Title V Air Operation Permit Revision Application

City of Tallahassee
Electric Utility

Arvah B. Hopkins Generating Station
Leon County, Florida

Hopkins Unit 2A Re-Powering

October 2008

CITY OF TALLAHASSEE

300 South Adams Street
Tallahassee, FL 32301

CITY OF TALLAHASSEE

October 31, 2008

Jonathan Holtom
Title V Section
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

Re: Title V Air Operation Permit Revision Application
Arvah B. Hopkins Generating Station (Facility ID 0730003)
Project No.: 0730003-013-AV

Dear Mr. Holtom:

Please find attached four copies of an Application for Air Permit Revision – Title V Source for the City of Tallahassee Arvah B. Hopkins Generating Station. The revision application is submitted 180 days after the commencement of operation for Unit 2A, as required by Rule 62-213.420, Florida Administrative Code (F.A.C.).

The City of Tallahassee is hereby requesting the following revision to be incorporated into the Title V Operating Permit. In addition, the City also requests the removal of conditions pertaining to Unit 2 (EU-004) that has been rendered incapable of operation.

The revision application was completed on the form provided by the Florida Department of Environmental Protection and adopted in Rule 62-210.900(1), F.A.C. The revision application is signed and sealed by a licensed Professional Engineer and contains the original signature of Rob McGarrah as the Primary Responsible Official.

If you have any questions regarding the attached application, please do not hesitate to contact me at (850) 891-8710, or John Powell, Environmental Regulatory Compliance Administrator at (850) 891-8851 or Rob McGarrah, Manager of Power Production at (850) 891-5534.

Sincerely,

Russell A. Wider

Russell Wider, P.E.
Environmental Engineer

Attachments

cc: Cynthia Barber, COT
Rob McGarrah, COT
Triveni Singh, COT
Phil Bucci, COT
John Powell, COT

Arvah B. Hopkins Generating Station

Unit 2A Re-Powering

Title V Air Operation Permit Revision Application

Prepared for:

City of Tallahassee

October 2008

Introduction

The Arvah B. Hopkins Generating Station is an existing electric generation facility, which is located in Leon County at 1125 Geddie Road, Tallahassee, Florida. The facility is owned and operated by the City of Tallahassee (COT). The facility is comprised of two fossil fuel fired steam generating units (Units 1 and 2), two Westinghouse combustion turbines (CTs) (referred to as GT-1 and GT-2), and two General Electric (GE) LM6000 CTs (referred to as GT-3 and GT-4).

Recently, COT constructed and placed into operation an additional combined cycle unit consisting of one GE 7FA CT and associated electric generator, a gas fired duct burner, a heat recovery steam generator (HRSG) and the existing steam turbine-electric generator (from Unit 2). This project is referred to as Unit 2A. The combustion turbine is rated a nominal 188 MW and the HRSG will be used to re-power the existing Unit 2 steam turbine-electric generator. In the combustion turbine, natural gas will be fired as the primary fuel and distillate oil will be fired as a restricted alternative fuel from onsite storage tanks. Natural gas will be the sole fuel for the duct burner system. Emissions of nitrogen oxides (NOx) will be controlled by a selective catalytic reduction (SCR) system plus the dry low NOx (DLN) combustion system when firing natural gas and water injection when firing distillate oil.

An air construction permit was required prior to the commencement of construction of Unit 2A, per Rule 62-212.300(1)(a), Florida Administrative Code (F.A.C.). COT submitted an air construction permit application to FDEP in May 2006. An air construction permit was issued by FDEP (Air Permit No. 0730003-009-AC was issued September 19, 2006), authorizing the construction and initial operation of Unit 2A. This air construction permit expires July 1, 2009.

The City of Tallahassee must complete compliance testing for each allowable fuel, as required by Air Construction Permit No. 0730003-009-AC, Section III, Specific Condition No. 26 (Initial compliance testing for ammonia slip and visible emissions, recording of carbon monoxide (CO) and NOx emissions by the continuous emissions monitoring systems (CEMS)). The initial emissions performance testing for natural gas without duct burning was conducted on July 10, 2008 and for natural gas with duct burning was conducted on July 30, 2008. These initial performance tests demonstrated that Unit 2A was operating in compliance with all applicable permit emissions limits, while firing natural gas. Reports of these initial tests were submitted to the FDEP Northwest District Office on August 21 and September 12, 2008, respectively, and are attached to this permit application.

As of yet, COT has not conducted the initial performance demonstrations for the unit while firing distillate oil, as the unit has not been commissioned for liquid fuel. Since the unit has not demonstrated compliance while using distillate oil as fuel, as required, by the air operation permit application due date, a compliance plan is attached to this application. The compliance plan details the necessary steps and associated due dates by which the unit will demonstrate that it is operating in compliance with all applicable permit emissions limits for firing distillate oil (see Attachment C).

A Title V operation permit is required for regular operation of Unit 2A. As required by Section II, Condition 9 of the Unit 2A air construction permit, a Title V operation permit application must be submitted to the Bureau of Air Regulation, with a copy to FDEP's Northwest District in accordance with Chapter 62-213, F.A.C. Rule 62-213.420(1)(a)4, F.A.C., states that a Title V source which contains an emissions unit that commences operation or is modified after October 25, 1995, shall submit an application for a permit revision at least 90 days prior to expiration of the unit's air construction permit, but no later than 180 days after the emissions unit commences

operation. Initial startup of Unit 2A occurred on May 2, 2008. Accordingly, the application for a Title V revision for Unit 2A is due at least by April 2, 2009 (90 days prior to air construction permit expiration), but no later than November 1, 2008 (180 days after commencement of operation).

MAY 1, 2008

This permit application submittal, using FDEP Form No. 62-210.900(1), Application for Air Permit-Long Form, effective 3/16/08 constitutes COT's application to revise Title V Air Permit No. 0730003-011-AV to incorporate the appropriate terms and conditions of Air Construction Permit no. 0730003-009-AC pursuant to the requirements of Chapter 62-213, F.A.C.

In addition to incorporating the referenced terms and conditions above, COT requests that conditions related to Unit 2 (Section III, Subsection B of permit no. 0730003-011-AV) either be removed or add a permitting note delineating that the specific conditions of the referenced section and subsection no longer apply. Unit 2 was rendered incapable of operation prior to the commencement of operation of Unit 2A as required by the air construction permit.

RETIRED UNIT EXEMPTION 2.

ACID RAIN PART APPLICATION 7.

Table of Contents

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

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

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

Air Operation Permit – Use this form to apply for:

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

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **City of Tallahassee**	
2. Site Name: **Arvah B. Hopkins Generating Station**	
3. Facility Identification Number: **0730003**	
4. Facility Location... Street Address or Other Locator: **1125 Geddie Road** City: **Tallahassee** County: **Leon** Zip Code: **32304**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Russell Wider, P.E.**
2. Application Contact Mailing Address... Organization/Firm: **City of Tallahassee, Environmental Policy & Energy Resources** Street Address: **300 South Adams Street, A-10** City: **Tallahassee** State: **Florida** Zip Code: **32301**
3. Application Contact Telephone Numbers... Telephone: **(850) 891-8710** ext. Fax: **(850) 891-8277**
4. Application Contact E-mail Address: **Russell.Wider@talgov.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 10/31/08	3. PSD Number (if applicable):
2. Project Number(s): 0730003-013-AV	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

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

Air Construction Permit

☐ Air construction permit.

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

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

Air Operation Permit

☐ Initial Title V air operation permit.

☒ Title V air operation permit revision.

☐ Title V air operation permit renewal.

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

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

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

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

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

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

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

Application Comment

APPLICATION INFORMATION

The City of Tallahassee (COT) recently constructed and placed into operation a new combined cycle unit at the Arvah B. Hopkins Generating Station. Unit 2A (EU-033) is a dual-fuel unit consisting of a General Electric 7FA combustion turbine generator (CTG), a heat recovery steam generator (HRSG), a gas-fired duct burner system, a HRSG stack and a bypass stack. The CTG will produce a nominal 188 MW and the HRSG will be used to re-power the existing Unit 2 steam turbine-electrical generator. The CTG will use natural gas as its primary fuel and distillate oil will be fired as a restricted alternative fuel. The existing Unit 2 boiler has been permanently shutdown and rendered incapable of operation.

This permit application constitutes COT's application to revise Title V Air Operation Permit No. 0730003-011-AV to incorporate the appropriate terms and conditions of Air Construction permit no. 0730003-009-AC pursuant to the requirements of Chapter 62-213, F.A.C.

In addition to incorporating the terms and conditions above, COT would also like to request that the terms and conditions pertaining to the now defunct Unit 2 boiler (EU 004) either be removed from the Permit or a permitting note added delineating that the specific conditions of that section (Section B) no longer apply.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
EU033	Unit 2A - Combustion Turbine (Phase II Acid Rain Unit)		NA

Application Processing Fee

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

APPLICATION INFORMATION

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name :
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Owner/Authorized Representative Telephone Numbers... Telephone: Fax:
4. Owner/Authorized Representative E-mail Address:
5. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.* _____ _____ Signature Date

APPLICATION INFORMATION

Application Responsible Official Certification

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

1. Application Responsible Official Name:
   Robert E. McGarrah, Manager of Power Production

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

   ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☒ The designated representative at an Acid Rain source, CAIR source, or Hg Budget source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: **City of Tallahassee**
   Street Address: **2602 Jackson Bluff Road**
   City: **Tallahassee** State: **Florida** Zip Code: **32304**

4. Application Responsible Official Telephone Numbers...
   Telephone: **(850) 891-5534** Fax: **(850) 891-5162**

5. Application Responsible Official E-mail Address: **Rob.McGarrah@talgov.com**

6. Application Responsible Official Certification:

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

   Signature _____ Date 10/29/08

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **John K. Powell**
   Registration Number: **58737**
2. Professional Engineer Mailing Address...
   Organization/Firm: **City of Tallahassee, Environmental Policy & Energy Resources**
   Street Address: **300 South Adams Street**
   City: **Tallahassee** State: **Florida** Zip Code: **32301**
3. Professional Engineer Telephone Numbers...
   Telephone: **(850) 891-8851** ext. Fax: **(850) 891-8277**
4. Professional Engineer E-mail Address: **John.Powell@talgov.com**
5. Professional Engineer Statement:

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

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

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

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

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

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here [X], 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.

John K Powell — 10/29/08

Signature — Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **16** East (km) **749.53** North (km) **3371.7**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **30/27/08** Longitude (DD/MM/SS) **84/24/00**	
3. Governmental Facility Code: **4**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment : **This existing facility currently consists of: two steam electric generating units (Unit 1 & Unit 2 (now shutdown)), two Westinghouse combustion turbines (CTs) (referred to as GT-1 and GT-2), two General Electric LM6000 CTs (referred to as GT-3 and GT-4) and one combined cycle combustion turbine (referred to as Unit 2A) that is used to re-power the existing Unit 2 steam turbine-electrical generator set.**			

Facility Contact

1. Facility Contact Name: **Russell Wider, PE**
2. Facility Contact Mailing Address... Organization/Firm: **City of Tallahassee, Environmental Policy & Energy Resources** Street Address: **300 South Adams Street** City: **Tallahassee** State: **Florida** Zip Code: **32304**
3. Facility Contact Telephone Numbers: Telephone: **(850) 891-8710** ext. Fax: **(850) 891- 8277**
4. Facility Contact E-mail Address: **Russell.Wider@talgov.com**

Facility Primary Responsible Official

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

1. Facility Primary Responsible Official Name: **Robert E. McGarrah, Manager of Power Production**
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: **City of Tallahassee** Street Address: **1125 Geddie Road** City: **Tallahassee** State: **Florida** Zip Code: **32304**
3. Facility Primary Responsible Official Telephone Numbers... Telephone: **(850) 891-5534** ext. Fax: **(850) 891-5162**
4. Facility Primary Responsible Official E-mail Address: **Robert.Mcgarrah@talgov.com**

Facility Regulatory Classifications

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

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	

12. Facility Regulatory Classifications Comment:

NSPS – 40 CFR Part 60, Subpart GG, applies to the turbine and Subpart Da applies to the HRSG duct burner. However, the proposed 40 CFR Part 60, Subpart KKKK, eventually will replace Subpart GG. Under Subpart KKKK, the duct burner would be exempt from meeting the requirements of Da. NESHAP – 40 CFR 63, Subpart YYYY may apply based on actual oil fuel used in a calendar year.

Due to the shutdown of the Unit 2 boiler, the project avoided PSD preconstruction review for all pollutants.

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
Particulate Matter - PM	**A**	
Particulate Matter with an aerodynamic diameter less than 10 microns – PM10	**A**	
Sulfur Dioxide – SO_2	**A**	
Nitrogen Oxides – NOx	**A**	
Carbon Monoxide	**A**	
Volatile Organic Compounds – VOCs	**A**	
Total Hazardous Air Pollutants – HAPs	**A**	
Sulfuric Acid Mist – SAM	**A**	

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

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

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date: **May 2006**
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date: **May 2006**
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID:_____ [x] Previously Submitted, Date: **May 2006**

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☐ Attached, Document ID:_____
   ☒ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☒ Attached, Document ID: **Attachment C** _____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☒ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☒ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

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

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: **April 2006**
   ☐ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☐ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: **April 2008**
   ☐ Not Applicable (not a CAIR source)

3. Hg Budget Part (DEP Form No. 62-210.900(1)(c)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not a Hg Budget unit)

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

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

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

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

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

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

   [x] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:
   One nominal 188-MW GE 7-FA Combined Cycle Combustion Turbine with HRSG Duct Firing.

3. Emissions Unit Identification Number: **033**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A		**May 2, 2008**	**49**

8. Federal Program Applicability: (Check all that apply)

   [x] Acid Rain Unit

   [x] CAIR Unit

   [ ] Hg Budget Unit

9. Package Unit:
   Manufacturer: **General Electric** Model Number: **7-FA**

10. Generator Nameplate Rating: **188 MW**

11. Emissions Unit Comment: **Based on natural gas-firing at 25 °F for CT only. For distillate oil-firing, rating is 199 MW at 25 °F.**

Emissions Unit Control Equipment/Method: Control 1 of 3

1. Control Equipment/Method Description: **Staged Combustion [Dry Low NOx (DLN) Burners]**
2. Control Device or Method Code: **025**

Emissions Unit Control Equipment/Method: Control 2 of 3

1. Control Equipment/Method Description: **Water Injection**
2. Control Device or Method Code: **028**

Emissions Unit Control Equipment/Method: Control 3 of 3

1. Control Equipment/Method Description: **Selective Catalytic Reduction (SCR)**
2. Control Device or Method Code: **139**

Emissions Unit Control Equipment/Method: Control ___ of ___

1. Control Equipment/Method Description:
2. Control Device or Method Code:

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate: **188 MW (nominal)**	
3. Maximum Heat Input Rate: **2,664 million Btu/hr (HHV) (natural gas firing)**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

Maximum heat input for natural gas firing at 25 °F, includes 1,899 MMBtu/hr (HHV) heat input from the combustion turbine and 765 MMBtu/hr (HHV) heat input from duct firing natural gas.

Maximum heat input from oil firing is 2,079 MMBtu/hr (HHV) heat input from the combustion turbine plus 765 MMBtu/hr (HHV) heat input from duct firing natural gas. Heat input varies based on inlet temperature and performance (see Attachment A).

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Site Plan**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **150** feet	7. Exit Diameter: **18** feet
8. Exit Temperature: **188 °F**	9. Actual Volumetric Flow Rate: **1,016,100** acfm	10. Water Vapor: **11.2 %**
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: **16** East (km): **749.7** North (km): **3371.7**	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Information at base load conditions for natural gas firing with the duct burner at 59 °F ambient temperature. See Attachment A of the Air Permit Application for performance at various ambient temperatures and loads. The design includes a simple cycle emergency bypass stack with a stack height of 150 feet and a diameter of 18 feet.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): **Internal combustion engine – Electric Generation; Turbine, Natural Gas**		
2. Source Classification Code (SCC): **2-01-002-01**	3. SCC Units: **Million cubic feet**	
4. Maximum Hourly Rate: **2.571**	5. Maximum Annual Rate: **18,323**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,036**
10. Segment Comment: **Maximum hourly rate is for one turbine at 25 °F ambient and includes duct firing. Maximum annual rate is based on a total of 8,760 hours of operation at 59 °F, with 2,598,800 MMBtu/yr (HHV) of duct firing.**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): **Internal combustion engine – Electric Generation; Turbine, Distillate Oil**		
2. Source Classification Code (SCC): **2-01-001-01**	3. SCC Units: **1,000 gallons**	
4. Maximum Hourly Rate: **16.0**	5. Maximum Annual Rate: **53,276**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.05**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **130**
10. Segment Comment: **Maximum hourly rate is for one turbine at 25 °F ambient and includes maximum natural gas firing in the duct burner. Maximum annual rate is based on a maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent to 3,500 hours of operation) at 59 °F ambient temperature for the CT.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

Segment Description and Rate: Segment __ of __

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM/PM_{10}			**EL**
SO_2			**EL**
NO_x	**028**	**139**	**EL**
CO			**EL**
VOCs			**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM/PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **48.7** lb/hour **11.8** tons/year	4. Synthetically Limited? [X] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **48.7 (as per construction permit application)** Reference: **Permit 0730003-009-AC**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **97.5** tons/year	8.b. Baseline 24-month Period: From: **1/1/2004** To: **12/31/2005**
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years

10. Calculation of Emissions:

Maximum hourly rate based on full load oil firing in CT and the duct burner firing gas at 59 °F. Annual emissions based on an equivalent 5,260 hours of natural gas firing with maximum heat input rate of 2,598,800 MMBtu/yr (HHV) for duct firing at full load and maximum heat input rate of 6,926,500 MMBtu/yr (HHV)(equivalent to 3,500 hours) of distillate oil-firing of the CT at full load and 59 °F.

11. Potential, Fugitive, and Actual Emissions Comment:

See 5/06 Air construction permit application, Appendix A, Table A-8.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **2**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **21.1** lb/hour **65.2** tons/year
5. Method of Compliance: **EPA Method 9; Initial and once annually.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on natural gas firing in both CT and duct burner at 25 °F and full load. Annual emission rate based on natural gas-firing with a maximum heat input rate of 2,598,800 MMBtu/yr (HHV) of duct firing at 59 °F and full load. Refer to AC Permit Application (0730003-009-AC) dated 5/06.**	

Allowable Emissions Allowable Emissions **2** of **2**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **38.7** lb/hour **65.8** tons/year
5. Method of Compliance: **EPA Method 9, Initial; Annual, if > 400 hr/yr.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on distillate oil firing in CT and firing natural gas in the duct burner at 59 °F and full load. Annual emission rate based on a maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent of 3,500 hours) of distillate oil-firing of CT at 59 °F and full load. Refer to AC Permit Application (0730003-009-AC) dated 5/2006.**	

Allowable Emissions Allowable Emissions __ of ___

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

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **111** lb/hour **211.7** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **111 lb/hr (as per construction permit app.)** Reference: **Permit 0730003-009-AC**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **1,642** tons/year	8.b. Baseline 24-month Period: From: **2/1/2004** To: **1/31/2006**
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years

10. Calculation of Emissions:

Maximum hourly rate based on full load oil firing in CT and duct burner firing gas at 59 °F. Annual emissions based on an equivalent 5,260 hours of natural gas firing with maximum heat input rate of 2,598,800 MMBtu/yr (HHV) for duct firing at full load and maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent to 3,500 hours) of distillate oil-firing of the CT at full load and 59 °F. Refer to 5/06 Air Construction Permit Application, Attachment A, Table A-8.

11. Potential, Fugitive, and Actual Emissions Comment:

See 5/06 Air construction permit application, Appendix A, for performance at various ambient temperatures and loads.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2 grains S/100 SCF**	4. Equivalent Allowable Emissions: **14.7** lb/hour **50.5** tons/year
5. Method of Compliance: **Fuel analysis**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on natural gas firing in both CT and duct burner at 25 °F and full load. Annual emission rate based on natural gas-firing with a maximum heat input rate of 2,598,800 MMBtu/yr (HHV) of duct firing at 59 °F and full load. Refer to AC Permit App. dated 5/06, Table A-8.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.05% Sulfur**	4. Equivalent Allowable Emissions: **107** lb/hour **178.5** tons/year
5. Method of Compliance: **Fuel analysis.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on distillate oil firing in CT and firing natural gas in the duct burner at 59 °F and full load. Annual emission rate based on distillate oil-firing with a maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent of 3,500 hours) in CT at 59 °F and full load. Refer to AC Permit Application dated 5/06.**	

Allowable Emissions Allowable Emissions __ of ___

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

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **108.4** lb/hour **265.7** tons/year	4. Synthetically Limited? [x] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **108.4 lb/hr (as per construction permit app.)** Reference: **Permit 0730003-009-AC**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **843.3** tons/year	8.b. Baseline 24-month Period: From: **5/1/2003** To: **4/30/2005**
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years

10. Calculation of Emissions:

Maximum hourly rate based on full load oil firing in CT and duct burner firing gas at 25 °F. Annual emissions based on an equivalent 8,760 hours of natural gas firing for simple cycle operation at full load and 59 °F with exhaust gases routed to emergency bypass stack. Potential annual emissions for combined cycle operation are based on an equivalent 5,260 hours of natural gas firing with maximum heat input rate of 2,598,800 MMBtu/yr (HHV) for duct firing at full load and 6,926,500 MMBtu/yr (HHV) (equivalent to 3,500 hours) of distillate oil-firing of the CT at full load and 59 °F.

11. Potential, Fugitive, and Actual Emissions Comment:

See 5/06 Air construction permit application, Appendix A, Table A-8.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **5 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **47.8** lb/hour **164.9** tons/year
5. Method of Compliance: **CEMS 30-day rolling average**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on natural gas firing in CT and duct burner at 25 °F and full load. Annual emission rate based on natural gas-firing with a maximum heat input rate of 2,598,800 MMBtu/yr (HHV) (equivalent of 3650 hours) of duct firing at 59 °F and full load.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **10 ppmvd @ 15% O_2 for CT**	4. Equivalent Allowable Emissions: **108.4** lb/hour **135.6** tons/year
5. Method of Compliance: **CEMS 30 day rolling average**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on distillate oil firing in CT and duct burner firing gas at 25 °F and full load. Annual emission rate based maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent of 3,500 hours) of distillate oil firing of CT at 59 °F and full load.**	

Allowable Emissions Allowable Emissions __ of __

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **9 ppmvd @ 15% O_2 for CT**	4. Equivalent Allowable Emissions: **61.8** lb/hour **255.6** tons/year
5. Method of Compliance: **CEMS (see Part B, Air Construction Permit Application dated 5/2006)**	
6. Allowable Emissions Comment (Description of Operating Method): **For simple cycle operation with emergency bypass stack. Maximum hourly rate based on natural gas firing in CT at 25 °F and full load. Annual emission rate based on an equivalent 8,760 hours of operation at 59 °F and full load. .**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **142.9** lb/hour **340.1** tons/year	4. Synthetically Limited? [x] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **142.9 lb/hr (as per construction permit app.)** Reference: **Permit 0730003-009-AC**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **241.1** tons/year	8.b. Baseline 24-month Period: From: **1/1/2001** To: **12/31/2002**
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years

10. Calculation of Emissions:

Maximum hourly rate based on full load oil firing in CT and duct burner firing gas at 25 °F. Annual emissions based on an equivalent 5,260 hours of natural gas firing with maximum heat input rate of 2,598,800 MMBtu/yr (HHV) (equivalent to 3,650 hours) for duct firing at full load and 6,926,500 MMBtu/yr (HHV) (equivalent to 3,500 hours) of distillate oil-firing of the CT at full load and 59 °F. Refer to Appendix A, Table 2-7 of 5/06 Air construction permit (0730003-009-AC) application.

11. Potential, Fugitive, and Actual Emissions Comment:

See 5/06 Air construction permit application, Appendix A, Table A-8.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **16.8 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **96.8** lb/hour **143.9** tons/year
5. Method of Compliance: **EPA Method 10; Initial; Annual, if > 400 hr/yr.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on natural gas firing in both CT and the duct burner at 25 °F and full load. Annual emission rate based on maximum heat input rate of 2,598,800 MMBtu/yr (HHV)(equivalent to 3,6500 hours) of natural gas duct firing at 59 °F and full load. 10 ppmvd at 15% O_2 for CT only. Refer to Air Construction Permit Application dated 5/2006.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **21.4 ppmvd @ 15% O_2 with duct firing**	4. Equivalent Allowable Emissions: **142.9** lb/hour **143.9** tons/year
5. Method of Compliance: **EPA Method 10, Initial; Annual, if > 400 hr/yr.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on distillate oil firing in CT and duct burner (firing natural gas) at 25 °F and full load. Annual emission rate based on a maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent of 3,500 hours) of distillate oil firing in CT at 59 °F and full load. 17 ppmvd at 15% O_2 for CT only. Refer to Air Construction Permit Application dated 5/2006.**	

Allowable Emissions Allowable Emissions __ of ___

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

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **VOCs**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **17.1** lb/hour **47.4** tons/year	4. Synthetically Limited? [x] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **17.1 lb/hr (as per construction permit app.)** Reference: **Permit 0730003-009-AC**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): **19.7** tons/year	8.b. Baseline 24-month Period: From:**1/1/2004** To:**12/31/2005**
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: [ ] 5 years [ ] 10 years

10. Calculation of Emissions:

Maximum hourly rate based on full load oil firing in CT and duct burner firing gas at 25 °F. Annual emissions based on an equivalent 5,260 hours of natural gas firing with maximum heat input rate of 2,598,800 MMBtu/yr (HHV) (equivalent to 3,650 hours) for duct firing at full load and 6,926,500 MMBtu/yr (HHV) (equivalent to 3,500 hours) of distillate oil-firing in the CT at full load and 59 °F.

11. Potential, Fugitive, and Actual Emissions Comment:

See 5/06 Air construction permit application, Appendix A, Table A-8.

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **5.7 ppmvd @ 15% O_2 for CT and HRSG**	4. Equivalent Allowable Emissions: **16.7** lb/hour **46.8** tons/year
5. Method of Compliance: **EPA Method 25A; Initial performance test only.**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on natural gas firing in both CT and duct burner at 25 °F and full load. Annual emission rate based on natural gas-firing with a maximum heat input rate of 2,598,800 MMBtu/yr (HHV) of duct firing at 59 °F and full load. 3.2 ppmvd @ 15% O_2 for CT only.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **5.3 ppmvd @ 15% O_2 for CT and DB**	4. Equivalent Allowable Emissions: **17.1** lb/hour **13.1** tons/year
5. Method of Compliance: **EPA Method 25A, Initial performance test only**	
6. Allowable Emissions Comment (Description of Operating Method): **Maximum hourly rate based on distillate oil firing in CT and duct burner (gas) at 25 °F and full load. Annual emission rate based on maximum heat input rate of 6,926,500 MMBtu/yr (HHV) (equivalent of 3,500 hours) of distillate oil firing in the CT at 59 °F and full load.**	

Allowable Emissions Allowable Emissions __ of ___

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

G. VISIBLE EMISSIONS INFORMATION

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

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

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **Rule 62-296.320(4) (b). Excess emissions.**	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **EM**	2. Pollutant(s): **NOx**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Thermo Electron Corporation** Model Number: **42i-LS** Serial Number: **0724323059**	
5. Installation Date: **5/7/08**	6. Performance Specification Test Date: **7/19/08**
7. Continuous Monitor Comment: **CEMS required pursuant to 40 CFR 75.**	

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **O_2**	2. Pollutant(s): **Oxygen**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **M&C Products Analysentechnik GmbH** Model Number: **PMA 100L** Serial Number: **0704250**	
5. Installation Date: **5/7/08**	6. Performance Specification Test Date: **7/19/08**
7. Continuous Monitor Comment: **Diluent monitor required pursuant to 40 CFR Part 75 for NOx monitoring.**	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

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

1. Parameter Code: **EM**	2. Pollutant(s): **CO**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **Thermo Electron Corporation** Model Number: **48i** Serial Number: **0723523610**	
5. Installation Date: **5/7/08**	6. Performance Specification Test Date: **7/22/08**
7. Continuous Monitor Comment: **Monitor was installed for the purpose of demonstrating compliance with the CO emissions cap (Reasonable assurance, Chapter 62-4.070(3), F.A.C.).**	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

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

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

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [ ] Attached, Document ID: _____ [x] Previously Submitted, Date **5/31/06**

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

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

6. Compliance Demonstration Reports/Records:
   [x] Attached, Document ID: **Attachment E**
   Test Date(s)/Pollutant(s) Tested: **July 10, 2008 – natural gas, no duct burning - Ammonia Slip, VE; July 30, 2008 – natural gas w/ duct burning -Ammonia Slip, VE**
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [x] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: **see Compliance Plan (Att. C) – oil firing – Ammonia slip, VE (with and without duct burning)**
   [ ] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
   [ ] Attached, Document ID: _____ [x] Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)):	
☐ Attached, Document ID: _____	[x] Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.):	
☐ Attached, Document ID: _____	[x] Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)	
☐ Attached, Document ID: _____	[x] Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements:	
☐ Attached, Document ID: _____	
2. Compliance Assurance Monitoring:	
☐ Attached, Document ID: _____	[x] Not Applicable
3. Alternative Methods of Operation:	
[x] Attached, Document ID: **Att. D**	☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading):	
☐ Attached, Document ID: _____	[x] Not Applicable

X
EXPLAIN.

Additional Requirements Comment

Alternate Methods of Operation:

May operate in simple cycle HRSG/SCR bypass mode only during emergency situations where the HRSG, SCR and/or the steam turbine-generator are unavailable. (Specific condition 22 of Air permit no. 0730003-009-AC). See Attachment D.

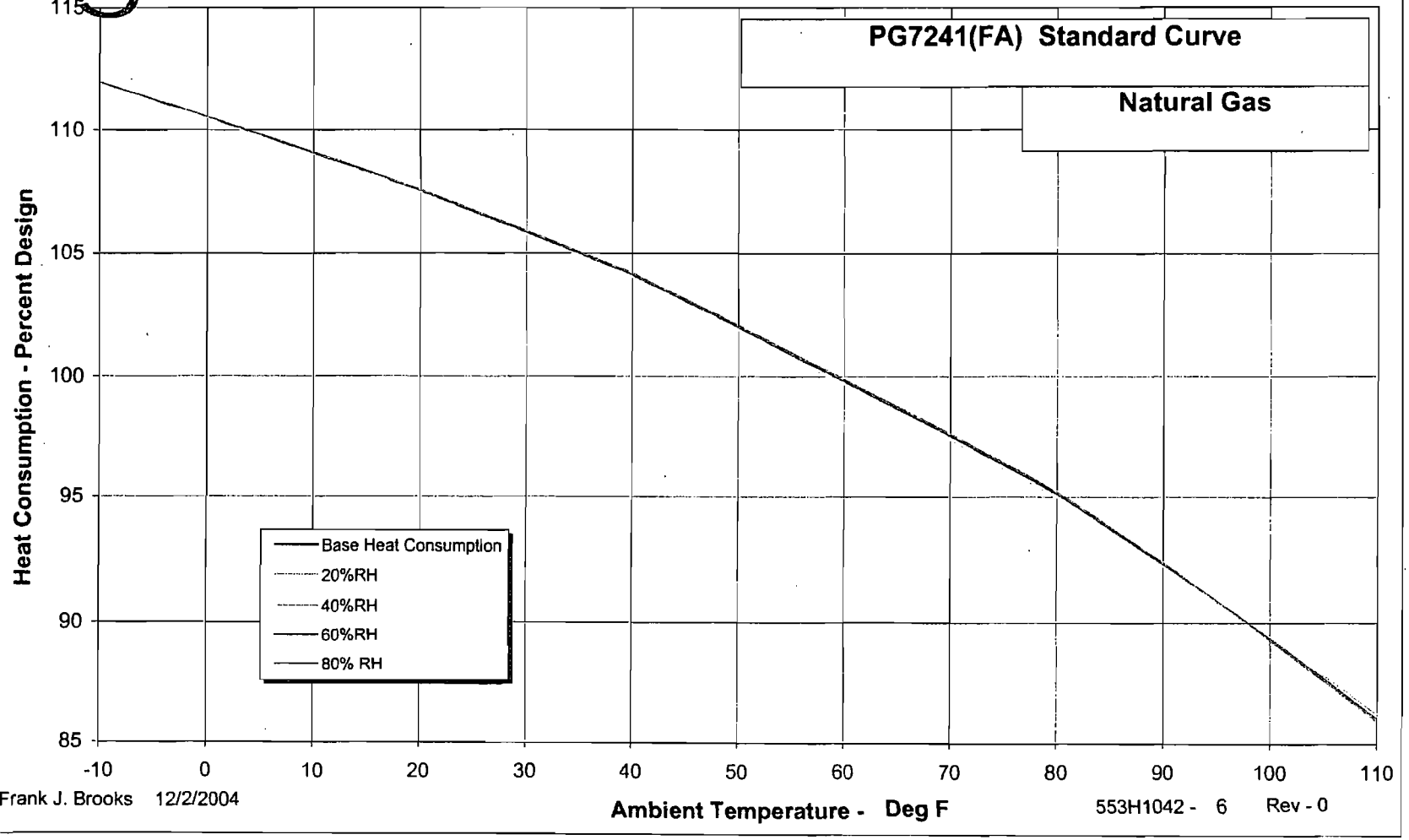
PART A

Heat input curve

GE Proprietary and Confidential

Heat Consumption vs Ambient Temperature

g

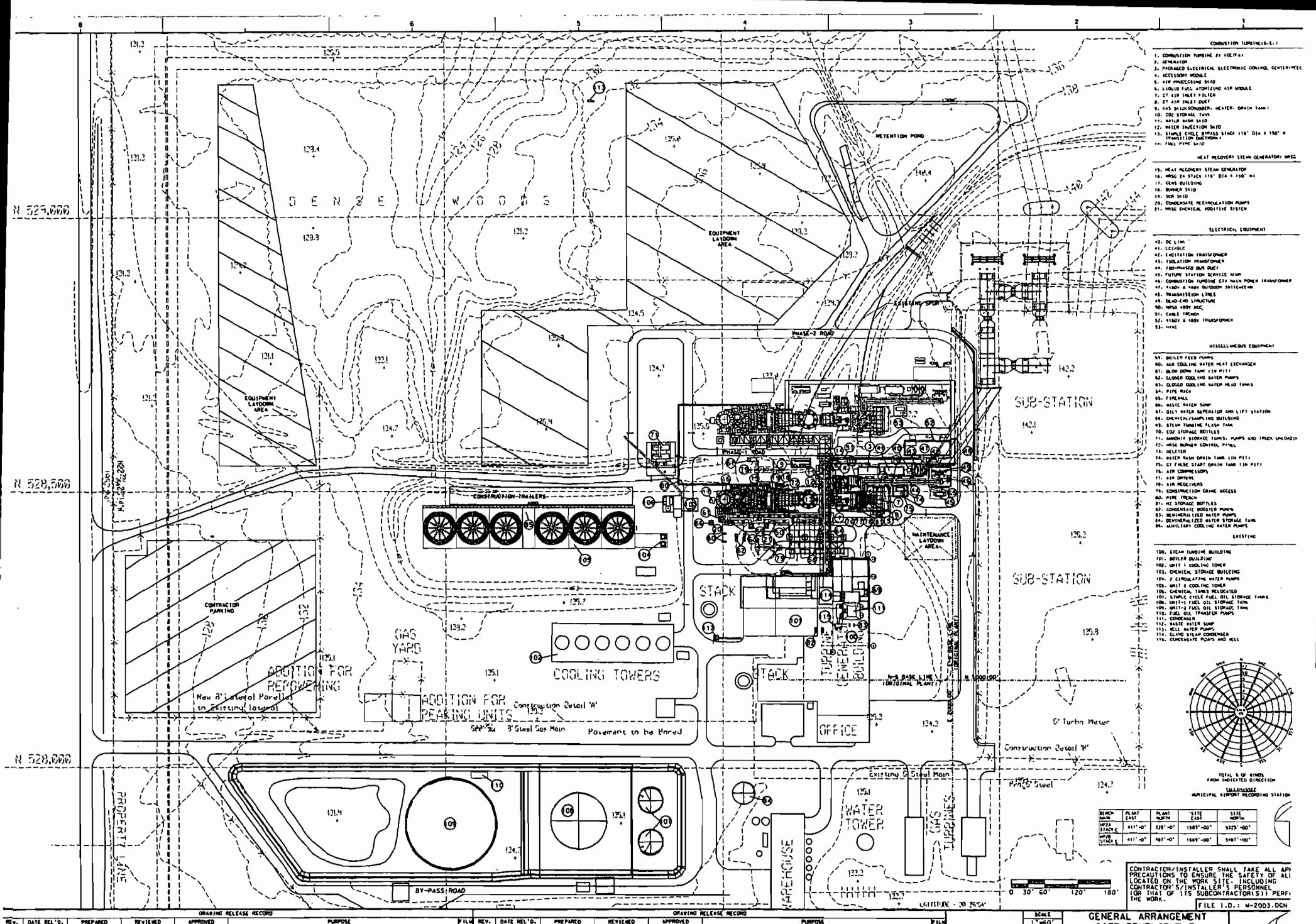


Frank J. Brooks 12/2/2004

553H1042 - 6 Rev - 0

PART B

Diagrams:
Site plan
Process Flow Diagram



BENCH MARK	PLANT EAST	PLANT NORTH	SITE EAST	SITE NORTH
HPSB STACK ℄	411'-0"	375'-0"	1589'-00"	5375'-00"
HPSB STACK ℄	411'-0"	467'-0"	1589'-00"	5417'-00"

CONTRACTOR/INSTALLER SHALL TAKE ALL APP PRECAUTIONS TO ENSURE THE SAFETY OF ALL LOCATED ON THE WORK SITE. INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERF THE WORK.

FILE I.D.: M-2003.DGN

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE	FILM
A	10/20/2006	R. MILLER	G. RIVERA		FOR BIDS SPEC. H-7177	
B	02/20/2007	R. MILLER	G. RIVERA		FOR REFERENCE AND INFORMATION	
C	03/13/2007	R. MILLER	G. RIVERA		FOR REFERENCE AND INFORMATION	

DRAWING RELEASE RECORD

SCALE: 1"=60'

PROJECT NUMBER: 10558-046

GENERAL ARRANGEMENT SITE DEVELOPMENT HOPKINS REPOWERING PROJECT UNIT

CITY OF TALLAHASSEE
TALLAHASSEE, FLORIDA

DRAWING NO. M-2003

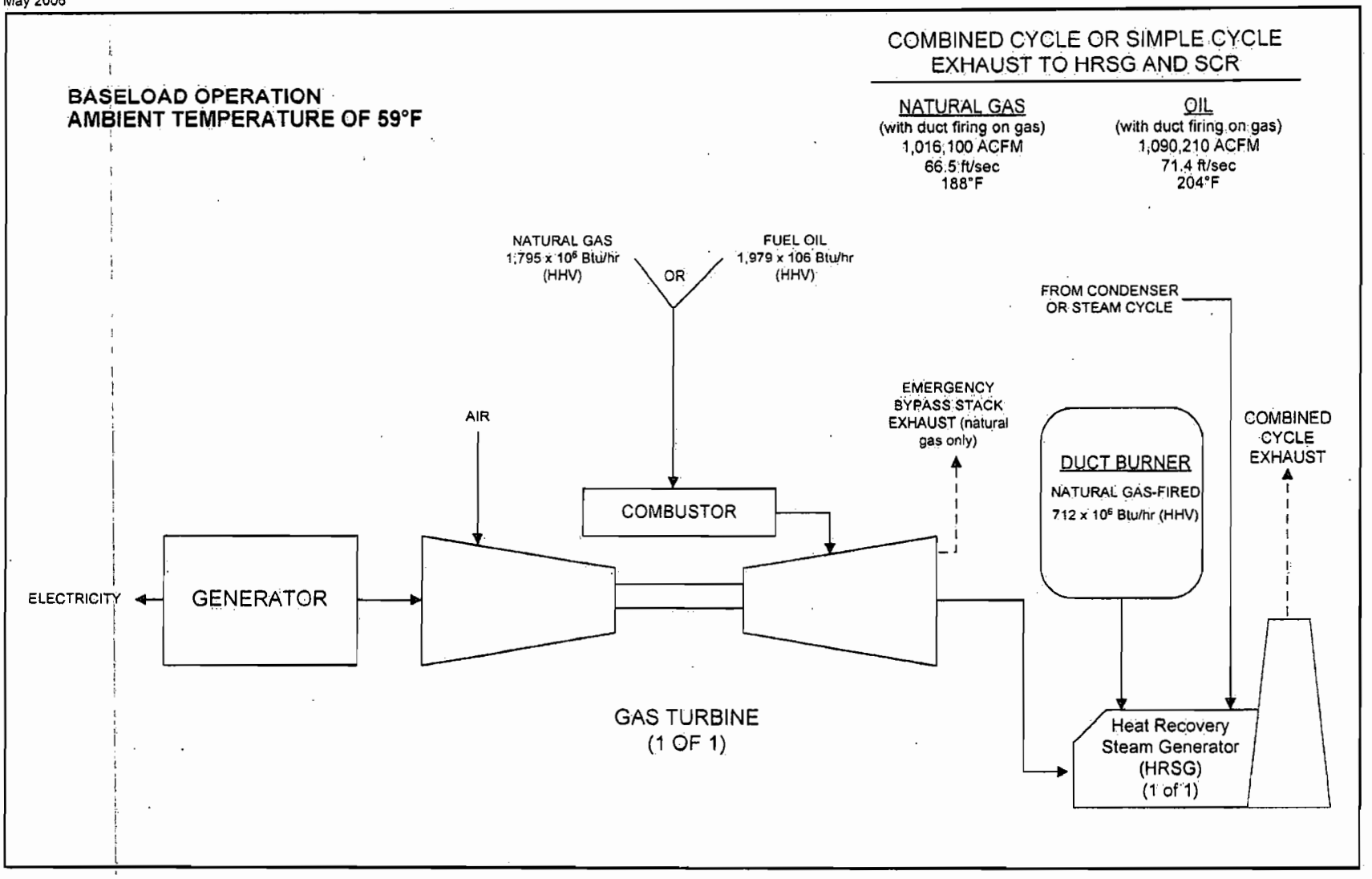


Figure 2-1
Process Flow Diagram
Baseload Operation, Ambient Temperature of 59°F
Unit No. 2 Repowering Project
0637522/4.4/Figure 2-1.vsd

Process Flow Legend
Solid/Liquid ——→
Gas - - - - →

CITY OF TALLAHASSEE

PART C

Compliance Plan

Compliance Plan

Activity	Due Date
Liquid Fuel Oil initial installation and cleaning	31-Dec-08
Schedule outage for Unit 2A Starts	09-Feb-09
Scheduled outage for Unit 2A Ends	18-Mar-09
Liquid Fuel Oil Commissioning	25-Mar-09
Notification of Compliance Test to FDEP	15 days prior to Performance test
Performance testing Completed	No Later Than 5/31/09
Compliance Test Report to FDEP	45 days after Performance test is completed.

PART D

Alternate Methods of Operation

Alternative Methods of Operation

Unit 2A is a combined cycle unit consisting of a General Electric 7FA combustion turbine-electrical generator set, a heat recovery steam generator (HRSG), a gas-fired duct burner system, and other associated equipment. The unit if fueled by natural gas or distillate oil containing a maximum sulfur content of 0.05% by weight. The alternative methods of operation (AMO) associated with the unit are related to the type of fuel being fired and rate of operation. The combustion turbine will produce a nominal 188 MW and the HRSG will used to re-power the existing steam turbine electric generator. The current AMOs include the following:

- Natural Gas Firing – Maximum rate of 1899 MMBtu/hr (HHV @ 29 °F), allowed up to 8,760 hours per year.
- Fuel Oil Firing- Maximum Rate of 2079 MMBtu/hr (HHV @ 29 °F), restricted to 6,926,500 MMBtu (HHV) during any consecutive 12 months (equivalent to 3,500 hours of full load oil firing).

Duct burners shall fire no more than 2,598,800 MMBtu (HHV) of natural gas during any consecutive 12 months (equivalent to 3,650 hours of full load duct firing).

Simple Cycle HRSG/SCR Bypass Operation:
The combustion turbine shall fire only natural gas with no duct firing when operating as a simple cycle unit with the exhaust bypassing the HRSG and SCR system. Unit 2A (EU-033) may operate in simple cycle HRSG/SCR bypass mode only during emergency situations where the HRSG, SCR and/or the steam turbine-generator are unavailable. (Specific condition 22 of air permit no. 0730003-009-AC).

Note: Fuel additives typically of a magnesium oxide, hydroxide, sulfonate, or calcium nitrate origin may be used.

PART E

Initial Performance Tests

CITY OF TALLAHASSEE

Transmittal Via Email: Rick.Bradburn@dep.state.fl.us

August 21 2008

Rick Bradburn
Northwest District Office
Florida Department of Environmental Protection
160 Governmental Center
Pensacola, Florida 32502-5794

Re: Initial Compliance Test Report
Combustion Turbine No. HP2A (EU-033)
Ammonia Slip and Visible Emissions
Arvah B. Hopkins Generating Station
Facility ID No. 0730003

Dear Mr. Bradburn:

Pursuant to Air Construction Permit No. 0730003-009-AC, the City of Tallahassee (City) submits the attached Initial Compliance Test Report for Combustion Turbine (CTG) No. HP2A (EU-033) at the Arvah B. Hopkins Generating Station.

Specific condition no. 26 of the above permit requires that Hopkins demonstrate compliance with the standards for ammonia slip and visible emissions for the heat recovery and steam generator (HRSG) stack on each authorized fuel while operating within 60 days after achieving the maximum production rate. This unit is equipped with supplement duct firing. Prior to the initial compliance testing occurring, the City consulted with the Department on the definition of when the 60-day clock began since the CTG and duct burners were commissioned at different times. Based on this consultation, it was identified that the City had two options with respect to the initial compliance testing on natural gas. Option 1 was to perform a single initial compliance test within 60 days of the CTG achieving 90% or greater of the permitted heat input, with both the CTG and duct burners in operation. Option 2 was to perform two (2) separate tests. One of the tests would be the CTG in operation without the supplemental duct firing and the second test would be with both the CTG and duct burners in operation. Under option 2, there would be individual 60 day time periods, each starting when the respective emissions source (CTG or duct burner) first achieved 90% or greater heat input. As a result of a failure of one of the circulating water pump motors on unit 2, the City elected to utilize Option 2.

Air Consulting and Engineering (ACE) performed the CTG initial compliance testing on July 10, 2008 with the CTG at base load and the duct burners not in operation. The test results indicate the ammonia slip rate was 0.106 ppm @ 15% O_2, which is well below the 5 ppm @ 15% O_2 permitted emission limit.

Also as part of this initial compliance report package, the visible emissions test and as required, emissions of carbon monoxide and oxides of nitrogen that were recorded by the certified continuous emissions monitoring systems (CEMS) during the ammonia slip testing (see Appendix G). Visible emissions were observed concurrently with Run 3 of the ammonia slip test. The highest six-minute period averaged 0% opacity at the heat input rate referenced above. Allowable opacity is 10% (see Appendix H for field data sheets and observer's certification).

At the time of this testing, the CTG's heat input was 1680 mmbtu/hr with the evaporative coolers in operation. Based on data collected from the CTG control system, the compressor inlet temperature averaged 77.6°F during the compliance testing. The subject air permit identifies the heat input limit to be 1899 mmbtu/hr at a compressor inlet temperature of 25°F. Using the original equipment manufacturer's correction curves, the CTG heat input limit at a compressor inlet temperature of 77.6°F is 1703.8 mmbtu/hr. Based on this, the unit was operating at 98.6% of the permitted heat input limit. I have attached the GE correction curve and the calculations to determine this heat input limit.

CITY HALL
300 South Adams Street
Tallahassee, FL 32301-1731
850-891-0000
TDD: 711 • Talgov.com

Please do not hesitate to contact me at (850) 891-8710, if you have any questions or require additional information.

Sincerely,

Russell a. Wider

Russell Wider, P.E.
Environmental Engineer

Attachments

cc: Cynthia Barber, COT
Rob McGarrah, COT
Triveni Singh, COT
Phil Bucci, COT
John Powell, COT

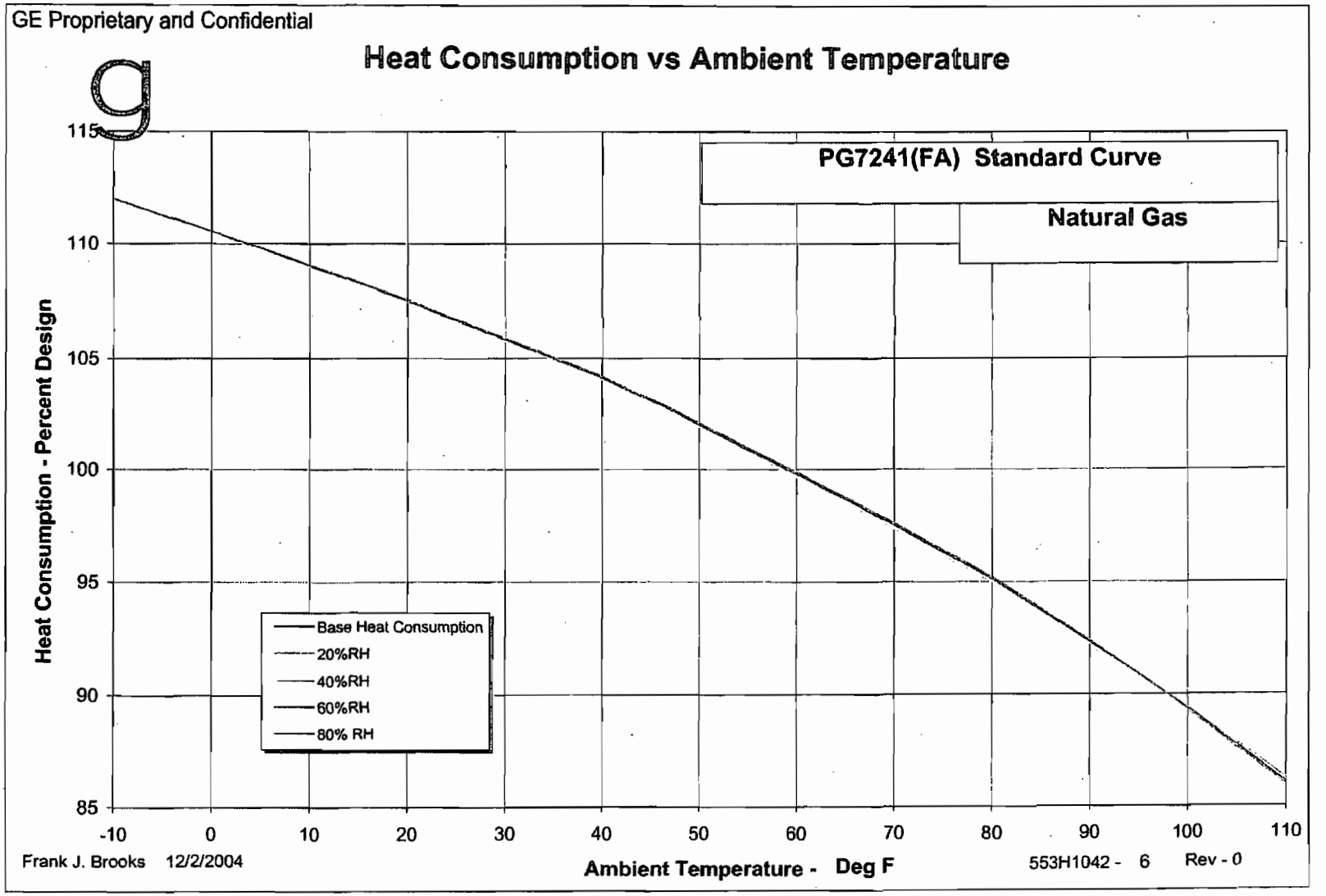
Hopkins Unit 2
CTG Heat Input Limit Calculations

- Heat input permit limit: 1899 mmbtu/hr at 25°F
- Test Compressor Inlet Temperature: 77.6°F
- Percent design of Heat input at 25°F: 107% (taken from GE Heat Consumption vs Ambient Temperature Curve)
- Percent Design heat input at 77.6°F: 96% (taken from GE Heat Consumption vs Ambient Temperature Curve)

Calculations:

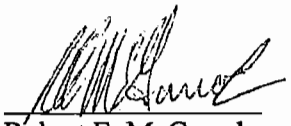
1. Heat Input limit at Compressor Inlet Temp of 77.6°F = ((1899/1.07)*.96) = 1703.8 mmbtu/hr
2. Testing heat input at % of limit: 1680/1703.8 = 98.6%77.6°F

GE Proprietary and Confidential



Responsible Official Certification

I, the undersigned, am the Responsible Official as defined in Chapter 62-210.200, F.A.C., of the Title V source for which this document is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements and information in this document are true, accurate, and complete.



Robert E. McGarrah
Responsible Official

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LIST OF FIGURES

ACE
AIR CONSULTING
& ENGINEERING, INC.

2106 N.W. 67th Place • Suite 4 • Gainesville, Florida • 32653
(352) 335-1889 FAX (352) 335-1891

REPORT CERTIFICATION

To the best of my knowledge, all applicable field and analytical procedures comply with the Florida Department of Environmental Protection requirements and all test data and plant operating data are true and correct.

Dagmar Fick

Dagmar Fick, Staff Engineer

8/5/08

Date

To the best of my knowledge, all process data furnished by me for inclusion in this report are true and correct.

Test Coordinator

Date

1.0 INTRODUCTION

On July 10, 2008 Air Consulting and Engineering, Inc. (ACE) conducted ammonia slip emission testing on the exhaust stack of Unit 2A (EU033) at the City of Tallahassee Electric Utilities' Arvah B. Hopkins Generating Station in Tallahassee, Florida. Testing was performed to demonstrate compliance with conditions stated in the Florida Department of Environmental Protection (FDEP) Permit Number 0730003-009-AC. The unit was fired on natural gas.

United States Environmental Protection Agency (EPA) Method CTM-27 was used to determine ammonia emissions emissions.

Mr. John Powell of the City of Tallahassee Electric Utilities provided the production data.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Initial compliance testing for ammonia slip was performed as part the compliance requirements for the repowered unit. Ammonia emissions and stack gas parameters are summarized in Table 1.

Ammonia emissions averaged 0.106 ppm at 15% O_2. The permitted emission limit for ammonia slip is 5 ppm at 15% O_2. Due to mechanical problems during the compliance test runs the unit operated a decreased load.

Complete emission data, field data sheets and laboratory data are presented in Appendices A, B and C respectively.

Table 1. Ammonia Emission Summary
Unit HB2A
City of Tallahasse - Hopkins Power Plant
Tallahasse, Florida
July 10, 2008

Run Number	Time	Total Flow Rate dscfm	Oxygen %	Ammonia Emissions ppm	ppm @15% O2
1	1115-1227	811230	13.70	0.126	0.103
2	1250-1400	846684	13.60	0.033	0.027
3	1412-1522	847110	13.60	0.234	0.189
Average	---	835008	13.63	0.131	0.106

ppm NH3 @ 15% O2 = ppm NH3 x (20.9-15)/(20.9-%O2)

Allowable Emissions
NH3 = 5 ppmvd @ 15% O2

3.0 PROCESS DESCRIPTION AND OPERATION

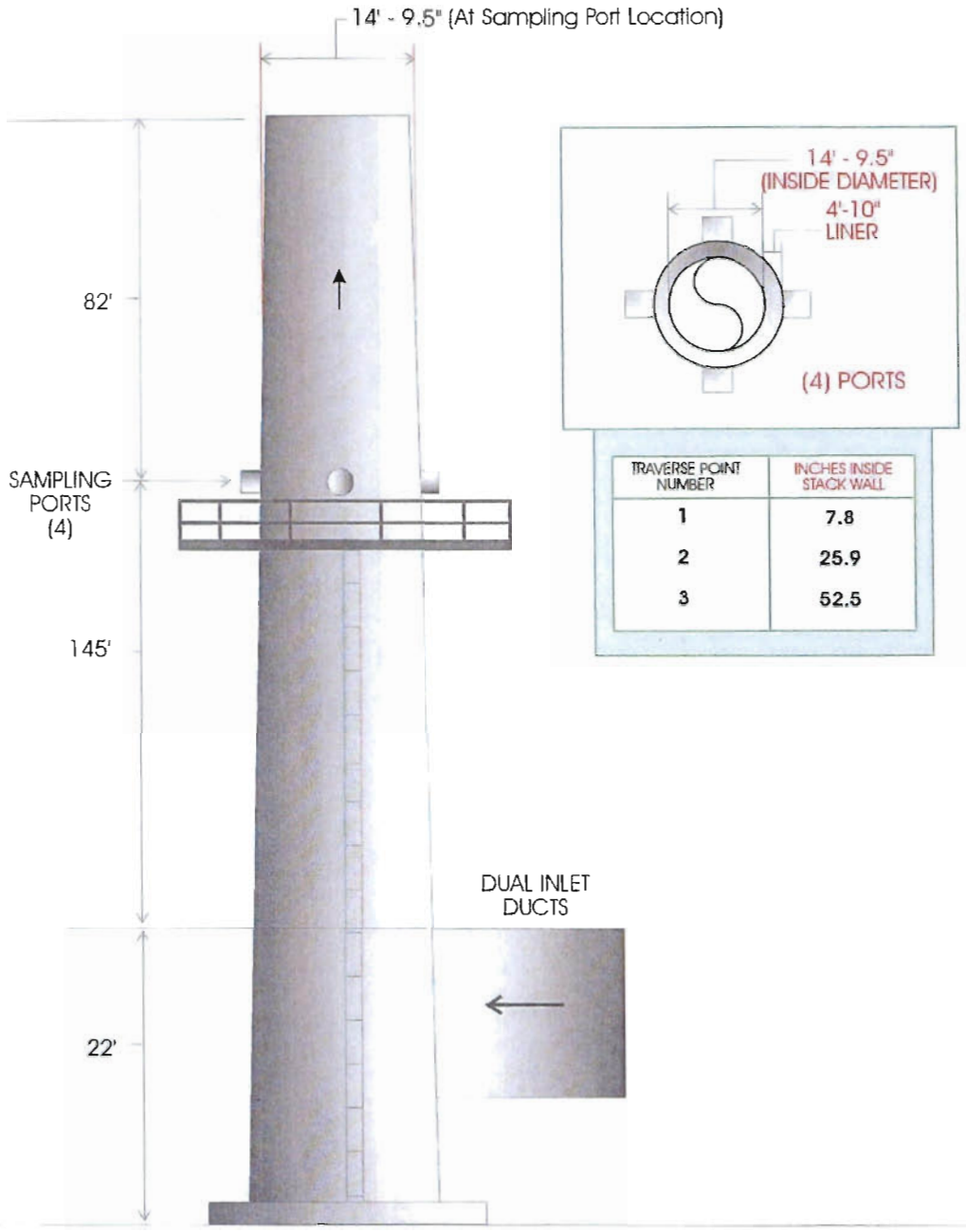
Unit 2 was repowered to include a General Electric 7FA combustion turbine rated at 188 megawatts (MW) and a gas-fired heat recovery steam generator (HRSG) which produces a nominal 238 MW. The maximum design heat input rate is 1899 MMBtu per hour. The turbine can be fired with natural gas and distillate oil. NOx emissions are controlled by a selective catalytic reduction (SCR) system and the dry low-NOx (DLN) combustion system when firing natural gas and water injection when firing distillate oil.

During the compliance test the unit generated 239 MW with a heat input of 1680 MMBtu/hr.

Fuel usage data, fuel analyses, and calculations are provided in Appendix D.

4.0 SAMPLE POINT LOCATION

Figure 1 is a schematic of the Hopkins Unit 2 exhaust stack giving individual sampling point locations.



NOTE: NOT TO SCALE.

SOURCE: AIR CONSULTING & ENGINEERING, INC. (ABHOP) 9/1/00

FIGURE 1.
SAMPLING POINT LOCATION
UNIT 2 EXHAUST STACK
A.B. HOPKINS GENERATING STATION
TALLAHASSEE, FLORIDA

5.0 FIELD AND ANALYTICAL PROCEDURES

5.1 Determination of Ammonia Emissions From Stationary Sources (In-Stack Filtration Method) --EPA Method CTM027

Ammonia samples were collected according to the United States Environmental Protection Agency (EPA) in Method 17 sampling train. A schematic diagram of the sampling train used is shown in Figure 2.

PREPARATION OF EQUIPMENT

1. FILTERS - Gelman type "A" filters, or their equivalents, were inspected, numbered, and placed in a drying oven for two hours at 105 degrees C.

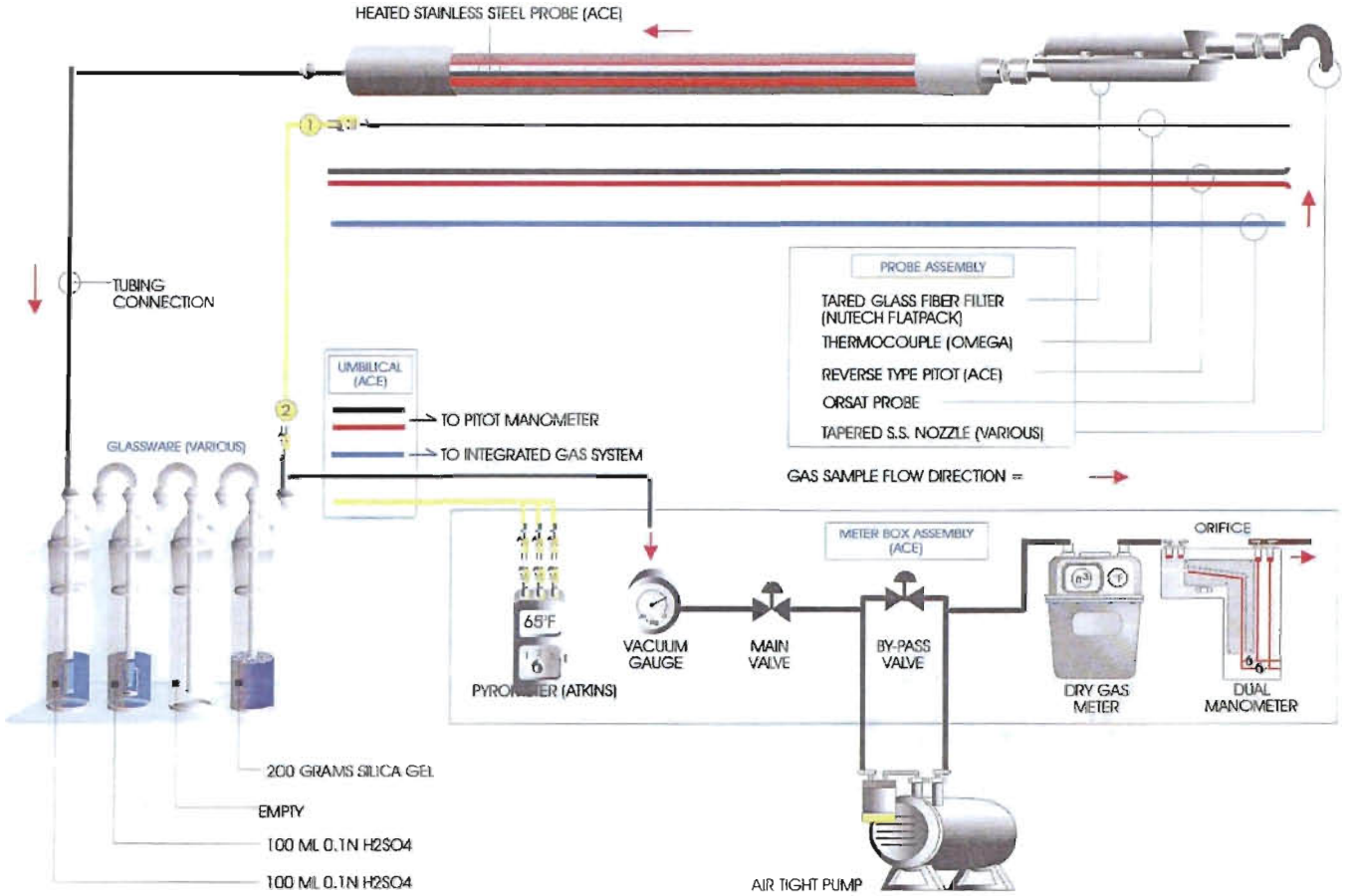
2. NOZZLE, FILTER HOLDER, AND SAMPLING PROBE - The nozzle and in-stack filter holder made of borosilicate glass or Teflon were washed vigorously with soapy water and brushes, rinsed with distilled water and acetone, and dried prior to the test program. All openings on the sampling equipment were sealed while in transit to the test site.

3. IMPINGERS - The Greenburg-Smith impingers were cleaned with a warm soapy water solution and brushes, rinsed with distilled water and acetone, and dried. The impingers were sealed lightly during transit.

TEST PROCEDURES

Prior to performing the actual sample runs, certain flue and exhaust gas parameters were measured. These preliminary measurements included the average gas temperature; the high, low, and average gas velocity head; the gas moisture content; and the flue dimensions at the point where the tests were being performed. The gas temperature was determined by using a bi-metallic thermocouple and calibrated pyrometer. Velocity head measurements were made with calibrated type "S" pitot tube and an inclined manometer. Velocity head measurements of 0.05 inches H_2O or less were measured utilizing a micromanometer.

The sampling traverse points were selected so that a representative sample could be extracted from the gas stream. The traverse points were located in the center of equal areas, the number of which were dependent upon the distance upstream and downstream from flow disturbances (per EPA Method 1). Each particulate matter test run consisted of sampling for a pre-determined specific time at each traverse point. The type "S" pitot tube and thermocouple were connected to the sampling probe so that instantaneous velocity head and temperature measurements could be made at each point during the test run (EPA Method 2). Nomographs were used to calculate the isokinetic sampling rate at each traverse point during each test run.



FILENAME: (CTM027) 5/05

FIGURE 2.

EPA METHOD CTM027 SAMPLING SCHEMATIC
(DETERMINATION OF AMMONIA EMISSIONS
FROM STATIONARY SOURCES, IN-STACK FILTRATION METHOD)

The gases sampled passed through the following components: a stainless steel nozzle and stainless steel in-stack filter holder; a stainless steel probe; two impingers each with 100 ml of 0.1N H2SO4; one impinger dry; one impinger with 200 grams of indicating type silica gel (6-16 Mesh); a flexible sample line; an air-tight pump; a dry test meter; and a calibrated orifice. The second impinger had a standard tip, while the first, third, and fourth impingers had modified tips with a 0.5 inch I.D. opening. Sample recovery was accomplished by the following procedures:

1. The volume of fluid from the first three impingers was measured and then placed into clean HDPE bottles and then send to the contract lab for analysis.
2. The used silica gel from the fourth impinger was transferred to the original tared container and sealed. It was weighed to the nearest 0.1 gram.

DATA

The field data sheets, calculation sheets, and nomenclature definitions are included in the Appendices of this report.

5.2 CO2 and O2 Sampling and Analysis --EPA Method 3

CO_2 and O_2 samples were collected by an integrated bag system. The sampling system consisted of a stainless steel probe, sample line from probe to a condenser, a small vacuum pump with a rotometer, and a TEDLAR bag.

The sampling procedure consists of the following leak-check and sampling techniques. Prior to sampling, the bag was leak-checked at 2 to 4 inches of water. The inlet to the condenser was plugged and a vacuum of 10 inches of Hg was pulled. The outlet of the pump was then plugged and the pump shut off. The vacuum held steady for at least 30 seconds. The sample line was then purged with flue gas and the bag was connected. Sampling was conducted at an appropriate constant rate at the same points and for the same length of time as the particulate sampling. At the conclusion of the run, the pump was shut off and the bag secured.

After leak checking the orsat gas analyzer, the average value for each gas was determined. The gas was measured until two values were obtained that fell within the specified variance of the gas tested. Data were recorded on the field data sheet and the bag was evacuated for the next sample run.

APPENDIX A

COMPLETE EMISSION DATA WITH SAMPLE CALCULATIONS

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/10/2008

RUN NUMBER:	1		IMPINGER ml.	75.0
BEGIN TIME (hour : minute):	11:15 AM		SILICA GEL. gms.	7.8
END TIME (hour : minute):	12:27 PM		% O2:	13.70
TOTAL RUN TIME:	60	MINUTES	% CO2:	4.30
BAROMETRIC PRESSURE:	30.12	inches Hg.	"F" FACTOR:	NA
STACK PRESSURE:	30.18	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	389.814	CUBIC FT.		
INITIAL METER:	341.640	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1161653
AVG. SQ. RT. VEL. HEAD:	1.1683	VOLUMETRIC FLOW(WVSCFM):	66710
AVG. VEL. HEAD (in H2O):	1.3883	VOLUMETRIC FLOW(DSCFM):	811230
AVG. STACK TEMP. (F):	244.4	VOLUMETRIC FLOW(WSCFM):	877940
AVG. METER TEMP. (F):	87.6		
AVG. ORIFICE DIFFERENTIAL:	1.638	**AMMONIA EMISSION DATA:**	
METER ACF:	48.174		
METER SCF:	47.394	PPM NH3:	0.1260
MEASURED SCF MOISTURE:	3.897	PPM NH3 @15% O2:	0.103
MEASURED MOISTURE %:	7.60		
STACK TEMP. (deg. C):	118.0		
VAPOR PRESSURE:	54.8		
SATURATION MOISTURE %:	NA		
PERCENT WATER VAPOR:	7.60		
GAS MOLECULAR WT.(dry):	29.24		
GAS MOLECULAR WT.(wet):	28.38		
PERCENT EXCESS AIR:	172.370		
AVERAGE VELOCITY(FPS):	76.1		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	101.10		

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/10/2008

RUN NUMBER:	2		IMPINGER ml.	80.0
BEGIN TIME (*hour : minute*):	12:50 PM		SILICA GEL. *gms.*	7.3
END TIME (hour : minute):	2:00 PM		% O2:	13.60
TOTAL RUN TIME:	60	MINUTES	% CO2:	4.40
BAROMETRIC PRESSURE:	30.12	*inches Hg.*	"F" FACTOR:	NA
STACK PRESSURE:	30.18	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	441.098	CUBIC FT.		
INITIAL METER:	390.207	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1232683
AVG. SQ. RT. VEL. HEAD:	1.2301	VOLUMETRIC FLOW(WVSCFM):	70294
AVG. VEL. HEAD (in H2O):	1.5208	VOLUMETRIC FLOW(DSCFM):	846684
AVG. STACK TEMP. (F):	255.7	VOLUMETRIC FLOW(WSCFM):	916977
AVG. METER TEMP. (F):	94.1		
AVG. ORIFICE DIFFERENTIAL:	1.764	**AMMONIA EMISSION DATA:**	
METER ACF:	50.891		
METER SCF:	49.495	PPM NH3:	0.0330
MEASURED SCF MOISTURE:	4.109	PPM NH3 @15% O2:	0.027
MEASURED MOISTURE %:	7.67		
STACK TEMP. (deg. C):	124.3		
VAPOR PRESSURE:	66.8		
SATURATION MOISTURE %:	NA		
PERCENT WATER VAPOR:	7.67		
GAS MOLECULAR WT.(dry):	29.25		
GAS MOLECULAR WT.(wet):	28.39		
PERCENT EXCESS AIR:	168.986		
AVERAGE VELOCITY(FPS):	80.7		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	101.16		

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/10/2008

RUN NUMBER:	3		IMPINGER ml.	82.0
BEGIN TIME (hour : minute):	2:12 PM		SILICA GEL. gms.	7.5
END TIME (hour : minute):	3:22 PM		% O2:	13.60
TOTAL RUN TIME:	60	MINUTES	% CO2:	4.40
BAROMETRIC PRESSURE:	30.12	inches Hg.	"F" FACTOR:	NA
STACK PRESSURE:	30.18	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	493.837	CUBIC FT.		
INITIAL METER:	441.804	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1228191
AVG. SQ. RT. VEL. HEAD:	1.2285	VOLUMETRIC FLOW(WVSCFM):	71230
AVG. VEL. HEAD (in H2O):	1.5167	VOLUMETRIC FLOW(DSCFM):	847110
AVG. STACK TEMP. (F):	252.0	VOLUMETRIC FLOW(WSCFM):	918341
AVG. METER TEMP. (F):	99.8		
AVG. ORIFICE DIFFERENTIAL:	1.820	**AMMONIA EMISSION DATA:**	
METER ACF:	52.033		
METER SCF:	50.100	PPM NH3:	0.2340
MEASURED SCF MOISTURE:	4.213	PPM NH3 @15% O2:	0.189
MEASURED MOISTURE %:	7.76		
STACK TEMP. (deg. C):	122.2		
VAPOR PRESSURE:	62.7		
SATURATION MOISTURE %:	NA		
PERCENT WATER VAPOR:	7.76		
GAS MOLECULAR WT.(dry):	29.25		
GAS MOLECULAR WT.(wet):	28.38		
PERCENT EXCESS AIR:	168.986		
AVERAGE VELOCITY(FPS):	80.4		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	102.35		

AIR CONSULTING and ENGINEERING, INC.

COMPANY NAME:	CITY OF TALLAHASSEE				
LOCATION:	TALLAHASSEE, FLORIDA				
SOURCE:	HOPKINS UNIT # HB2A				
DATE:	7/10/08				
RUN NUMBER:	2	**FROM:**	12:50	**TO:**	14:00

SOURCE PARAMETER ENTRIES

PORT-POINT	"inches"	VELOCITY HEAD	ORIFICE CALC.	DELTA P ACTUAL	STACK TEMP. F	METER TEMP.F
1 - 1	63.91	1.30	1.51	1.51	254	92
1 - 2	31.63	1.20	1.39	1.39	255	92
1 - 3	9.41	1.10	1.28	1.28	259	93
2 - 1		1.60	1.86	1.86	261	93
2 - 2		1.70	1.97	1.97	253	93
2 - 3		1.75	2.03	2.03	254	94
3 - 1		1.50	1.74	1.74	253	94
3 - 2		1.80	2.09	2.09	252	95
3 - 3		1.60	1.86	1.86	253	95
4 - 1		1.50	1.74	1.74	261	96
4 - 2		1.70	1.97	1.97	258	96
4 - 3		1.50	1.74	1.74	255	96
AVERAGES:		1.521		1.764	255.67	94.08

AIR CONSULTING and ENGINEERING, INC.

COMPANY NAME: CITY OF TALLAHASSEE
LOCATION: TALLAHASSEE, FLORIDA
SOURCE: HOPKINS UNIT # HB2A
DATE: 7/10/08
RUN NUMBER: 3 **FROM:** 14:12 **TO:** 15:22

SOURCE PARAMETER ENTRIES

PORT-POINT	"inches"	VELOCITY HEAD	ORIFICE CALC.	DELTA P ACTUAL	STACK TEMP. F	METER TEMP.F
1 - 1	63.91	1.50	1.80	1.80	252	99
1 - 2	31.63	1.65	1.98	1.98	248	99
1 - 3	9.41	1.35	1.62	1.62	244	99
2 - 1		1.60	1.92	1.92	249	100
2 - 2		1.85	2.22	2.22	250	100
2 - 3		1.70	2.04	2.04	252	100
3 - 1		1.60	1.92	1.92	257	100
3 - 2		1.75	2.10	2.10	258	100
3 - 3		1.45	1.74	1.74	258	100
4 - 1		1.40	1.68	1.68	252	100
4 - 2		1.25	1.50	1.50	250	100
4 - 3		1.10	1.32	1.32	254	100
AVERAGES:		1.517	1.820		252.00	99.75

AIR CONSULTING and ENGINEERING, INC.
SAMPLE CALCULATIONS

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/10/2008

RUN NUMBER: 1

NOZZLE AREA SQ.FT.:
An=Pi*(Rn)E2 = Pi*(Dn/2)E2 = Pi*[(Dn/2)E2]*[(1ft/12in)E2]
=Pi*(Dn)E2 / (576) = (3.1416)*[(0.212)E2]/(576)
= 0.000245

METER ACTUAL CU. FEET:
Vm = (Vm final) - (Vm initial)
= (389.814) - (341.64)
= 48.174

METER STANDARD CU. FEET:
VMstd=(K1)*(Vm)*(Y)*{(Pbar)+[(DHavg)/(13.6)]}/[(TMavg)+(460)]
= (17.64)*(48.174)*(1.0099)*{(30.12)+[(1.64)/(13.6)]}/[(87.6)+(460)]
= 47.394

MEASURED SCF MOISTURE:
VWstd=(K2)*(Vlc)
= (0.04707)*(75 + 7.8)
= 3.897

MEASURED % MOISTURE:
Bwm%={(VWstd)/[(VMstd)+(VWstd)]}*100%
= {(3.897)/[(47.394)+(3.897)]}*100%
= 7.6%

STACK TEMP. Deg C
Tsc=[(TSavg)-32]*5/9
= [(244.4)-32]*5/9
= 118

VAPOR PREASURE (in Hg):
Pv={2.718E[18.6866-0.00244*(273+(Tsc))-4509.47/(273+(Tsc))-
149541/((273+(Tsc))E2)]}/3.375
= {2.718E[18.688-0.00244*(273+(118))-4509.47/(273+(118))-
149541/((273+(118))E2)]}/3.375
= 54.85

SATURATION MOISTURE %:
Bwsat%=NA
NA
NA

PERCENT WATER VAPOR:
Bwo% = Bwm% IF Bwm% < Bwsat%
Bwo% = Bwsat% IF Bwsat% < Bwm%
= 7.6

GAS MOLECULAR WT.(dry):
Md = [(0.440)*(%CO2)]+[(0.320)*(%O2)]+{(0.280)*[(%N2)+(%CO)]}
= [(0.440)*(%CO2)]+[(0.320)*(%O2)]+{(0.280)*[(100)-(%CO2)-(%O2)]}
= [(0.440)*(4.3)]+[(0.032)*(13.7)]+{(0.280)*(82)]}
= 29.2

GAS MOLECULAR WT.(wet):
Ms= {(Md)*[1-(Bwo%/100)]}+[(18.0)*(Bwo%/100)]
= {(29.2)*[1-(0.076)]}+[(18.0)*(0.076)]
= 28.38

PERCENT EXCESS AIR:
%EA={(%O2)/{[(0.264)*(%N2)]-(%O2)}}*(100%)
= {(13.7)/{[(0.264)*(82)]-(13.7)}}*(100%)
= 172.37

AIR CONSULTING and ENGINEERING, INC.
NOMENCLATURE

%CO - Percent Carbon Monoxide.
%CO2 - Percent Carbon Dioxide.
%EA - Percent excess air.
%Iso - Percent isokenetics.
%N2 - Percent Nitrogen.
%O2 - Percent Oxygen.
An - Area of the nozzle, square feet.
As - Stack area, square feet.
ASRVH - Average of the square roots of the velocity heads.
Bwm% - Percent water vapor as measured.
Bwo% - Percent water vapor.
Bwsat% - Percent water vapor at saturation.
C3H8 - Propane.
CH4 - Methane.
CO - Carbon Monoxide
CO - Carbon Monoxide.
CO2 - Carbon Dioxide
Cp - Pitot coefficient.
CSO2 - Concentration of Sulfur Dioxide, pounds per dry standard cubic foot.
DHavg - Average meter orifice pressure differential.
Dn - Nozzle diameter.
E - Denotes exponent.
F - Fuel factor,standard cubic feet per million BTU.
Gr/SCF - Grains per dry standard cubic foot.
Hr - Hour.
K1 - A constant =17.64.
K2 - A constant = 0.04707.
K4 - A constant = 0.09450.
lb - pound.
lb/Hr - pounds per hour.
lb/MMBTU - Pounds per million British Thermal Units.
lb/SCF - Pounds per dry standard cubic foot.
Md - Molecular weight of dry stack gas.
mg - Mass of filter and dried probe wash, milligrams.
MMBTU - million British Thermal Units.
Ms - Molecular weight of wet stack gas.
NOx - Oxides of Nitrogen.
Pbar - Barometric pressure, inches of Mercury.
Pi - A constant = 3.14159....
PPM - Parts per million.
Ps - Stack pressure, inches Mercury.
Pv - Vapor pressure of water at stack temperature, inches Mercury.
Qs - Volumetric flow rate, actual cubic feet per minute.
QSstd - Volumetric flow rate, dry standard cubic feet per minute.
Rn - Nozzle radius, inches.
SCF - Standard cubic feet.
SO2 - Sulfur Dioxide.
TMavg - Average meter temperature, degrees Fahrenheit.
TSavg - Average stack temperature, degrees Fahrenheit.
Tsc - Average stack temperature, degrees Celsius.
Vlc - Volume of moisture collected in the impingers and silica gel, milliliters.
Vm - Metered volume, actual cubic feet.
Vm final - Final meter reading, actual cubic feet.
Vm initial - Initial meter reading, actual cubic feet.
VMstd - Metered volume corrected to standard conditions, standard cubic feet.
VOC - Volitile organic compounds.
VSavg - Average stack velocity, feet per second.
VWstd - Standard volume of water vapor, standard cubic feet.

WVSCFM - Volumetric flow rate of water vapor, standard cubic feet per minute.
Y - Meter correction factor.

APPENDIX B

FIELD DATA SHEETS

PLANT City of Tallahassee
SOURCE Hopkins Unit # HB2A
PLANT LOCATION Tallahassee, FL.
TYPE OF SAMPLING TRAIN CTM027
TYPE OF SAMPLES Ammonia Slip
DATE 7-10-08 RUN NUMBER 1
TIME START 1115 TIME END 1227
SAMPLE TIME 5 / 12 (MIN/PT)= 60 TOTAL MIN
ASSUMED MOISTURE(%) 7 FDA 0.93
NOMOGRAPH Cf 1.18 PITOT Cf 0.84
Pb ("Hg) 30.12 Ps ("Hg) 80's
WEATHER Scat. TEMP (F) 30.18
METER BOX NO. 3 H 1.3637 Y 1.0099
NOZZLE IDENTIFICATION NO. GLASS
NOZZLE CAL .212 / .212 / .212 = 0.212
STACK DIMENSIONS 216"
STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469
STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____
PORT SIZE 6" NIPPLE LENGTH 17.5"
STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'
AGENCY OBSERVER(S)_____
TEST COORDINATOR(S)_____
V. E. OBSERVER_____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS:_____

TEST ID_____
PAGE 1 OF 2
MATERIAL PROCESSING RATE_____
GAS METER READINGS: FINAL 389.814 (FT3)
INITIAL 341.640 (FT3)
NET 48.174 (FT3)
FILTER NO. N/A IMP. VOL.GAIN 75.0 (ml)
SILICA GEL NO. 424 WT. GAIN 7.8 (ml)
TOTAL CONDENSATE 82.8 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	4.3	4.3	4.4		4.3
%O2	13.7	13.7	13.6		13.7
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR
LEAK CHECKS
PRE 0.00 CFM 15 ("Hg) POST 0.00 CFM 10 ("Hg)
METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG OK
PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK
POST TEST (+) 0.0 / 4.0 "H20 (15 SECONDS)
POST TEST (-) 0.0 / 3.0 "H20 (15 SECONDS)
PYROMETER NUMBER 3
BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1120	344.985	0.88	1.04	1.04	242	N/A	62	85	3.0
2		25	348.430	0.92	1.09	1.09	244	↓	61	85	3.0
3		30	351.798	0.86	1.01	1.01	242		60	86	3.0
2-1		1140	356.150	1.60	1.89	1.89	240		60	86	5.0
2		45	360.980	2.00	2.36	2.36	239		60	87	6.5
3		50	365.543	1.70	2.01	2.01	239		59	87	6.0

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1158	369.700	1.50	1.77	1.77	245	N/A	59	88	5.0
2		03	374.135	1.70	2.01	2.01	245		59	89	5.0
3		1208	378.547	1.60	1.89	1.89	247		58	89	5.0
4-1		1217	382.355	1.30	1.53	1.53	253		58	89	3.0
2		22	386.250	1.40	1.65	1.65	249		58	90	3.5
3		1227	389.814	1.20	1.42	1.42	245	↓	59	90	3.0
END		1227	48.174	1.388		1.638	244.42			87.58	

PLANT City of Tallahassee
SOURCE Hopkins Unit # HB2A
PLANT LOCATION Tallahassee, FL.
TYPE OF SAMPLING TRAIN CTM027
TYPE OF SAMPLES Ammonia Slip
DATE 7-10-08 RUN NUMBER 2
TIME START 1250 TIME END 1400
SAMPLE TIME 5 / 12 (MIN/PT)= 60 TOTAL MIN
ASSUMED MOISTURE(%) 7 FDA 0.93
NOMOGRAPH Cf 1.16 PITOT Cf 0.84
Pb ("Hg) 30.12 Ps ("Hg) 30.18
WEATHER Scat. TEMP (F) 80's
METER BOX NO. 3 H 1.3637 Y 1.0099
NOZZLE IDENTIFICATION NO. GLASS
NOZZLE CAL .212 / .212 / .212 = 0.212
STACK DIMENSIONS 216"
STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469
STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____
PORT SIZE 6" NIPPLE LENGTH 17.5"
STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'
AGENCY OBSERVER(S)_____
TEST COORDINATOR(S)_____
V. E. OBSERVER_____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS:_____

TEST ID_____
PAGE 1 OF 2
MATERIAL PROCESSING RATE_____
GAS METER READINGS: FINAL 441.098 (FT3)
INITIAL 390.207 (FT3)
NET 50.891 (FT3)
FILTER NO. N/A IMP. VOLGAIN 80.0 (ml)
SILICA GEL NO. 542 WT. GAIN 7.3 (ml)
TOTAL CONDENSATE 87.3 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	4.3	4.4	4.4		4.4
%O2	13.6	13.6	13.5		13.6
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR
LEAK CHECKS
PRE 0.00 CFM 17 ("Hg) POST 0.00 CFM 12 ("Hg)
METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG OK
PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK
POST TEST (+) 0.0 / 3.0 "H20 (15 SECONDS)
POST TEST (-) 0.0 / 4.0 "H20 (15 SECONDS)
PYROMETER NUMBER_____
BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1255	394.120	1.30	1.51	1.51	254	N/A	62	92	4.0
2		00	397.960	1.20	1.39	1.39	255	↓	61	92	4.0
3		05	401.692	1.10	1.28	1.28	259		61	93	3.5
2-1		1314	405.900	1.60	1.86	1.86	261		61	93	5.0
2		19	410.365	1.70	1.97	1.97	253.		61	93	5.5
3		24	414.907	1.75	2.03	2.03	254		62	94	5.5

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1331	419.100	1.50	1.74	1.74	253	N/A	62	94	5.0
2			423.550	1.80	2.09	2.09	252		62	95	6.0
3			427.968	1.60	1.86	1.86	253		62	95	5.0
4-1		1350	432.285	1.50	1.74	1.74	261		61	96	4.5
2		55	436.760	1.70	1.97	1.97	258		61	96	6.0
3		1400	441.098	1.50	1.74	1.74	255	↓	61	96	5.0
END		1500	50.891	1.521		1.764	255.67			94.08	

PLANT City of Tallahassee

SOURCE Hopkins Unit #HB2A

PLANT LOCATION Tallahassee, FL.

TYPE OF SAMPLING TRAIN CTM027

TYPE OF SAMPLES Ammonia Slip

DATE 7-10-08 RUN NUMBER 3

TIME START 1412 TIME END 1522

SAMPLE TIME 5 , 12 (MIN/PT)= 60 TOTAL MIN

ASSUMED MOISTURE(%) 7 FDA 0.93

NOMOGRAPH Cf 1.2 PITOT Cf 0.84

Pb ("Hg) 30.12 Ps ("Hg) 30.18

WEATHER SCAT. TEMP (F) 90's

METER BOX NO. 3 H 1.3637 Y 1.0099

NOZZLE IDENTIFICATION NO. GLASS

NOZZLE CAL .212 , .212 , .212 = 0.212

STACK DIMENSIONS 216"

STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469

STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____

PORT SIZE 6" NIPPLE LENGTH 17.5"

STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'

AGENCY OBSERVER(S)_____

TEST COORDINATOR(S)_____

V. E. OBSERVER_____

ACE AIR CONSULTING & ENGINEERING, INC.

2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS:_____

TEST ID_____

PAGE 1 OF 2

MATERIAL PROCESSING RATE_____

GAS METER READINGS: FINAL 493.837 (FT3)

INITIAL 441.804 (FT3)

NET 52.033 (FT3)

FILTER NO. N/A IMP. VOLGAIN 82.0 (ml)

SILICA GEL NO. 544 WT. GAIN 7.5 (ml)

TOTAL CONDENSATE 89.5 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	4.4	4.3	4.4		4.4
%O2	13.6	13.6	13.5		13.6
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR

LEAK CHECKS

PRE 0.00 CFM 18 ("Hg) POST 0.00 CFM 14 ("Hg)

METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG OK

PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK

POST TEST (+) 0.0 , 4.0 "H20 (15 SECONDS)

POST TEST (-) 0.0 , 3.0 "H20 (15 SECONDS)

PYROMETER NUMBER 3

BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1417	446.110	1.50	1.80	1.80	252	N/A	62	99	5.0
2		22	450.500	1.65	1.98	1.98	248	↓	61	99	5.5
3		1427	454.716	1.35	1.62	1.62	244		61	99	5.0
2-1		1436	459.180	1.60	1.92	1.92	249		61	100	5.5
2		41	463.940	1.85	2.22	2.22	250		62	100	6.5
3		46	468.573	1.70	2.04	2.04	252		62	100	6.0

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1453	472.850	1.60	1.92	1.92	257	N/A	62	100	5.5
2		58	477.460	1.75	2.10	2.10	258		62	100	6.0
3		1503	481.862	1.45	1.74	1.74	258		62	100	5.5
4-1		12	486.035	1.40	1.68	1.68	252		61	100	5.0
2		17	489.980	1.25	1.50	1.50	250		61	100	4.5
3		1522	493.837	1.10	1.32	1.32	254		61	100	4.0
END		1522	52.033	1.517		1.820	252.00			99.75	

APPENDIX C

LABORATORY ANALYSES

AIR CONSULTING AND ENGINEERING, INC.
2106 NW 67th Place, Suite 4, Gainesville, Florida 32653

Laboratory Results

Unit HB2A
City of Tallahasse - Hopkins Power Plant
Tallahassee, Florida
July 10, 2008

Run	Sample Volume ml	Ammonium mg/L	Blank Corrected Ammonia mg/L	Volume of Ammonia Gas Litres	Total Ammonia Gas Litres	Dry Gas Volume scf	Dry Gas Volume Litres	Ammonia Cons. ppmV
1 - Imp. 1	215.0	0.51	0.50	1.44E-04	1.69E-04	47.39	1342.02	0.126
1 - Imp. 2	160.0	0.13	0.12	2.56E-05				
1 - Imp. 3	50.0	0.01	0.00	0.00E+00				
2 - Imp. 1	218.0	0.14	0.13	3.78E-05	4.57E-05	49.50	1401.51	0.033
2 - Imp. 2	162.0	0.04	0.03	6.49E-06				
2 - Imp. 3	50.0	0.03	0.02	1.34E-06				
3 Imp.1	228.0	0.12	0.11	3.35E-05	3.32E-04	50.10	1418.65	0.234
3 - Imp. 2	1554.0	0.15	0.14	2.99E-04				
32 - Imp. 3	50.0	0.01	0.00	0.00E+00				
Blank								
0.1N H2SO4	100.0	0.01						

Volume of Ammonia Gas = $\frac{(\text{mg/l - blank}) \times (\text{SampleVol.}) (24.04)}{(1000) \times (18)}$

24.04 = litres of ideal gas per mole of substance
1/1000 = conversion factor from mg/l to g/l
18 = formular weight of Ammonium ion

ppmV Ammonia = $\frac{\text{Volume of Ammonis Gas}}{\text{Dry Gas Meter Volume}} \times 10E6$

July 23, 2008

Stephen Neck
Air Consulting and Engineering, Inc.
2106 NW 67th Place
Suite 4
Gainesville, FL 32653

Re: SunLabs Project Number: **080715.05**
Client Project Description: **City of Tallahassee Hopkins Unit**

Dear Mr. Neck:

Enclosed is the report of laboratory analysis for the following samples:

Sample Number	Sample Description	Date Collected
69378	Run 1 - 1 Imp 1	07/10/08
69379	Run 1 - 2 Imp 2	07/10/08
69380	Run 1 - 3 Imp 3	07/10/08
69381	Run 2 - 1 Imp 1	07/10/08
69382	Run 2 - 2 Imp 2	07/10/08
69383	Run 2 - 3 Imp 3	07/10/08
69384	Run 3 - 1 Imp 1	07/10/08
69385	Run 3 - 2 Imp 2	07/10/08
69386	Run 3 - 3 Imp 3	07/10/08
69387	Blank - 0.1N H2SO4	07/10/08
69388	Blank - HPLC H2O	07/10/08

Copies of the Chain(s)-of-Custody, if received, are attached to this report.

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Sincerely,

Michael W. Palmer
Vice President, Laboratory Operations

Enclosures

SunLabs, Inc.
5460 Beaumont Center Blvd., Suite 520
Tampa, Florida 33634

Phone: 813-681-9401
Fax: 813-354-4661
Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080715.05	Project Description: City of Tallahassee Hopkins Unit

July 23, 2008

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
SunLabs Sample Number **69378**					Matrix		Liquid		
Sample Designation **Run 1 - 1 Imp 1**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	215	1				07/22/08 16:07	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.51	1	0.01	0.01		07/22/08 16:07	07/22/08 13:19
End of Sample No: 69378									
SunLabs Sample Number **69379**					Matrix		Liquid		
Sample Designation **Run 1 - 2 Imp 2**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	160	1				07/22/08 16:20	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.13	1	0.01	0.01		07/22/08 16:20	07/22/08 13:19
End of Sample No: 69379									
SunLabs Sample Number **69380**					Matrix		Liquid		
Sample Designation **Run 1 - 3 Imp 3**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	50	1				07/22/08 16:33	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		07/22/08 16:33	07/22/08 13:19
End of Sample No: 69380									
SunLabs Sample Number **69381**					Matrix		Liquid		
Sample Designation **Run 2 - 1 Imp 1**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	218	1				07/22/08 16:47	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.14	1	0.01	0.01		07/22/08 16:47	07/22/08 13:19
End of Sample No: 69381									
SunLabs Sample Number **69382**					Matrix		Liquid		
Sample Designation **Run 2 - 2 Imp 2**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	162	1				07/22/08 17:26	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.04	1	0.01	0.01		07/22/08 17:26	07/22/08 13:19
End of Sample No: 69382									

Laboratory ID Number - E84809

SunLabs, Inc.
5460 Beaumont Center Blvd., Suite 520
Tampa, Florida 33634

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Fax: 813-354-4661
Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080715.05	Project Description: City of Tallahassee Hopkins Unit

July 23, 2008

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
SunLabs Sample Number **69383**					Matrix		Liquid		
Sample Designation **Run 2 - 3 Imp 3**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	50	1				07/22/08 17:40	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.03	1	0.01	0.01		07/22/08 17:40	07/22/08 13:19
		End of Sample No: 69383							
SunLabs Sample Number **69384**					Matrix		Liquid		
Sample Designation **Run 3 - 1 Imp 1**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	228	1				07/22/08 20:34	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.12	1	0.01	0.01		07/22/08 20:34	07/22/08 13:19
		End of Sample No: 69384							
SunLabs Sample Number **69385**					Matrix		Liquid		
Sample Designation **Run 3 - 2 Imp 2**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	154	1				07/22/08 20:47	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.16	1	0.01	0.01		07/22/08 20:47	07/22/08 13:19
		End of Sample No: 69385							
SunLabs Sample Number **69386**					Matrix		Liquid		
Sample Designation **Run 3 - 3 Imp 3**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	228	1				07/22/08 21:00	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		07/22/08 21:00	07/22/08 13:19
		End of Sample No: 69386							
SunLabs Sample Number **69387**					Matrix		Liquid		
Sample Designation **Blank - 0.1N H2SO4**					Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	100	1				07/22/08 21:14	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		07/22/08 21:14	07/22/08 13:19
		End of Sample No: 69387							

SunLabs, Inc.
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Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080715.05	Project Description: City of Tallahassee Hopkins Unit

July 23, 2008

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
SunLabs Sample Number	**69388**				Matrix		Liquid		
Sample Designation	**Blank - HPLC H2O**				Date Collected		07/10/08		
					Date Received		07/15/08 12:35		
Ammonia by Method CTM-027									
Sample Volume		mL	100	1				07/22/08 21:27	07/22/08 13:19
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		07/22/08 21:27	07/22/08 13:19
			End of Sample No: 69388						

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080715.05	Project Description: City of Tallahassee Hopkins Unit

July 23, 2008

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep

Footnotes

*	SunLabs is not currently NELAC certified for this analyte.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MB	Method Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Sample not analyzed at client's request.
RL	RL(reporting limit) = PQL(practical quantitation limit).
RPD	Relative Percent Difference
U	Compound was analyzed for but not detected.
V	Indicates that the analyte was detected in both the sample and the associated method blank.

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Quality Control Data

Project Number	Air Consulting and Engineering, Inc.
080715.05	Project Description: City of Tallahassee Hopkins Unit

July 23, 2008

Batch No: **C5736**
TestCode: CTM-027

Associated Samples
69378, 69379, 69380, 69381, 69382, 69383, 69384, 69385, 69386, 69387, 69388

Compound	Blank	LCS Spike	LCS %Rec	LCSD %Rec	RPD %	---QC Limits--- RPD	LCS	MS Spike	MS %Rec	MSD %Rec	RPD %	---QC Limits--- RPD	MS	Dup RPD	Qualifiers
Parent Sample Number									*69378*	*69378*					
Ammonium	0.01 U	5.00	110	111	1			5.00	131	137	4				

* Indicates value is outside control limits for %Recovery or greater than acceptance criteria for RPD

Footnotes

U — *Compound was analyzed for but not detected.*

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ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

SAMPLE RECOVERY AND CHAIN OF CUSTODY

080715.05

PLANT City of Tallahassee
SOURCE Hopkins Unit
TEST DATE(S) 7-10-08
TEST TEAM C.R./S.C.
RUN NUMBER(S) 1,2,3

TYPE OF SAMPLING TRAIN CTM-027
TYPE OF SAMPLES AMMONIA
PROJECT NO.
PAGE 1 OF 1

SAMPLE INVENTORY

	SAMPLE ID	DESCRIPTION/COMPONENTS	RINSE TYPE	COLOR	NO. OF CONTAINERS
1378	RUN 1-1	IMP. 1, 100 mls .1N H2SO4 + 65 mls gain	HPLC H2O-50mls	CLEAR	1-215 mls
379	" " 2	IMP. 2, 100 mls .1N H2SO4 + 10 mls gain	" " "	"	1-160 mls
1380	" " 3	IMP. 3, 0 mls gain	" " "	"	1-50 mls
381	RUN 2-1	IMP. 1, 100 mls .1N H2SO4 + 68 mls gain	HPLC H2O-50 mls	CLEAR	1-218 mls
382	" " 2	IMP. 2, 100 mls .1N H2SO4 + 12 mls gain	" " "	"	1-162 mls
	" " 3	IMP. 3, 0 mls gain	" " "	"	1-50 mls
13					
384	RUN 3-1	IMP. 1, 100 mls .1N H2SO4 + 78 mls gain	HPLC H2O-50 mls	CLEAR	1-228 mls
385	" " 2	IMP. 2, 100 mls .1N H2SO4 + 4 mls gain	" " "	"	1-154 mls
386	" " 3	IMP. 3, 0 mls gain	" " "	"	1-50 mls
1387	BLANK	0.1 N H2SO4 - 100 mls	N/A	CLEAR	1-100 mls
388	BLANK	HPLC H2O - 100 mls	N/A	CLEAR	1-100 mls

TOTAL CONTAINERS SHIPPED: 11

SAMPLES COLLECTED/CHARGED BY: CR
REAGENTS PREPARED BY: CR
METHOD OF SHIPMENT
FROM FIELD: VAN
FROM ACE LABORATORY: VAN

ANALYSES TO BE PERFORMED BY: Sun Labs
REMARKS:
DATE: 7-15-08 TIME: 12:35
INIT: MP

APPENDIX D

QUALITY ASSURANCE
AND
CHAIN OF CUSTODY

DRY GAS METER CALIBRATION STANDARD

Air Consulting and Engineering, Inc. (ACE) uses a Precision Scientific model 63123 wet test meter (Serial Number PS 001105) as its dry gas meter calibration standard. The wet test meter has a one cubic foot per revolution capacity and is verified by water displacement annually. The latest verification occurred September 17, 2007.

WET TEST METER CALIBRATION

TEST #	FINAL V (VF) (L)	INIT V (VI) (L)	TOTAL V (VM) (L)	FLASK V (VS) (L)	% ERROR (+or - 1%)
1	28.30	0	28.30	28.32	-0.07
2	28.29	0	28.29	28.32	-0.11
3	28.31	0	28.31	28.32	-0.04
AVG.	28.30	0	28.30	28.32	-0.07

CALCULATIONS:

VM = VF - VI
% ERROR = 100 (VM - VS) / VS (+ OR - 1 %)

VF- VOLUME FINAL
VI - VOLUME INITIAL
VM - VOLUME METER
VS - VOLUME FLASK

% ERROR RANGE = 28.03 - 28.60

AIR CONSULTING AND ENGINEERING,INC. — WET TEST METER ANNUAL CALIBRATION

DATE 9-17-07 CALIBRATED BY C. RESHARD WET TEST METER SERIAL NUMBER PSC01105

RANGE OF WET TEST METER FLOW RATE 0-120 (l/min) VOLUME OF TEST FLASK 28.32 (V_s) SATISFACTORY LEAK CHECK?

Ambient Temperature of Equilliberate Liquid in Wet Test Meter and Reservoir 60 (Deg. F)

TEST NUMBER	FINAL VOLUME (V_f), (l)	INITIAL VOLUME (V_i), (l)	TOTAL VOLUME (V_m), b (l)	FLASK VOLUME (V_s), (l)	PERCENT ERROR, c %
1	28.30	0	28.30	28.32	-0.07
2	28.29	0	28.29	28.32	-0.11
3	28.31	0	28.31	28.32	-0.07

CALCULATIONS:

b $V_m = V_f - V_i$.

c % Error = 100 ($V_m - V_s$) / V_s = -0.07 (+/- 1%)

ACE AIR CONSULTING & ENGINEERING, INC.

Air Consulting & Engineering, Inc
Annual Meter Box Calibration

Date: March 10, 2008				Metering System Identification:			Box # 3
Barometric Pressure:, P_b= 30.38 in.Hg				Calibrated By:			Charles Reshard
Orifice Manometer Setting ΔH in.H_2O	Spirometer (Wet Meter) gas volume V_w ft^3	Dry Gas meter volume V_m ft^3	Temperatures				Time θ min
			Spirometer (Wet Meter) t_w °F	Dry Gas Meter			
				Inlet t_i °F	Outlet t_o °F	Average t_m °F	
2.000	5.925	6.045	45.0	62.0	62.0	62.0	7.00
0.500	5.693	5.843	45.0	64.0	64.0	64.0	13.00
3.000	5.286	5.420	45.0	67.0	67.0	67.0	5.00
1.000	5.521	5.715	46.0	69.0	69.0	69.0	9.00
4.000	6.052	6.203	46.0	71.0	71.0	71.0	5.00
1.500	5.940	6.176	46.0	73.0	73.0	73.0	8.00

Calculations

ΔH, in. H_2O	Y (meter ratio)		ΔH, in. H_2O
	$\frac{V_w P_b (t_m + 460)}{V_m (P_b + \Delta H/13.6)(t_w + 460)}$		$\frac{0.0317 \Delta H}{P_b (t_o + 460)} \left[((t_w + 460)\,\theta)/V_w \right]^2$
	Y	difference	ΔH_a
2.000	1.0083	0.001	1.423
0.500	1.0098	0.002	1.324
3.000	1.0104	0.003	1.355
1.000	1.0075	0.000	1.342
4.000	1.0140	0.007	1.374
1.500	1.0094	0.002	1.364
Average	**1.0099**	0.003	**1.3637**

Y = Ratio of reading of wet test meter to dry test meter; tolerance for individual values ± 0.02 from average

ΔH_a = Orifice pressure differential that equates to 0.75 cfm of air @ 68 °F and 29.92 in. Hg, measured in in. H_2O; tolerance for individual values +-0.02 from average

INITIALS: C.R.

ACCEPTABLE? (Yes) / No (circle one)

Air Consulting & Engineering, Inc
Meter Box Post Test Calibration

Date: August 5, 2008			Metering System Identification:				Meter Box # 3
Barometric Pressure:, P_b=	30.11	in.Hg	Calibrated By:			Charles Reshard	
Orifice Manometer Setting ΔH in.H_2O	Spirometer (Wet Meter) gas volume V_w ft^3	Dry Gas meter volume V_m ft^3	Temperatures				Time υ min
			Spirometer (Wet Meter) t_w °F	Dry Gas Meter. Inlet t_i °F	Outlet t_o °F	Average t_m °F	
1.800	5.715	5.818	57.000	79.0	79.0	79.0	7.00
1.800	5.683	5.778	57.000	80.0	80.0	80.0	7.00
1.800	5.686	5.765	57.000	81.0	81.0	81.0	7.00

Calculations

Δ H, in. H_2O	Y (meter ratio)		Δ H, in. H_2O
	$\frac{V_w P_b (t_m + 460)}{V_m (P_b + \Delta H/13.6)(t_w + 460)}$		$\frac{0.0317 \Delta H}{P_b (t_o + 460)} \left[((t_w + 460)\,\theta)/V_w \right]^2$
	Y	difference	ΔH_a
1.800	1.0196	0.0037	1.4099
1.800	1.0228	0.0005	1.4231
1.800	1.0276	0.0042	1.4190
Average	**1.0233**	**0.0028**	**1.4173**

Y = Ratio of reading of wet test meter to dry test meter; tolerance for individual values 6 0.02 from average

ΔH_a = Orifice pressure differential that equates to 0.75 cfm of air @ 68 °F and 29.92 in. Hg, measured in in. H_2O; tolerance for individual values +-0.02 from average

PLANT: City Of Tallahassee **SOURCE:** Hopkins Unit HB2A

TEST METHOD : CTM-027 **TS:** 250

PROBE # 90 **PYROMETER # :** 3 **MAX VAC.:** 7

PRETEST Y: 1.0099 **TEST DATE:** July 10, 2008

INITIALS: CR **ACCEPTABLE?** (Yes) No (circle one)

AIR CONSULTING AND ENGINEERING, INC.

PITOT TUBE CALIBRATION

DATE CALIBRATED 03-Nov-07 CALIBRATED BY Rick Hyre PITOT TUBE NUMBER 90

IS PITOT TUBE ASSEMBLY LEVEL YES / NO (circle) ARE PITOT TUBE OPENING DAMAGED YES / NO (circle)

α_1 = 1.00 ° (<10°), α_2 = 2.00 ° (<10°), β_1 = 0.50 ° (<5°), β_2 = 1.00 ° (<5°)

γ = 1.00 ° υ = 0.00 ° A = 1.156 in. = (Pa + Pb)

Z = A sin γ = 0.020 in.; <0.125 in.

W = A sin υ = 0.000 in.; <0.031 in.

Pa 0.578 in. Pb 0.578 in. Dt 0.375 IN.

Was calibration required? YES / NO (circle)

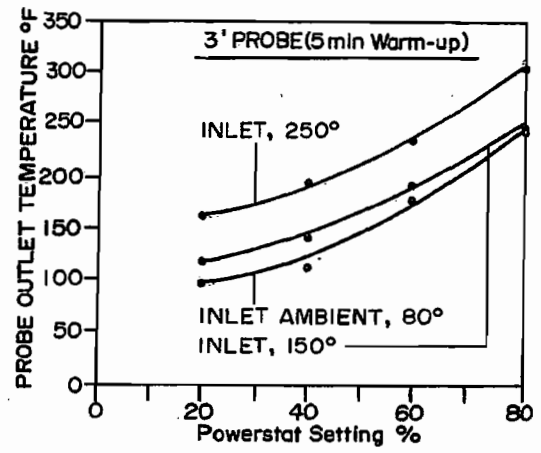
THERMOCOUPLE CALIBRATION

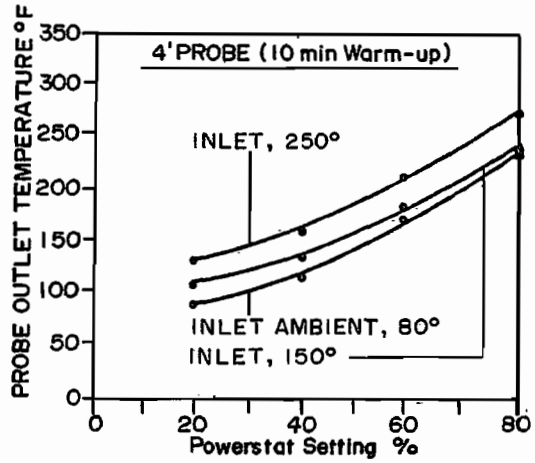
SOURCE	GLASS THERMOMETER WITH NBS MERCURY (F)	PYROMETER DEGREES (F)	DEGREE DIFFERENCE	PERCENT DIFFERENCE
ICE BATH	35	37	-2	-0.40404
AMBIENT	76	78	-2	-0.37313
HOT OVEN	407	404	3	0.346021

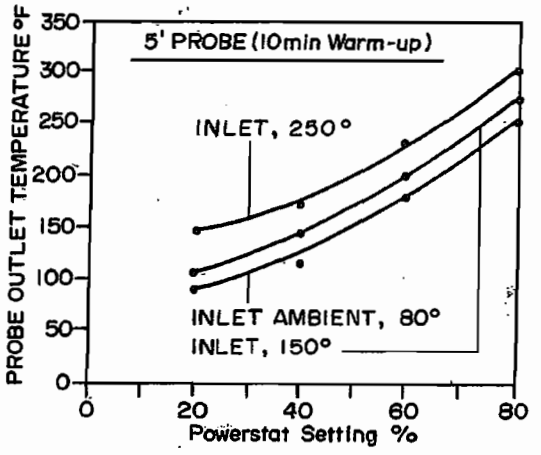
FDEP - MAXIMUM 5 DEGREE DIFFERENCE

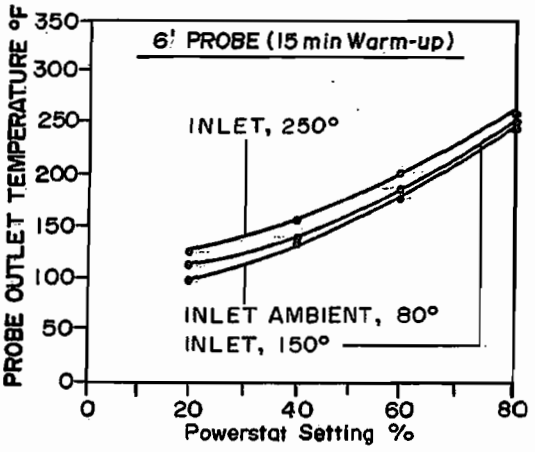
EPA - $\frac{\text{(REF.TEMP.F+460) - (PYROMETER TEMP.F+460)}}{\text{(REF.TEMP.F+460)}}$ X 100 SPECIFICATION PERCENT DIFFERENCE LESS THAN 1.5 PERCENT

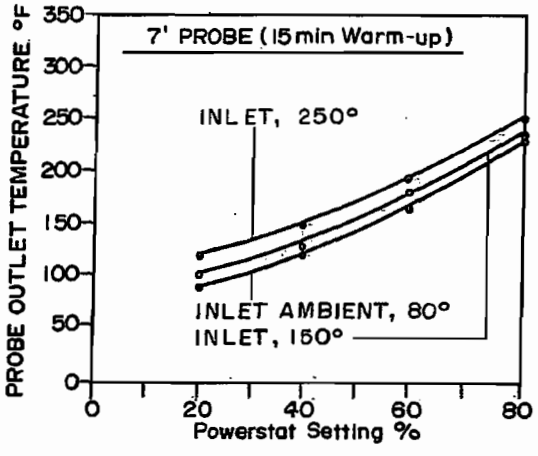
ACCEPTABLE YES / NO (CIRCLE)











NOTE: Flow rate held constant at 0.75; 50% change in flow rate has little effect on probe temperature.

PROBE GRAPH

AIR CONSULTING
and
ENGINEERING

APPENDIX E

PRODUCTION DATA AND FUEL ANALYSIS

ALL TIMES
CENTRAL TIME ZONE

NH3 SLIP TESTING

Record#	DATE	TIME	GEN11	GAS12	NOXD13	CO_14
1	07/10/2008	100000	239.000	1627.540	4.700	0.400
2	07/10/2008	110000	238.710	1627.240	4.700	0.400
3	07/10/2008	120000	239.270	1628.890	4.800	0.400
4	07/10/2008	130000	239.130	1627.010	4.800	0.400
5	07/10/2008	140000	238.870	1623.980	4.800	0.400
6	07/10/2008	150000	238.870	1623.700	4.800	0.500
7	/ /					
8	/ /	AVE	238.980	1626.390	4.800	0.400

HEAT INPUT - 'mmbtu's

RUN 1 - 1681.7
RUN 2 - 1680.7
RUN 3 - 1676.6

Florida Gas Transmission Company, LLC

Date Requested: Jul 14 2008 1

The data contained herein is preliminary data and therefore should be used for contemporaneous operational purposes onl change at month end. This data is provided to assist our customers in tracking their gas usage as closely as possible on a i information contained on this web page is not to be considered billable information. This data will be subject to additional modification prior to billing. Florida Gas is not responsible for any reliance on this information by any party.

FGT Chromatograph By Id

Station Name: 8030 - PERRY STREAM #1 36" WEST LEG- SYSTEM

download – tab-delimited file

Date	BTU	CO2	N2	Grav	Methan	Ethane	Propan	Ibutan	Nbutan	Ipenta	Npenta	C6	C7	C8	
07/13/2008	1030	1.101	0.497	0.588	95.509	2.216	0.370	0.081	0.086	0.038	0.026	0.078	0.000	0.000	(
07/12/2008	1030	1.064	0.499	0.587	95.589	2.173	0.369	0.081	0.086	0.037	0.025	0.076	0.000	0.000	(
07/11/2008	1033	1.025	0.486	0.589	95.286	2.468	0.430	0.086	0.088	0.035	0.024	0.072	0.000	0.000	(
07/10/2008	1033	1.025	0.486	0.589	95.286	2.468	0.430	0.086	0.088	0.035	0.024	0.072	0.000	0.000	(
07/09/2008	1033	1.146	0.533	0.591	95.093	2.445	0.444	0.093	0.098	0.041	0.028	0.078	0.000	0.000	(
07/08/2008	1031	1.125	0.526	0.589	95.285	2.327	0.407	0.088	0.093	0.041	0.028	0.080	0.000	0.000	(
07/07/2008	1030	1.090	0.530	0.588	95.411	2.274	0.388	0.085	0.087	0.038	0.025	0.073	0.000	0.000	(
07/06/2008	1031	1.120	0.550	0.589	95.280	2.324	0.406	0.089	0.090	0.039	0.026	0.076	0.000	0.000	(
07/05/2008	1031	1.123	0.576	0.590	95.242	2.316	0.417	0.096	0.090	0.039	0.026	0.076	0.000	0.000	(
07/04/2008	1030	1.065	0.543	0.588	95.487	2.218	0.385	0.083	0.085	0.037	0.025	0.073	0.000	0.000	(
07/03/2008	1031	1.068	0.525	0.589	95.348	2.339	0.412	0.085	0.088	0.037	0.025	0.073	0.000	0.000	(
07/02/2008	1030	1.047	0.498	0.587	95.636	2.147	0.371	0.081	0.085	0.037	0.025	0.073	0.000	0.000	(
07/01/2008	1029	1.050	0.487	0.586	95.709	2.104	0.356	0.080	0.082	0.036	0.024	0.072	0.000	0.000	(
06/30/2008	1029	1.021	0.477	0.586	95.733	2.115	0.359	0.081	0.083	0.036	0.024	0.071	0.000	0.000	(
06/29/2008	1030	1.031	0.484	0.587	95.596	2.214	0.377	0.083	0.084	0.036	0.024	0.072	0.000	0.000	(
06/28/2008	1030	1.019	0.486	0.586	95.692	2.136	0.368	0.081	0.084	0.037	0.025	0.071	0.000	0.000	(
06/27/2008	1031	0.996	0.471	0.587	95.654	2.169	0.408	0.086	0.087	0.036	0.024	0.069	0.000	0.000	(
06/26/2008	1033	1.006	0.474	0.588	95.408	2.329	0.459	0.095	0.096	0.037	0.025	0.071	0.000	0.000	(
06/25/2008	1031	1.088	0.492	0.588	95.411	2.285	0.407	0.090	0.089	0.038	0.025	0.074	0.000	0.000	(
06/24/2008	1030	1.077	0.500	0.587	95.519	2.232	0.371	0.082	0.084	0.037	0.024	0.074	0.000	0.000	(
06/23/2008	1029	1.043	0.515	0.587	95.600	2.185	0.366	0.079	0.082	0.036	0.024	0.071	0.000	0.000	(
06/22/2008	1030	1.086	0.488	0.588	95.505	2.242	0.373	0.083	0.086	0.038	0.025	0.075	0.000	0.000	(
06/21/2008	1029	1.069	0.459	0.587	95.655	2.171	0.353	0.080	0.082	0.036	0.024	0.071	0.000	0.000	(
06/20/2008	1030	1.057	0.469	0.587	95.665	2.141	0.368	0.082	0.085	0.037	0.024	0.073	0.000	0.000	(
06/19/2008	1031	1.036	0.458	0.587	95.657	2.149	0.393	0.087	0.087	0.037	0.024	0.072	0.000	0.000	(
06/18/2008	1030	1.077	0.475	0.587	95.591	2.156	0.386	0.086	0.088	0.039	0.025	0.076	0.000	0.000	(
06/17/2008	1029	1.090	0.499	0.587	95.585	2.148	0.367	0.083	0.085	0.039	0.026	0.078	0.000	0.000	(
06/16/2008	1029	1.099	0.505	0.588	95.573	2.141	0.370	0.082	0.085	0.039	0.026	0.078	0.000	0.000	(
06/15/2008	1030	1.089	0.497	0.587	95.595	2.131	0.371	0.083	0.086	0.040	0.027	0.080	0.000	0.000	(
06/14/2008	1031	1.100	0.498	0.589	95.412	2.277	0.394	0.086	0.089	0.040	0.026	0.078	0.000	0.000	(
06/13/2008	1031	1.083	0.485	0.588	95.469	2.278	0.375	0.083	0.086	0.039	0.026	0.075	0.000	0.000	(
06/12/2008	1031	1.093	0.479	0.588	95.471	2.260	0.380	0.085	0.087	0.040	0.026	0.078	0.000	0.000	(
06/11/2008	1031	1.086	0.491	0.588	95.450	2.280	0.377	0.084	0.087	0.040	0.026	0.078	0.000	0.000	(
06/10/2008	1031	1.089	0.494	0.588	95.461	2.249	0.387	0.087	0.088	0.040	0.026	0.079	0.000	0.000	(
06/09/2008	1031	1.059	0.489	0.588	95.475	2.267	0.390	0.087	0.089	0.040	0.026	0.079	0.000	0.000	(
06/08/2008	1032	1.073	0.472	0.588	95.454	2.283	0.392	0.088	0.091	0.041	0.027	0.080	0.000	0.000	(
06/07/2008	1032	1.062	0.472	0.589	95.413	2.319	0.403	0.088	0.092	0.041	0.027	0.081	0.000	0.000	(
06/06/2008	1031	1.090	0.465	0.588	95.476	2.252	0.391	0.087	0.091	0.041	0.027	0.081	0.000	0.000	(
06/05/2008	1030	1.060	0.440	0.586	95.722	2.122	0.350	0.082	0.084	0.039	0.025	0.076	0.000	0.000	(
06/04/2008	1030	1.091	0.489	0.588	95.469	2.273	0.373	0.084	0.086	0.038	0.025	0.073	0.000	0.000	(
06/02/2008	1029	1.044	0.414	0.585	95.878	2.031	0.338	0.079	0.080	0.037	0.024	0.075	0.000	0.000	(
06/01/2008	1029	1.044	0.414	0.585	95.878	2.031	0.338	0.079	0.080	0.037	0.024	0.075	0.000	0.000	(

APPENDIX F

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

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Charles Reshard
Field Team Leader
Laboratory Analysis
Post Test Calibration

Sid Carter
Field Testing

Dagmar Fick
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APPENDIX G

NOX AND CO CEMS DATA

10-Jul-08 HH3 SLIP ST			10-Jul-08				
			NOx ppm	NOx (ppm)	CO ppm	CO ppm	O2 (%)
Record#	DATE	TIME	uncorrected	corrected	uncorrected	corrected	
1	7/10/2008	101500	5.1	4.1	0.5	0.40	13.59
2	7/10/2008	101600	5.1	4.1	0.4	0.32	13.59
3	7/10/2008	101700	5.1	4.1	0.5	0.40	13.59
4	7/10/2008	101800	5.2	4.2	0.5	0.40	13.59
5	7/10/2008	101900	5.2	4.2	0.4	0.32	13.58
6	7/10/2008	102000	5.3	4.3	0.5	0.40	13.58
7	7/10/2008	102100	5.3	4.3	0.5	0.40	13.59
8	7/10/2008	102200	5.4	4.4	0.4	0.32	13.59
9	7/10/2008	102300	5.5	4.4	0.4	0.32	13.59
10	7/10/2008	102400	5.6	4.5	0.4	0.32	13.58
11	7/10/2008	102500	5.6	4.5	0.4	0.32	13.58
12	7/10/2008	102600	5.6	4.5	0.4	0.32	13.59
13	7/10/2008	102700	5.7	4.6	0.5	0.40	13.59
14	7/10/2008	102800	5.8	4.6	0.4	0.32	13.59
15	7/10/2008	102900	5.8	4.7	0.5	0.40	13.59
16	7/10/2008	103000	5.9	4.8	0.4	0.32	13.59
17	7/10/2008	103100	6	4.8	0.5	0.40	13.61
18	7/10/2008	103200	6.1	4.9	0.5	0.40	13.61
19	7/10/2008	103300	6.1	4.9	0.5	0.40	13.61
20	7/10/2008	103400	6.1	4.9	0.4	0.32	13.61
21	7/10/2008	103500	6.1	4.9	0.4	0.32	13.60
22	7/10/2008	103600	6.1	4.9	0.5	0.40	13.60
23	7/10/2008	103700	6.1	4.9	0.5	0.40	13.60
24	7/10/2008	103800	6.2	5	0.5	0.40	13.60
25	7/10/2008	103900	6.2	5	0.4	0.32	13.60
26	7/10/2008	104000	6.2	5	0.5	0.40	13.60
27	7/10/2008	104100	6.2	5	0.4	0.32	13.60
28	7/10/2008	104200	6.2	5	0.4	0.32	13.60
29	7/10/2008	104300	6.2	5	0.4	0.32	13.60
30	7/10/2008	104400	6.2	5	0.5	0.40	13.60
31	7/10/2008	104500	6.2	5	0.5	0.40	13.60
32	7/10/2008	104600	6.2	5	0.5	0.40	13.60
33	7/10/2008	104700	6.2	5	0.4	0.32	13.60
34	7/10/2008	104800	6.2	5	0.4	0.32	13.60
35	7/10/2008	104900	6.1	4.9	0.4	0.32	13.60
36	7/10/2008	105000	6.1	4.9	0.4	0.32	13.60
37	7/10/2008	105100	6.1	4.9	0.5	0.40	13.60
38	7/10/2008	105200	6.1	4.9	0.4	0.32	13.60
39	7/10/2008	105300	6.1	4.9	0.4	0.32	13.59
40	7/10/2008	105400	6	4.8	0.4	0.32	13.59
41	7/10/2008	105500	6	4.8	0.5	0.40	13.59
42	7/10/2008	105600	5.9	4.8	0.5	0.40	13.59
43	7/10/2008	105700	5.9	4.8	0.5	0.40	13.59
44	7/10/2008	105800	5.9	4.8	0.5	0.40	13.59
45	7/10/2008	105900	5.9	4.8	0.4	0.32	13.59
46	7/10/2008	110000	5.8	4.8	0.5	0.40	13.59
47	7/10/2008	110100	5.9	4.8	0.4	0.32	13.60
48	7/10/2008	110200	5.9	4.8	0.4	0.32	13.61
49	7/10/2008	110300	5.9	4.8	0.4	0.32	13.61

10-Jul-08 HH3 SLIP ST			10-Jul-08				
			NOx ppm	NOx (ppm)	CO ppm	CO ppm	O2 (%)
Record#	DATE	TIME	uncorrected	corrected	uncorrected	corrected	
50	7/10/2008	110400	5.9	4.8	0.4	0.32	13.61
51	7/10/2008	110500	5.9	4.8	0.4	0.32	13.60
52	7/10/2008	110600	5.8	4.7	0.3	0.24	13.61
53	7/10/2008	110700	5.8	4.7	0.5	0.40	13.61
54	7/10/2008	110800	5.8	4.7	0.4	0.32	13.61
55	7/10/2008	110900	5.8	4.7	0.4	0.32	13.61
56	7/10/2008	111000	5.8	4.7	0.4	0.32	13.60
57	7/10/2008	111100	5.8	4.7	0.4	0.32	13.60
58	7/10/2008	111200	5.8	4.7	0.4	0.32	13.59
59	7/10/2008	111300	5.8	4.7	0.5	0.40	13.59
60	7/10/2008	111400	5.8	4.7	0.4	0.32	13.59
61	7/10/2008	111500	5.8	4.7	0.5	0.40	13.59
62	7/10/2008	111600	5.8	4.7	0.4	0.32	13.59
63	7/10/2008	111700	5.9	4.8	0.4	0.32	13.59
64	7/10/2008	111800	5.9	4.8	0.4	0.32	13.59
65	7/10/2008	111900	5.9	4.8	0.4	0.32	13.60
66	7/10/2008	112000	5.9	4.8	0.4	0.32	13.60
67	7/10/2008	112100	5.9	4.8	0.4	0.32	13.60
68	7/10/2008	112200	5.9	4.8	0.5	0.40	13.60
69	7/10/2008	112300	6	4.8	0.4	0.32	13.60
70	7/10/2008	112400	5.9	4.8	0.5	0.40	13.59
71	7/10/2008	112500	5.9	4.8	0.5	0.40	13.60
72	7/10/2008	112600	5.9	4.8	0.5	0.40	13.60
73	7/10/2008	112700	5.8	4.7	0.5	0.40	13.60
74	7/10/2008	112800	5.8	4.7	0.4	0.32	13.60
75	7/10/2008	112900	5.8	4.7	0.4	0.32	13.60
76	7/10/2008	113000	5.8	4.7	0.4	0.32	13.59
77	7/10/2008	113100	5.8	4.7	0.4	0.32	13.59
78	7/10/2008	113200	5.8	4.7	0.4	0.32	13.59
79	7/10/2008	113300	5.8	4.7	0.4	0.32	13.59
80	7/10/2008	113400	5.8	4.7	0.4	0.32	13.60
81	7/10/2008	113500	5.8	4.7	0.4	0.32	13.59
82	7/10/2008	113600	5.8	4.7	0.4	0.32	13.59
83	7/10/2008	113700	5.8	4.7	0.5	0.40	13.60
84	7/10/2008	113800	5.9	4.8	0.5	0.40	13.60
85	7/10/2008	113900	5.9	4.8	0.5	0.40	13.60
86	7/10/2008	114000	6	4.8	0.4	0.32	13.59
87	7/10/2008	114100	6	4.8	0.3	0.24	13.60
88	7/10/2008	114200	6	4.8	0.5	0.40	13.60
89	7/10/2008	114300	6.1	4.9	0.4	0.32	13.60
90	7/10/2008	114400	6.1	4.8	0.5	0.40	13.59
91	7/10/2008	114500	6	4.8	0.4	0.32	13.59
92	7/10/2008	114600	6	4.9	0.4	0.32	13.59
93	7/10/2008	114700	6	4.8	0.4	0.32	13.59
94	7/10/2008	114800	6	4.8	0.3	0.24	13.59
95	7/10/2008	114900	6	4.8	0.4	0.32	13.59
96	7/10/2008	115000	6	4.8	0.4	0.32	13.59
97	7/10/2008	115100	5.9	4.8	0.5	0.40	13.59
98	7/10/2008	115200	6	4.8	0.4	0.32	13.60

10-Jul-08 HH3 SLIP ST			10-Jul-08				
Record#	DATE	TIME	NOx ppm uncorrected	NOx (ppm) corrected	CO ppm uncorrected	CO ppm corrected	O2 (%)
99	7/10/2008	115300	6	4.8	0.4	0.32	13.60
100	7/10/2008	115400	6	4.8	0.4	0.32	13.60
101	7/10/2008	115500	6	4.8	0.4	0.32	13.60
102	7/10/2008	115600	6	4.8	0.5	0.40	13.59
103	7/10/2008	115700	6	4.8	0.5	0.40	13.60
104	7/10/2008	115800	6	4.9	0.4	0.32	13.60
105	7/10/2008	115900	6	4.9	0.4	0.32	13.60
106	7/10/2008	120000	6	4.9	0.4	0.32	13.60
107	7/10/2008	120100	5.9	4.8	0.4	0.32	13.60
108	7/10/2008	120200	5.9	4.8	0.4	0.32	13.59
109	7/10/2008	120300	5.9	4.8	0.4	0.32	13.60
110	7/10/2008	120400	5.9	4.8	0.4	0.32	13.60
111	7/10/2008	120500	5.9	4.8	0.4	0.32	13.60
112	7/10/2008	120600	5.9	4.8	0.4	0.32	13.59
113	7/10/2008	120700	5.8	4.7	0.4	0.32	13.60
114	7/10/2008	120800	5.9	4.8	0.5	0.40	13.60
115	7/10/2008	120900	5.9	4.8	0.5	0.40	13.60
116	7/10/2008	121000	5.9	4.8	0.4	0.32	13.60
117	7/10/2008	121100	5.9	4.8	0.4	0.32	13.60
118	7/10/2008	121200	5.9	4.8	0.5	0.40	13.59
119	7/10/2008	121300	5.8	4.7	0.4	0.32	13.59
120	7/10/2008	121400	5.8	4.7	0.5	0.40	13.60
121	7/10/2008	121500	5.8	4.7	0.5	0.40	13.60
122	7/10/2008	121600	5.8	4.7	0.4	0.32	13.59
123	7/10/2008	121700	5.8	4.7	0.4	0.32	13.58
124	7/10/2008	121800	5.9	4.8	0.5	0.40	13.59
125	7/10/2008	121900	5.9	4.8	0.5	0.40	13.58
126	7/10/2008	122000	5.9	4.8	0.4	0.32	13.59
127	7/10/2008	122100	5.9	4.8	0.4	0.32	13.58
128	7/10/2008	122200	5.8	4.7	0.5	0.40	13.59
129	7/10/2008	122300	5.8	4.7	0.4	0.32	13.59
130	7/10/2008	122400	5.8	4.7	0.5	0.40	13.59
131	7/10/2008	122500	5.8	4.7	0.5	0.40	13.60
132	7/10/2008	122600	5.9	4.8	0.5	0.40	13.60
133	7/10/2008	122700	5.9	4.8	0.5	0.40	13.60
134	7/10/2008	122800	5.9	4.8	0.5	0.40	13.61
135	7/10/2008	122900	5.9	4.8	0.5	0.40	13.61
136	7/10/2008	123000	5.8	4.8	0.4	0.32	13.61
137	7/10/2008	123100	5.9	4.8	0.5	0.40	13.60
138	7/10/2008	123200	5.9	4.8	0.4	0.32	13.60
139	7/10/2008	123300	5.9	4.8	0.5	0.40	13.60
140	7/10/2008	123400	5.9	4.8	0.4	0.32	13.60
141	7/10/2008	123500	5.9	4.8	0.5	0.40	13.60
142	7/10/2008	123600	5.9	4.8	0.4	0.32	13.59
143	7/10/2008	123700	5.9	4.8	0.5	0.40	13.59
144	7/10/2008	123800	6	4.8	0.5	0.40	13.59
145	7/10/2008	123900	6	4.8	0.5	0.40	13.59
146	7/10/2008	124000	6	4.8	0.5	0.40	13.59
147	7/10/2008	124100	6	4.8	0.4	0.32	13.58

10-Jul-08 HH3 SLIP ST			10-Jul-08				
Record#	DATE	TIME	NOx ppm uncorrected	NOx (ppm) corrected	CO ppm uncorrected	CO ppm corrected	O2 (%)
148	7/10/2008	124200	5.9	4.8	0.5	0.40	13.58
149	7/10/2008	124300	5.9	4.8	0.4	0.32	13.58
150	7/10/2008	124400	5.9	4.8	0.5	0.40	13.58
151	7/10/2008	124500	5.9	4.8	0.4	0.32	13.58
152	7/10/2008	124600	5.9	4.8	0.4	0.32	13.59
153	7/10/2008	124700	5.9	4.8	0.5	0.40	13.59
154	7/10/2008	124800	5.9	4.8	0.4	0.32	13.59
155	7/10/2008	124900	5.9	4.8	0.5	0.40	13.59
156	7/10/2008	125000	5.9	4.8	0.5	0.40	13.59
157	7/10/2008	125100	5.9	4.8	0.4	0.32	13.59
158	7/10/2008	125200	5.8	4.8	0.4	0.32	13.58
159	7/10/2008	125300	5.8	4.7	0.4	0.32	13.58
160	7/10/2008	125400	5.8	4.7	0.4	0.32	13.58
161	7/10/2008	125500	5.8	4.7	0.5	0.40	13.58
162	7/10/2008	125600	5.8	4.7	0.4	0.32	13.58
163	7/10/2008	125700	5.8	4.7	0.4	0.32	13.58
164	7/10/2008	125800	5.8	4.7	0.4	0.32	13.58
165	7/10/2008	125900	5.8	4.7	0.5	0.40	13.59
166	7/10/2008	130000	5.8	4.7	0.5	0.40	13.58
167	7/10/2008	130100	5.9	4.8	0.5	0.40	13.59
168	7/10/2008	130200	5.9	4.8	0.5	0.40	13.58
169	7/10/2008	130300	5.9	4.8	0.4	0.32	13.58
170	7/10/2008	130400	6	4.8	0.4	0.32	13.58
171	7/10/2008	130500	6	4.8	0.4	0.32	13.58
172	7/10/2008	130600	6	4.8	0.5	0.40	13.59
173	7/10/2008	130700	6	4.8	0.5	0.40	13.59
174	7/10/2008	130800	6	4.8	0.5	0.40	13.59
175	7/10/2008	130900	6	4.8	0.5	0.40	13.58
176	7/10/2008	131000	6	4.8	0.4	0.32	13.58
177	7/10/2008	131100	6	4.8	0.5	0.40	13.58
178	7/10/2008	131200	6	4.8	0.5	0.40	13.57
179	7/10/2008	131300	5.9	4.8	0.4	0.32	13.58
180	7/10/2008	131400	5.9	4.8	0.4	0.32	13.58
181	7/10/2008	131500	5.9	4.8	0.5	0.40	13.58
182	7/10/2008	131600	5.9	4.8	0.5	0.40	13.59
183	7/10/2008	131700	5.9	4.8	0.4	0.32	13.58
184	7/10/2008	131800	6	4.8	0.4	0.32	13.59
185	7/10/2008	131900	6	4.8	0.5	0.40	13.58
186	7/10/2008	132000	6	4.8	0.4	0.32	13.58
187	7/10/2008	132100	6	4.8	0.4	0.32	13.59
188	7/10/2008	132200	6	4.8	0.5	0.40	13.58
189	7/10/2008	132300	6	4.8	0.4	0.32	13.58
190	7/10/2008	132400	6	4.8	0.5	0.40	13.59
191	7/10/2008	132500	6	4.8	0.5	0.40	13.59
192	7/10/2008	132600	5.9	4.8	0.5	0.40	13.58
193	7/10/2008	132700	5.9	4.8	0.4	0.32	13.58
194	7/10/2008	132800	5.9	4.8	0.4	0.32	13.58
195	7/10/2008	132900	5.9	4.8	0.5	0.40	13.58
196	7/10/2008	133000	5.9	4.8	0.4	0.32	13.57

10-Jul-08 HH3 SLIP ST			10-Jul-08				
			NOx ppm	NOx (ppm)	CO ppm	CO ppm	O2 (%)
Record#	DATE	TIME	uncorrected	corrected	uncorrected	corrected	
197	7/10/2008	133100	5.9	4.8	0.5	0.40	13.58
198	7/10/2008	133200	5.9	4.8	0.4	0.32	13.58
199	7/10/2008	133300	5.9	4.8	0.4	0.32	13.58
200	7/10/2008	133400	5.9	4.8	0.4	0.32	13.58
201	7/10/2008	133500	5.9	4.8	0.4	0.32	13.58
202	7/10/2008	133600	5.9	4.8	0.4	0.32	13.58
203	7/10/2008	133700	5.9	4.8	0.4	0.32	13.58
204	7/10/2008	133800	5.9	4.8	0.4	0.32	13.58
205	7/10/2008	133900	5.9	4.8	0.5	0.40	13.58
206	7/10/2008	134000	5.8	4.7	0.4	0.32	13.59
207	7/10/2008	134100	5.9	4.8	0.5	0.40	13.59
208	7/10/2008	134200	5.9	4.8	0.4	0.32	13.59
209	7/10/2008	134300	5.9	4.8	0.4	0.32	13.58
210	7/10/2008	134400	5.9	4.8	0.5	0.40	13.58
211	7/10/2008	134500	5.8	4.8	0.4	0.32	13.58
212	7/10/2008	134600	5.8	4.7	0.4	0.32	13.58
213	7/10/2008	134700	5.8	4.7	0.4	0.32	13.57
214	7/10/2008	134800	5.8	4.7	0.4	0.32	13.58
215	7/10/2008	134900	5.8	4.7	0.5	0.40	13.58
216	7/10/2008	135000	5.9	4.8	0.4	0.32	13.58
217	7/10/2008	135100	5.9	4.8	0.4	0.32	13.58
218	7/10/2008	135200	5.9	4.8	0.4	0.32	13.58
219	7/10/2008	135300	5.9	4.8	0.5	0.40	13.59
220	7/10/2008	135400	5.9	4.8	0.5	0.40	13.58
221	7/10/2008	135500	5.9	4.8	0.4	0.32	13.58
222	7/10/2008	135600	5.9	4.8	0.5	0.40	13.58
223	7/10/2008	135700	5.9	4.8	0.4	0.32	13.58
224	7/10/2008	135800	5.9	4.8	0.5	0.40	13.58
225	7/10/2008	135900	5.8	4.8	0.5	0.40	13.58
226	7/10/2008	140000	5.8	4.7	0.4	0.32	13.58
227	7/10/2008	140100	5.8	4.7	0.5	0.40	13.58
228	7/10/2008	140200	5.8	4.7	0.5	0.40	13.58
229	7/10/2008	140300	5.8	4.7	0.4	0.32	13.58
230	7/10/2008	140400	5.8	4.8	0.5	0.40	13.58
231	7/10/2008	140500	5.9	4.8	0.4	0.32	13.58
232	7/10/2008	140600	5.9	4.8	0.5	0.40	13.58
233	7/10/2008	140700	5.9	4.8	0.5	0.40	13.58
234	7/10/2008	140800	5.9	4.8	0.5	0.40	13.58
235	7/10/2008	140900	5.9	4.8	0.5	0.40	13.58
236	7/10/2008	141000	5.9	4.8	0.5	0.40	13.58
237	7/10/2008	141100	5.9	4.8	0.5	0.40	13.57
238	7/10/2008	141200	5.9	4.8	0.5	0.40	13.58
239	7/10/2008	141300	5.9	4.8	0.4	0.32	13.58
240	7/10/2008	141400	5.9	4.8	0.4	0.32	13.58
241	7/10/2008	141500	5.9	4.8	0.4	0.32	13.58
242	7/10/2008	141600	5.9	4.8	0.4	0.32	13.58
243	7/10/2008	141700	5.9	4.8	0.5	0.40	13.58
244	7/10/2008	141800	5.9	4.8	0.4	0.32	13.57
245	7/10/2008	141900	5.9	4.7	0.4	0.32	13.57

10-Jul-08 HH3 SLIP ST			10-Jul-08				
Record#	DATE	TIME	NOx ppm uncorrected	NOx (ppm) corrected	CO ppm uncorrected	CO ppm corrected	O2 (%)
246	7/10/2008	142000	5.9	4.8	0.5	0.40	13.57
247	7/10/2008	142100	5.9	4.7	0.5	0.40	13.57
248	7/10/2008	142200	5.8	4.8	0.5	0.40	13.57

APPENDIX H

VISIBLE EMISSIONS DATA SHEETS

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Form Number	1	H	P	2	A		Page 1	Of 2
Continued on VEO Form Number								

Method Used (Circle One): (Method 9) 203A 203B Other: _____

Company Name: CITY OF TALLAHASSEE		
Facility Name: ARVAH B. HOPKINS GENERATING STATION		
Street Address: 1125 GEDDIE ROAD		
City: TALLAHASSEE	State: FL	Zip: 32304

Process: COMBUSTION TURBINE 2A	Unit #: HP2A	Operating Mode: 1620 mm BTU/hr
Control Equipment: SCR		Operating Mode: GAS

Describe Emission Point: METAL GRAY CIRCULAR STACK

Height of Emiss. Pt. Start 150' End 150'	Height of Emiss. Pt. Rel. to Observer Start 150' End 150'
Distance to Emiss. Pt. Start 400' End 400'	Direction to Emiss. Pt. (Degrees) Start 112° End 112°
Vertical Angle to Obs. Pt. Start 17° End 17°	Direction to Obs. Pt. (Degrees) Start 112° End 112°

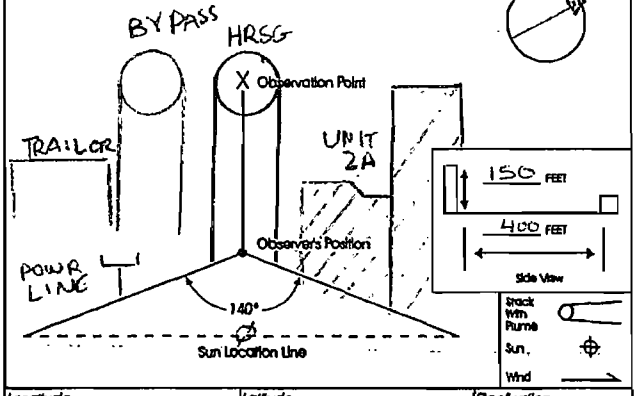
Distance and Direction to Observation Point from Emission Point: Start 1 ft ABOVE STACK End SAME

Describe Emissions: Start CONING	End SAME
Emission Color: Start CLEAR End CLEAR	Water Droplet Plume: Attached ☐ Detached ☐ None ☒

Describe Plume Background: Start SKY		End SAME	
Background Color: Start GRAY/BLU	End SAME	Sky Conditions: Start CLOUDY	End SAME
Wind Speed: Start 1-2 mph	End SAME	Wind Direction: Start NW	End NW
Ambient Temp.: Start 93°	End 93°	Wet Bulb Temp. 83	RH Percent 40 %

Source Layout Sketch

Draw North Arrow: ☐ TN ☒ MN



Longitude	Latitude	Declination
84 24' 01'	30 27 06	-3

Additional Information: WITHOUT DUCT FIRING

Observation Date	Time Zone	Start Time	End Time
07/10/08	EASTERN	14:14	15:13

Min \ Sec	0	15	30	45	Comments
1	Ø	Ø	Ø	Ø	
2	Ø	Ø	Ø	Ø	
3	Ø	Ø	Ø	Ø	
4	Ø	Ø	Ø	Ø	
5	Ø	Ø	Ø	Ø	
6	Ø	Ø	Ø	Ø	
7	Ø	Ø	Ø	Ø	
8	Ø	Ø	Ø	Ø	
9	Ø	Ø	Ø	Ø	
10	Ø	Ø	Ø	Ø	
11	Ø	Ø	Ø	Ø	
12	Ø	Ø	Ø	Ø	
13	Ø	Ø	Ø	Ø	
14	Ø	Ø	Ø	Ø	
15	Ø	Ø	Ø	Ø	
16	Ø	Ø	Ø	Ø	
17	Ø	Ø	Ø	Ø	
18	Ø	Ø	Ø	Ø	
19	Ø	Ø	Ø	Ø	
20	Ø	Ø	Ø	Ø	
21	Ø	Ø	Ø	Ø	
22	Ø	Ø	Ø	Ø	
23	Ø	Ø	Ø	Ø	
24	Ø	Ø	Ø	Ø	
25	Ø	Ø	Ø	Ø	
26	Ø	Ø	Ø	Ø	
27	Ø	Ø	Ø	Ø	
28	Ø	Ø	Ø	Ø	
29	Ø	Ø	Ø	Ø	
30	Ø	Ø	Ø	Ø	

Observer's Name (Print): HAZEM TAMIMI	
Observer's Signature: Hazem Tamimi	Date: 7/10/08
Organization: CITY OF TALLAHASSEE	
Certified By: ETA	Date: 5/14/2008

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One): Method 9 | 203A | 203B | Other: _____

Company Name	CITY OF TALLAHASSEE
Facility Name	ARVAH B. HOPKINS GENERATING STATION
Street Address	1125 GEDDIE ROAD
City	TALLAHASSEE
State	FL
Zip	32304

Process	Unit #	Operating Mode
COMBUSTION TURBINE 2A	HP2A	1626 mm BTU/hr
Control Equipment		Operating Mode
SCR		GAS

Describe Emission Point: METAL GRAY CIRCULAR STACK

	Start	End
Height of Emiss. Pt.	150'	150'
Height of Emiss. Pt. Rel. to Observer	150'	150'
Distance to Emiss. Pt.	400'	400'
Direction to Emiss. Pt. (Degrees)	112°	112°
Vertical Angle to Obs. Pt.	17°	17°
Direction to Obs. Pt. (Degrees)	112°	112°

Distance and Direction to Observation Point from Emission Point: Start 1 ft ABOVE STACK End SAME

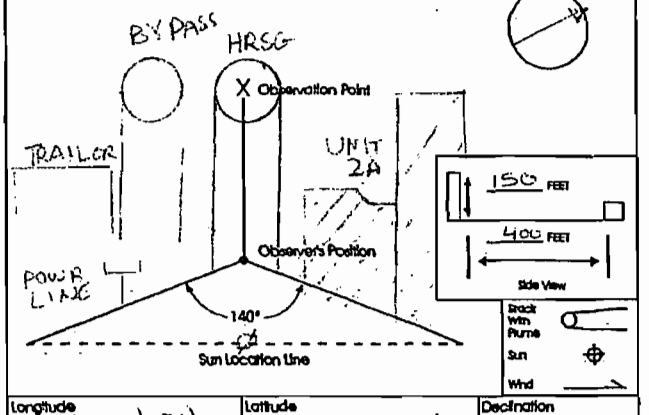
	Start	End
Describe Emissions	CONING	SAME
Emission Color	CLEAR	CLEAR

Water Droplet Plume: Attached ☐ Detached ☐ None ☒

	Start	End
Describe Plume Background	SKY	SAME
Background Color	GRAY/BLUE	SAME
Sky Conditions	CLOUDY	SAME
Wind Speed	1-2 mph	SAME
Wind Direction	NW	NW
Ambient Temp.	93°	93°
Wet Bulb Temp.	83	
RH Percent	69%	

Source Layout Sketch

Draw North Arrow: ☐ TN ☒ MN



Longitude	Latitude	Declination
84 24' 01"	30 27 06	-3

Additional Information: WITHOUT DUCT FIRING

VEOF1.1

Form Number	Page	Of
HP2A	2	2

Continued on VEO Form Number: _____

Observation Date: 07/10/08 | Time Zone: EASTERN | Start Time: 14:14 | End Time: 15:13

Min \ Sec	0	15	30	45	Comments
1	Ø	Ø	Ø	Ø	
2	Ø	Ø	Ø	Ø	
3	Ø	Ø	Ø	Ø	
4	Ø	Ø	Ø	Ø	
5	Ø	Ø	Ø	Ø	
6	Ø	Ø	Ø	Ø	
7	Ø	Ø	Ø	Ø	
8	Ø	Ø	Ø	Ø	
9	Ø	Ø	Ø	Ø	
10	Ø	Ø	Ø	Ø	
11	Ø	Ø	Ø	Ø	
12	Ø	Ø	Ø	Ø	
13	Ø	Ø	Ø	Ø	
14	Ø	Ø	Ø	Ø	
15	Ø	Ø	Ø	Ø	
16	Ø	Ø	Ø	Ø	
17	Ø	Ø	Ø	Ø	
18	Ø	Ø	Ø	Ø	
19	Ø	Ø	Ø	Ø	
20	Ø	Ø	Ø	Ø	
21	Ø	Ø	Ø	Ø	
22	Ø	Ø	Ø	Ø	
23	Ø	Ø	Ø	Ø	
24	Ø	Ø	Ø	Ø	
25	Ø	Ø	Ø	Ø	
26	Ø	Ø	Ø	Ø	
27	Ø	Ø	Ø	Ø	
28	Ø	Ø	Ø	Ø	
29	Ø	Ø	Ø	Ø	
30	Ø	Ø	Ø	Ø	

Observer's Name (Print)	HAZEM TAMIMI
Observer's Signature	Hazem Tamimi — Date: 7/10/08
Organization	CITY OF TALLAHASSEE
Certified By	ETA — Date: 5/14/2008

VISIBLE EMISSIONS EVALUATOR

This is to certify that

HAZEM TAMIMI

met the specifications of Federal Reference Method 9 and qualifies 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, NC. This certificate is valid for six months from date of issue.

363992
CERT NUMBER

5/14/2008
DATE OF SCHOOL

PENSACOLA, FL
SCHOOL LOCATION

11/13/2008
CERTIFICATION EXP DATE

TAM642923
STUDENT ID NUMBER

EASTERN TECHNICAL ASSOCIATES

HAZEM TAMIMI

TAM642923 STUDENT ID NUMBER

met the specifications of Federal Reference Method 9 and qualifies 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, NC. This certificate is valid for six months from date of issue and expires on the date below.

PENSACOLA, FL	5/14/2008	363992
SCHOOL LOCATION	DATE OF SCHOOL	CERT NUMBER
PENF06	11/13/2008	
LAST LECTURE	CERTIFICATION EXP DATE	BEARER

Customer Support
Debbie or Sheila
919-878-3188
www.eta-is-opacity.com

CITY OF TALLAHASSEE

Transmittal Via Email: NWDAir@dep.state.fl.us

September 12, 2008

Rick Bradburn
Northwest District Office
Florida Department of Environmental Protection
160 Governmental Center
Pensacola, Florida 32502-5794

Re: Initial Compliance Test Report
Combustion Turbine No. HP2A (EU-033)
Ammonia Slip and Visible Emissions
Arvah B. Hopkins Generating Station
Facility ID No. 0730003

Dear Mr. Bradburn:

Pursuant to Air Construction Permit No. 0730003-009-AC, the City of Tallahassee (City) submits the attached Initial Compliance Test Report for Combustion Turbine (CTG) No. HP2A (EU-033) at the Arvah B. Hopkins Generating Station.

Specific condition no. 26 of the above permit requires that Hopkins demonstrate compliance with the standards for ammonia slip and visible emissions for the heat recovery and steam generator (HRSG) stack on each authorized fuel while operating. This must occur within 60 days after achieving the maximum production rate. This unit is equipped with supplement duct firing. Prior to the initial compliance testing occurring, the City consulted with the Department on the definition of when the 60-day clock began since the CTG and duct burners were commissioned at different times. Based on this consultation, it was identified that the City had two options with respect to the initial compliance testing on natural gas. Option 1 was to perform a single initial compliance test within 60 days of the CTG achieving 90% or greater of the permitted heat input, with both the CTG and duct burners in operation. Option 2 was to perform two (2) separate tests. One of the tests would be the CTG in operation without the supplemental duct firing and the second test would be with both the CTG and duct burners in operation. Under option 2, there would be individual 60 day time periods, each starting when the respective emissions source (CTG or duct burner) first achieved 90% or greater heat input. The City elected to utilize Option 2 and earlier this year submitted results from the test that was performed while the CTG was at base load and the duct burners were not in operation.

Air Consulting and Engineering (ACE) performed the CTG initial compliance testing on July 30, 2008 with the CTG at base load and the duct burners in operation. The test results indicate the ammonia slip rate was 0.032 ppm @ 15% O_2, which is well below the 5 ppm @ 15% O_2 permitted emission limit.

Also as part of this initial compliance report package, the visible emissions test and as required, emissions of carbon monoxide and oxides of nitrogen that were recorded by the certified continuous emissions monitoring systems (CEMS) during the ammonia slip testing (see Appendix G). Visible emissions were observed concurrently with Run 1 of the ammonia slip test. The highest six-minute period averaged 0% opacity at the heat input rate referenced above. Allowable opacity is 10% (see Appendix H for field data sheets and observer's certification).

Please do not hesitate to contact me at (850) 891-8710, if you have any questions or require additional information.

Sincerely,

Russell a. Wider

Russell Wider, P.E.
Environmental Engineer

Attachments

cc: Cynthia Barber, COT
Rob McGarrah, COT
Triveni Singh, COT
Phil Bucci, COT
John Powell, COT

CITY OF TALLAHASSEE

Responsible Official Certification

I, the undersigned, am the Responsible Official as defined in Chapter 62-210.200, F.A.C., of the Title V source for which this document is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements and information in this document are true, accurate, and complete.

Robert E. McGarrah
Responsible Official

CITY HALL
300 South Adams Street
Tallahassee, FL 32301-1731
850-891-0000
TDD: 711 • Talgov.com

COMPLIANCE TEST REPORT
FOR
AMMONIA SLIP EMISSIONS

ARVAH B. HOPKINS GENERATING STATION
UNIT 2A (EU033)

CITY OF TALLAHASSEE
ELECTRIC UTILITIES

PERMIT NUMBER 0730003-009-AC
NATURAL GAS FIRING

JULY 30, 2008

PREPARED FOR:

CITY OF TALLAHASSEE
ELECTRIC UTILITIES
2602 JACKSON BLUFF ROAD
TALLAHASSEE, FLORIDA 32304

PREPARED BY:

AIR CONSULTING AND ENGINEERING, INC.
2106 NW 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32653

184-08-02

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LIST OF FIGURES

ACE
AIR CONSULTING
& ENGINEERING, INC.

2106 N.W. 67th Place • Suite 4 • Gainesville, Florida • 32653
(352) 335-1889 FAX (352) 335-1891

REPORT CERTIFICATION

To the best of my knowledge, all applicable field and analytical procedures comply with the Florida Department of Environmental Protection requirements and all test data and plant operating data are true and correct.

Dagmar F. Fick

Dagmar Fick, Staff Engineer

9/2/08

Date

To the best of my knowledge, all process data furnished by me for inclusion in this report are true and correct.

Test Coordinator

Date

1.0 INTRODUCTION

On July 30, 2008 Air Consulting and Engineering, Inc. (ACE) conducted ammonia slip emission testing on the exhaust stack of Unit 2A (EU033) at the City of Tallahassee Electric Utilities' Arvah B. Hopkins Generating Station in Tallahassee, Florida. Testing was performed to demonstrate compliance with conditions stated in the Florida Department of Environmental Protection (FDEP) Permit Number 0730003-009-AC. The unit was fired on natural gas.

United States Environmental Protection Agency (EPA) Method CTM-27 was used to determine ammonia emissions emissions.

Mr. John Powell of the City of Tallahassee Electric Utilities provided the production data.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Initial compliance testing for ammonia slip was performed as part the compliance requirements for the repowered unit. Ammonia emissions and stack gas parameters are summarized in Table 1.

Ammonia emissions averaged 0.032 ppm at 15% O_2. The permitted emission limit for ammonia slip is 5 ppm at 15% O_2. Due to mechanical problems during the compliance test runs the unit operated a decreased load. * Please disregard. This is an item from the last report. RAW

Complete emission data, field data sheets and laboratory data are presented in Appendices A, B and C respectively.

Table 1. Ammonia Emission Summary
Unit HB2A
City of Tallahasse - Hopkins Power Plant
Tallahasse, Florida
July 30, 2008

Run Number	Time	Total Flow Rate dscfm	Oxygen %	Ammonia Emissions ppm	Ammonia Emissions ppm @15% O2
1	1237-1345	840324	10.20	0.071	0.039
2	1404-1511	841621	10.10	0.070	0.038
3	1524-1630	850386	10.30	0.036	0.020
Average	—	844110	10.20	0.059	0.032

ppm NH3 @ 15% O2 = ppm NH3 x (20.9-15)/(20.9-%O2)

Allowable Emissions
NH3 = 5 ppmvd @ 15% O2

3.0 PROCESS DESCRIPTION AND OPERATION

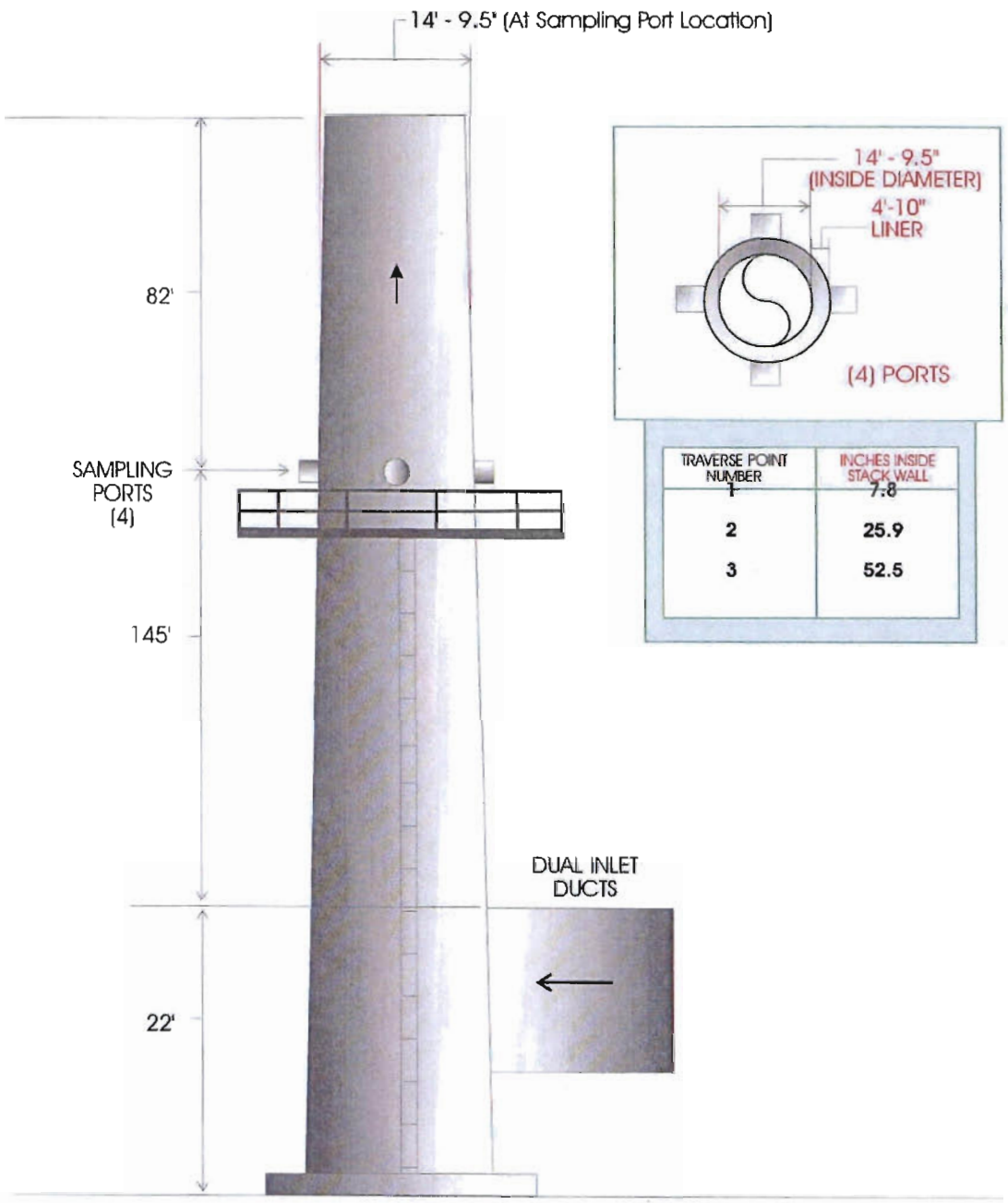
Unit 2 was repowered to include a General Electric 7FA combustion turbine rated at 188 megawatts (MW) and a gas-fired heat recovery steam generator (HRSG) which produces a nominal 238 MW. The maximum design heat input rate is 1899 MMBtu per hour. The turbine can be fired with natural gas and distillate oil. NOx emissions are controlled by a selective catalytic reduction (SCR) system and the dry low-NOx (DLN) combustion system when firing natural gas and water injection when firing distillate oil.

During the compliance test the unit generated 308 MW with a heat input of 2262 MMBtu/hr.

Fuel usage data, fuel analyses, and calculations are provided in Appendix D.

4.0 SAMPLE POINT LOCATION

Figure 1 is a schematic of the Hopkins Unit 2 exhaust stack giving individual sampling point locations.



NOTE: NOT TO SCALE.

SOURCE: AIR CONSULTING & ENGINEERING, INC. (ABHOP) 9/1/00

FIGURE 1
SAMPLING POINT LOCATION
UNIT 2 EXHAUST STACK
A.B. HOPKINS GENERATING STATION
TALLAHASSEE, FLORIDA

5.0 FIELD AND ANALYTICAL PROCEDURES

5.1 Determination of Ammonia Emissions From Stationary Sources (In-Stack Filtration Method)–EPA Method CTM-027

Ammonia samples were collected according to the United States Environmental Protection Agency (EPA) in Method 17 sampling train. A schematic diagram of the sampling train used is shown in Figure 2.

PREPARATION OF EQUIPMENT

1. FILTERS - Gelman type "A" filters, or their equivalents, were inspected, numbered, and placed in a drying oven for two hours at 105 degrees C.

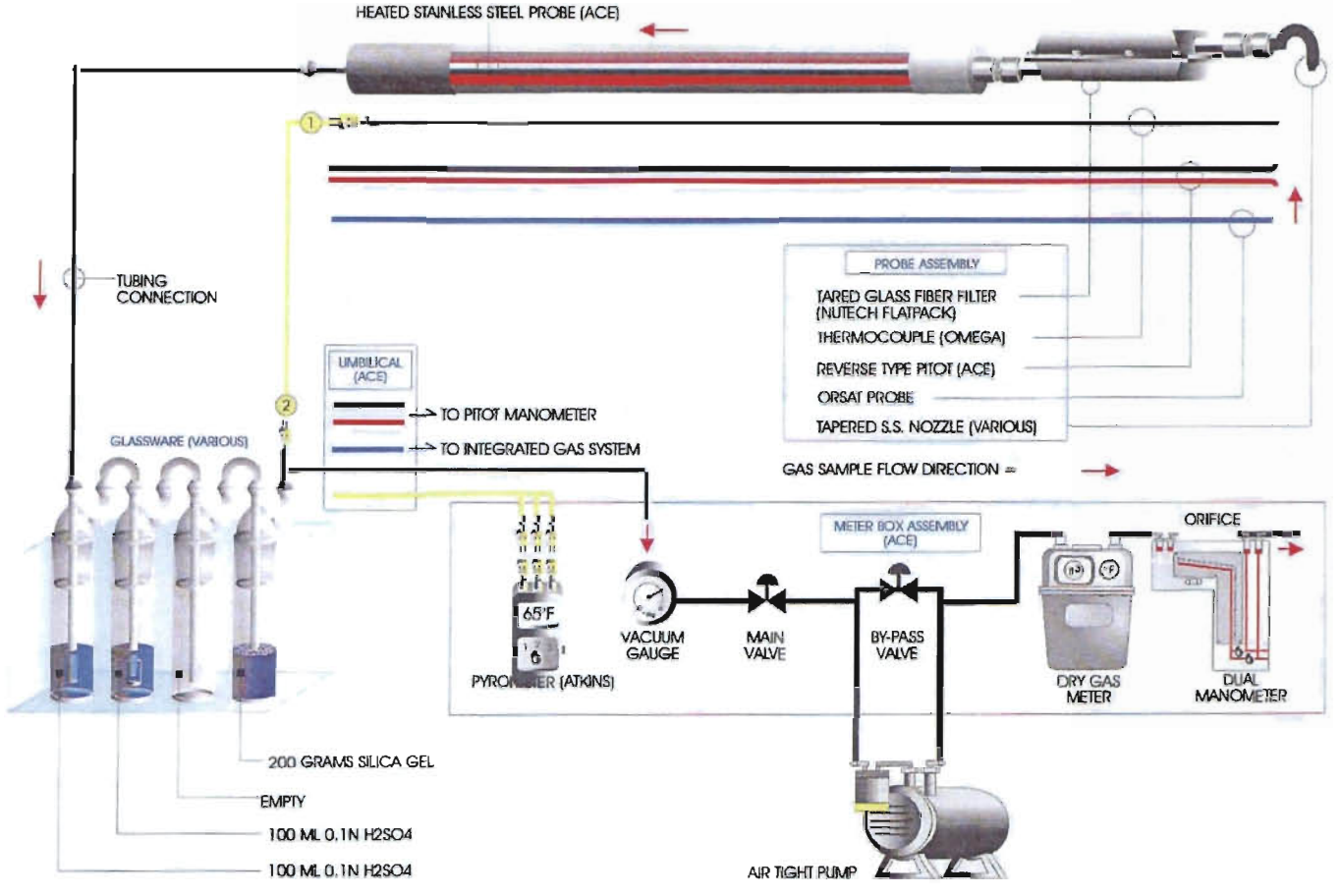
2. NOZZLE, FILTER HOLDER, AND SAMPLING PROBE - The nozzle and in-stack filter holder made of brorosilicate glass or Teflon were washed vigorously with soapy water and brushes, rinsed with distilled water and acetone, and dried prior to the test program. All openings on the sampling equipment were sealed while in transit to the test site.

3. IMPINGERS - The Greenburg-Smith impingers were cleaned with a warm soapy water solution and brushes, rinsed with distilled water and acetone, and dried. The impingers were sealed lightly during transit.

TEST PROCEDURES

Prior to performing the actual sample runs, certain flue and exhaust gas parameters were measured. These preliminary measurements included the average gas temperature; the high, low, and average gas velocity head; the gas moisture content; and the flue dimensions at the point where the tests were being performed. The gas temperature was determined by using a bi-metallic thermocouple and calibrated pyrometer. Velocity head measurements were made with calibrated type "S" pitot tube and an inclined manometer. Velocity head measurements of 0.05 inches H_2O or less were measured utilizing a micromanometer.

The sampling traverse points were selected so that a representative sample could be extracted from the gas stream. The traverse points were located in the center of equal areas, the number of which were dependent upon the distance upstream and downstream from flow disturbances (per EPA Method 1). Each particulate matter test run consisted of sampling for a pre-determined specific time at each traverse point. The type "S" pitot tube and thermocouple were connected to the sampling probe so that instantaneous velocity head and temperature measurements could be made at each point during the test run (EPA Method 2). Nomographs were used to calculate the isokinetic sampling rate at each traverse point during each test run.



FILENAME: (CTM027) 5/05

FIGURE 2.

EPA METHOD CTM027 SAMPLING SCHEMATIC
(DETERMINATION OF AMMONIA EMISSIONS
FROM STATIONARY SOURCES, IN-STACK FILTRATION METHOD)

The gases sampled passed through the following components: a stainless steel nozzle and stainless steel in-stack filter holder; a stainless steel probe; two impingers each with 100 ml of 0.1N H2SO4; one impinger dry; one impinger with 200 grams of indicating type silica gel (6-16 Mesh); a flexible sample line; an air-tight pump; a dry test meter; and a calibrated orifice. The second impinger had a standard tip, while the first, third, and fourth impingers had modified tips with a 0.5 inch I.D. opening. Sample recovery was accomplished by the following procedures:

1. The volume of fluid from the first three impingers was measured and then placed into clean HDPE bottles and then send to the contract lab for analysis.
2. The used silica gel from the fourth impinger was transferred to the original tared container and sealed. It was weighed to the nearest 0.1 gram.

DATA

The field data sheets, calculation sheets, and nomenclature definitions are included in the Appendices of this report.

5.2 CO2 and O2 Sampling and Analysis –EPA Method 3

CO_2 and O_2 samples were collected by an integrated bag system. The sampling system consisted of a stainless steel probe, sample line from probe to a condenser, a small vacuum pump with a rotometer, and a TEDLAR bag.

The sampling procedure consists of the following leak-check and sampling techniques. Prior to sampling, the bag was leak-checked at 2 to 4 inches of water. The inlet to the condenser was plugged and a vacuum of 10 inches of Hg was pulled. The outlet of the pump was then plugged and the pump shut off. The vacuum held steady for at least 30 seconds. The sample line was then purged with flue gas and the bag was connected. Sampling was conducted at an appropriate constant rate at the same points and for the same length of time as the particulate sampling. At the conclusion of the run, the pump was shut off and the bag secured.

After leak checking the orsat gas analyzer, the average value for each gas was determined. The gas was measured until two values were obtained that fell within the specified variance of the gas tested. Data were recorded on the field data sheet and the bag was evacuated for the next sample run.

APPENDIX A

COMPLETE EMISSION DATA WITH SAMPLE CALCULATIONS

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/30/2008

RUN NUMBER:	1		IMPINGER ml.	123.0
BEGIN TIME (hour : minute):	12:37 PM		SILICA GEL. gms.	14.5
END TIME (hour : minute):	1:45 PM		% O2:	10.20
TOTAL RUN TIME:	60	MINUTES	% CO2:	5.50
BAROMETRIC PRESSURE:	29.96	inches Hg.	"F" FACTOR:	NA
STACK PRESSURE:	30.02	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	792.238	CUBIC FT.		
INITIAL METER:	739.013	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1173581
AVG. SQ. RT. VEL. HEAD:	1.2112	VOLUMETRIC FLOW(WVSCFM):	105361
AVG. VEL. HEAD (in H2O):	1.4750	VOLUMETRIC FLOW(DSCFM):	840324
AVG. STACK TEMP. (F):	197.2	VOLUMETRIC FLOW(WSCFM):	945686
AVG. METER TEMP. (F):	92.9		
AVG. ORIFICE DIFFERENTIAL:	1.918	**AMMONIA EMISSION DATA:**	
METER ACF:	53.225		
METER SCF:	51.619	PPM NH3:	0.0710
MEASURED SCF MOISTURE:	6.472	PPM NH3 @15% O2:	0.039
MEASURED MOISTURE %:	11.14		
STACK TEMP. (deg. C):	91.8		
VAPOR PRESSURE:	22.0		
SATURATION MOISTURE %:	73.42		
PERCENT WATER VAPOR:	11.14		
GAS MOLECULAR WT.(dry):	29.29		
GAS MOLECULAR WT.(wet):	28.03		
PERCENT EXCESS AIR:	84.611		
AVERAGE VELOCITY(FPS):	76.9		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	106.30		

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7,30,08

RUN NUMBER:	2		IMPINGER ml.	139.0
BEGIN TIME (hour : minute):	2:04 PM		SILICA GEL. gms.	10.2
END TIME (hour : minute):	3:11 PM		% O2:	10.10
TOTAL RUN TIME:	60	MINUTES	% CO2:	5.50
BAROMETRIC PRESSURE:	29.96	inches Hg.	"F" FACTOR:	NA
STACK PRESSURE:	30.02	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	846.508	CUBIC FT.		
INITIAL METER:	792.802	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1183694
AVG. SQ. RT. VEL. HEAD:	1.2208	VOLUMETRIC FLOW(WVSCFM):	114152
AVG. VEL. HEAD (in H2O):	1.5000	VOLUMETRIC FLOW(DSCFM):	841621
AVG. STACK TEMP. (F):	195.8	VOLUMETRIC FLOW(WSCFM):	955774
AVG. METER TEMP. (F):	96.3		
AVG. ORIFICE DIFFERENTIAL:	1.950	**AMMONIA EMISSION DATA:**	
METER ACF:	53.706		
METER SCF:	51.778	PPM NH3:	0.0700
MEASURED SCF MOISTURE:	7.023	PPM NH3 @15% O2:	0.038
MEASURED MOISTURE %:	11.94		
STACK TEMP. (deg. C):	91.0		
VAPOR PRESSURE:	21.4		
SATURATION MOISTURE %:	71.40		
PERCENT WATER VAPOR:	11.94		
GAS MOLECULAR WT.(dry):	29.28		
GAS MOLECULAR WT.(wet):	27.94		
PERCENT EXCESS AIR:	82.912		
AVERAGE VELOCITY(FPS):	77.5		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	106.46		

AIR CONSULTING and ENGINEERING, INC.
COMPLETE EMISSION DATA

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7,30,08

RUN NUMBER:	3		IMPINGER ml.	144.0
BEGIN TIME (hour : minute):	3:24 PM		SILICA GEL. gms.	9.4
END TIME (hour : minute):	4:30 PM		% O2:	10.30
TOTAL RUN TIME:	60	MINUTES	% CO2:	5.20
BAROMETRIC PRESSURE:	29.96	inches Hg.	"F" FACTOR:	NA
STACK PRESSURE:	30.02	inches Hg.		
NOZZLE DIAMETER:	0.212	INCHES		
METER CORR. FACTOR:	1.010			
FINAL METER:	899.202	CUBIC FT.		
INITIAL METER:	847.400	CUBIC FT.		
STACK AREA:	254.469	SQ. FT.		
PITOT Cp:	0.84			

EMISSION RESULTS

NOZZLE AREA (SQ. FT.):	0.000245	VOLUMETRIC FLOW(ACFM):	1237622
AVG. SQ. RT. VEL. HEAD:	1.2568	VOLUMETRIC FLOW(WVSCFM):	122118
AVG. VEL. HEAD (in H2O):	1.5875	VOLUMETRIC FLOW(DSCFM):	850386
AVG. STACK TEMP. (F):	213.9	VOLUMETRIC FLOW(WSCFM):	972503
AVG. METER TEMP. (F):	92.4		
AVG. ORIFICE DIFFERENTIAL:	1.889	**AMMONIA EMISSION DATA:**	
METER ACF:	51.802		
METER SCF:	50.281	PPM NH3:	0.0360
MEASURED SCF MOISTURE:	7.221	PPM NH3 @15% O2:	0.020
MEASURED MOISTURE %:	12.56		
STACK TEMP. (deg. C):	101.1		
VAPOR PRESSURE:	31.0		
SATURATION MOISTURE %:	NA		
PERCENT WATER VAPOR:	12.56		
GAS MOLECULAR WT.(dry):	29.24		
GAS MOLECULAR WT.(wet):	27.83		
PERCENT EXCESS AIR:	85.776		
AVERAGE VELOCITY(FPS):	81.1		
MMBTUH(if applicable):	NA		
PERCENT ISOKINETIC:	102.32		

AIR CONSULTING and ENGINEERING, INC.

COMPANY NAME:	CITY OF TALLAHASSEE				
LOCATION:	TALLAHASSEE, FLORIDA				
SOURCE:	HOPKINS UNIT # H82A				
DATE:	7/30/08				
RUN NUMBER:	1	**FROM:**	12:37	**TO:**	13:45

SOURCE PARAMETER ENTRIES

PORT-POINT	"inches"	VELOCITY HEAD	ORIFICE CALC.	DELTA P ACTUAL	STACK TEMP. F	METER TEMP.F
1 - 1	63.91	1.40	1.82	1.82	196	91
1 - 2	31.63	1.40	1.82	1.82	197	91
1 - 3	9.41	1.50	1.95	1.95	198	92
2 - 1		1.70	2.21	2.21	197	92
2 - 2		1.90	2.47	2.47	198	93
2 - 3		1.70	2.21	2.21	197	93
3 - 1		1.50	1.95	1.95	197	93
3 - 2		1.60	2.08	2.08	196	94
3 - 3		1.45	1.89	1.89	197	94
4 - 1		1.20	1.56	1.56	198	94
4 - 2		1.20	1.56	1.56	197	94
4 - 3		1.15	1.50	1.50	198	94
AVERAGES:		1.475	1.918		197.17	92.92

AIR CONSULTING and ENGINEERING, INC.

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/30/08
RUN NUMBER:	2 **FROM:** 14:04 **TO:** 15:11

SOURCE PARAMETER ENTRIES

PORT-POINT	"inches"	VELOCITY HEAD	ORIFICE DELTA P CALC.	ACTUAL	STACK TEMP, F	METER TEMP,F
1 - 1	63.91	1.25	1.63	1.63	197	96
1 - 2	31.63	1.20	1.56	1.56	195	98
1 - 3	9.41	1.15	1.50	1.50	194	96
2 - 1		1.40	1.82	1.82	195	96
2 - 2		1.40	1.82	1.82	196	97
2 - 3		1.50	1.95	1.95	195	97
3 - 1		1.60	2.08	2.08	196	97
3 - 2		1.90	2.47	2.47	197	96
3 - 3		1.55	2.02	2.02	195	96
4 - 1		1.40	1.82	1.82	195	96
4 - 2		1.90	2.47	2.47	198	96
4 - 3		1.75	2.28	2.28	197	96
AVERAGES:		1.500		1.950	195.83	96.25

AIR CONSULTING and ENGINEERING, INC.

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	7/30/08
RUN NUMBER:	3 **FROM:** 15:24 **TO:** 16:30

SOURCE PARAMETER ENTRIES

PORT-POINT	"inches"	VELOCITY HEAD	ORIFICE CALC.	DELTA P ACTUAL	STACK TEMP. F	METER TEMP.F
1 - 1	63.91	1.40	1.67	1.67	216	93
1 - 2	31.63	1.60	1.90	1.90	221	93
1 - 3	9.41	1.30	1.55	1.55	218	93
2 - 1		1.50	1.79	1.79	216	93
2 - 2		1.90	2.26	2.26	215	93
2 - 3		1.65	1.96	1.96	212	92
3 - 1		1.40	1.67	1.67	213	92
3 - 2		1.25	1.49	1.49	212	92
3 - 3		1.85	2.20	2.20	211	92
4 - 1		1.50	1.79	1.79	210	92
4 - 2		1.90	2.26	2.26	212	92
4 - 3		1.80	2.14	2.14	211	92
AVERAGES:		1.588		1.889	213.92	92.42

AIR CONSULTING and ENGINEERING, INC.
SAMPLE CALCULATIONS

COMPANY NAME:	CITY OF TALLAHASSEE
LOCATION:	TALLAHASSEE, FLORIDA
SOURCE:	HOPKINS UNIT # HB2A
DATE:	##

RUN NUMBER: 1

NOZZLE AREA SQ.FT.:

An=Pi*(Rn)E2 = Pi*(Dn/2)E2 = Pi*[(Dn/2)E2]*[(1ft/12in)E2]
=Pi*(Dn)E2 / (576) = (3.1416)*[(0.212)E2]/(576)
= 0.000245

METER ACTUAL CU. FEET:

Vm = (Vm final) - (Vm initial)
= (792.238) - (739.013)
= 53.225

METER STANDARD CU. FEET:

VMstd=(K1)*(Vm)*(Y)*{(Pbar)+[(DHavg)/(13.6)]}/[(TMavg)+(460)]
= (17.64)*(53.225)*(1.0099)*{(29.96)+[(1.92)/(13.6)]}/[(92.9)+(460)]
= 51.619

MEASURED SCF MOISTURE:

VWstd=(K2)*(Vlc)
= (0.04707)*(123 + 14.5)
= 6.472

MEASURED % MOISTURE:

Bwm%={(VWstd)/[(VMstd)+(VWstd)]}*100%
= {(6.472)/[(51.619)+(6.472)]}*100%
= 11.14%

STACK TEMP. Deg C

Tsc=[(TSavg)-32]*5/9
= [(197.2)-32]*5/9
= 91.8

VAPOR PREASURE (in Hg):

Pv={2.718E[18.6866-0.00244*(273+(Tsc))-4509.47/(273+(Tsc))-149541/((273+(Tsc))E2)]}/3.375
= {2.718E[18.688-0.00244*(273+(91.8))-4509.47/(273+(91.8))-149541/((273+(91.8))E2)]}/3.375
= 22.04

SATURATION MOISTURE %:

Bwsat%=(Pv)/(Ps)*100
=(22.04)/(30.02)*100
= 73.42

PERCENT WATER VAPOR:

Bwo% = Bwm% IF Bwm% < Bwsat%
Bwo% = Bwsat% IF Bwsat% < Bwm%
= 11.14

GAS MOLECULAR WT.(dry):

Md = [(0.440)*(%CO2)]+[(0.320)*(%O2)]+{(0.280)*[(%N2)+(%CO)]}
= [(0.440)*(%CO2)]+[(0.320)*(%O2)]+{(0.280)*[(100)-(%CO2)-(%O2)]}
= [(0.440)*(5.5)]+[(0.032)*(10.2)]+{(0.280)*(84.3)]}
= 29.3

GAS MOLECULAR WT.(wet):

Ms= {(Md)*[1-(Bwo%/100)]}+[(18.0)*(Bwo%/100)]
= {(29.3)*[1-(0.1114)]}+[(18.0)*(0.1114)]
= 28.03

PERCENT EXCESS AIR:

%EA={(%O2)/{[(0.264)*(%N2)]-(%O2)}}*(100%)
= {(10.2)/{[(0.264)*(84.3)]-(10.2)}}*(100%)
= 84.61

AVERAGE VELOCITY(FPS): VSavg=(85.48)*(Cp)*(ASRVH)*{[(TSavg)+(460)]/[(Ms)*(Ps)]}E1/2
= (85.48)*(0.84)*(1.21)*{[(197.2)+(460)]/[(28)*(30.02)]}E1/2
= 76.86

PERCENT ISOKINETIC: %Iso={(K4)*(TSavg+460)*(VMstd)/{(Ps)*(Vs)*(An)*(time)*[1-(Bwo%/100)]}
*100

={ (0.09450)*(197.2+460)*(51.619)/{(30.02)*(76.86)*(0.000245)*(60)*[1-(11.14/100)]} }*100%
= 106.3

VOLUMETRIC FLOW(ACFM): QS=(VSavg)*(As)*(60)
= (76.86)*(254.469)*(60)
= 1173580.9

VOLUMETRIC FLOW(WVSCFM): WVSCFM=(QS)*(17.64)*(Bwo%/100)*(Ps)/(TSavg+460)
= (1173580.9)*(17.64)*(11.14/100)*(30.02)/(197.2+460)
= 105361.1

VOLUMETRIC FLOW(DSCFM): QSstd=(QS)*(17.64)*[1-(Bwo%/100)]*(Ps)/(TSavg+460)
= (1173580.9)*(17.64)*[1-(11.14/100)]*(30.02)/(197.2+460)
= 840324.5

AMMONIA EMISSION DATA:

PPM = 0.071

PPM @ 15% O2 *ppm*= (ppm)*((20.9-15)/(20.9- O2))
= (0.071*[(20.9-15)/(10.7)]
= 0.03915

AIR CONSULTING and ENGINEERING, INC.
NOMENCLATURE

%CO - Percent Carbon Monoxide.
%CO2 - Percent Carbon Dioxide.
%EA - Percent excess air.
%Iso - Percent isokenetics.
%N2 - Percent Nitrogen.
%O2 - Percent Oxygen.
An - Area of the nozzle, square feet.
As - Stack area, square feet.
ASRVH - Average of the square roots of the velocity heads.
Bwm% - Percent water vapor as measured.
Bwo% - Percent water vapor.
Bwsat% - Percent water vapor at saturation.
C3H8 - Propane.
CH4 - Methane.
CO - Carbon Monoxide
CO - Carbon Monoxide.
CO2 - Carbon Dioxide
Cp - Pitot coefficient.
CSO2 - Concentration of Sulfur Dioxide, pounds per dry standard cubic foot.
DHavg - Average meter orifice pressure differential.
Dn - Nozzle diameter.
E - Denotes exponent.
F - Fuel factor,standard cubic feet per million BTU.
Gr/SCF - Grains per dry standard cubic foot.
Hr - Hour.
K1 - A constant =17.64.
K2 - A constant = 0.04707.
K4 - A constant = 0.09450.
lb - pound.
lb/Hr - pounds per hour.
lb/MMBTU - Pounds per million British Thermal Units.
lb/SCF - Pounds per dry standard cubic foot.
Md - Molecular weight of dry stack gas.
mg - Mass of filter and dried probe wash, milligrams.
MMBTU - million British Thermal Units.
Ms - Molecular weight of wet stack gas.
NOx - Oxides of Nitrogen.
Pbar - Barometric pressure, inches of Mercury.
Pi - A constant = 3.14159....
PPM - Parts per million.
Ps - Stack pressure, inches Mercury.
Pv - Vapor pressure of water at stack temperature, inches Mercury.
Qs - Volumetric flow rate, actual cubic feet per minute.
QSstd - Volumetric flow rate, dry standard cubic feet per minute.
Rn - Nozzle radius, inches.
SCF - Standard cubic feet.
SO2 - Sulfur Dioxide.
TMavg - Average meter temperature, degrees Fahrenheit.
TSavg - Average stack temperature, degrees Fahrenheit.
Tsc - Average stack temperature, degrees Celsius.
Vlc - Volume of moisture collected in the impingers and silica gel, milliliters.
Vm - Metered volume, actual cubic feet.
Vm final - Final meter reading, actual cubic feet.
Vm initial - Initial meter reading, actual cubic feet.
VMstd - Metered volume corrected to standard conditions, standard cubic feet.
VOC - Volitile organic compounds.
VSavg - Average stack velocity, feet per second.
VWstd - Standard volume of water vapor, standard cubic feet.

WVSCFM - Volumetric flow rate of water vapor, standard cubic feet per minute.
Y - Meter correction factor.

APPENDIX B

FIELD DATA SHEETS

PLA City of Tallahassee
SOURCE Hopkins Unit HB2A
PLANT LOCATION Tallahassee, FL
TYPE OF SAMPLING TRAIN CTM-027
TYPE OF SAMPLES Ammonia Slip
DATE 7-30-08 RUN NUMBER 1
TIME START 1237 TIME END 1345
SAMPLE TIME 5 / 12 (MIN/PT)= 60 TOTAL MIN
ASSUMED MOISTURE(%) 7 FDA 0.93
NOMOGRAPH Cf 1.30 PITOT Cf 0.84
Pb ("Hg) 29.96 Ps ("Hg) 30.02
WEATHER Scat. TEMP (F) 80's
METER BOX NO. 3 H 1.3637 Y 1.0099
NOZZLE IDENTIFICATION NO. Glass
NOZZLE CAL .212 / .212 / .212 = 0.212
STACK DIMENSIONS 216"
STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469
STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____
PORT SIZE 6" NIPPLE LENGTH 17.5"
STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'
AGENCY OBSERVER(S)_____
TEST COORDINATOR(S)_____
V. E. OBSERVER_____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS:_____

TEST ID _____
PAGE 1 OF 2
MATERIAL PROCESSING RATE _____
GAS METER READINGS: FINAL 792.238 (FT3)
INITIAL 739.013 (FT3)
NET 53.225 (FT3)
FILTER NO. N/A IMP. VOL GAIN 123.0 (ml)
SILICA GEL NO. 49 WT. GAIN 14.5 (ml)
TOTAL CONDENSATE 137.5 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	5.6	5.5	5.5		5.5
%O2	10.2	10.3	10.2		10.2
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR

LEAK CHECKS
PRE 0.00 CFM 17 ("Hg) POST 0.00 CFM 10 ("Hg)
METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG OK
PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK
POST TEST (+) 0.0 / 4.0 "H20 (15 SECONDS)
POST TEST (-) 0.0 / 3.0 "H20 (15 SECONDS)
PYROMETER NUMBER 3
BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1242	743.365	1.40	1.82	1.82	196	N/A	63	91	4.0
2		47	747.720	1.40	1.82	1.82	197		62	91	4.0
3		1252	752.172	1.50	1.95	1.95	198		62	92	4.5
2-1		1301	756.860	1.70	2.21	2.21	197		62	92	5.0
2		06	761.915	1.90	2.47	2.47	198		63	93	6.0
3		1311	767.018	1.70	2.21	2.21	197	↓	63	93	5.0

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1318	771.340	1.50	1.95	1.95	197	N/A	63	93	5.0
2		23	775.890	1.60	2.08	2.08	196		63	94	5.5
3		1328	780.366	1.45	1.89	1.89	197		64	94	5.0
4-1		1335	784.333	1.20	1.56	1.56	198		64	94	4.0
2		40	788.300	1.20	1.56	1.56	197		64	94	4.0
3		1345	792.238	1.15	1.50	1.50	198	↓	64	94	4.0
END		1345	53.226	1.475		1.918	197.17			92.92	

PLANT City of Tallahassee

SOURCE Hopkins Unit HB2A

PLANT LOCATION Tallahassee, FL.

TYPE OF SAMPLING TRAIN CTM-027

TYPE OF SAMPLES AMMONIA Slip

DATE 7-30-08 RUN NUMBER 2

TIME START 1404 TIME END 1511

SAMPLE TIME 5 / 12 (MIN/PT)= 60 TOTAL MIN

ASSUMED MOISTURE(%) 7 FDA 0.93

NOMOGRAPH Cf 1.30 PITOT Cf 0.84

Pb ("Hg) 29.96 Ps ("Hg) 30.02

WEATHER Scat. TEMP (F) 80's

METER BOX NO. 3 H 1.3637 Y 1.0099

NOZZLE IDENTIFICATION NO. GLASS

NOZZLE CAL .212 / .212 / .212 = 0.212

STACK DIMENSIONS 216"

STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469

STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____

PORT SIZE 6" NIPPLE LENGTH 17.5"

STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'

AGENCY OBSERVER(S) _____

TEST COORDINATOR(S) _____

V. E. OBSERVER _____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS: _____

TEST ID _____

PAGE 1 OF 2

MATERIAL PROCESSING RATE _____

GAS METER READINGS: FINAL 846.508 (FT3)

INITIAL 792.802 (FT3)

NET 53.706 (FT3)

FILTER NO. N/A IMP. VOLGAIN 139.0 (ml)

SILICA GEL NO. 608 WT. GAIN 10.2 (ml)

TOTAL CONDENSATE 149.2 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	5.5	5.6	5.5		5.5
%O2	10.1	10.0	10.2		10.1
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR

LEAK CHECKS

PRE 0.00 CFM 16 ("Hg) POST 0.00 CFM 14 ("Hg

METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG ___

PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK

POST TEST (+) 0.0 / 4.0 "H20 (15 SECONDS

POST TEST (-) 0.0 / 5.0 "H20 (15 SECONDS

PYROMETER NUMBER 3

BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1409	796.890	1.25	1.63	1.63	197	N/A	65	96	4.0
2		14	800.890	1.20	1.56	1.56	195		64	96	4.0
3		1419	804.893	1.15	1.50	1.50	194		63	96	4.0
2-1		1427	809.180	1.40	1.82	1.82	195		63	96	5.0
2		1432	813.400	1.40	1.82	1.82	196		63	97	5.0
3		1437	817.828	1.50	1.95	1.95	195	↓	64	97	5.5

ACE AIR CONDITIONING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1444	822.400	1.60	2.08	2.08	196	N/A	64	97	6.0
2		49	827.450	1.90	2.47	2.47	197		64	96	7.0
3		1454	832.257	1.55	2.02	2.02	195		64	96	6.0
4-1		1501	836.790	1.40	1.82	1.82	195		64	96	5.5
2		06	841.695	1.90	2.47	2.47	198		64	96	7.5
3		1511	846.508	1.75	2.28	2.28	197	↓	64	96	7.0
END		1511	53.706	1.500		1.950	195.83			96.25	

PLANT City of Tallahassee

SOURCE Hopkins Unit HB2A

PLANT LOCATION Tallahassee, FL.

TYPE OF SAMPLING TRAIN CTM-027

TYPE OF SAMPLES Ammonia Slip

DATE 7-30-08 RUN NUMBER 3

TIME START 1524 TIME END 1630

SAMPLE TIME 5 / 12 (MIN/PT)= 60 TOTAL MIN

ASSUMED MOISTURE(%) 7 FDA 0.93

NOMOGRAPH Cf 1.19 PITOT Cf 0.84

Pb ("Hg) 29.96 Ps ("Hg) 30.02

WEATHER Overcast TEMP (F) 80's

METER BOX NO. 3 H 1.3637 Y 1.0099

NOZZLE IDENTIFICATION NO. Glass

NOZZLE CAL .212 / .212 / .212 = 0.212

STACK DIMENSIONS 216"

STACK AREA (FT2) 254.469 EFFECTIVE (FT2) 254.469

STACK DIAMETERS:(UPSTREAM)_____(DOWNSTREAM)_____

PORT SIZE 6" NIPPLE LENGTH 17.5"

STACK HEIGHT (FT)_____ UMBILICAL LENGTH 300'

AGENCY OBSERVER(S)_____

TEST COORDINATOR(S)_____

V. E. OBSERVER_____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

STACK CONFIGURATION

REMARKS:_____

TEST ID _____

PAGE 1 OF 2

MATERIAL PROCESSING RATE _____

GAS METER READINGS: FINAL 899.202 (FT3)

INITIAL 847.400 (FT3)

NET 51.802 (FT3)

FILTER NO. N/A IMP. VOL GAIN 144.0 (ml)

SILICA GEL NO. 801 WT. GAIN 9.4 (ml)

TOTAL CONDENSATE 153.4 (ml)

ORSAT

	1	2	3	4	AVG.
%CO2	5.2	5.3	5.2		5.2
%O2	10.3	10.3	10.2		10.3
%CO					
%N2					

Fo= N/A Fo RANGE= N/A ORSAT ANALYZER CR

LEAK CHECKS

PRE 0.00 CFM 17 ("Hg) POST 0.00 CFM 12 ("Hg)

METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG ____

PITOT TUBE NO. 90 PRE-TEST LEAK CHECK OK

POST TEST (+) 0.0 / 4.0 "H20 (15 SECONDS)

POST TEST (-) 0.0 / 3.0 "H20 (15 SECONDS)

PYROMETER NUMBER 3

BOX OPERATOR RESHARD PROBE HOLDER CARTER

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1529	851.280	1.40	1.67	1.67	216	N/A	64	93	4.0
2		34	855.530	1.80	1.90	1.90	221		64	93	5.0
3		1539	859.667	1.30	1.55	1.55	218		64	93	4.0
2-1		1547	863.760	1.50	1.79	1.79	216		64	93	5.0
2		52	868.330	1.90	2.26	2.26	215		63	93	6.0
3		1557	872.876	1.65	1.96	1.96	212	✓	63	92	5.0

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
3-1		1603	877.200	1.40	1.67	1.67	213	N/A	63	92	5.0
2		08	881.090	1.25	1.49	1.49	212		63	92	4.0
3		13	885.551	1.85	2.20	2.20	211		63	92	6.0
4-1		1620	889.700	1.50	1.79	1.79	210		63	92	5.0
2		25	894.380	1.90	2.26	2.26	212		64	92	6.0
3		1630	899.202	1.80	2.14	2.14	211		64	92	6.0
END		1630	51.802	1.588		1.889	213.92			92.42	

APPENDIX C

LABORATORY ANALYSES

AIR CONSULTING AND ENGINEERING, INC.
2106 NW 67th Place, Suite 4, Gainesville, Florida 32653

Laboratory Results

Unit HB2A
City of Tallahasse - Hopkins Power Plant
Tallahassee, Florida
July 30, 2008

Run	Sample Volume ml	Ammonium mg/L	Blank Corrected Ammonia mg/L	Volume of Ammonia Gas Litres	Total Ammonia Gas Litres	Dry Gas Volume scf	Dry Gas Volume Litres	Ammonia Cons. ppmV
1 - Imp. 1	255.0	0.28	0.27	9.20E-05	9.55E-05	47.39	1342.02	0.071
1 - Imp. 2	164.0	0.01	0.00	0.00E+00				
1 - Imp. 3	54.0	0.06	0.05	3.53E-06				
2 - Imp. 1	285.0	0.21	0.20	7.61E-05	9.78E-05	49.50	1401.51	0.070
2 - Imp. 2	150.0	0.01	0.00	0.00E+00				
2 - Imp. 3	54.0	0.31	0.30	2.16E-05				
3 Imp.1	282.0	0.14	0.13	4.90E-05	5.11E-05	50.10	1418.65	0.036
3 - Imp. 2	160.0	0.01	0.00	0.00E+00				
32 - Imp. 3	52.0	0.04	0.03	2.15E-06				
Blank 0.1N H2SO4	100.0	0.01						

Volume of Ammonia Gas = $\frac{(mg/l - blank) \times (SampleVol.)(24.04)}{(1000) \times (18)}$

24.04 = litres of ideal gas per mole of substance
1/1000 = conversion factor from mg/l to g/l
18 = formular weight of Ammonium ion

ppmV Ammonia = $\frac{\text{Volume of Ammonis Gas}}{\text{Dry Gas Meter Volume}} \times 10E6$

August 14, 2008

Stephen Neck
Air Consulting and Engineering, Inc.
2106 NW 67th Place
Suite 4
Gainesville, FL 32653

Re: SunLabs Project Number: **080801.08**
Client Project Description: **City of Tallahassee Hopkins Unit HB2A**

Dear Mr. Neck:

Enclosed is the report of laboratory analysis for the following samples:

Sample Number	Sample Description	Date Collected
70431	Run 1-1 Imp. #1	07/30/08
70432	Run 1-2 Imp. #2	07/30/08
70433	Run 1-3 Imp. #3	07/30/08
70434	Run 2-1 Imp. #1	07/30/08
70435	Run 2-2 Imp. #2	07/30/08
70436	Run 2-3 Imp. #3	07/30/08
70437	Run 3-1 Imp. #1	07/30/08
70438	Run 3-2 Imp. #2	07/30/08
70439	Run 3-3 Imp. #3	07/30/08
70440	Blank 0.1N H2SO4	07/30/08
70441	Blank HPLC H2O	07/30/08

Copies of the Chain(s)-of-Custody, if received, are attached to this report.

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Sincerely,

Michael W. Palmer
Vice President, Laboratory Operations

Enclosures

SunLabs, Inc.
5460 Beaumont Center Blvd., Suite 520
Tampa, Florida 33634

Phone: 813-881-9401
Fax: 813-354-4661
Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70431**
Sample Designation **Run 1-1 Imp. #1**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	255	1				08/13/08 18:21	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.28	1	0.01	0.01		08/13/08 18:21	08/13/08 14:52

Laboratory ID Number - E84809

SunLabs, Inc.
5460 Beaumont Center Blvd., Suite 520
Tampa, Florida 33634

Phone: 813-881-9401
Fax: 813-354-4661
Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70432**
Sample Designation **Run 1-2 Imp. #2**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	164	1				08/13/08 18:34	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		08/13/08 18:34	08/13/08 14:52

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70433**
Sample Designation **Run 1-3 Imp. #3**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	54	1				08/13/08 18:47	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.059	1	0.01	0.01		08/13/08 18:47	08/13/08 14:52

Laboratory ID Number - E84809

SunLabs, Inc.
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Tampa, Florida 33634

Phone: 813-881-9401
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Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70434**
Sample Designation **Run 2-1 Imp. #1**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	285	1				08/13/08 19:27	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.21	1	0.01	0.01		08/13/08 19:27	08/13/08 14:52

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70435**
Sample Designation **Run 2-2 Imp. #2**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	150	1				08/13/08 19:40	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		08/13/08 19:40	08/13/08 14:52

Laboratory ID Number - EB4809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70436**
Sample Designation **Run 2-3 Imp. #3**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	54	1				08/13/08 19:53	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.31	1	0.01	0.01		08/13/08 19:53	08/13/08 14:52

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70437**
Sample Designation **Run 3-1 Imp. #1**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	282	1				08/13/08 20:07	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.14	1	0.01	0.01		08/13/08 20:07	08/13/08 14:52

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70438**
Sample Designation **Run 3-2 Imp. #2**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	160	1				08/13/08 20:20	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		08/13/08 20:20	08/13/08 14:52

Laboratory ID Number - E84809

SunLabs, Inc.
5460 Beaumont Center Blvd., Suite 520
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Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70439**
Sample Designation **Run 3-3 Imp. #3**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	52	1				08/13/08 20:33	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.041	1	0.01	0.01		08/13/08 20:33	08/13/08 14:52

Laboratory ID Number - E84809

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Phone: 813-881-9401
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Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70440**
Sample Designation **Blank 0.1N H2SO4**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	100	1				08/13/08 20:46	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		08/13/08 20:46	08/13/08 14:52

Laboratory ID Number - E84809

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

SunLabs Sample Number **70441**
Sample Designation **Blank HPLC H2O**

Matrix: Liquid
Date Collected: 07/30/08
Date Received: 08/01/08 13:55

Parameters	Method	Units	Results	Dil Factor	MDL	RL	CAS Number	Date/Time Analyzed	Date/Time Prep
Ammonia by Method CTM-027									
Sample Volume		mL	100	1				08/13/08 21:00	08/13/08 14:52
Ammonium	CTM-027	mg/L	0.01 U	1	0.01	0.01		08/13/08 21:00	08/13/08 14:52

Laboratory ID Number - E84809

SunLabs, Inc.
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Email: Info@SunLabsInc.com

Report of Laboratory Analysis

SunLabs Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

Footnotes	
*	SunLabs is not currently NELAC certified for this analyte.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MB	Method Blank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Sample not analyzed at client's request.
RL	RL(reporting limit) = PQL(practical quantitation limit).
RPD	Relative Percent Difference
U	Compound was analyzed for but not detected.
V	Indicates that the analyte was detected in both the sample and the associated method blank.

SunLabs, Inc.
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Email: Info@SunLabsInc.com

Quality Control Data

Project Number	Air Consulting and Engineering, Inc.
080801.08	Project Description: City of Tallahassee Hopkins Unit HB2A

August 14, 2008

Batch No: **C6056**
TestCode: CTM-027

Associated Samples
70431, 70432, 70433, 70434, 70435, 70436, 70437, 70438, 70439, 70440, 70441

Compound	Blank	LCS Spike	LCS %Rec	LCSD %Rec	RPD %	---QC Limits--- RPD	LCS	MS Spike	MS %Rec	MSD %Rec	RPD %	---QC Limits--- RPD	MS	Dup RPD	Qualifiers
Parent Sample Number									*70435*	*70435*					
Ammonium	0.01 U	5.00	122	121	1			5.00	142	151	6				

* indicates value is outside control limits for %Recovery or greater than acceptance criteria for RPD

Footnotes

U — *Compound was analyzed for but not detected.*

SunLabs, Inc.
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2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(352) 335-1889 - OFFICE / (352) 335-1891 - FAX

SAMPLE RECOVERY AND CHAIN OF CUSTODY

080801.08

PLANT City of Tallahassee
SOURCE HOPKINS Unit HB2A
TEST DATE(S) 7-30-08
TEST TEAM CR, SC
RUN NUMBER(S) 1, 2, 3

TYPE OF SAMPLING TRAIN CTM-027
TYPE OF SAMPLES AMMONIA
PROJECT NO.
PAGE 1 OF 1

SAMPLE INVENTORY

	SAMPLE ID	DESCRIPTION/COMPONENTS	RINSE TYPE	COLOR	NO. OF CONTAINERS
431	RUN 1-1	IMP. #1-100 M/S 0.1N H2SO4 + 105 M/S GAIN	HPLC H2O-50 M/S	Cloudy	1-255 M/S
432	" " 2	IMP. #2-100 M/S 0.1N H2SO4 + 14 M/S GAIN	" " "	CLEAR	1-164 M/S
433	" " 3	IMP #3-4 M/S GAIN	" " "	CLEAR	1-54 M/S
434	RUN 2-1	IMP #1-100 M/S 0.1N H2SO4 + 135 M/S GAIN	HPLC H2O-50 M/S	Cloudy	1-285 M/S
435	" " 2	IMP #2-100 M/S 0.1N H2SO4 + 0 M/S GAIN	" " "	CLEAR	1-150 M/S
436	" " 3	IMP #3-4 M/S GAIN	" " "	CLEAR	1-54 M/S
437	RUN 3-1	IMP #1-100 M/S 0.1N H2SO4 + 132 M/S GAIN	HPLC H2O-50 M/S	Cloudy	1-282 M/S
438	" " 2	IMP #2-100 M/S 0.1N H2SO4 + 10 M/S GAIN	" " "	CLEAR	1-160 M/S
439	" " 3	IMP #3-2 M/S GAIN	" " "	CLEAR	1-52 M/S
440	BLANK	0.1N H2SO4 - 100 M/S	N/A	CLEAR	1-100 M/S
441	BLANK	HPLC H2O - 100 M/S	N/A	CLEAR	1-100 M/S

TOTAL CONTAINERS SHIPPED: 11

SAMPLES COLLECTED/CHARGED BY: CR
REAGENTS PREPARED BY: CR

METHOD OF SHIPMENT
FROM FIELD: VAN
FROM ACE LABORATORY: VAN

ANALYSES TO BE PERFORMED BY: SUN LABS
REMARKS:
DATE: 8-1-08 TIME: 1355
Rec'd By: Nanni

APPENDIX D

QUALITY ASSURANCE
AND
CHAIN OF CUSTODY

DRY GAS METER CALIBRATION STANDARD

Air Consulting and Engineering, Inc. (ACE) uses a Precision Scientific model 63123 wet test meter (Serial Number PS 001105) as its dry gas meter calibration standard. The wet test meter has a one cubic foot per revolution capacity and is verified by water displacement annually. The latest verification occurred September 17, 2007.

WET TEST METER CALIBRATION

TEST #	FINAL V (VF) (L)	INIT V (VI) (L)	TOTAL V (VM) (L)	FLASK V (VS) (L)	% ERROR (+or - 1%)
1	28.30	0	28.30	28.32	-0.07
2	28.29	0	28.29	28.32	-0.11
3	28.31	0	28.31	28.32	-0.04
AVG.	28.30	0	28.30	28.32	-0.07

CALCULATIONS:

VM = VF - VI
% ERROR = 100 (VM - VS) / VS (+ OR - 1 %)

VF- VOLUME FINAL
VI - VOLUME INITIAL
VM - VOLUME METER
VS - VOLUME FLASK

% ERROR RANGE = 28.03 - 28.60

AIR CONSULTING AND ENGINEERING,INC.

WET TEST METER ANNUAL CALIBRATION

DATE 9-17-07 CALIBRATED BY C. RESHARD WET TEST METER SERIAL NUMBER PSC01105

RANGE OF WET TEST METER FLOW RATE 0-120 (l/min) VOLUME OF TEST FLASK 28.32 (V_s) SATISFACTORY LEAK CHECK?

Ambient Temperature of Equilliberate Liquid In Wet Test Meter and Reservoir 60 (Deg. F)

TEST NUMBER	FINAL VOLUME (V_f), (l)	INITIAL VOLUME (V_i), (l)	TOTAL VOLUME (V_m), b (l)	FLASK VOLUME (V_s), (l)	PERCENT ERROR, c %
1	28.30	0	28.30	28.32	-0.07
2	28.29	0	28.29	28.32	-0.11
3	28.31	0	28.31	28.32	-0.07

CALCULATIONS:

b $V_m = V_f - V_i$.

c % Error = 100 $(V_m - V_s) / V_s$ = -0.07 (+/- 1%)

ACE AIR CONSULTING & ENGINEERING, INC.

Air Consulting & Engineering, Inc
Annual Meter Box Calibration

Date: March 10, 2008				Metering System Identification:			Box # 3
Barometric Pressure:, P_b= 30.38 in.Hg				Calibrated By:			Charles Reshard
Orifice Manometer Setting ΔH in.H_2O	Spirometer (Wet Meter) gas volume V_w ft^3	Dry Gas meter volume V_m ft^3	Temperatures				Time υ min
			Spirometer (Wet Meter) t_w °F	Dry Gas Meter			
				Inlet t_i °F	Outlet t_o °F	Average t_m °F	
2.000	5.925	6.045	45.0	62.0	62.0	62.0	7.00
0.500	5.693	5.843	45.0	64.0	64.0	64.0	13.00
3.000	5.286	5.420	45.0	67.0	67.0	67.0	5.00
1.000	5.521	5.715	46.0	69.0	69.0	69.0	9.00
4.000	6.052	6.203	46.0	71.0	71.0	71.0	5.00
1.500	5.940	6.176	46.0	73.0	73.0	73.0	8.00

Calculations

ΔH, in. H_2O	Y (meter ratio)		ΔH, in. H_2O
	$\frac{V_w P_b (t_m + 460)}{V_m (P_b + \Delta H/13.6)(t_w + 460)}$		$\frac{0.0317 \Delta H}{P_b (t_o + 460)} \left[((t_w + 460)\, \theta) / V_w \right]^2$
	Y	difference	ΔH_a
2.000	1.0083	0.001	1.423
0.500	1.0098	0.002	1.324
3.000	1.0104	0.003	1.355
1.000	1.0075	0.000	1.342
4.000	1.0140	0.007	1.374
1.500	1.0094	0.002	1.364
Average	**1.0099**	0.003	**1.3637**

Y = Ratio of reading of wet test meter to dry test meter; tolerance for individual values ± 0.02 from average

ΔH_a = Orifice pressure differential that equates to 0.75 cfm of air @ 68 °F and 29.92 in. Hg, measured in in. H_2O; tolerance for individual values +-0.02 from average

INITIALS: C.R.

ACCEPTABLE? (Yes) / No (circle one)

Air Consulting & Engineering, Inc
Meter Box Post Test Calibration

Date: August 5, 2008				Metering System Identification:			Meter Box # 3
Barometric Pressure:, P_b= 30.11 in.Hg				Calibrated By:			Charles Reshard
Orifice Manometer Setting ΔH in.H_2O	Spirometer (Wet Meter) gas volume V_w ft^3	Dry Gas meter volume V_m ft^3	Temperatures				Time υ min
			Spirometer (Wet Meter) t_w °F	Dry Gas Meter			
				Inlet t_i °F	Outlet t_o °F	Average t_m °F	
1.900	5.140	5.223	57.000	81.0	81.0	81.0	6.00
1.900	5.127	5.210	57.000	82.0	82.0	82.0	6.00
1.900	5.122	5.206	57.000	82.0	82.0	82.0	6.00

Calculations

Δ H, in. H_2O	Y (meter ratio)		Δ H, in. H_2O
	$\frac{V_w P_b (t_m + 460)}{V_m (P_b + \Delta H/13.6)(t_w + 460)}$		$\frac{0.0317 \Delta H}{P_b (t_o + 460)} \left[((t_w + 460)\,\theta)/V_w \right]^2$
	Y	difference	ΔH_a
1.900	1.0250	0.0012	1.3467
1.900	1.0269	0.0007	1.3510
1.900	1.0267	0.0005	1.3537
Average	**1.0262**	**0.0008**	**1.3504**

Y = Ratio of reading of wet test meter to dry test meter; tolerance for individual values 6 0.02 from average

ΔH_a = Orifice pressure differential that equates to 0.75 cfm of air @ 68 °F and 29.92 in. Hg, measured in in. H_2O; tolerance for individual values +-0.02 from average

PLANT: City Of Tallahassee **SOURCE:** Hopkins Unit HB2A

TEST METHOD : CTM-027 **TS:** 200

PROBE # 90 **PYROMETER # :** 3 **MAX VAC.:** 8

PRETEST Y: 1.0099 **TEST DATE:** July 30, 2008

INITIALS: CR **ACCEPTABLE?** (Yes) / No (circle one)

AIR CONSULTING AND ENGINEERING, INC.

PITOT TUBE CALIBRATION

DATE CALIBRATED 03-Nov-07 CALIBRATED BY Rick Hyre PITOT TUBE NUMBER 90

IS PITOT TUBE ASSEMBLY LEVEL YES / NO (circle) ARE PITOT TUBE OPENING DAMAGED YES / NO (circle)

α_1 = 1.00 ° (<10°), α_2 = 2.00 ° (<10°), β_1 = 0.50 ° (<5°), β_2 = 1.00 ° (<5°)

γ = 1.00 ° υ = 0.00 ° A = 1.156 in. = (Pa + Pb)

Z = A sin γ = 0.020 in.; <0.125 in.

W = A sin υ = 0.000 in.; <0.031 in.

Pa 0.578 in. Pb 0.578 in. Dt 0.375 IN.

Was calibration required? YES (NO) (circle)

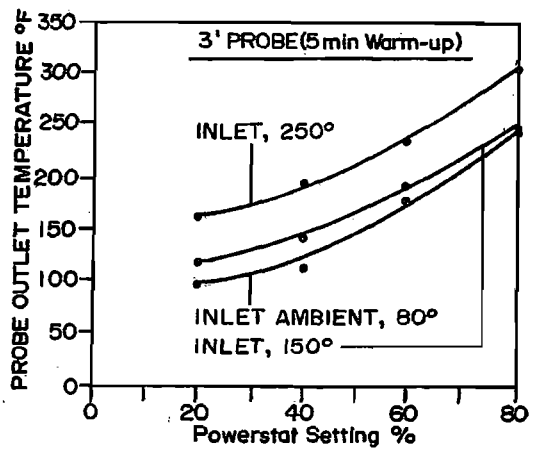
THERMOCOUPLE CALIBRATION

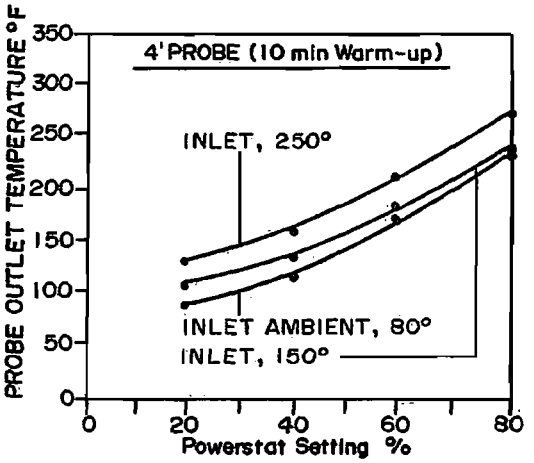
SOURCE	GLASS THERMOMETER WITH NBS MERCURY (F)	PYROMETER DEGREES (F)	DEGREE DIFFERENCE	PERCENT DIFFERENCE
ICE BATH	35	37	-2	-0.40404
AMBIENT	76	78	-2	-0.37313
HOT OVEN	407	404	3	0.346021

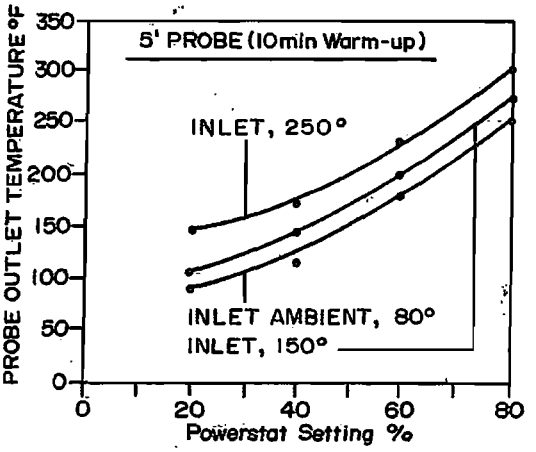
FDEP - MAXIMUM 5 DEGREE DIFFERENCE

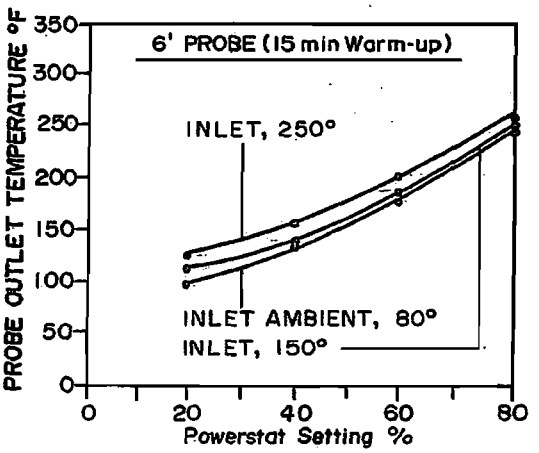
EPA - $\frac{\text{(REF.TEMP.F+460) - (PYROMETER TEMP.F+460)}}{\text{(REF.TEMP.F+460)}}$ X 100 SPECIFICATION PERCENT DIFFERENCE LESS THAN 1.5 PERCENT

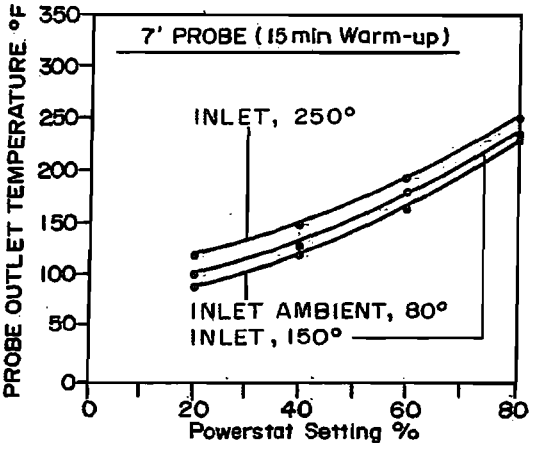
ACCEPTABLE (YES) NO (CIRCLE)











NOTE: Flow rate held constant at 0.75; 50% change in flow rate has little effect on probe temperature.

PROBE GRAPH

AIR CONSULTING and ENGINEERING

APPENDIX E

PRODUCTION DATA AND FUEL ANALYSIS

30JUL08 NH3 SLIP TEST - UNIT 2A

Record#	DATE	TIME	GEN11	GAS12	NOXD13	CO_14
1	07/30/2008	110000	255.040	1791.250	4.500	5.300
2	07/30/2008	120000	307.490	2204.820	4.600	1.100
3	07/30/2008	130000	308.610	2212.470	4.600	1.000
4	07/30/2008	140000	309.020	2216.140	4.500	1.000
5	07/30/2008	150000	309.120	2216.720	4.600	1.000
6	07/30/2008	160000	302.000	2155.670	4.500	1.000
7	07/30/2008	170000	283.870	1997.830	4.500	0.900
8	07/30/2008	180000	281.920	1976.700	4.500	0.900
9	/ /					
10	/ /	AVE	294.634	2096.450	4.538	1.525

0

Heat Input Numbers - mmBTU's

Run #1 2282.1

Run #2 2282.8

Run #3 2220.7

Florida Gas Transmission Company, LLC

Date Requested: Sep 03 2008 1

The data contained herein is preliminary data and therefore should be used for contemporaneous operational purposes onl change at month end. This data is provided to assist our customers in tracking their gas usage as closely as possible on a information contained on this web page is not to be considered billable information. This data will be subject to additional modification prior to billing. Florida Gas is not responsible for any reliance on this information by any party.

FGT Chromatograph By Id

Station Name: 8030 - PERRY STREAM #1 36" WEST LEG- SYSTEM

download – tab-delimited file

Date	BTU	CO2	N2	Grav	Methan	Ethane	Propan	Ibutan	Nbutan	Ipenta	Npenta	C6	C7	C8	
09/02/2008	1034	1.218	0.554	0.593	94.856	2.507	0.478	0.103	0.110	0.048	0.032	0.095	0.000	0.000	(
09/01/2008	1039	1.284	0.657	0.598	94.211	2.785	0.593	0.128	0.136	0.058	0.031	0.118	0.000	0.000	(
08/31/2008	1034	1.137	0.529	0.591	95.082	2.425	0.455	0.101	0.105	0.046	0.031	0.089	0.000	0.000	(
08/30/2008	1031	1.097	0.509	0.589	95.383	2.284	0.402	0.086	0.092	0.040	0.027	0.079	0.000	0.000	(
08/29/2008	1030	1.114	0.600	0.590	95.227	2.329	0.411	0.070	0.094	0.045	0.032	0.078	0.000	0.000	(
08/28/2008	1032	1.124	0.521	0.590	95.201	2.414	0.413	0.089	0.093	0.040	0.026	0.079	0.000	0.000	(
08/27/2008	1031	1.122	0.525	0.589	95.225	2.428	0.396	0.084	0.087	0.038	0.025	0.072	0.000	0.000	(
08/26/2008	1031	1.118	0.500	0.589	95.313	2.357	0.396	0.087	0.088	0.039	0.026	0.076	0.000	0.000	(
08/25/2008	1031	1.119	0.511	0.589	95.336	2.334	0.391	0.084	0.088	0.038	0.025	0.074	0.000	0.000	(
08/24/2008	1031	1.136	0.517	0.589	95.268	2.359	0.398	0.088	0.092	0.040	0.026	0.075	0.000	0.000	(
08/23/2008	1032	1.128	0.512	0.590	95.215	2.417	0.404	0.089	0.091	0.040	0.027	0.077	0.000	0.000	(
08/22/2008	1033	1.105	0.523	0.590	95.173	2.439	0.426	0.092	0.095	0.041	0.027	0.078	0.000	0.000	(
08/21/2008	1033	1.124	0.530	0.591	95.127	2.438	0.439	0.094	0.097	0.042	0.028	0.082	0.000	0.000	(
08/20/2008	1032	1.155	0.540	0.590	95.104	2.462	0.411	0.088	0.091	0.041	0.027	0.081	0.000	0.000	(
08/19/2008	1032	1.130	0.546	0.590	95.161	2.431	0.407	0.087	0.092	0.040	0.027	0.079	0.000	0.000	(
08/18/2008	1032	1.119	0.546	0.590	95.185	2.431	0.401	0.085	0.090	0.039	0.026	0.078	0.000	0.000	(
08/17/2008	1033	1.114	0.559	0.590	95.092	2.479	0.424	0.090	0.095	0.041	0.027	0.079	0.000	0.000	(
08/16/2008	1033	1.115	0.550	0.591	95.050	2.523	0.429	0.091	0.095	0.041	0.027	0.079	0.000	0.000	(
08/15/2008	1033	1.127	0.532	0.591	95.043	2.534	0.433	0.091	0.095	0.040	0.027	0.077	0.000	0.000	(
08/14/2008	1033	1.076	0.515	0.590	95.154	2.503	0.427	0.091	0.094	0.040	0.026	0.074	0.000	0.000	(
08/13/2008	1032	1.064	0.518	0.589	95.263	2.425	0.414	0.088	0.092	0.039	0.026	0.072	0.000	0.000	(
08/12/2008	1030	1.021	0.501	0.587	95.540	2.279	0.369	0.079	0.082	0.036	0.024	0.068	0.000	0.000	(
08/11/2008	1031	1.002	0.528	0.587	95.505	2.311	0.368	0.079	0.082	0.036	0.023	0.068	0.000	0.000	(
08/10/2008	1030	0.979	0.536	0.586	95.565	2.279	0.359	0.077	0.080	0.035	0.023	0.067	0.000	0.000	(
08/09/2008	1031	1.097	0.506	0.588	95.367	2.359	0.369	0.081	0.085	0.037	0.025	0.074	0.000	0.000	(
08/08/2008	1031	1.097	0.506	0.588	95.367	2.359	0.369	0.081	0.085	0.037	0.025	0.074	0.000	0.000	(
08/07/2008	1032	1.106	0.521	0.590	95.201	2.454	0.395	0.088	0.090	0.040	0.026	0.078	0.000	0.000	(
08/06/2008	1033	1.071	0.543	0.590	95.168	2.449	0.425	0.093	0.098	0.043	0.029	0.082	0.000	0.000	(
08/05/2008	1033	1.071	0.543	0.590	95.168	2.449	0.425	0.093	0.098	0.043	0.029	0.082	0.000	0.000	(
08/04/2008	1032	1.076	0.521	0.589	95.269	2.392	0.411	0.090	0.094	0.041	0.028	0.079	0.000	0.000	(
08/03/2008	1024	1.079	1.300	0.592	94.499	2.405	0.401	0.087	0.091	0.039	0.026	0.073	0.000	0.000	(
08/02/2008	1031	1.062	0.525	0.588	95.384	2.332	0.390	0.084	0.087	0.038	0.025	0.072	0.000	0.000	(
08/01/2008	1030	1.074	0.505	0.588	95.506	2.248	0.367	0.079	0.085	0.038	0.025	0.074	0.000	0.000	(
07/31/2008	1030	1.032	0.503	0.587	95.617	2.204	0.356	0.076	0.082	0.036	0.024	0.071	0.000	0.000	(
07/30/2008	1030	1.053	0.516	0.588	95.474	2.286	0.374	0.078	0.085	0.037	0.025	0.073	0.000	0.000	(
07/29/2008	1031	1.109	0.527	0.589	95.327	2.337	0.389	0.082	0.089	0.038	0.026	0.076	0.000	0.000	(
07/28/2008	1031	1.136	0.527	0.590	95.235	2.358	0.416	0.088	0.094	0.040	0.027	0.079	0.000	0.000	(
07/27/2008	1030	1.133	0.526	0.589	95.361	2.284	0.388	0.082	0.088	0.038	0.026	0.075	0.000	0.000	(
07/26/2008	1030	1.091	0.512	0.588	95.453	2.261	0.379	0.081	0.086	0.038	0.025	0.073	0.000	0.000	(
07/25/2008	1029	1.083	0.483	0.587	95.608	2.171	0.362	0.079	0.083	0.036	0.024	0.072	0.000	0.000	(
07/24/2008	1029	1.083	0.483	0.587	95.608	2.171	0.362	0.079	0.083	0.036	0.024	0.072	0.000	0.000	(
07/23/2008	1030	1.088	0.494	0.588	95.520	2.216	0.380	0.081	0.085	0.037	0.025	0.074	0.000	0.000	(

07/22/2008	1031	1.129	0.527	0.590	95.287	2.300	0.423	0.090	0.095	0.041	0.028	0.082	0.000	0.000
07/21/2008	1031	1.090	0.525	0.589	95.364	2.271	0.416	0.090	0.095	0.042	0.028	0.080	0.000	0.000
07/20/2008	1030	1.099	0.520	0.588	95.475	2.205	0.389	0.084	0.087	0.039	0.026	0.077	0.000	0.000
07/19/2008	1030	1.158	0.549	0.590	95.267	2.303	0.402	0.086	0.090	0.040	0.026	0.078	0.000	0.000
07/18/2008	1030	1.107	0.537	0.589	95.356	2.292	0.397	0.083	0.087	0.038	0.025	0.077	0.000	0.000
07/17/2008	1030	1.092	0.522	0.588	95.456	2.235	0.389	0.082	0.086	0.037	0.025	0.077	0.000	0.000
07/16/2008	1031	1.126	0.525	0.590	95.258	2.352	0.411	0.087	0.092	0.040	0.027	0.081	0.000	0.000
07/15/2008	1031	1.158	0.545	0.590	95.188	2.382	0.405	0.085	0.091	0.039	0.027	0.079	0.000	0.000
07/14/2008	1031	1.128	0.533	0.589	95.278	2.332	0.406	0.085	0.092	0.039	0.027	0.079	0.000	0.000
07/13/2008	1030	1.101	0.497	0.588	95.509	2.216	0.370	0.081	0.086	0.038	0.026	0.078	0.000	0.000
07/12/2008	1030	1.064	0.499	0.587	95.589	2.173	0.369	0.081	0.086	0.037	0.025	0.076	0.000	0.000
07/11/2008	1033	1.025	0.486	0.589	95.286	2.468	0.430	0.086	0.088	0.035	0.024	0.072	0.000	0.000
07/10/2008	1033	1.025	0.486	0.589	95.286	2.468	0.430	0.086	0.088	0.035	0.024	0.072	0.000	0.000
07/09/2008	1033	1.146	0.533	0.591	95.093	2.445	0.444	0.093	0.098	0.041	0.028	0.078	0.000	0.000
07/08/2008	1031	1.125	0.526	0.589	95.285	2.327	0.407	0.088	0.093	0.041	0.028	0.080	0.000	0.000
07/07/2008	1030	1.090	0.530	0.588	95.411	2.274	0.388	0.085	0.087	0.038	0.025	0.073	0.000	0.000
07/06/2008	1031	1.120	0.550	0.589	95.280	2.324	0.406	0.089	0.090	0.039	0.026	0.076	0.000	0.000
07/05/2008	1031	1.123	0.576	0.590	95.242	2.316	0.417	0.096	0.090	0.039	0.026	0.076	0.000	0.000
07/04/2008	1030	1.065	0.543	0.588	95.487	2.218	0.385	0.083	0.085	0.037	0.025	0.073	0.000	0.000
07/03/2008	1031	1.068	0.525	0.589	95.348	2.339	0.412	0.085	0.088	0.037	0.025	0.073	0.000	0.000
07/02/2008	1030	1.047	0.498	0.587	95.636	2.147	0.371	0.081	0.085	0.037	0.025	0.073	0.000	0.000
07/01/2008	1029	1.050	0.487	0.586	95.709	2.104	0.356	0.080	0.082	0.036	0.024	0.072	0.000	0.000
06/30/2008	1029	1.021	0.477	0.586	95.733	2.115	0.359	0.081	0.083	0.036	0.024	0.071	0.000	0.000
06/29/2008	1030	1.031	0.484	0.587	95.596	2.214	0.377	0.083	0.084	0.036	0.024	0.072	0.000	0.000
06/28/2008	1030	1.019	0.486	0.586	95.692	2.136	0.368	0.081	0.084	0.037	0.025	0.071	0.000	0.000
06/27/2008	1031	0.996	0.471	0.587	95.654	2.169	0.408	0.086	0.087	0.036	0.024	0.069	0.000	0.000
06/26/2008	1033	1.006	0.474	0.588	95.408	2.329	0.459	0.095	0.096	0.037	0.025	0.071	0.000	0.000
06/25/2008	1031	1.088	0.492	0.588	95.411	2.285	0.407	0.090	0.089	0.038	0.025	0.074	0.000	0.000
06/24/2008	1030	1.077	0.500	0.587	95.519	2.232	0.371	0.082	0.084	0.037	0.024	0.074	0.000	0.000
06/23/2008	1029	1.043	0.515	0.587	95.600	2.185	0.366	0.079	0.082	0.036	0.024	0.071	0.000	0.000
06/22/2008	1030	1.086	0.488	0.588	95.505	2.242	0.373	0.083	0.086	0.038	0.025	0.075	0.000	0.000
06/21/2008	1029	1.069	0.459	0.587	95.655	2.171	0.353	0.080	0.082	0.036	0.024	0.071	0.000	0.000
06/20/2008	1030	1.057	0.469	0.587	95.665	2.141	0.368	0.082	0.085	0.037	0.024	0.073	0.000	0.000
06/19/2008	1031	1.036	0.458	0.587	95.657	2.149	0.393	0.087	0.087	0.037	0.024	0.072	0.000	0.000
06/18/2008	1030	1.077	0.475	0.587	95.591	2.156	0.386	0.086	0.088	0.039	0.025	0.076	0.000	0.000
06/17/2008	1029	1.090	0.499	0.587	95.585	2.148	0.367	0.083	0.085	0.039	0.026	0.078	0.000	0.000
06/16/2008	1029	1.099	0.505	0.588	95.573	2.141	0.370	0.082	0.085	0.039	0.026	0.078	0.000	0.000
06/15/2008	1030	1.089	0.497	0.587	95.595	2.131	0.371	0.083	0.086	0.040	0.027	0.080	0.000	0.000
06/14/2008	1031	1.100	0.498	0.589	95.412	2.277	0.394	0.086	0.089	0.040	0.026	0.078	0.000	0.000
06/13/2008	1031	1.083	0.485	0.588	95.469	2.278	0.375	0.083	0.086	0.039	0.026	0.075	0.000	0.000
06/12/2008	1031	1.093	0.479	0.588	95.471	2.260	0.380	0.085	0.087	0.040	0.026	0.078	0.000	0.000
06/11/2008	1031	1.086	0.491	0.588	95.450	2.280	0.377	0.084	0.087	0.040	0.026	0.078	0.000	0.000
06/10/2008	1031	1.089	0.494	0.588	95.461	2.249	0.387	0.087	0.088	0.040	0.026	0.079	0.000	0.000
06/09/2008	1031	1.059	0.489	0.588	95.475	2.267	0.390	0.087	0.089	0.040	0.026	0.079	0.000	0.000
06/08/2008	1032	1.073	0.472	0.588	95.454	2.283	0.392	0.088	0.091	0.041	0.027	0.080	0.000	0.000
06/07/2008	1032	1.062	0.472	0.589	95.413	2.319	0.403	0.088	0.092	0.041	0.027	0.081	0.000	0.000
06/06/2008	1031	1.090	0.465	0.588	95.476	2.252	0.391	0.087	0.091	0.041	0.027	0.081	0.000	0.000
06/05/2008	1030	1.060	0.440	0.586	95.722	2.122	0.350	0.082	0.084	0.039	0.025	0.076	0.000	0.000
06/04/2008	1030	1.091	0.489	0.588	95.469	2.273	0.373	0.084	0.086	0.038	0.025	0.073	0.000	0.000

APPENDIX F

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

Air Consulting and Engineering, Inc.

Charles Reshard
Field Team Leader
Laboratory Analysis
Post Test Calibration

Sid Carter
Field Testing

Dagmar Fick
Report Preparation

Gloria K. Gagich
Document Production

City of Tallahassee

John Powell
Test Coordinator
Production Data

APPENDIX G

NOX AND CO CEMS DATA

DATE	TIME	NOx (ppm) Uncorrected	NOx (ppm) Corrected to 15% O2	CO (ppm) Uncorrected	CO (ppm) Corrected to 15% O2	O2 (%)
7/30/2008	123100	8.4	4.6	1.00	0.55	10.13
7/30/2008	123200	8.3	4.6	1.00	0.55	10.14
7/30/2008	123300	8.2	4.5	1.00	0.55	10.11
7/30/2008	123400	8.2	4.5	1.00	0.55	10.12
7/30/2008	123500	8.3	4.6	1.00	0.55	10.12
7/30/2008	123600	8.3	4.6	1.00	0.55	10.10
7/30/2008	123700	8.4	4.6	1.00	0.55	10.13
7/30/2008	123800	8.4	4.6	1.00	0.55	10.12
7/30/2008	123900	8.3	4.6	1.00	0.55	10.12
7/30/2008	124000	8.4	4.6	1.00	0.55	10.12
7/30/2008	124100	8.3	4.6	1.00	0.55	10.13
7/30/2008	124200	8.3	4.6	1.00	0.55	10.13
7/30/2008	124300	8.2	4.5	1.00	0.55	10.12
7/30/2008	124400	8.3	4.5	1.00	0.55	10.11
7/30/2008	124500	8.2	4.5	1.00	0.55	10.10
7/30/2008	124600	8.3	4.6	1.00	0.55	10.11
7/30/2008	124700	8.4	4.6	0.90	0.49	10.10
7/30/2008	124800	8.2	4.5	1.00	0.55	10.12
7/30/2008	124900	8.2	4.5	1.00	0.55	10.12
7/30/2008	125000	8.4	4.6	1.00	0.55	10.13
7/30/2008	125100	8.4	4.6	1.00	0.55	10.14
7/30/2008	125200	8.3	4.6	1.00	0.55	10.13
7/30/2008	125300	8.3	4.6	1.00	0.55	10.12
7/30/2008	125400	8.3	4.6	1.00	0.55	10.13
7/30/2008	125500	8.3	4.6	1.00	0.55	10.13
7/30/2008	125600	8.3	4.5	1.00	0.55	10.11
7/30/2008	125700	8.2	4.5	1.00	0.55	10.12
7/30/2008	125800	8.3	4.6	1.00	0.55	10.14
7/30/2008	125900	8.3	4.6	1.00	0.55	10.12
7/30/2008	130000	8.3	4.6	1.00	0.55	10.13
7/30/2008	130100	8.3	4.6	1.00	0.55	10.13
7/30/2008	130200	8.3	4.5	1.00	0.55	10.12
7/30/2008	130300	8.2	4.5	1.00	0.55	10.13
7/30/2008	130400	8.3	4.6	1.00	0.55	10.14
7/30/2008	130500	8.3	4.6	1.00	0.55	10.12
7/30/2008	130600	8.4	4.6	0.90	0.49	10.14
7/30/2008	130700	8.4	4.6	1.00	0.55	10.14
7/30/2008	130800	8.3	4.6	1.00	0.55	10.12
7/30/2008	130900	8.3	4.6	1.00	0.55	10.11
7/30/2008	131000	8.3	4.5	1.00	0.55	10.12
7/30/2008	131100	8.3	4.5	1.00	0.55	10.14
7/30/2008	131200	8.3	4.6	1.00	0.55	10.13
7/30/2008	131300	8.3	4.5	1.00	0.55	10.13
7/30/2008	131400	8.2	4.6	1.00	0.55	10.14

DATE	TIME	NOx (ppm) Uncorrected	NOx (ppm) Corrected to 15% O2	CO (ppm) Uncorrected	CO (ppm) Corrected to 15% O2	O2 (%)
7/30/2008	131500	8.2	4.5	1.00	0.55	10.13
7/30/2008	131600	8.3	4.5	1.00	0.55	10.13
7/30/2008	131700	8.3	4.6	1.00	0.55	10.13
7/30/2008	131800	8.2	4.5	1.00	0.55	10.12
7/30/2008	131900	8.2	4.4	1.00	0.55	10.13
7/30/2008	132000	8.2	4.6	1.00	0.55	10.12
7/30/2008	132100	8.3	4.6	1.00	0.55	10.14
7/30/2008	132200	8.3	4.5	1.00	0.55	10.14
7/30/2008	132300	8.4	4.6	1.00	0.55	10.14
7/30/2008	132400	8.4	4.6	1.00	0.55	10.14
7/30/2008	132500	8.3	4.6	0.90	0.49	10.16
7/30/2008	132600	8.2	4.5	1.00	0.55	10.16
7/30/2008	132700	8.3	4.5	1.00	0.55	10.14
7/30/2008	132800	8.3	4.6	1.00	0.55	10.16
7/30/2008	132900	8.4	4.6	0.90	0.49	10.13
7/30/2008	133000	8.3	4.6	1.00	0.55	10.15
7/30/2008	133100	8.3	4.6	1.00	0.55	10.15
7/30/2008	133200	8.2	4.5	0.90	0.49	10.14
7/30/2008	133300	8.2	4.5	0.90	0.49	10.15
7/30/2008	133400	8.4	4.6	1.00	0.55	10.12
7/30/2008	133500	8.3	4.6	1.00	0.55	10.13
7/30/2008	133600	8.2	4.5	1.00	0.55	10.12
7/30/2008	133700	8.2	4.5	1.00	0.55	10.13
7/30/2008	133800	8.3	4.6	1.00	0.55	10.13
7/30/2008	133900	8.3	4.6	1.00	0.55	10.15
7/30/2008	134000	8.3	4.6	1.00	0.55	10.15
7/30/2008	134100	8.3	4.6	1.00	0.55	10.15
7/30/2008	134200	8.3	4.6	1.00	0.55	10.16
7/30/2008	134300	8.3	4.5	1.00	0.55	10.12
7/30/2008	134400	8.3	4.5	1.00	0.55	10.14
7/30/2008	134500	8.4	4.6	1.00	0.55	10.12
7/30/2008	134600	8.3	4.5	1.00	0.55	10.12
7/30/2008	134700	8.2	4.5	1.00	0.55	10.12
7/30/2008	134800	8.2	4.5	1.10	0.60	10.10
7/30/2008	134900	8.2	4.5	1.00	0.55	10.11
7/30/2008	135000	8.3	4.5	1.00	0.55	10.12
7/30/2008	135100	8.3	4.6	1.00	0.55	10.11
7/30/2008	135200	8.3	4.5	1.00	0.55	10.13
7/30/2008	135300	8.3	4.5	1.00	0.55	10.10
7/30/2008	135400	8.3	4.6	1.00	0.55	10.13
7/30/2008	135500	8.3	4.6	1.00	0.55	10.11
7/30/2008	135600	8.3	4.6	1.00	0.55	10.13
7/30/2008	135700	8.3	4.6	1.00	0.55	10.14
7/30/2008	135800	8.2	4.5	1.10	0.60	10.13
7/30/2008	135900	8.3	4.5	1.00	0.55	10.12
7/30/2008	140000	8.3	4.6	1.00	0.55	10.14
7/30/2008	140100	8.3	4.5	1.10	0.60	10.14
7/30/2008	140200	8.3	4.5	1.00	0.55	10.13
7/30/2008	140300	8.3	4.5	1.00	0.55	10.13
7/30/2008	140400	8.3	4.5	1.00	0.55	10.12

DATE	TIME	NOx (ppm) Uncorrected	NOx (ppm) Corrected to 15% O2	CO (ppm) Uncorrected	CO (ppm) Corrected to 15% O2	O2 (%)
7/30/2008	140500	8.3	4.5	1.00	0.55	10.12
7/30/2008	140600	8.3	4.6	1.00	0.55	10.12
7/30/2008	140700	8.4	4.6	1.00	0.55	10.13
7/30/2008	140800	8.4	4.6	1.00	0.55	10.12
7/30/2008	140900	8.4	4.6	1.00	0.55	10.12
7/30/2008	141000	8.4	4.6	1.00	0.55	10.12
7/30/2008	141100	8.4	4.6	1.00	0.55	10.12
7/30/2008	141200	8.4	4.6	1.00	0.55	10.13
7/30/2008	141300	8.4	4.6	1.10	0.60	10.12
7/30/2008	141400	8.4	4.6	1.00	0.55	10.14
7/30/2008	141500	8.3	4.6	1.00	0.55	10.13
7/30/2008	141600	8.3	4.6	1.00	0.55	10.13
7/30/2008	141700	8.4	4.6	1.00	0.55	10.13
7/30/2008	141800	8.3	4.5	1.00	0.55	10.13
7/30/2008	141900	8.3	4.6	1.00	0.55	10.13
7/30/2008	142000	8.3	4.6	1.00	0.55	10.15
7/30/2008	142100	8.3	4.6	1.00	0.55	10.15
7/30/2008	142200	8.3	4.6	1.10	0.60	10.15
7/30/2008	142300	8.3	4.6	1.00	0.55	10.13
7/30/2008	142400	8.4	4.6	1.00	0.55	10.14
7/30/2008	142500	8.4	4.6	1.00	0.55	10.14
7/30/2008	142600	8.4	4.6	1.00	0.55	10.13
7/30/2008	142700	8.4	4.6	1.00	0.55	10.13
7/30/2008	142800	8.3	4.6	1.10	0.60	10.12
7/30/2008	142900	8.3	4.5	1.00	0.55	10.13
7/30/2008	143000	8.2	4.6	1.00	0.55	10.12
7/30/2008	143100	8.4	4.5	1.00	0.55	10.12
7/30/2008	143200	8.3	4.6	1.00	0.55	10.11
7/30/2008	143300	8.4	4.6	1.00	0.55	10.12
7/30/2008	143400	8.3	4.6	1.00	0.55	10.11
7/30/2008	143500	8.4	4.6	1.00	0.55	10.14
7/30/2008	143600	8.3	4.6	1.00	0.55	10.12
7/30/2008	143700	8.3	4.6	1.00	0.55	10.12
7/30/2008	143800	8.3	4.6	1.00	0.55	10.13
7/30/2008	143900	8.3	4.6	1.00	0.55	10.14
7/30/2008	144000	8.3	4.6	1.00	0.55	10.14
7/30/2008	144100	8.4	4.6	1.00	0.55	10.13
7/30/2008	144200	8.4	4.6	1.00	0.55	10.12
7/30/2008	144300	8.3	4.6	1.00	0.55	10.12
7/30/2008	144400	8.3	4.6	1.00	0.55	10.11
7/30/2008	144500	8.3	4.6	1.00	0.55	10.11
7/30/2008	144600	8.3	4.5	1.00	0.55	10.12
7/30/2008	144700	8.2	4.5	1.00	0.55	10.12
7/30/2008	144800	8.2	4.5	1.00	0.55	10.12
7/30/2008	144900	8.2	4.5	1.00	0.55	10.14
7/30/2008	145000	8.2	4.5	1.00	0.55	10.12
7/30/2008	145100	8.2	4.5	1.00	0.55	10.13
7/30/2008	145200	8.4	4.6	1.00	0.55	10.12
7/30/2008	145300	8.3	4.6	1.00	0.55	10.14
7/30/2008	145400	8.2	4.5	1.00	0.55	10.13

DATE	TIME	NOx (ppm) Uncorrected	NOx (ppm) Corrected to 15% O2	CO (ppm) Uncorrected	CO (ppm) Corrected to 15% O2	O2 (%)
7/30/2008	145500	8.2	4.5	1.00	0.55	10.12
7/30/2008	145600	8.3	4.5	1.00	0.55	10.13
7/30/2008	145700	8.3	4.6	1.00	0.55	10.11
7/30/2008	145800	8.3	4.6	1.00	0.55	10.11
7/30/2008	145900	8.4	4.6	1.00	0.55	10.10
7/30/2008	150000	8.3	4.6	1.10	0.60	10.10
7/30/2008	150100	8.2	4.5	1.00	0.55	10.11
7/30/2008	150200	8.2	4.5	1.00	0.55	10.12
7/30/2008	150300	8.2	4.6	1.00	0.55	10.12
7/30/2008	150400	8.3	4.5	1.00	0.55	10.12
7/30/2008	150500	8.3	4.6	1.00	0.55	10.11
7/30/2008	150600	8.3	4.6	1.00	0.55	10.10
7/30/2008	150700	8.2	4.5	1.00	0.55	10.14
7/30/2008	150800	8.4	4.6	1.00	0.55	10.10
7/30/2008	150900	8.4	4.6	1.00	0.55	10.11
7/30/2008	151000	8.3	4.5	1.00	0.55	10.11
7/30/2008	151100	8.2	4.5	1.00	0.55	10.12
7/30/2008	151200	8.2	4.5	1.00	0.55	10.11
7/30/2008	151300	8.2	4.5	1.00	0.55	10.12
7/30/2008	151400	8.2	4.5	1.00	0.55	10.10
7/30/2008	151500	8.2	4.5	1.00	0.55	10.11
7/30/2008	151600	8.3	4.5	1.00	0.55	10.11
7/30/2008	151700	8.3	4.6	1.00	0.55	10.11
7/30/2008	151800	8.3	4.5	1.00	0.55	10.12
7/30/2008	151900	8.3	4.6	1.00	0.55	10.11
7/30/2008	152000	8.3	4.6	1.00	0.55	10.11
7/30/2008	152100	8.3	4.6	1.00	0.55	10.12
7/30/2008	152200	8.4	4.6	1.00	0.55	10.11
7/30/2008	152300	8.4	4.6	1.00	0.55	10.12
7/30/2008	152400	8.3	4.6	1.00	0.55	10.11
7/30/2008	152500	8.2	4.5	1.00	0.55	10.10
7/30/2008	152600	8.3	4.6	1.00	0.55	10.10
7/30/2008	152700	8.4	4.5	1.00	0.55	10.09
7/30/2008	152800	8.3	4.6	1.00	0.55	10.10
7/30/2008	152900	8.4	4.5	1.00	0.55	10.10
7/30/2008	153000	8.3	4.5	1.00	0.55	10.09
7/30/2008	153100	8.3	4.6	1.00	0.55	10.11
7/30/2008	153200	8.3	4.5	1.00	0.55	10.15
7/30/2008	153300	8.2	4.5	1.10	0.61	10.19
7/30/2008	153400	8.1	4.5	1.00	0.56	10.27
7/30/2008	153500	8	4.5	0.90	0.50	10.32
7/30/2008	153600	7.8	4.4	1.00	0.56	10.36
7/30/2008	153700	7.9	4.4	0.90	0.51	10.41
7/30/2008	153800	7.8	4.4	1.00	0.57	10.45
7/30/2008	153900	7.8	4.4	0.90	0.51	10.48
7/30/2008	154000	7.8	4.4	0.90	0.51	10.51
7/30/2008	154100	7.7	4.4	0.90	0.51	10.52
7/30/2008	154200	7.7	4.4	0.90	0.51	10.55
7/30/2008	154300	7.7	4.4	0.90	0.51	10.57

DATE	TIME	NOx (ppm) Uncorrected	NOx (ppm) Corrected to 15% O2	CO (ppm) Uncorrected	CO (ppm) Corrected to 15% O2	O2 (%)
7/30/2008	154400	7.7	4.4	0.80	0.46	10.59
7/30/2008	154500	7.7	4.4	0.90	0.52	10.66
7/30/2008	154600	7.5	4.4	0.80	0.47	10.78
7/30/2008	154700	7.4	4.3	0.80	0.47	10.83
7/30/2008	154800	7.3	4.3	0.80	0.47	10.87
7/30/2008	154900	7.4	4.4	0.80	0.47	10.91
7/30/2008	155000	7.3	4.4	0.80	0.48	10.96
7/30/2008	155100	7.2	4.3	0.90	0.54	10.99
7/30/2008	155200	7.3	4.4	0.80	0.48	11.00
7/30/2008	155300	7.3	4.4	0.80	0.48	11.01
7/30/2008	155400	7.4	4.4	0.80	0.48	11.01
7/30/2008	155500	7.4	4.4	0.90	0.54	11.02
7/30/2008	155600	7.4	4.4	0.80	0.48	11.02
7/30/2008	155700	7.4	4.4	0.80	0.48	11.01
7/30/2008	155800	7.6	4.5	0.80	0.48	10.99
7/30/2008	155900	7.6	4.5	0.80	0.48	10.98
7/30/2008	160000	7.6	4.5	0.80	0.48	10.97
7/30/2008	160100	7.5	4.5	0.80	0.48	10.98
7/30/2008	160200	7.6	4.5	0.80	0.48	10.98
7/30/2008	160300	7.5	4.5	0.80	0.48	10.99
7/30/2008	160400	7.6	4.5	0.90	0.54	10.97
7/30/2008	160500	7.6	4.6	0.80	0.48	11.01
7/30/2008	160600	7.6	4.5	0.80	0.48	10.98
7/30/2008	160700	7.6	4.5	0.80	0.48	10.97
7/30/2008	160800	7.5	4.5	0.80	0.48	10.99
7/30/2008	160900	7.5	4.4	0.90	0.54	11.01
7/30/2008	161000	7.5	4.5	0.80	0.48	11.01
7/30/2008	161100	7.4	4.5	0.80	0.48	11.08
7/30/2008	161200	7.3	4.5	0.90	0.54	11.10
7/30/2008	161300	7.3	4.4	0.80	0.48	11.10
7/30/2008	161400	7.4	4.4	0.80	0.48	11.12
7/30/2008	161500	7.4	4.5	0.90	0.54	11.13
7/30/2008	161600	7.4	4.5	0.80	0.49	11.13
7/30/2008	161700	7.2	4.4	0.90	0.55	11.18
7/30/2008	161800	7.2	4.4	0.80	0.49	11.21
7/30/2008	161900	7.3	4.4	0.80	0.49	11.21
7/30/2008	162000	7.4	4.5	0.80	0.49	11.22
7/30/2008	162100	7.4	4.5	0.80	0.49	11.22
7/30/2008	162200	7.4	4.5	0.80	0.49	11.24
7/30/2008	162300	7.4	4.5	0.80	0.49	11.25
7/30/2008	162400	7.4	4.5	0.80	0.49	11.24
7/30/2008	162500	7.3	4.5	0.80	0.49	11.27
7/30/2008	162600	7.3	4.5	0.80	0.49	11.30
7/30/2008	162700	7.1	4.4	0.80	0.49	11.31
7/30/2008	162800	7.2	4.4	0.90	0.56	11.34
7/30/2008	162900	7.2	4.4	0.90	0.56	11.35
7/30/2008	163000	7.2	4.4	0.80	0.49	11.35
7/30/2008	163100	7.2	4.4	0.80	0.23	11.35

APPENDIX H

VISIBLE EMISSIONS DATA SHEETS

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One): (Method 9) 203A 203B Other: _____

Form Number	Page	Of
HP2A	1	2

Continued on VEO Form Number: _____

Company Name	CITY OF TALLAHASSEE
Facility Name	ARVAH B. HOPKINS GENERATING STATION
Street Address	1125 GEDDIE ROAD
City	TALLAHASSEE
State	FL
Zip	32304

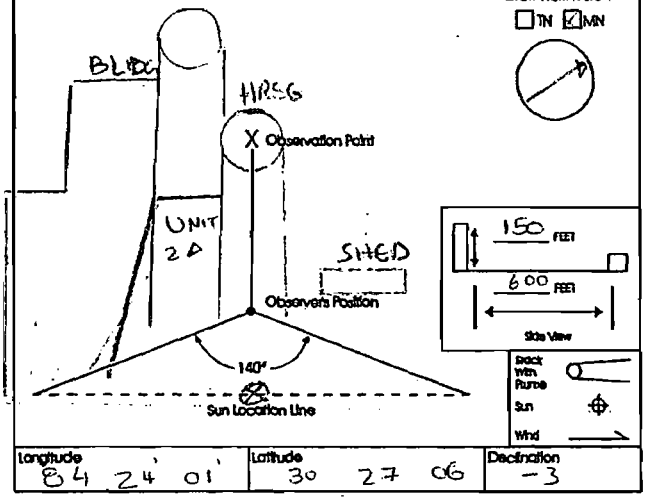
Process: COMBUSTION TURBINE 2A	Unit #: HP2A	Operating Mode: 2282.5 mmBTU/Hr
Control Equipment: SCR		Operating Mode: GAS

Describe Emission Point	METAL GRAY CIRCULAR STACK
Height of Emiss. Pt.	Start 150' End 150'
Height of Emiss. Pt. Rel. to Observer	Start 150' End 150'
Distance to Emiss. Pt.	Start 600' End 600'
Direction to Emiss. Pt. (Degrees)	Start 352° End 352°
Vertical Angle to Obs. Pt.	Start 15° End 15°
Direction to Obs. Pt. (Degrees)	Start 352 End 352°
Distance and Direction to Observation Point from Emission Point	Start 1 ft ABOVE STACK End SAME

Describe Emissions	Start CONING End SAME
Emission Color	Start CLEAR End CLEAR
Water Droplet Plume	Attached ☐ Detached ☐ None ☒
Describe Plume Background	Start SKY End SAME
Background Color	Start GRAY/BLUE End SAME
Sky Conditions	Start CLOUDY End SAME
Wind Speed	Start 2-4 mph End 2-4 mph
Wind Direction	Start NW End NW
Ambient Temp.	Start 95° End 96°
Wet Bulb Temp.	79°
RH Percent	50%

Source Layout Sketch

Draw North Arrow: ☐ TN ☑ MN



Longitude	Latitude	Declination
84 24' 01"	30 27 06	-3

Additional Information: WITH DUCT FIRING

Observation Date	Time Zone	Start Time	End Time
7/30/08	EASTERN	12:42 PM	1:41 PM

Min \ Sec	0	15	30	45	Comments
1	Ø	Ø	Ø	Ø	
2	Ø	Ø	Ø	Ø	
3	Ø	Ø	Ø	Ø	
4	Ø	Ø	Ø	Ø	
5	Ø	Ø	Ø	Ø	
6	Ø	Ø	Ø	Ø	
7	Ø	Ø	Ø	Ø	
8	Ø	Ø	Ø	Ø	
9	Ø	Ø	Ø	Ø	
10	Ø	Ø	Ø	Ø	
11	Ø	Ø	Ø	Ø	
12	Ø	Ø	Ø	Ø	
13	Ø	Ø	Ø	Ø	
14	Ø	Ø	Ø	Ø	
15	Ø	Ø	Ø	Ø	
16	Ø	Ø	Ø	Ø	
17	Ø	Ø	Ø	Ø	
18	Ø	Ø	Ø	Ø	
19	Ø	Ø	Ø	Ø	
20	Ø	Ø	Ø	Ø	
21	Ø	Ø	Ø	Ø	
22	Ø	Ø	Ø	Ø	
23	Ø	Ø	Ø	Ø	
24	Ø	Ø	Ø	Ø	
25	Ø	Ø	Ø	Ø	
26	Ø	Ø	Ø	Ø	
27	Ø	Ø	Ø	Ø	
28	Ø	Ø	Ø	Ø	
29	Ø	Ø	Ø	Ø	
30	Ø	Ø	Ø	Ø	

Observer's Name (Print)	HAZEM TAMIMI
Observer's Signature	Hazem Tamimi
Date	7/30/08
Organization	CITY OF TALLAHASSEE
Certified By	ETA
Date	5/14/2008

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One): (Method 9) 203A 203B Other: _____

Form Number	HP2A	Page 2 of 2
Continued on VEO Form Number		

Company Name: CITY OF TALLAHASSEE
Facility Name: ARVAH B. HOPKINS GENERATING STATION
Street Address: 1125 GEDDIE ROAD
City: TALLAHASSEE | State: FL | Zip: 32304

Process: COMBUSTION TURBINE 2A | Unit #: HP2A | Operating Mode: 2282.5 mmBTU/hr
Control Equipment: SCR | Operating Mode: GAS

Describe Emission Point: METAL GRAY CIRCULAR STACK

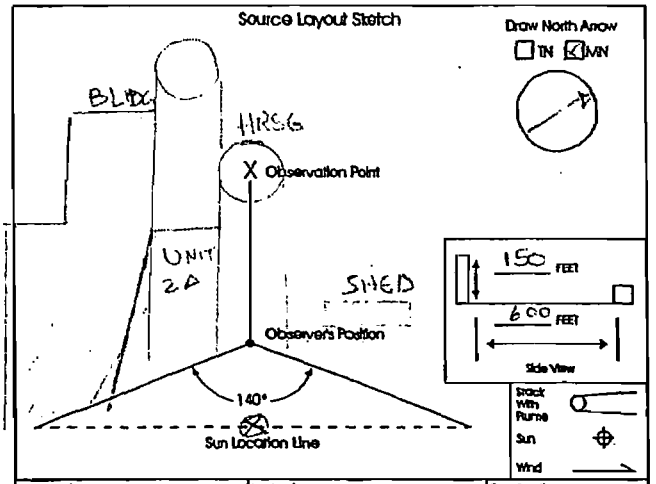
	Start	End
Height of Emiss. Pt.	150'	150'
Height of Emiss. Pt. Rel. to Observer	150'	150'
Distance to Emiss. Pt.	600'	600'
Direction to Emiss. Pt. (Degrees)	352°	352°
Vertical Angle to Obs. Pt.	15°	15°
Direction to Obs. Pt. (Degrees)	352	352°

Distance and Direction to Observation Point from Emission Point: Start 1 ft ABOVE STACK End SAME

Describe Emissions: Start CONING End SAME
Emission Color: Start CLEAR End CLEAR
Water Droplet Plume: Attached ☐ Detached ☐ None ☒

Describe Plume Background: Start SKY End SAME
Background Color: Start GRAY/BLUE End SAME
Sky Conditions: Start CLOUDY End SAME
Wind Speed: Start 2-4 mph End 2-4 mph
Wind Direction: Start NW End NW
Ambient Temp.: Start 95° End 96°
Wet Bulb Temp.: 79°
RH Percent: 50%

Source Layout Sketch



Longitude: 84 24' 01" | Latitude: 30 27 06 | Declination: -3

Additional Information: WITH DUCT FIRING

Observation Date	Time Zone	Start Time	End Time
7/30/08	EASTERN	12:42 PM	1:41 PM

Min \ Sec	0	15	30	45	Comments
1	Ø	Ø	Ø	Ø	
2	Ø	Ø	Ø	Ø	
3	Ø	Ø	Ø	Ø	
4	Ø	Ø	Ø	Ø	
5	Ø	Ø	Ø	Ø	
6	Ø	Ø	Ø	Ø	
7	Ø	Ø	Ø	Ø	
8	Ø	Ø	Ø	Ø	
9	Ø	Ø	Ø	Ø	
10	Ø	Ø	Ø	Ø	
11	Ø	Ø	Ø	Ø	
12	Ø	Ø	Ø	Ø	
13	Ø	Ø	Ø	Ø	
14	Ø	Ø	Ø	Ø	
15	Ø	Ø	Ø	Ø	
16	Ø	Ø	Ø	Ø	
17	Ø	Ø	Ø	Ø	
18	Ø	Ø	Ø	Ø	
19	Ø	Ø	Ø	Ø	
20	Ø	Ø	Ø	Ø	
21	Ø	Ø	Ø	Ø	
22	Ø	Ø	Ø	Ø	
23	Ø	Ø	Ø	Ø	
24	Ø	Ø	Ø	Ø	
25	Ø	Ø	Ø	Ø	
26	Ø	Ø	Ø	Ø	
27	Ø	Ø	Ø	Ø	
28	Ø	Ø	Ø	Ø	
29	Ø	Ø	Ø	Ø	
30	Ø	Ø	Ø	Ø	

Observer's Name (Print): HAZEM TAMIMI
Observer's Signature: Hazem Tamimi | Date: 7/30/08
Organization: CITY OF TALLAHASSEE
Certified By: ETA | Date: 5/14/2008

VISIBLE EMISSIONS EVALUATOR

This is to certify that

HAZEM TAMIMI

met the specifications of Federal Reference Method 9 and qualifies 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, NC. This certificate is valid for six months from date of issue.

363992
CERT NUMBER

5/14/2008
DATE OF SCHOOL

PENSACOLA, FL
SCHOOL LOCATION

11/13/2008
CERTIFICATION EXP DATE

TAM642923
STUDENT ID NUMBER

EASTERN TECHNICAL ASSOCIATES

HAZEM TAMIMI

TAM642923 STUDENT ID NUMBER

met the specifications of Federal Reference Method 9 and qualifies 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, NC. This certificate is valid for six months from date of issue and expires on the date below.

PENSACOLA, FL	5/14/2008	363992
SCHOOL LOCATION	DATE OF SCHOOL	CERT NUMBER
PENF06	11/13/2008	
LAST LECTURE	CERTIFICATION EXP DATE	BEARER

Customer Support
Debbie or Sheila
919-878-3188
www.eta-is-opacity.com

PART F

Startup & Shutdown Procedures

Startup and Shutdown Procedures

The City of Tallahassee follows best operational practices in the startup and shutdown of Unit 2A at the Hopkins Generating Station. Under normal conditions standard operating guidelines are followed for startup and shutdown of the gas turbines. Under any abnormal condition of operation, best operational practices are followed to minimize emissions and to minimize the duration of any excess emissions.

Normal start up to combined cycle sequence of events:

1. CTG start initiated.
    a. CTG spins at purge speed (850 RPM) for 15.2 minutes to purge HRSG
2. CTG Fire
    a. Following purge, CTG slows to firing speed (~580 RPM) and fires.
    b. CTG then spins up to sync speed (3600 RPM)
    c. Permission is obtained from FRCC Reliability Coordinator to open 230 kv sync breakers
    d. Motor operated disconnect between the generator step-up transformer and the 230 kV sync breakers is closed
3. CTG Sync
    a. Following receiving permission from Reliability Coordinator to open 230 kv breakers, unit is sync'd to system
    b. CTG is loaded to between 5 - 15 MW
    c. HRSG pressure is built
    d. STG seals and set
    e. Condenser vacuum is pulled
    f. HRSG drains and vents are configured from start up to load settings
    g. CTG performance gas heater is cut in once sufficient temperature has been reached in HRSG water supply to heater
4. STG Roll
    a. Once HRSG and CTG conditions are acceptable and steam condition requirements are met, STG is rolled to sync speed. Depending upon the STG temperature, there may be hold points at intermediate speeds
    b. CTG is still between 5 - 15 MW
    c. At Sync speed, STG is readied for sync to grid.
5. STG Sync
    a. STG sync'd to grid and loaded to between 5 and 30 MW.
    b. CTG is still between 5 - 15 MW
    c. STG drains are closed and set for run
    d. Once STG and HRSG are ready for load, CTG is ramped form 15 MW to ~70 MW at ~10 MW/minute.
6. CTG In Mode 6Q
    a. CTG achieves mode 6Q ~65-75 MW
    b. In Mode 6Q, DLN combustion is configured and CTG NOx emissions drop to 9 ppmvd or less on natural gas
    c. One unit has settled out, unit is released for dispatch

Normal Combined Cycle Shutdown Procedure

Lower unit to 120 MW (~70MW on CT and ~ 50MW on ST).

Lower all drum level setpoints to -8.0"

Close HP (HP881) & IP (IP668) continuous blows.

Lower CT load to 5 - 7 MW (monitor Main Steam & Hot Reheat temperatures { DO NOT exceed 1035 degrees F }).

Close IP back pressure valve (IP706) while opening IP sky vent (BS693).

Take off Recirc Pumps & close CD508.

Check Steam Turbine drain valves (should open @ app. 17-19 PSI on crossover pipe). MASTER MENU > OLD MASTER MENU > MAIN/EXT STM & BLR VENT > MISC STEAM SYSTEM DRNS in lower right corner > TURB DRAIN VALVES.

Open Steam Turbine Main Steam drains, Cold Reheat and Hot Reheat drains from above mentioned MISC STEAM SYSTEM DRNS page.

Open Steam Turbine Drains TD200 & TD201 (old #2 & #3 extraction drains). MASTER MENU > STEAM TURBINE DRAIN SYS.

Go to Steam Turbine HMI page: "On line mode" select "VPC Manual".
Raise throttle pressure to 800psi by manually closing the governor valves.

Notify the Control Center

On CT Startup page, select "Stop".

When HP235 & HP236 opens, open CT MOD (MPCT5) on Unit 2 Graphics 18KV 230V TRANSF & MOD, page # 4102. Will need to have someone visually verify MOD is open.

Call Control Center and request permission to close HP235 & HP236. This has to be closed from the 230 KV building.

Start steam turbine aux oil pump.

Start lowering load on steam turbine with governor control pistol grip and maintaining throttle pressure above 500 PSI with at least 100 degrees superheat on both main steam and hot reheat while monitoring condenser vacuum and hood temperature.

NOTE: At any time there is less than 100 degrees SH on Main Steam or Hot Reheat, immediately trip the steam turbine.

With steam turbine at 3 MW, call Control Center to request permission to open HP112 & HP113. Open HP112 & HP113. Open field breaker and place voltage regulator in "off" position. Trip steam turbine.

When turbine speed reaches 400 RPM, open vacuum breaker, shut down vacuum pump. When vacuum get to "0", shut down gland steam exhauster and close gland steam supply.

When IP SH PSI reaches 25 PSI, open IP SH drain valve IP690.

When RH PSI reaches 25 PSI, open RH#3 drain valve HR751.

When main steam SH PSI reaches 25 PSI, open HP SH drain valves BD925, BD923 and BD947.

SPECIAL NOTE: if force cooling HRSG, when CT speed drops to 42 RPM, initiate a CRANK from CT HMI start up page by selecting "Crank" then Master Control "Start". Keep feeding drums and slowly reducing PSI with HP, IP & RH sky vents. Continue feeding drums until drums are at "0" PSI and 212 degrees F. Continue crank on CT until "Highest" wheelspace temperature reach 150 degrees F. At this point select "Stop" from Master Control.

PART G

Natural Gas Analysis

Florida Gas Transmission-8030

Oct 14 2008 3:42 PM

Date	BTU	CO2	N2	Grav	Methan	Ethane	Propan	Ibutan	Nbutan	Ipenta	Npenta	C6
10/13/2008	1028	1.09	0.545	0.587	95.579	2.097	0.394	0.082	0.086	0.036	0.024	0.066
10/12/2008	1029	1.063	0.554	0.587	95.58	2.097	0.404	0.084	0.089	0.037	0.025	0.067
10/11/2008	1029	1.126	0.56	0.588	95.412	2.177	0.415	0.087	0.091	0.039	0.025	0.068
10/10/2008	1029	1.142	0.57	0.589	95.355	2.22	0.409	0.084	0.089	0.037	0.025	0.068
10/9/2008	1028	1.068	0.517	0.586	95.712	2.031	0.382	0.08	0.084	0.036	0.023	0.067
10/8/2008	1028	1.062	0.552	0.587	95.602	2.115	0.388	0.078	0.082	0.035	0.023	0.064
10/7/2008	1029	1.102	0.57	0.588	95.38	2.247	0.405	0.083	0.086	0.037	0.024	0.068
10/6/2008	1028	1.049	0.544	0.586	95.632	2.142	0.367	0.074	0.076	0.033	0.021	0.063
10/5/2008	1028	1.024	0.51	0.586	95.753	2.086	0.363	0.073	0.074	0.032	0.021	0.063
10/4/2008	1027	0.982	0.5	0.584	95.919	2.014	0.339	0.067	0.07	0.03	0.02	0.059
10/3/2008	1030	1.046	0.528	0.587	95.501	2.226	0.419	0.077	0.087	0.034	0.023	0.059
10/2/2008	1031	1.084	0.501	0.588	95.422	2.239	0.439	0.085	0.094	0.038	0.025	0.072
10/1/2008	1032	1.139	0.506	0.59	95.246	2.32	0.453	0.092	0.098	0.041	0.027	0.078
9/30/2008	1031	1.153	0.506	0.589	95.319	2.282	0.427	0.086	0.091	0.038	0.025	0.072
9/29/2008	1030	1.105	0.503	0.588	95.456	2.214	0.413	0.085	0.089	0.038	0.025	0.073
9/28/2008	1030	1.132	0.516	0.589	95.357	2.257	0.424	0.086	0.092	0.038	0.025	0.073
9/27/2008	1031	1.124	0.511	0.589	95.319	2.306	0.44	0.083	0.091	0.036	0.024	0.067
9/26/2008	1033	1.255	0.52	0.593	94.823	2.589	0.471	0.095	0.101	0.042	0.028	0.077
9/25/2008	1033	1.318	0.518	0.594	94.791	2.524	0.475	0.104	0.107	0.046	0.031	0.087
9/24/2008	1033	1.323	0.506	0.594	94.802	2.515	0.476	0.105	0.107	0.047	0.031	0.089
9/23/2008	1035	1.346	0.5	0.595	94.708	2.533	0.508	0.113	0.115	0.05	0.033	0.095
9/22/2008	1035	1.374	0.51	0.596	94.568	2.606	0.528	0.115	0.121	0.051	0.035	0.093
9/21/2008	1035	1.347	0.5	0.595	94.691	2.542	0.519	0.109	0.118	0.05	0.033	0.09
9/20/2008	1034	1.292	0.493	0.594	94.822	2.484	0.516	0.107	0.116	0.048	0.033	0.089
9/19/2008	1035	1.325	0.477	0.595	94.734	2.549	0.518	0.106	0.117	0.049	0.033	0.094
9/18/2008	1036	1.279	0.477	0.594	94.829	2.47	0.528	0.111	0.123	0.051	0.035	0.097
9/17/2008	1033	1.297	0.514	0.593	94.891	2.421	0.495	0.1	0.115	0.047	0.032	0.088
9/16/2008	1033	1.332	0.537	0.594	94.758	2.507	0.49	0.098	0.113	0.047	0.032	0.086
9/15/2008	1033	1.355	0.536	0.594	94.688	2.575	0.472	0.098	0.109	0.047	0.032	0.087
9/14/2008	1031	1.363	0.565	0.594	94.764	2.521	0.432	0.092	0.104	0.045	0.031	0.083

9/13/2008	1031	1.369	0.561	0.594	94.714	2.57	0.436	0.094	0.101	0.044	0.029	0.082
9/12/2008	1034	1.338	0.486	0.594	94.793	2.532	0.466	0.106	0.108	0.048	0.032	0.092
9/11/2008	1033	1.271	0.497	0.593	94.959	2.445	0.445	0.103	0.108	0.048	0.032	0.093
9/10/2008	1033	1.271	0.497	0.593	94.959	2.445	0.445	0.103	0.108	0.048	0.032	0.093
9/9/2008	1033	1.293	0.541	0.593	94.825	2.509	0.46	0.1	0.106	0.046	0.031	0.089
9/8/2008	1035	1.292	0.491	0.594	94.838	2.485	0.491	0.111	0.112	0.049	0.033	0.098
9/7/2008	1038	1.304	0.529	0.596	94.502	2.658	0.561	0.128	0.128	0.054	0.035	0.101
9/6/2008	1035	1.222	0.503	0.593	94.929	2.472	0.48	0.106	0.112	0.049	0.033	0.095
9/5/2008	1035	1.222	0.503	0.593	94.929	2.472	0.48	0.106	0.112	0.049	0.033	0.095
9/4/2008	1034	1.268	0.536	0.593	94.839	2.499	0.473	0.102	0.111	0.048	0.032	0.092
9/3/2008	1034	1.298	0.572	0.595	94.667	2.571	0.494	0.105	0.114	0.049	0.033	0.096
9/2/2008	1034	1.218	0.554	0.593	94.856	2.507	0.478	0.103	0.11	0.048	0.032	0.095
9/1/2008	1039	1.284	0.657	0.598	94.211	2.785	0.593	0.128	0.136	0.058	0.031	0.118
8/31/2008	1034	1.137	0.529	0.591	95.082	2.425	0.455	0.101	0.105	0.046	0.031	0.089
8/30/2008	1031	1.097	0.509	0.589	95.383	2.284	0.402	0.086	0.092	0.04	0.027	0.079
8/29/2008	1030	1.114	0.6	0.59	95.227	2.329	0.411	0.07	0.094	0.045	0.032	0.078
8/28/2008	1032	1.124	0.521	0.59	95.201	2.414	0.413	0.089	0.093	0.04	0.026	0.079
8/27/2008	1031	1.122	0.525	0.589	95.225	2.428	0.396	0.084	0.087	0.038	0.025	0.072
8/26/2008	1031	1.118	0.5	0.589	95.313	2.357	0.396	0.087	0.088	0.039	0.026	0.076
8/25/2008	1031	1.119	0.511	0.589	95.336	2.334	0.391	0.084	0.088	0.038	0.025	0.074
8/24/2008	1031	1.136	0.517	0.589	95.268	2.359	0.398	0.088	0.092	0.04	0.026	0.075
8/23/2008	1032	1.128	0.512	0.59	95.215	2.417	0.404	0.089	0.091	0.04	0.027	0.077
8/22/2008	1033	1.105	0.523	0.59	95.173	2.439	0.426	0.092	0.095	0.041	0.027	0.078
8/21/2008	1033	1.124	0.53	0.591	95.127	2.438	0.439	0.094	0.097	0.042	0.028	0.082
8/20/2008	1032	1.155	0.54	0.59	95.104	2.462	0.411	0.088	0.091	0.041	0.027	0.081
8/19/2008	1032	1.13	0.546	0.59	95.161	2.431	0.407	0.087	0.092	0.04	0.027	0.079
8/18/2008	1032	1.119	0.546	0.59	95.185	2.431	0.401	0.085	0.09	0.039	0.026	0.078
8/17/2008	1033	1.114	0.559	0.59	95.092	2.479	0.424	0.09	0.095	0.041	0.027	0.079
8/16/2008	1033	1.115	0.55	0.591	95.05	2.523	0.429	0.091	0.095	0.041	0.027	0.079
8/15/2008	1033	1.127	0.532	0.591	95.043	2.534	0.433	0.091	0.095	0.04	0.027	0.077
8/14/2008	1033	1.076	0.515	0.59	95.154	2.503	0.427	0.091	0.094	0.04	0.026	0.074
8/13/2008	1032	1.064	0.518	0.589	95.263	2.425	0.414	0.088	0.092	0.039	0.026	0.072
8/12/2008	1030	1.021	0.501	0.587	95.54	2.279	0.369	0.079	0.082	0.036	0.024	0.068
8/11/2008	1031	1.002	0.528	0.587	95.505	2.311	0.368	0.079	0.082	0.036	0.023	0.068
8/10/2008	1030	0.979	0.536	0.586	95.565	2.279	0.359	0.077	0.08	0.035	0.023	0.067
8/9/2008	1031	1.097	0.506	0.588	95.367	2.359	0.369	0.081	0.085	0.037	0.025	0.074
8/8/2008	1031	1.097	0.506	0.588	95.367	2.359	0.369	0.081	0.085	0.037	0.025	0.074

8/7/2008	1032	1.106	0.521	0.59	95.201	2.454	0.395	0.088	0.09	0.04	0.026	0.078
8/6/2008	1033	1.071	0.543	0.59	95.168	2.449	0.425	0.093	0.098	0.043	0.029	0.082
8/5/2008	1033	1.071	0.543	0.59	95.168	2.449	0.425	0.093	0.098	0.043	0.029	0.082
8/4/2008	1032	1.076	0.521	0.589	95.269	2.392	0.411	0.09	0.094	0.041	0.028	0.079
8/3/2008	1024	1.079	1.3	0.592	94.499	2.405	0.401	0.087	0.091	0.039	0.026	0.073
8/2/2008	1031	1.062	0.525	0.588	95.384	2.332	0.39	0.084	0.087	0.038	0.025	0.072
8/1/2008	1030	1.074	0.505	0.588	95.506	2.248	0.367	0.079	0.085	0.038	0.025	0.074
7/31/2008	1030	1.032	0.503	0.587	95.617	2.204	0.356	0.076	0.082	0.036	0.024	0.071
7/30/2008	1030	1.053	0.516	0.588	95.474	2.286	0.374	0.078	0.085	0.037	0.025	0.073
7/29/2008	1031	1.109	0.527	0.589	95.327	2.337	0.389	0.082	0.089	0.038	0.026	0.076
7/28/2008	1031	1.136	0.527	0.59	95.235	2.358	0.416	0.088	0.094	0.04	0.027	0.079
7/27/2008	1030	1.133	0.526	0.589	95.361	2.284	0.388	0.082	0.088	0.038	0.026	0.075
7/26/2008	1030	1.091	0.512	0.588	95.453	2.261	0.379	0.081	0.086	0.038	0.025	0.073
7/25/2008	1029	1.083	0.483	0.587	95.608	2.171	0.362	0.079	0.083	0.036	0.024	0.072
7/24/2008	1029	1.083	0.483	0.587	95.608	2.171	0.362	0.079	0.083	0.036	0.024	0.072
7/23/2008	1030	1.088	0.494	0.588	95.52	2.216	0.38	0.081	0.085	0.037	0.025	0.074
7/22/2008	1031	1.129	0.527	0.59	95.287	2.3	0.423	0.09	0.095	0.041	0.028	0.082
7/21/2008	1031	1.09	0.525	0.589	95.364	2.271	0.416	0.09	0.095	0.042	0.028	0.08
7/20/2008	1030	1.099	0.52	0.588	95.475	2.205	0.389	0.084	0.087	0.039	0.026	0.077
7/19/2008	1030	1.158	0.549	0.59	95.267	2.303	0.402	0.086	0.09	0.04	0.026	0.078
7/18/2008	1030	1.107	0.537	0.589	95.356	2.292	0.397	0.083	0.087	0.038	0.025	0.077
7/17/2008	1030	1.092	0.522	0.588	95.456	2.235	0.389	0.082	0.086	0.037	0.025	0.077
7/16/2008	1031	1.126	0.525	0.59	95.258	2.352	0.411	0.087	0.092	0.04	0.027	0.081
7/15/2008	1031	1.158	0.545	0.59	95.188	2.382	0.405	0.085	0.091	0.039	0.027	0.079
7/14/2008	1031	1.128	0.533	0.589	95.278	2.332	0.406	0.085	0.092	0.039	0.027	0.079

PART H

Identification of Applicable Requirements

Identification of Applicable Requirements

This Title V Air Operation Permit Application Revision for the Arvah B. Hopkins Generating Station utilizes the provision outlined in Chapter 403, Florida Statues (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, 62-213 and 62-214.

In addition, the applicant hereby request to reference the list of department rules to which all Title V sources are likely subject, which is found on the Florida Department of Environmental Protection's website.

Title V Core List Effective: 03/01/02

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61, Subpart M: NESHAP for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 06-01-01

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 06-21-01

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(5), F.A.C.: Notification of Startup.
62-210.300(6), F.A.C.: Emissions Unit Reclassification.
62-210.300(7), F.A.C.: Transfer of Air Permits.

62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(1), F.A.C.: Public Notice of Proposed Agency Action.
62-210.350(2), F.A.C.: Additional Public Notice Requirements for Emissions Units Subject to Prevention of Significant Deterioration or Nonattainment-Area Preconstruction Review.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.
62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.
62-210.400, F.A.C.: Emission Estimates.
62-210.650, F.A.C.: Circumvention.
62-210.700, F.A.C.: Excess Emissions.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1), F.A.C.: Application for Air Permit – Title V Source, Form and Instructions.
62-210.900(5), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.
62-210.900(7), F.A.C.: Application for Transfer of Air Permit – Title V and Non-Title V Source.

CHAPTER 62-212, F.A.C.: STATIONARY SOURCES - PRECONSTRUCTION REVIEW, effective 08-17-00

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 04-16-01

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.415, F.A.C.: Trading of Emissions Within a Source.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.450, F.A.C.: Permit Review by EPA and Affected States
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1), F.A.C.: Major Air Pollution Source Annual Emissions Fee Form.
62-213.900(7), F.A.C.: Statement of Compliance Form.

Title V Core List

Effective: 03/01/02

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-02-99

62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.

CHAPTER 62-297, F.A.C.: STATIONARY SOURCES - EMISSIONS MONITORING, effective 03-02-99

62-297.310, F.A.C.: General Test Requirements.
62-297.330, F.A.C.: Applicable Test Procedures.
62-297.340, F.A.C.: Frequency of Compliance Tests.
62-297.345, F.A.C.: Stack Sampling Facilities Provided by the Owner of an Emissions Unit.
62-297.350, F.A.C.: Determination of Process Variables.
62-297.570, F.A.C.: Test Report.
62-297.620, F.A.C.: Exceptions and Approval of Alternate Procedures and Requirements.

Miscellaneous:

CHAPTER 28-106, F.A.C.: Decisions Determining Substantial Interests
CHAPTER 62-110, F.A.C.: Exception to the Uniform Rules of Procedure, effective **07-01-98**
CHAPTER 62-256, F.A.C.: Open Burning and Frost Protection Fires, effective 11-30-94
CHAPTER 62-257, F.A.C.: Asbestos Notification and Fee, effective 02-09-99
CHAPTER 62-281, F.A.C.: Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling, effective 09-10-96

PART I

Operation and Maintenance Plan

Operation and Maintenance Plan

The City follows best management practices in the operation and maintenance of the Unit to minimize the amount and duration of air pollutant emissions. There are numerous volumes of operation and maintenance plans located on-site at the Hopkins facility, many of which refer back to the manufacturer's operation and maintenance manuals.