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 11:18 | -0.3            | 3.8        | 13.8    | 0          | 4.89     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 11:19 | -0.2            | 1.0        | 13.8    | 0          | 4.9      | 0                        | 0          | 13.9    | 0          | 5.06     | -0.2%                   | 1.0%       | -0.4%    | 0.0%      |           | -0.8% Drift/Bias                        |
| 11:20 | 1.8             | 0.5        | 13.5    | 0          | 4.73     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:26 | 0.6             | 1.4        | 0.0     | 45         | -0.05    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:27 | 0.6             | 1.2        | 0.0     | 45         | -0.05    |                          |            |         | 45.1       |          |                         |            |          | -0.2%     |           | THC Initial Cal/Cal Error<br>% Absolute |
| 12:28 | 99.8            | 0.7        | 15.1    | 35         | 0.21     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:32 | 0.7             | 1.7        | 20.7    | 33         | -0.05    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:33 | 0.6             | 0.6        | 20.7    | 24         | -0.05    |                          |            |         | 24.8       |          |                         |            |          | -3.2%     |           | THC Initial Cal/Cal Error<br>% Absolute |
| 12:34 | 0.8             | 0.5        | 20.7    | 37         | -0.06    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:36 | 233.1           | 44.4       | 20.7    | 10         | -0.03    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 12:37 | 0.6             | 5.0        | 20.7    | 10         | -0.05    |                          |            |         | 10         |          |                         |            |          | 0.0%      |           | THC Initial Cal/Cal Error<br>% Absolute |
| 12:38 | 1.0             | 1.0        | 19.8    | 40         | 0.27     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:18 | -0.3            | 1.3        | 13.8    | 0          | 4.89     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:19 | -0.3            | 1.0        | 13.8    | 0          | 4.9      | 0                        | 0          | 13.9    | 0          | 5.06     | -0.3%                   | 1.0%       | -0.4%    | 0.0%      |           | -0.8% Drift/Bias                        |
| 13:20 | 26.8            | 0.9        | 1.5     | 0          | 0.83     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:21 | 46.3            | 37.3       | 0.0     | 0          | -0.01    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:22 | 46.3            | 44.7       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       | 0          | 0        | 1.0%                    | -1.3%      | 0.0%     | 0.0%      |           | -0.2% Drift/Bias                        |
| 13:23 | 46.3            | 45.3       | 1.1     | 0          | -0.03    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:53 | 46.4            | 45.7       | 0.0     | 0          | -0.04    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:54 | 46.3            | 45.7       | 0.0     | 0          | -0.04    | 45.3                     | 46         | 0       | 0          | 0        | 1.0%                    | -0.3%      | 0.0%     | 0.0%      |           | -0.2% Drift/Bias                        |
| 13:55 | 22.9            | 45.6       | 12.8    | 0          | 3.47     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:58 | -0.5            | 0.6        | 13.8    | 0          | 4.87     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 13:59 | -0.3            | 0.4        | 13.8    | 0          | 4.88     | 0                        | 0          | 13.9    | 0          | 5.06     | -0.3%                   | 0.4%       | -0.4%    | 0.0%      |           | -0.9% Drift/Bias                        |
| 14:00 | 9.4             | 0.1        | 13.2    | 0          | 4.45     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 14:44 | -0.2            | 0.5        | 13.8    | 0          | 4.89     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 14:45 | -0.3            | 0.3        | 13.8    | 0          | 4.89     | 0                        | 0          | 13.9    | 0          | 5.06     | -0.3%                   | 0.3%       | -0.4%    | 0.0%      |           | -0.9% Drift/Bias                        |
| 14:46 | -0.1            | 0.1        | 12.3    | 0          | 4.84     |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 14:48 | 46.7            | 18.7       | 0.0     | 0          | -0.02    |                          |            |         |            |          |                         |            |          |           |           |                                         |
| 14:49 | 46.8            | 44.5       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       | 0          | 0        | 1.5%                    | -1.5%      | 0.0%     | 0.0%      |           | -0.2% Drift/Bias                        |

McIntosh Unit #5 - SWPC 501G  
Calibration Record

| Time  | Measured Values |            |         |            |          | Certified Concentrations |            |         |            |          | Difference (% of Scale) |            |          |           |           |            |
|-------|-----------------|------------|---------|------------|----------|--------------------------|------------|---------|------------|----------|-------------------------|------------|----------|-----------|-----------|------------|
|       | CO<br>ppm       | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO<br>ppm                | NOx<br>ppm | O2<br>% | THC<br>ppm | CO2<br>% | CO<br>100               | NOx<br>100 | O2<br>25 | THC<br>50 | CO2<br>20 |            |
| 14:50 | 47.0            | 45.0       | 0.0     | 0          | -0.03    |                          |            |         |            |          |                         |            |          |           |           |            |
| 15:24 | 0.4             | 0.8        | 13.8    | 0          | 4.89     |                          |            |         |            |          |                         |            |          |           |           |            |
| 15:25 | 0.6             | 0.4        | 13.8    | 0          | 4.9      | 0                        | 0          | 13.9    | 0          | 5.06     | 0.6%                    | 0.4%       | -0.4%    | 0.0%      | -0.8%     | Drift/Bias |
| 15:26 | 18.7            | 1.1        | 4.6     | 0          | 1.71     |                          |            |         |            |          |                         |            |          |           |           |            |
| 15:29 | 47.7            | 45.1       | 0.0     | 0          | -0.02    |                          |            |         |            |          |                         |            |          |           |           |            |
| 15:30 | 47.6            | 45.3       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       | 0          | 0        | 2.3%                    | -0.7%      | 0.0%     | 0.0%      | -0.2%     | Drift/Bias |
| 15:31 | 38.9            | 45.2       | 5.5     | 0          | 1.41     |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:03 | 47.6            | 45.4       | 0.0     | 0          | -0.02    |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:04 | 47.5            | 45.5       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       | 0          | 0        | 2.2%                    | -0.5%      | 0.0%     | 0.0%      | -0.2%     | Drift/Bias |
| 16:05 | 19.5            | 45.4       | 12.8    | 0          | 3.48     |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:07 | 0.7             | 0.9        | 13.7    | 0          | 4.88     |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:08 | 0.8             | 0.3        | 13.8    | 0          | 4.89     | 0                        | 0          | 13.9    | 0          | 5.06     | 0.8%                    | 0.3%       | -0.4%    | 0.0%      | -0.9%     | Drift/Bias |
| 16:09 | 0.8             | 0.1        | 13.2    | 0          | 4.68     |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:12 | 0.9             | 5.8        | 20.6    | 24         | -0.01    |                          |            |         |            |          |                         |            |          |           |           |            |
| 16:13 | 1.0             | 0.5        | 20.6    | 24         | -0.02    |                          |            |         | 24.8       |          |                         |            |          | -1.6%     |           | Drift/Bias |
| 16:14 | 1.1             | 0.2        | 16.4    | 8          | 2.11     |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:21 | 1.0             | 1.1        | 20.6    | 23         | -0.02    |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:22 | 0.8             | 0.4        | 20.6    | 24         | -0.03    |                          |            |         | 24.8       |          |                         |            |          | -1.6%     |           | Drift/Bias |
| 17:23 | 0.8             | 0.3        | 15.1    | 3          | 3.56     |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:24 | 0.8             | 0.3        | 13.8    | 0          | 4.87     |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:25 | 0.9             | 0.1        | 13.8    | 0          | 4.88     | 0                        | 0          | 13.9    | 0          | 5.06     | 0.9%                    | 0.1%       | -0.4%    | 0.0%      | -0.9%     | Drift/Bias |
| 17:26 | 0.9             | 0.1        | 11.9    | 0          | 4.84     |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:28 | 47.8            | 41.2       | 0.0     | 0          | -0.01    |                          |            |         |            |          |                         |            |          |           |           |            |
| 17:29 | 47.7            | 44.9       | 0.0     | 0          | -0.02    | 45.3                     | 46         | 0       | 0          | 0        | 2.4%                    | -1.1%      | 0.0%     | 0.0%      | -0.1%     | Drift/Bias |
| 17:30 | 48.1            | 45.4       | 0.0     | 0          | -0.03    |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:39 | 33.7            | 32.5       | 0.2     | 0          | 0.03     |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:40 | 47.8            | 44.4       | 0.0     | 0          | -0.01    | 45.3                     | 46         | 0       | 0          | 0        | 2.5%                    | -1.6%      | 0.0%     | 0.0%      | -0.1%     | Drift/Bias |
| 18:41 | 47.6            | 45.8       | 1.9     | 0          | 0.43     |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:46 | 0.8             | 0.3        | 20.6    | 24         | -0.04    |                          |            |         | 24.8       |          |                         |            |          | -1.6%     |           | Drift/Bias |
| 18:47 | 1.0             | 0.2        | 17.4    | 12         | 2.14     |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:48 | 1.0             | 0.1        | 13.8    | 1          | 4.86     |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:49 | 0.8             | 0.1        | 13.8    | 0          | 4.87     | 0                        | 0          | 13.9    | 0          | 5.06     | 0.8%                    | 0.1%       | -0.4%    | 0.0%      | -0.9%     | Drift/Bias |
| 18:50 | 18.2            | 0.3        | 4.1     | 0          | 1.61     |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:52 | 45.9            | 44.6       | 0.0     | 0          | -0.02    |                          |            |         |            |          |                         |            |          |           |           |            |
| 18:53 | 45.7            | 45.3       | 0.0     | 0          | -0.03    | 45.3                     | 46         | 0       | 0          | 0        | 0.4%                    | -0.7%      | 0.0%     | 0.0%      | -0.2%     | Reset CO   |
| 18:54 | 45.7            | 45.5       | 1.1     | 17         | -0.03    |                          |            |         |            |          |                         |            |          |           |           |            |

Calibration Error and Drift Requirements:  
 EPA Method 20 (O2, CO2, & Nox)  
 EPA Method 10 (CO)  
 EPA Method 25A (THC)

Initial Cal Error  
 2% of Span  
 2% of Span  
 5% Absolute

Drift  
 2% of Span  
 <10% in 8 hours  
 3% of Span

.....Enertec NTDAS®  
.....Average Values Report  
....."03/23/00 17:03"

*Converter Efficiency Test*  
*Thermo Environmental 42C HL*

"Company: McIntosh Unit 5", "Period Start: 03/23/00 16:16"  
" Plant: ", "Period End: 03/23/00 16:59"  
"City/St: Lakeland, Florida", "Validation Type: 1/1 min"  
" Source: STACK", "Averaging Period: 1 min"  
.....Type: Block Avg

*SN*  
*42H-53090 -*  
*294*

....."Average", "Average", "Average", "Average", "Average", "Average", "Average"  
....."Average"  
....."NOx", "NOx Corr", "CO", "CO Corr", "THC", "THC Corr", "O2", "CO2"  
....."ppm", "ppm", "ppm", "ppm", "ppm", "ppm", "%", "%"  
Period Start

| Period Start      | NOx   | NOx Corr | CO     | CO Corr | THC | THC Corr | O2  | CO2 |
|-------------------|-------|----------|--------|---------|-----|----------|-----|-----|
| "03/23/00 16:16", | N/A   | N/A      | N/A    | N/A     | N/A | N/A      | N/A | N/A |
| N/A               |       |          |        |         |     |          |     |     |
| "03/23/00 16:17", | N/A   | N/A      | N/A    | N/A     | N/A | N/A      | N/A | N/A |
| N/A               |       |          |        |         |     |          |     |     |
| "03/23/00 16:18", | 42.3  | 988.6    | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.6              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:19", | 42.1  | 985.1    | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.6              | -0.02 |          |        |         |     |          |     |     |
| "03/23/00 16:20", | 42.1  | 985.9    | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.6              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:21", | 42.1  | 985.1    | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.6              | -0.02 |          |        |         |     |          |     |     |
| "03/23/00 16:22", | 42.2  | 1424.9   | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:23", | 42.3  | 1649.7   | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:24", | 42.5  | 1656.2   | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:25", | 42.7  | 1664.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:26", | 42.9  | 1671.2   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:27", | 43.1  | 1679.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:28", | 43.1  | 1680.9   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:29", | 43.3  | 1690.0   | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:30", | 43.3  | 1690.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:31", | 43.1  | 1682.2   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:32", | 43.4  | 1692.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:33", | 43.6  | 1698.5   | 999.9  | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:34", | 43.8  | 1706.3   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:35", | 43.8  | 1708.9   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:36", | 44.0  | 1716.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:37", | 44.0  | 1716.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:38", | 44.0  | 1716.0   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:39", | 43.8  | 1707.5   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |
| 20.7              | -0.01 |          |        |         |     |          |     |     |
| "03/23/00 16:40", | 43.7  | 1702.4   | 1000.0 | N/A     | N/A | N/A      | N/A | N/A |

CONV. EFF. cont'd.

|                   |       |        |          |          |              |            |            |       |  |
|-------------------|-------|--------|----------|----------|--------------|------------|------------|-------|--|
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:41", |       | 43.6 , | 1699.8 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:42", |       | 43.7 , | 1704.3 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:43", |       | 43.4 , | 1691.3 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:44", |       | 43.6 , | 1699.1 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:45", |       | 43.6 , | 1699.8 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:46", |       | 43.6 , | 1700.4 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:47", |       | 43.6 , | 1698.5 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:48", |       | 43.6 , | 1702.4 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:49", |       | 43.8 , | 1705.6 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:50", |       | 43.8 , | 1708.9 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:51", |       | 43.7 , | 1704.3 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:52", |       | 43.8 , | 1706.3 , | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:53", |       | 43.7 , | 1704.9 , | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:54", |       | 14.9 , | 581.1 ,  | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:55", |       | 0.3 ,  | 12.3 ,   | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:56", |       | 0.3 ,  | 11.7 ,   | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:57", |       | 0.3 ,  | 13.0 ,   | 999.9 ,  | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "03/23/00 16:58", |       | 0.3 ,  | 12.3 ,   | 1000.0 , | N/A ,        | N/A ,      | N/A ,      |       |  |
| 20.7 ,            | -0.01 |        |          |          |              |            |            |       |  |
| "Final Average*", |       | 38.4 , | 1428.1 , | 1000.0 , | N/A,N/A,N/A, |            | 20.7 ,     | -0.01 |  |
| " Maximum*",      |       | 44.0 , | 1716.0 , | 1000.0 , | 0.0 ,        |            | 0 ,        | C ,   |  |
| 20.7 ,            | 0.00  |        |          |          |              |            |            |       |  |
| " Minimum*",      |       | 0.3 ,  | 11.7 ,   | 999.9 ,  | 0000000.0 ,  | 00000000 , | 00000000 , |       |  |
| 20.6 ,            | -0.02 |        |          |          |              |            |            |       |  |

\*\*Does not include Invalid Averaging Periods ("N/A")"

Peak = 44.0  
Final = 43.6

$\Delta\% = 0.9\%$

pass  
*[Signature]*

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SHIPPED TO: McIntosh Power Station (Gate 8)  
 3030 East Lake Parker Drive  
 Lakeland, FL 33805  
 Attn: Bill Barclay/Jason Kraus

**CERTIFICATE  
 OF  
 ANALYSIS**

SGI ORDER #: 141693  
 ITEM#: 7  
 CERTIFICATION DATE: 4/8/99  
 P.O.#: 4500158527  
 BLEND TYPE: CERTIFIED

CYLINDER #: CC106855  
 CYLINDER PRES: 2000 psig  
 CYLINDER VALVE: CGA 860

ANALYTICAL ACCURACY: +/- 2%

| <u>COMPONENT</u> | <u>REQUESTED GAS<br/>CONC</u> | <u>ANALYSIS</u> |
|------------------|-------------------------------|-----------------|
| Carbon Monoxide  | 45.0 ppm                      | 45.3 ppm        |
| Nitric Oxide     | 45.0 ppm                      | 46.0 ppm        |
| NOX              | Reference Value Only          | 46.0 ppm        |
| Nitrogen         | Balance                       | Balance         |

ANALYST: Fred Pikula

DATE: 4/8/99

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Attn: Bill Barclay/Jason Kraus

CERTIFICATE  
OF  
ANALYSIS

SGI ORDER #: 141693  
ITEM#: 1  
CERTIFICATION DATE: 4/13/99  
P.O.#: 4500158527  
BLEND TYPE: CERTIFIED

CYLINDER #: CC108729  
CYLINDER PRES: 2000 psig  
CYLINDER VALVE: CGA 580

ANALYTICAL ACCURACY: +/- 2%

| <u>COMPONENT</u> | <u>REQUESTED GAS CONC</u> | <u>ANALYSIS</u> |
|------------------|---------------------------|-----------------|
| Oxygen           | 20.0 %                    | 20.0 %          |
| Nitrogen         | Balance                   | Balance         |

ANALYST: Fred PikulaDATE: 4/13/99

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3030 East Lake Parker Drive  
Lakeland, FL 33805  
Attn: Bill Barclay/Jason Kraus

**CERTIFICATE  
OF  
ANALYSIS**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| SGI ORDER #:        | 141693     | CYLINDER #:     | CC106965  |
| ITEM#:              | 8          | CYLINDER PRES:  | 2000 psig |
| CERTIFICATION DATE: | 4/8/99     | CYLINDER VALVE: | CGA 660   |
| P.O.#:              | 4500158527 |                 |           |
| BLEND TYPE:         | CERTIFIED  |                 |           |

ANALYTICAL ACCURACY: +/- 2%

| <u>COMPONENT</u> | <u>REQUESTED GAS<br/>CONC</u> | <u>ANALYSIS</u> |
|------------------|-------------------------------|-----------------|
| Carbon Monoxide  | 20.0 ppm                      | 20.0 ppm        |
| Nitric Oxide     | 20.0 ppm                      | 20.3 ppm        |
| NOX              | Reference Value Only          | 20.3 ppm        |
| Nitrogen         | Balance                       | Balance         |

ANALYST: \_\_\_\_\_  
Fred Pikula

DATE: \_\_\_\_\_  
4/8/99



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Lakeland, FL 33805  
Attn: Bill Barclay/Jason Kraus

**CERTIFICATE  
OF  
ANALYSIS**

SGI ORDER #: 141693  
ITEM#: 9  
CERTIFICATION DATE: 4/13/99  
P.O.#: 4500158527  
BLEND TYPE: CERTIFIED

CYLINDER #: CC107045  
CYLINDER PRES: 2000 psig  
CYLINDER VALVE: CGA 590

**ANALYTICAL ACCURACY: +/- 2%**

| <u>COMPONENT</u> | <u>REQUESTED GAS CONC</u> | <u>ANALYSIS</u> |
|------------------|---------------------------|-----------------|
| Oxygen           | 14.0 %                    | 13.9 %          |
| Carbon Dioxide   | 5.00 %                    | 5.06 %          |
| Nitrogen         | Balance                   | Balance         |

ANALYST: Fred Pikula

DATE: 4/13/99

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SHIPPED TO: CEM Services  
247 Oakland Street  
Mansfield, MA 02048

**CERTIFICATE  
OF  
ANALYSIS**

|                     |               |                 |           |
|---------------------|---------------|-----------------|-----------|
| SGI ORDER # :       | 141242        | CYLINDER # :    | CC106652  |
| ITEM# :             | 1             | CYLINDER PRES:  | 2000 psig |
| CERTIFICATION DATE: | 4/1/99        | CYLINDER VALVE: | CGA 580   |
| P.O.#:              | 1141B         |                 |           |
| GRADE:              | ZERO NITROGEN |                 |           |

| <u>COMPONENT</u> | <u>REQUESTED GAS GRADE</u> |
|------------------|----------------------------|
| NITROGEN         | 99.998 %                   |

THC < 0.01 ppm

ANALYST: \_\_\_\_\_  
Ted Neeme

DATE: \_\_\_\_\_  
4/1/99

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SHIPPED TO: McIntosh Power Station (Gate 8)  
3030 East Lake Parker Drive  
Lakeland, FL 33805  
Attn: Bill Barclay/Jason Kraus

CERTIFICATE  
OF  
ANALYSIS

SGI ORDER #: 141693  
ITEM#: 2  
CERTIFICATION DATE: 4/8/99  
P.O.#: 45001/8527  
BLEND TYPE: CERTIFIED

CYLINDER #: CC107087  
CYLINDER PRES: 2000 psig  
CYLINDER VALVE: CGA 350

ANALYTICAL ACCURACY: +1-2%

| COMPONENT       | REQUESTED GAS CONC | ANALYSIS |
|-----------------|--------------------|----------|
| Carbon Monoxide | 90.0 ppm           | 91.0 ppm |
| Nitrogen        | Balance            | Balance  |

ANALYST: Fred Pirola

DATE: 4/8/99

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Lakeland, FL 33805  
Attn: Bill Barclay/Jason Kraus

CERTIFICATE  
OF  
ANALYSIS

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| SGI ORDER # :       | 141693     | CYLINDER # :    | CC106738  |
| ITEM# :             | 10         | CYLINDER PRES:  | 2000 psig |
| CERTIFICATION DATE: | 4/13/99    | CYLINDER VALVE: | CGA 590   |
| P.O.# :             | 4500158527 |                 |           |
| BLEND TYPE:         | CERTIFIED  |                 |           |

ANALYTICAL ACCURACY: +/- 2%

| <u>COMPONENT</u> | <u>REQUESTED GAS<br/>CONC</u> | <u>ANALYSIS</u> |
|------------------|-------------------------------|-----------------|
| Methane          | 10.0 ppm                      | 10.0 ppm        |
| Air              | Balance                       | Balance         |

ANALYST: \_\_\_\_\_  
Ted NeemeDATE: \_\_\_\_\_  
4/13/99

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Lakeland, FL 33805  
Attn: Bill Barclay/Jason Kraus

CERTIFICATE  
OF  
ANALYSIS

SGI ORDER #: 141693  
ITEM#: 6  
CERTIFICATION DATE: 4/13/99  
P.O.#: 4500158527  
BLEND TYPE: CERTIFIED

CYLINDER #: CC107069  
CYLINDER PRES: 2000 psig  
CYLINDER VALVE: CGA 350

ANALYTICAL ACCURACY: +/- 2%

| <u>COMPONENT</u> | <u>REQUESTED GAS<br/>CONC</u> | <u>ANALYSIS</u> |
|------------------|-------------------------------|-----------------|
| Methane          | 45.0 ppm                      | 45.1 ppm        |
| Nitrogen         | Balance                       | Balance         |

ANALYST: Ted NeemeDATE: 4/13/99



State of Florida  
**Department of  
 Environmental Protection**

This is to Certify That

**CHARLES RESHARD**

has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

This Certificate Expires

Jun 9, 2000

*M. D. Harley*  
 Certificate Officer

*Charles Reshard*  
 Bearer's Signature

Your certificate is valid for six (6) months. To keep your certification current, you must recertify on or before the expiration date on the card. Please mark your calendar accordingly.

Provided field certification is continuous the classroom certificate expires:

Nov 30, 2001

If field certification is not continuous classroom certification must be obtained prior to your next field certification attempt.

If you have any questions about your certification, please contact M.D. Harley at 850/921-9509.

# VISIBLE EMISSIONS EVALUATOR

This is to certify that

*Charles Reshard*

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

274956

Certificate Number

Jacksonville, Florida

Location

December 9, 1999

Date of Issue

*Thomas Fore*  
President

*Michael Jansford*  
Director of Training

## AIR CONSTRUCTION PERMIT PSD-FL-245 (1050004-004-AC)

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

## APPLICABLE STANDARDS AND REGULATIONS:

1. Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296, 62-297; and the applicable requirements of the Code of Federal Regulations Section 40, Parts 60, 72, 73, and 75.
2. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]
3. These emission units shall comply with all applicable requirements of 40CFR60, Subpart A, General Provisions including:
  - 40CFR60.7, Notification and Recordkeeping
  - 40CFR60.8, Performance Tests
  - 40CFR60.11, Compliance with Standards and Maintenance Requirements
  - 40CFR60.12, Circumvention
  - 40CFR60.13, Monitoring Requirements
  - 40CFR60.19, General Notification and Reporting requirements
4. ARMS Emission Unit 028, Power Generation, consisting of a 250 megawatt combustion turbine with a once-through steam generator shall comply with all applicable provisions of 40CFR60, Subpart GG, Standards of performance for Stationary Gas Turbines, adopted by reference in Rule 62-204.800(7)(b), F.A.C. The Subpart GG requirement to correct test data to ISO conditions applies. However, such correction is not used for compliance determinations with the BACT standard(s). ?
5. ARMS Emission Unit 029, Fuel Storage, consisting of a 1.05 million gallon distillate fuel oil storage tank shall comply with all applicable provisions of 40CFR60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels, adopted by reference in Rule 62-204.800, F.A.C.
6. All notifications and reports required by the above specific conditions shall be submitted to the DEP's Southwest District office.

## GENERAL OPERATION REQUIREMENTS

7. Fuels: Only pipeline natural gas or maximum 0.05 percent sulfur fuel oil No. 2 or superior grade of distillate fuel oil shall be fired in this unit. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)] ✓



## AIR CONSTRUCTION PERMIT PSD-FL-245 (1050004-004-AC)

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

8. Capacity: The maximum heat input rates, based on the lower heating value (LHV) of each fuel to Unit 5 at ambient conditions of 59°F temperature, 60% relative humidity, 100% load, and 14.7 psi pressure shall not exceed 2,174 million Btu per hour (mmBtu/hr) when firing natural gas, nor 2,236 mmBtu/hr when firing No. 2 or superior grade of distillate fuel oil. These maximum heat input rates will vary depending upon ambient conditions and the combustion turbine characteristics. Manufacturer's curves corrected for site conditions or equations for correction to other ambient conditions shall be provided to the Department of Environmental Protection (DEP) within 45 days of completing the initial compliance testing. [Design, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]
9. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary.
10. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the DEP Southwest District office as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]
11. Operating Procedures: Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]
12. Circumvention: The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]
13. Maximum allowable hours of operation for the stationary gas turbine and once-through steam generator are 8760. Fuel usage as heat input, while burning natural gas in the stationary gas turbine, shall not exceed  $15.639 \times 10^{12}$  BTU (LHV) per year (rolled monthly) until the unit achieves the  $\text{NO}_x$  emission limits (other than the initial ones) given in Specific Condition 21. Thereafter, only the hourly heat input limits given in Specific Condition 8 apply. [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]
14. Fuel usage as heat input, while burning fuel oil in the stationary gas turbine, shall not exceed  $559 \times 10^9$  BTU (LHV) per year (rolled monthly). [Applicant Request, Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

## AIR CONSTRUCTION PERMIT PSD-FL-245 (1050004-004-AC)

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

Control Technology

15. Westinghouse Dry Low NO<sub>x</sub> (DLN) combustors shall be installed on the stationary combustion turbine to control nitrogen oxides (NO<sub>x</sub>) emissions while firing natural gas. [Design, Rule 62-4.070, F.A.C.]
16. The Dry Low NO<sub>x</sub> (DLN) combustors shall be replaced with Westinghouse Ultra Low NO<sub>x</sub> (ULN) combustors to accomplish further NO<sub>x</sub> control in order to achieve the emission limits specified in Specific Condition 20 and 21. A high temperature selective catalytic reduction (Hot SCR) system or a low temperature SCR system shall be installed and in operation (together with DLN or ULN combustors) not later than May 1, 2002 if the emission limits specified in Specific Condition No 20 and 21 are not achievable by ULN combustors by this date. [Design, Rules 62-4.070 and 62-212.400, F.A.C.]
17. The permittee shall design the stationary gas turbine, ducting, possible future heat recovery steam generator, and stack(s) to accommodate installation of SCR equipment and/or oxidation catalyst in the event that the ULN technology fails to achieve the NO<sub>x</sub> limits given in Specific Condition No. 20 and 21 or the carbon monoxide (CO) limits given in Specific Condition 22 are not met. [Rule 62-4.070, F.A.C.]
18. A water injection system shall be installed for use when firing No. 2 or superior grade distillate fuel oil for control of NO<sub>x</sub> emissions. [Design, Rules 62-4.070 and 62-212.400, F.A.C.]
19. The permittee shall provide manufacturer's emissions performance versus load diagrams for the DLN and ULN systems prior to their installation. DLN and ULN systems shall each be tuned upon initial operation to optimize emissions reductions and shall be maintained to minimize NO<sub>x</sub> emissions and CO emissions. Operation of the DLN or ULN systems in the diffusion firing mode shall be minimized when firing natural gas. [Rule 62-4.070, and 62-210.650 F.A.C.]

## EMISSION LIMITS AND STANDARDS

20. The following table is a summary of the BACT determination and is followed by the applicable specific conditions. Values for NO<sub>x</sub> are corrected to 15% O<sub>2</sub>. Values for CO are corrected to 15% O<sub>2</sub> only until May 1, 2002. [Rule 62-212.400, F.A.C.]

| Operational Mode | NO <sub>x</sub> (ppm)                                          | CO (ppm)                             | VOC (ppm)         | PM/Visibility (% Opacity) | Technology and Comments                                                                                                 |
|------------------|----------------------------------------------------------------|--------------------------------------|-------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Simple Cycle     | 25 - NG (basis)<br>237 lb/hr (24-hr avg)<br>42 - FO (3 hr avg) | 25 - NG or<br>10 - Ox Cat<br>90 - FO | 4 - NG<br>10 - FO | 10                        | DLN on gas, WI on oil.<br>Applies until 05/1/2002. Clean fuels, good combustion                                         |
| Simple Cycle     | 9 - NG (basis)<br>85 lb/hr (24-hr avg)<br>42 - FO (3 hr avg)   | 25 - NG or<br>10 - Ox Cat<br>90 - FO | 4 - NG<br>10 - FO | 10                        | ULN on gas, WI on oil.<br>Applies after 05/1/2002<br>Clean fuels, good combustion                                       |
| Simple Cycle     | 9 - NG (3 hr avg)<br>15 - FO (3-hr avg)                        | 25 - NG or<br>10 - Ox Cat<br>90 - FO | 4 - NG<br>10 - FO | 10                        | Hot SCR. Applies not later than 05/1/2002 if 9 ppm NO <sub>x</sub> not achievable by ULN. Clean fuels, good combustion. |
| Combined Cycle   | 7.5 - NG (3 hr avg)<br>15 - FO (3-hr avg)                      | 25 - NG or<br>10 - Ox Cat<br>90 - FO | 4 - NG<br>10 - FO | 10                        | Conventional SCR unless simple cycle limits are achieved on or before 05/01/2002.<br>Clean fuels, good combustion       |

## AIR CONSTRUCTION PERMIT PSD-FL-245 (1050004-004-AC)

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

21. Nitrogen Oxides (NO<sub>x</sub>) Emissions:

- stack test program*
- When NO<sub>x</sub> monitoring data is not available, substitution for missing data shall be handled as required by Title IV (40 CFR 75) to calculate any specified average time.
  - Until May 1, 2002, the concentration of NO<sub>x</sub> in the exhaust gas shall not exceed 237 lb/hr (at ISO conditions) on a 24 hr block average (basis 25 ppm @ 15% O<sub>2</sub>, full load) when firing natural gas and 42 ppmvd at 15% O<sub>2</sub> when firing fuel oil on the basis of a 3 hr average as measured by the continuous emission monitoring system (CEMS). In addition, NO<sub>x</sub> emissions calculated as NO<sub>2</sub> (at ISO conditions) shall exceed neither 25 ppm @ 15% O<sub>2</sub> nor 237 lb/hr (when firing natural gas) and shall exceed neither 42 ppm @ 15% O<sub>2</sub> nor 413 lb/hr (when firing fuel oil) to be demonstrated by stack test. [Rule 62-212.400, F.A.C.]
  - Not later than May 1, 2002, the concentration of NO<sub>x</sub> concentrations in the exhaust gas shall not exceed 85 lb/hr (at ISO conditions) on a 24 hr block average (basis 9 ppm @ 15% O<sub>2</sub>) when firing natural gas and 42 ppmvd at 15% O<sub>2</sub> when firing fuel oil on the basis of a 3 hr average as measured by the CEMS. In addition, NO<sub>x</sub> emissions calculated as NO<sub>2</sub> (at ISO conditions) shall exceed neither 9 ppm @ 15% O<sub>2</sub> nor 85 lb/hr (when firing natural gas) and shall exceed neither 42 ppm @ 15% O<sub>2</sub> nor 413 lb/hr (when firing fuel oil) to be demonstrated by stack test. [Rule 62-212.400, F.A.C.]
  - If Hot SCR is installed, achievable short-term NO<sub>x</sub> concentrations in the exhaust gas shall be demonstrated at baseload during the first compliance test following installation not to exceed 9 ppmvd at 15% O<sub>2</sub> when firing natural gas. NO<sub>x</sub> emissions shall not exceed 9 ppmvd at 15% O<sub>2</sub> when firing natural gas and 15 ppmvd at 15% O<sub>2</sub> when firing fuel oil on the basis of a 3-hr average, as measured by the CEMS. In addition, NO<sub>x</sub> emissions calculated as NO<sub>2</sub> (at ISO conditions) shall not exceed 85 lb/hr (when firing natural gas) and 148 lb/hr (when firing fuel oil) to be demonstrated by stack test. [Rule 62-212.400, F.A.C.]
  - If conventional SCR is installed in conjunction with conversion to combined cycle operation, achievable short-term NO<sub>x</sub> concentrations in the exhaust gas shall be demonstrated at baseload during the first compliance test following installation not to exceed 7.5 ppmvd at 15% O<sub>2</sub> when firing natural gas. If conventional SCR catalyst is installed, NO<sub>x</sub> emissions shall not exceed 7.5 ppmvd at 15% O<sub>2</sub> when firing natural gas and 15 ppmvd at 15% O<sub>2</sub> when firing fuel oil on the basis of 3-hr average, as measured by the CEMS. In addition, NO<sub>x</sub> emissions calculated as NO<sub>2</sub> (at ISO conditions) shall not exceed 71.1 lb/hr (when firing natural gas) and 148 lb/hr (when firing fuel oil) to be demonstrated by stack test. [Rule 62-212.400, F.A.C.]

## AIR CONSTRUCTION PERMIT PSD-FL-245 (1050004-004-AC)

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

22. Carbon Monoxide (CO) emissions: Prior to May 1, 2002, the concentration of CO (@15% O<sub>2</sub> in the exhaust gas when firing natural gas shall not exceed 25 ppmvd when firing natural gas and 90 ppmvd when firing fuel oil as measured by EPA Method 10. CO emissions (at ISO conditions) shall not exceed 145 lb/hr (when firing natural gas) and 539 lb/hr (when firing fuel oil). [Rule 62-212.400, F.A.C.]

After May 1, 2002, the concentration of CO in the exhaust gas when firing natural gas shall not exceed 25 ppmvd when firing natural gas and 90 ppmvd when firing fuel oil as measured by EPA Method 10. CO emissions (at ISO conditions) shall not exceed 106 lb/hr (when firing natural gas) and 386 lb/hr (when firing fuel oil). [Rule 62-212.400, F.A.C.]

23. Sulfur Dioxide (SO<sub>2</sub>) emissions: SO<sub>2</sub> emissions (at ISO conditions) shall not exceed 7.2 pounds per hour when firing pipeline natural gas and 127 pounds per hour when firing maximum 0.05 percent sulfur No. 2 or superior grade distillate fuel oil as measured by applicable compliance methods described below. Emissions of SO<sub>2</sub> shall not exceed 38.4 tons per year. [Rules 62-4.070 and 62-212.400, F.A.C. to avoid PSD Review]

24. Visible emissions (VE): VE emissions shall not exceed 10 percent opacity when firing natural gas or No. 2 or superior grade of fuel oil.

25. Volatile Organic Compounds (VOC) Emissions: The concentration of VOC in the exhaust gas when firing natural gas shall not exceed 4 ppmvd when firing natural gas and 10 ppmvd when firing fuel oil as assured by EPA Methods 18, and/or 25 A. VOC emissions (at ISO conditions) shall not exceed 10 lb/hr (when firing natural gas) and 25 lb/hr (when firing fuel oil). [Rule 62-212.400, F.A.C.]

## EXCESS EMISSIONS

26. Excess emissions resulting from startup, shutdown, malfunction or fuel switching shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized. Excess emissions occurrences shall in no case exceed four hours in any 24-hour period for cold startup or two hours in any 24-hour period for other reasons unless specifically authorized by DEP for longer duration.

27. Excess emissions entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited pursuant to Rule 62-210.700, F.A.C.

28. Excess Emissions Report: If excess emissions occur due to malfunction, the owner or operator shall notify DEP's Southwest District office within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rules 62-4.130 and 62-210.700(6), F.A.C.]

## PROJECT PARTICIPANTS

### STACS

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