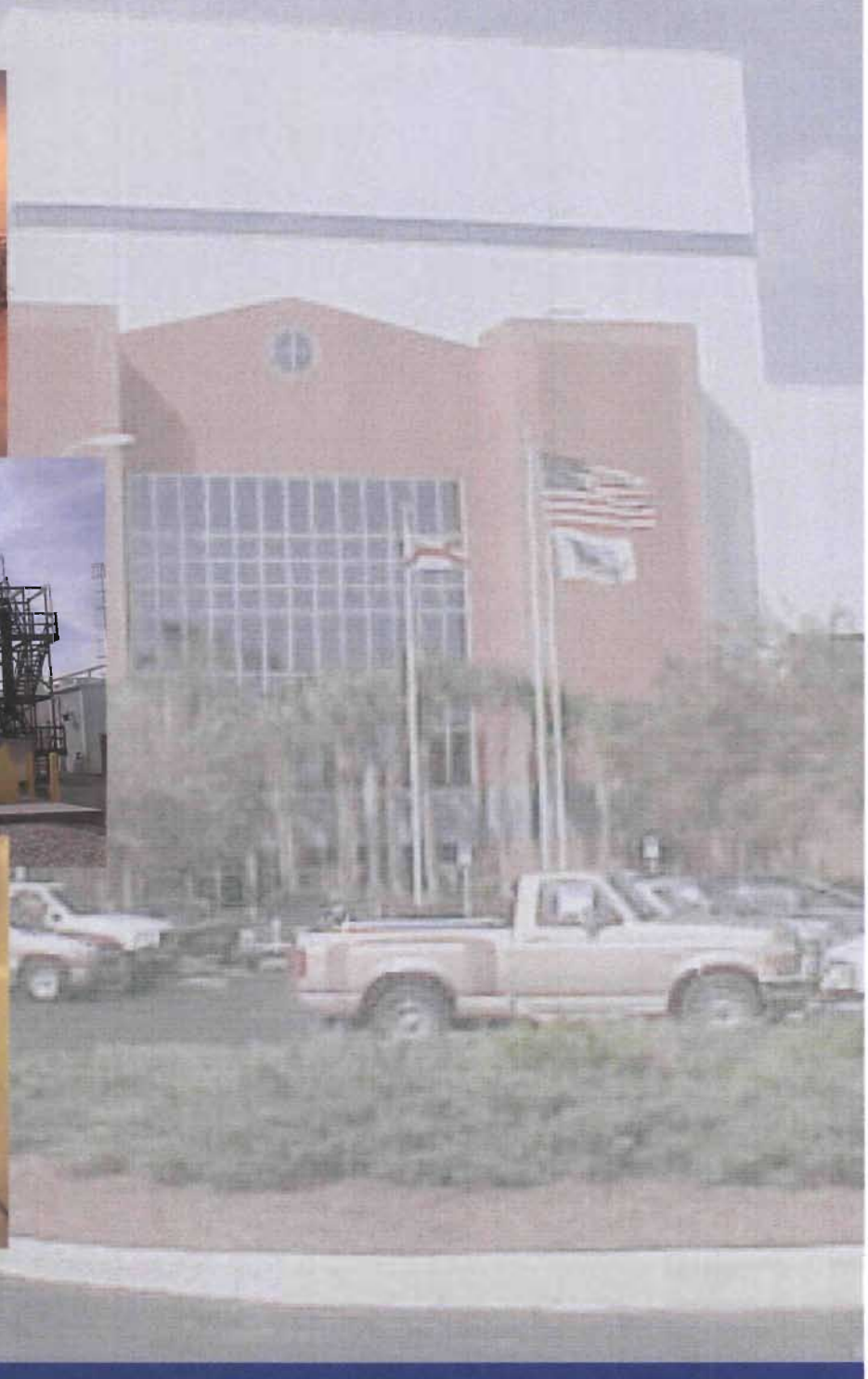
Lee County Resource Recovery Facility

Title V Air Operations Permit Renewal



MALCOLM PIRNIE

April 2005

1971-051

Prepared for the

Lee County Solid Waste Division

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INTRODUCTION

The Lee County Resource Recovery Facility (the "Facility") is located in Fort Myers, Florida and generates power from the combustion of approximately 1,200 tons of solid waste per day. The Facility is self-sufficient and operates on a small portion of the power it generates. The remaining electricity is sold to Seminole Electric Cooperative to power area homes and businesses.

The Facility's major components include two 600 ton per day (nominal) waterwall furnaces with Martin reverse-reciprocating grates, a Mitsubishi steam turbine and 39.7 megawatt generator. Air pollution controls include two dry scrubber units, two fabric filter baghouses, and mercury and nitrogen abatement systems.

Facility emissions are currently regulated under permits PSD-FL-151B and 0710119-003-AV. Emissions are constantly monitored by the Continuous Emissions Monitoring System, a complex network of sensors and monitoring equipment that relays emissions data to the Facility operators in the control room. The facility has the following significant emission sources:

- Two (2) mass-burn municipal waste combustors
- One (1) lime silo
- One (1) ash handling system
- One (1) cooling tower

Insignificant emission sources include the following:

- Ferrous sulfate tank
- Caustic soda tank
- Sulfuric acid tank
- Boiler chemicals
- Cooling tower chemicals
- Solvent degreaser
- Soda ash silo
- Carbon silo
- Truck traffic
- Diesel generator
- Diesel fire pumps (3)
- Portable diesel air compressor
- Sandblasting pot (100 lb.)
- Portable diesel welding machine
- Portable wood grinder
- Portable tire shredder
- Transfer Station

SECTION 2

Department of Environmental Protection

Division of Air Resource Management

RECEIVED
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BUREAU OF AIR REGULATION

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

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

- subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- at an existing federally enforceable state air operation permit (FESOP) or Title V permitted facility.

Air Operation Permit – Use this form to apply for:

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

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

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Lee County Solid Waste Division	
2. Site Name: Lee County Resource Recovery Facility	
3. Facility Identification Number: 0710119	
4. Facility Location... Street Address or Other Locator: 10500 Buckingham Road City: Fort Myers County: Lee Zip Code: 33905	
5. Relocatable Facility? ☐ Yes ☑ No	6. Existing Title V Permitted Facility? ☑ Yes ☐ No

Application Contact

1. Application Contact Name: Christopher C. Tilman, P.E.
2. Application Contact Mailing Address... Organization/Firm: Malcolm Pirnie, Inc. Street Address: 4315 Metro Parkway, Suite 520 City: Fort Myers State: FL Zip Code: 33916
3. Application Contact Telephone Numbers... Telephone: (239) 332-1300 ext. Fax: (239) 332-1789
4. Application Contact Email Address: ctilman@pirnie.com

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Project Number(s):	0710119-004-AV
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Purpose of Application

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

Air Construction Permit

☐ Air construction permit.

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

Renewal application for Title V permit no. 0710119-003-AV.

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
-001	Municipal Waste Combustion Unit No. 1		
-002	Municipal Waste Combustion Unit No. 2		
-003	Cooling Tower		

Application Processing Fee

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

Application Responsible Official Certification

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

1. Application Responsible Official Name: Lindsey J. Sampson

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

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

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

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

   ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm: Lee County Solid Waste Division
   Street Address: 10500 Buckingham Road
   City: Fort Myers State: FL Zip Code: 33905

4. Application Responsible Official Telephone Numbers...
   Telephone: (239) 338-3302 Fax: (239) 461-5871

5. Application Responsible Official Email Address: sampsolj@leegov.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 4/27/05 Date

Professional Engineer Certification

1. Professional Engineer Name: Christopher C. Tilman
   Registration Number: 61903
2. Professional Engineer Mailing Address...
   Organization/Firm: Malcolm Pirnie, Inc.
   Street Address: 4315 Metro Parkway, Suite 520
   City: Fort Myers State: FL Zip Code: 33916
3. Professional Engineer Telephone Numbers...
   Telephone: (239) 332-1300 Fax: (239) 332-1789
4. Professional Engineer Email Address: ctilman@pirnie.com
5. Professional Engineer Statement:

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

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

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

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

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

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

Signature 4-27-05 Date

(seal)

* Attach any exception to certification statement

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 424.21 North (km) 2945.70		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 26°37′54" Longitude (DD/MM/SS) 81°45′41"	
3. Governmental Facility Code: 3	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4953
7. Facility Comment : None			

Facility Contact

1. Facility Contact Name: Jody L. Howard
2. Facility Contact Mailing Address... Organization/Firm: Covanta Lee, Inc. Street Address: 10500 Buckingham Road City: Fort Myers State: FL Zip Code: 33905
3. Facility Contact Telephone Numbers: Telephone: (239) 337-2200 Fax: (239) 337-2510
4. Facility Contact Email Address: jhoward@covantaenergy.com

Facility Primary Responsible Official

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

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

Facility 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: Emissions limited by Florida permit no. PSD-FL-151B.	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM10	A	N
SO2	A	N
NOX	A	N
CO	A	N
H106	A	N
SAM	B	N
FL	B	N
PB	A	N
H021	B	N
H114	B	N
H015	B	N
DIOX	B	N
H027	B	N
VOC	B	N
NH3	B	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

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

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

Not applicable

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

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for FESOP Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☑ Attached, Document ID: Exhibit 4 ☐ 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: Exhibit 5
   ☐ 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: Exhibit 14
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

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

5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☑ Attached, Document ID: Exhibit 7 ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☑ Attached, Document ID: Exhibit 8 ☐ Not Applicable

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

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

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

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

EMISSIONS UNIT INFORMATION
Section [1] of [3]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:

   Municipal Waste Combustion Unit No. 1

3. Emissions Unit Identification Number: -001

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		08/24/94	49	[ ] Yes [√] No

9. Package Unit:
   Manufacturer: Distral Termica Model Number: Serial No. A2900

10. Generator Nameplate Rating: 40 MW

11. Emissions Unit Comment:

    Excess emissions are allowed during startup, shutdown, or malfunction, provided that the duration of these events does not exceed 3 hours (All emissions) and 15 hours (CO) (40 CFR 60 Subparts Cb and Eb)

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

   Slaked Lime Scrubber, Baghouse, Thermal De-Nox, Carbon Injection System

2. Control Device or Method Code(s): 13, 16, 32, 48

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate:	
3. Maximum Heat Input Rate: 275 MMBtu/hr	
4. Maximum Incineration Rate: 660 tons/day (nominal)	
5. Requested Maximum Operating Schedule:	
24 hours/day	7 days/week
52 weeks/year	8,760 hours/year
6. Operating Capacity/Schedule Comment:	
Combustion rate limited by Florida permit no. PSD-FL-151B.	

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: Point "K"	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Not Applicable		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 275 feet	7. Exit Diameter: 6.2 feet
8. Exit Temperature: 240°F	9. Actual Volumetric Flow Rate: 116,943 acfm	10. Water Vapor: 20%
11. Maximum Dry Standard Flow Rate: 72,039 dscfm	12. Nonstack Emission Point Height:	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 424.000 North (km): 2946.000	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Two boilers have separate stacks located within a common enclosure. Exit temperature, volumetric flow rate, and water vapor content indicated above are average values that vary with actual operating conditions.		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): Solid Waste Disposal – Government Municipal Incineration – Mass Burn Waterwall Combustor		
2. Source Classification Code (SCC): 50100105	3. SCC Units: Tons Burned (all solid fuels)	
4. Maximum Hourly Rate: 100.000	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.10	8. Maximum % Ash: 20.9	9. Million Btu per SCC Unit: 10±
10. Segment Comment: Combustion throughput demonstrated using steam flow measurements on a 4-hour block average rather than hourly tonnage rates. Sulfur and ash content on a wet basis.		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): Solid Waste Disposal – Government Auxiliary Fuel/No Emissions – Liquified Petroleum Gas (LPG)		
2. Source Classification Code (SCC): 50190010	3. SCC Units: Million Cubic Feet Burned (all gaseous fuels)	
4. Maximum Hourly Rate: 0.185	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.00	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 94
10. Segment Comment: None		

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	**016**		**EL**
PM10	**016**		**EL**
SO2	**013**		**EL**
NOX	**032**		**EL**
CO			**EL**
VOC			**EL**
HCL	**013**		**EL**
SAM	**013**		**EL**
FL	**013**		**EL**
PB	**016**		**EL**
H021	**016**		**EL**
H114	**048**		**EL**
H015	**013**		**EL**
DIOX			**EL**
NH3			**EL**

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.34 lb/hour 21.3 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0100 grains/dscf, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.34 lb/hour 21.3 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0100 grains/dscf, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: SO2	2. Total Percent Efficiency of Control:
3. Potential Emissions: 41.00 lb/hour 163.30 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 29 ppm, corrected to 7% O_2 Reference: 40 CFR 60, Subpart Cb	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 80.00 lb/hour 320.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 180 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: 27.23 lb/hour 108.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 100 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.80 lb/hour 23.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 37 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: HCL	2. Total Percent Efficiency of Control:
3. Potential Emissions: 17.70 lb/hour 70.7 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 25 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: SAM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 9.85 lb/hour 39.29 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 9.85 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: FL	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.96 lb/hour 3.80 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 5 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PB	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.1650 lb/hour 0.66 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.1650 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H021 (Beryllium Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 3.7 E-05 lb/hour 1.47 E-04 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 3.7 E-05 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H114 (Mercury Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.0379 lb/hour 0.1660 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.070 mg/dscm, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H015 (Arsenic Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.0025 lb/hour 0.0100 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0025 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: DIOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 7.0 E-06 lb/hour 2.8 E-05 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 30 ng/dscm, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: NH3	2. Total Percent Efficiency of Control:
3. Potential Emissions:	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 50.00 ppmv Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0100 grains/dscf, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.34 lb/hour 21.3 tons/year
5. Method of Compliance: PM emission levels will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 2 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0100 grains/dscf, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.34 lb/hour 21.3 tons/year
5. Method of Compliance: PM10 emission levels will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 3 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 29 ppm, corrected to 7% O_2 (See item 6)	4. Equivalent Allowable Emissions: 41.0 lb/hour 163.3 tons/year
5. Method of Compliance: SO_2 concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits SO_2 emissions to 29 ppm or 20 % of the potential sulfur dioxide emission (80% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 4 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 180 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 80.0 lb/hour 320.0 tons/year
5. Method of Compliance: NOX concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 5 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 100 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 27.23 lb/hour 108.0 tons/year
5. Method of Compliance: CO concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 6 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 37 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.80 lb/hour 23.0 tons/year
5. Method of Compliance: VOC emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 7 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 25 ppmdv, corrected to 7% O_2 (see item 6)	4. Equivalent Allowable Emissions: 17.70 lb/hour 70.7 tons/year
5. Method of Compliance: HCl emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits HCl emissions to 25 ppm or 5 % of the potential HCl emission (95% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

Allowable Emissions Allowable Emissions 8 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 9.85 lb/hour	4. Equivalent Allowable Emissions: 9.85 lb/hour 39.299 tons/year
5. Method of Compliance: SAM emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 9 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 5 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 0.96 lb/hour 3.80 tons/year
5. Method of Compliance: FL emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 10 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.1650 lb/hour	4. Equivalent Allowable Emissions: 0.1650 lb/hour 0.66 tons/year
5. Method of Compliance: PB emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 11 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.7 E-05 lb/hour	4. Equivalent Allowable Emissions: 3.7 E-05 lb/hour 1.47 E-04 tons/year
5. Method of Compliance: H021 (Beryllium Compounds) emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 12 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.070 mg/dscm, corrected to 7% O_2 (see 6)	4. Equivalent Allowable Emissions: 0.0379 lb/hour 0.166 tons/year
5. Method of Compliance: H114 (Mercury Compounds) emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits mercury emissions to 0.070 mg/dscm or 15 % of the potential mercury emissions (85% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 13 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0025 lb/hour	4. Equivalent Allowable Emissions: 0.0025 lb/hour 0.010 tons/year
5. Method of Compliance: H015 (Arsenic Compounds) emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 14 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 30 ng/dscm, corrected to 7% O_2	4. Equivalent Allowable Emissions: 7.0 E-06 lb/hour 2.8 E-05 tons/year
5. Method of Compliance: DIOX emissions will be verified by annual testing on one of the two combustion units at the Facility.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 15 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 50.0 ppmv	4. Equivalent Allowable Emissions:
5. Method of Compliance: NH_3 emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: [√] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 3 hours	
4. Method of Compliance: Opacity Monitor	
5. Visible Emissions Comment: Excess emissions are allowed during startup, shut-down or malfunction, provided that the duration of these events does not exceed 3 hours (40 CFR 60.58(b)).	

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

Continuous Monitoring System: Continuous Monitor 1 of 6

1. Parameter Code: VE	2. Pollutant(s): Visible Emissions (Opacity)
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 400B	Serial Number: 400B45426B63/274
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: Monitor located at stack	

Continuous Monitoring System: Continuous Monitor 2 of 6

1. Parameter Code: EM	2. Pollutant(s): Sulfur Dioxide
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Western Research Model Number: 721-M	Serial Number: 93-721M-8056-7 (8)
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: SO_2 monitors are located at the furnace outlet (serial no. 93-721M-8056-8) and stack (serial no. 93-721M-8056-7).	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

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

Continuous Monitoring System: Continuous Monitor 3 of 6

1. Parameter Code: EM	2. Pollutant(s): Nitrogen Oxides
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 42H	Serial Number: 42H-50337-285
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: Monitor located at stack	

Continuous Monitoring System: Continuous Monitor 4 of 6

1. Parameter Code: EM	2. Pollutant(s): Carbon Monoxide
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 48	Serial Number: 48-45332-273
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: CO monitors are located at the furnace outlet and stack. Requested change to monitor at furnace outlet only.	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

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

Continuous Monitoring System: Continuous Monitor 5 of 6

1. Parameter Code: O2	2. Pollutant(s): Oxygen
3. CMS Requirement:	☑ Rule ☐ Other
4. Monitor Information... Manufacturer: Servomex Model Number: 1400B3	Serial Number: 01420/B143
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: O_2 monitors are located at the inlet and outlet.	

Continuous Monitoring System: Continuous Monitor 6 of 6

1. Parameter Code: CO2	2. Pollutant(s): Carbon Dioxide
3. CMS Requirement:	☑ Rule ☐ Other
4. Monitor Information... Manufacturer: Fuji Model Number: ZRH	Serial Number: N2L1474T
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: CO_2 monitors are located at the furnace outlet (serial no. N2L1474T) and stack (serial no. N2L1452T).	

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 2 [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 9 [ ] 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: Exhibit 10 [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 11 [ ] Previously Submitted, Date _____
   [ ] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 12 [ ] Previously Submitted, Date _____
   [ ] Not Applicable

6. Compliance Demonstration Reports/Records
   [√] Attached, Document ID: Exhibit 13
   Test Date(s)/Pollutant(s) Tested: June 22-24, 2004
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

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

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☑ Attached, Document ID: Exhibit 5
2. Compliance Assurance Monitoring
   ☑ Attached, Document ID: Exhibit 6 ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☑ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☑ Not Applicable

Additional Requirements Comment

None

III. EMISSIONS UNIT INFORMATION

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

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

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

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

EMISSIONS UNIT INFORMATION
Section [2] of [3]

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:

   Municipal Waste Combustion Unit No. 2

3. Emissions Unit Identification Number: -002

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		08/24/94	49	[ ] Yes [√] No

9. Package Unit:
   Manufacturer: Distral Termica Model Number: Serial No. A2901

10. Generator Nameplate Rating: 40 MW

11. Emissions Unit Comment:

    Excess emissions are allowed during startup, shutdown, or malfunction, provided that the duration of these events does not exceed 3 hours (All emissions) and 15 hours (CO) (40 CFR 60 Subparts Cb and Eb)

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:

   Slaked Lime Scrubber, Baghouse, Thermal De-Nox, Carbon Injection System

2. Control Device or Method Code(s): 13, 16, 32, 48

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:		
2. Maximum Production Rate:		
3. Maximum Heat Input Rate: 275 MMBtu/hr		
4. Maximum Incineration Rate: 660 tons/day (nominal)		
5. Requested Maximum Operating Schedule:	24 hours/day	7 days/week
	52 weeks/year	8,760 hours/year
6. Operating Capacity/Schedule Comment: Combustion rate limited by Florida permit no. PSD-FL-151B.		

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: Point "K"	2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: Not Applicable		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: V	6. Stack Height: 275 feet	7. Exit Diameter: 6.2 feet
8. Exit Temperature: 240°F	9. Actual Volumetric Flow Rate: 116,943 acfm	10. Water Vapor: 20%
11. Maximum Dry Standard Flow Rate: 72,039 dscfm	12. Nonstack Emission Point Height:	
13. Emission Point UTM Coordinates... Zone: 17 East (km): 424.000 North (km): 2946.000	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Two boilers have separate stacks located within a common enclosure. Exit temperature, volumetric flow rate, and water vapor content indicated above are average values that vary with actual operating conditions.		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type): Solid Waste Disposal – Government Municipal Incineration – Mass Burn Waterwall Combustor		
2. Source Classification Code (SCC): 50100105	3. SCC Units: Tons Burned (all solid fuels)	
4. Maximum Hourly Rate: 100.000	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.10	8. Maximum % Ash: 20.9	9. Million Btu per SCC Unit: 10±
10. Segment Comment: Combustion throughput demonstrated using steam flow measurements on a 4-hour block average rather than hourly tonnage rates. Sulfur and ash content on a wet basis.		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type): Solid Waste Disposal – Government Auxiliary Fuel/No Emissions – Liquified Petroleum Gas (LPG)		
2. Source Classification Code (SCC): 50190010	3. SCC Units: Million Cubic Feet Burned (all gaseous fuels)	
4. Maximum Hourly Rate: 0.185	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: 0.00	8. Maximum % Ash: 0.0	9. Million Btu per SCC Unit: 94
10. Segment Comment: None		

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	**016**		**EL**
PM10	**016**		**EL**
SO2	**013**		**EL**
NOX	**032**		**EL**
CO			**EL**
VOC			**EL**
HCL	**013**		**EL**
SAM	**013**		**EL**
FL	**013**		**EL**
PB	**016**		**EL**
H021	**016**		**EL**
H114	**048**		**EL**
H015	**013**		**EL**
DIOX			**EL**
NH3			**EL**

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.34 lb/hour 21.3 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0100 grains/dscf, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PM10	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.34 lb/hour 21.3 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0100 grains/dscf, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: SO2	2. Total Percent Efficiency of Control:
3. Potential Emissions: 41.00 lb/hour 163.30 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 29 ppm, corrected to 7% O_2 Reference: 40 CFR 60, Subpart Cb	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: NOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 80.00 lb/hour 320.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 180 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: CO	2. Total Percent Efficiency of Control:
3. Potential Emissions: 27.23 lb/hour 108.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 100 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: VOC	2. Total Percent Efficiency of Control:
3. Potential Emissions: 5.80 lb/hour 23.0 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 37 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: HCL	2. Total Percent Efficiency of Control:
3. Potential Emissions: 17.70 lb/hour 70.7 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 25 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: SAM	2. Total Percent Efficiency of Control:
3. Potential Emissions: 9.85 lb/hour 39.29 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 9.85 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: FL	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.96 lb/hour 3.80 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 5 ppmdv, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: PB	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.1650 lb/hour 0.66 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.1650 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H021 (Beryllium Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 3.7 E-05 lb/hour 1.47 E-04 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 3.7 E-05 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H114 (Mercury Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.0379 lb/hour 0.1660 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.070 mg/dscm, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: H015 (Arsenic Compounds)	2. Total Percent Efficiency of Control:
3. Potential Emissions: 0.0025 lb/hour 0.0100 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 0.0025 lb/hour Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: DIOX	2. Total Percent Efficiency of Control:
3. Potential Emissions: 7.0 E-06 lb/hour 2.8 E-05 tons/year	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 30 ng/dscm, corrected to 7% O_2 Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

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

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

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

1. Pollutant Emitted: NH3	2. Total Percent Efficiency of Control:
3. Potential Emissions:	4. Synthetically Limited? [√] Yes [ ] No
5. Range of Estimated Fugitive Emissions (as applicable):	
6. Emission Factor: 50.00 ppmv Reference: PSD-FL-151B	7. Emissions Method Code: 0
8. Calculation of Emissions: Limited by Florida permit PSD-FL-151B	
9. Pollutant Potential/Estimated Fugitive Emissions Comment: Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 1 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0100 grains/dscf, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.34 lb/hour 21.3 tons/year
5. Method of Compliance: PM emission levels will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 2 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0100 grains/dscf, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.34 lb/hour 21.3 tons/year
5. Method of Compliance: PM10 emission levels will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 3 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 29 ppm, corrected to 7% O_2 (See item 6)	4. Equivalent Allowable Emissions: 41.0 lb/hour 163.3 tons/year
5. Method of Compliance: SO_2 concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits SO_2 emissions to 29 ppm or 20 % of the potential sulfur dioxide emission (80% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 4 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 180 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 80.0 lb/hour 320.0 tons/year
5. Method of Compliance: NOX concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 5 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 100 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 27.23 lb/hour 108.0 tons/year
5. Method of Compliance: CO concentration limitations are demonstrated on a continuous emission monitoring basis. The mass emission limitation is verified during annual compliance stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 6 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 37 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 5.80 lb/hour 23.0 tons/year
5. Method of Compliance: VOC emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 7 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 25 ppmdv, corrected to 7% O_2 (see item 6)	4. Equivalent Allowable Emissions: 17.70 lb/hour 70.7 tons/year
5. Method of Compliance: HCl emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits HCl emissions to 25 ppm or 5 % of the potential HCl emission (95% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

Allowable Emissions Allowable Emissions 8 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 9.85 lb/hour	4. Equivalent Allowable Emissions: 9.85 lb/hour 39.299 tons/year
5. Method of Compliance: SAM emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 9 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 5 ppmdv, corrected to 7% O_2	4. Equivalent Allowable Emissions: 0.96 lb/hour 3.80 tons/year
5. Method of Compliance: FL emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 10 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.1650 lb/hour	4. Equivalent Allowable Emissions: 0.1650 lb/hour 0.66 tons/year
5. Method of Compliance: PB emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 11 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 3.7 E-05 lb/hour	4. Equivalent Allowable Emissions: 3.7 E-05 lb/hour 1.47 E-04 tons/year
5. Method of Compliance: H021 (Beryllium Compounds) emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 12 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.070 mg/dscm, corrected to 7% O_2 (see 6)	4. Equivalent Allowable Emissions: 0.0379 lb/hour 0.166 tons/year
5. Method of Compliance: H114 (Mercury Compounds) emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Florida permit PSD-FL-151B limits mercury emissions to 0.070 mg/dscm or 15 % of the potential mercury emissions (85% reduction by weight or volume), corrected to 7% O_2, whichever is less stringent.	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

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

Allowable Emissions Allowable Emissions 13 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.0025 lb/hour	4. Equivalent Allowable Emissions: 0.0025 lb/hour 0.010 tons/year
5. Method of Compliance: H015 (Arsenic Compounds) emissions will be verified by annual stack testing.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 14 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 30 ng/dscm, corrected to 7% O_2	4. Equivalent Allowable Emissions: 7.0 E-06 lb/hour 2.8 E-05 tons/year
5. Method of Compliance: DIOX emissions will be verified by annual testing on one of the two combustion units at the Facility.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

Allowable Emissions Allowable Emissions 15 of 15

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 50.0 ppmv	4. Equivalent Allowable Emissions:
5. Method of Compliance: NH_3 emissions will be verified by stack testing every 5 years.	
6. Allowable Emissions Comment (Description of Operating Method): Limited by Florida permit PSD-FL-151B	

G. VISIBLE EMISSIONS INFORMATION

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

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: ☑ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 3 hours	
4. Method of Compliance: Opacity Monitor	
5. Visible Emissions Comment: Excess emissions are allowed during startup, shut-down or malfunction, provided that the duration of these events does not exceed 3 hours (40 CFR 60.58(b)).	

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

Continuous Monitoring System: Continuous Monitor 1 of 6

1. Parameter Code: VE	2. Pollutant(s): Visible Emissions (Opacity)
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 400B	Serial Number: 400B45426B63/274
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: Monitor located at stack	

Continuous Monitoring System: Continuous Monitor 2 of 6

1. Parameter Code: EM	2. Pollutant(s): Sulfur Dioxide
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Western Research Model Number: 721-M	Serial Number: 93-721M-8056-7 (8)
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: SO_2 monitors are located at the furnace outlet (serial no. 93-721M-8056-8) and stack (serial no. 93-721M-8056-7)..	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

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

Continuous Monitoring System: Continuous Monitor 3 of 6

1. Parameter Code: EM	2. Pollutant(s): Nitrogen Oxides
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 42H	Serial Number: 42H-50337-285
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: Monitor located at stack	

Continuous Monitoring System: Continuous Monitor 4 of 6

1. Parameter Code: EM	2. Pollutant(s): Carbon Monoxide
3. CMS Requirement:	[√] Rule [ ] Other
4. Monitor Information... Manufacturer: Thermo Environmental Instruments Model Number: 48	Serial Number: 48-45332-273
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: CO monitors are located at the furnace outlet and stack. Requested change to monitor at furnace outlet only.	

H. CONTINUOUS MONITOR INFORMATION (CONTINUED)

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

Continuous Monitoring System: Continuous Monitor 5 of 6

1. Parameter Code: O2	2. Pollutant(s): Oxygen
3. CMS Requirement:	☑ Rule ☐ Other
4. Monitor Information... Manufacturer: Servomex Model Number: 1400B3	Serial Number: 01420/B143
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: O_2 monitors are located at the inlet and outlet.	

Continuous Monitoring System: Continuous Monitor 6 of 6

1. Parameter Code: CO2	2. Pollutant(s): Carbon Dioxide
3. CMS Requirement:	☑ Rule ☐ Other
4. Monitor Information... Manufacturer: Fuji Model Number: ZRH	Serial Number: N2L1474T
5. Installation Date: 08/01/1994	6. Performance Specification Test Date: 10/17/1994
7. Continuous Monitor Comment: CO_2 monitors are located at the furnace outlet (serial no. N2L1474T) and stack (serial no. N2L1452T).	

EMISSIONS UNIT INFORMATION
Section [2] of [3]

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 2 [ ] Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 9 [ ] 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: Exhibit 10 [ ] Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 11 [ ] Previously Submitted, Date _____
   [ ] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 12 [ ] Previously Submitted, Date _____
   [ ] Not Applicable

6. Compliance Demonstration Reports/Records
   [√] Attached, Document ID: Exhibit 13
   Test Date(s)/Pollutant(s) Tested: June 22-24, 2004
   [ ] Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   [ ] Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

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

EMISSIONS UNIT INFORMATION
Section [2] of [3]

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☑ Attached, Document ID: Exhibit 5
2. Compliance Assurance Monitoring
   ☑ Attached, Document ID: Exhibit 6 ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☑ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☑ Not Applicable
5. Acid Rain Part Application
   ☐ Certificate of Representation (EPA Form No. 7610-1)
      ☐ Copy Attached, Document ID:
   ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
      ☐ Attached, Document ID:_____
      ☐ Previously Submitted, Date:_____
   ☑ Not Applicable

Additional Requirements Comment

None

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

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

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

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

Emissions Unit Description and Status

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

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

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

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

2. Description of Emissions Unit Addressed in this Section:

Cooling Tower

3. Emissions Unit Identification Number: -003

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A		08/24/94	49	☐ Yes ☑ No

9. Package Unit:
Manufacturer: GEA Model Number:

10. Generator Nameplate Rating:

11. Emissions Unit Comment:

None

EMISSIONS UNIT INFORMATION
Section [3] of [3]

Emissions Unit Control Equipment

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

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 2 [ ] Previously Submitted, Date _____

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

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 11 [ ] Previously Submitted, Date _____
   [ ] Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   [√] Attached, Document ID: Exhibit 12 [ ] Previously Submitted, Date _____
   [ ] Not Applicable

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

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

Additional Requirements for Air Construction Permit Applications

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

Additional Requirements for Title V Air Operation Permit Applications

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

Additional Requirements Comment

None

3

MALCOLM PIRNIE

FACILITY ADDITIONAL INFORMATION

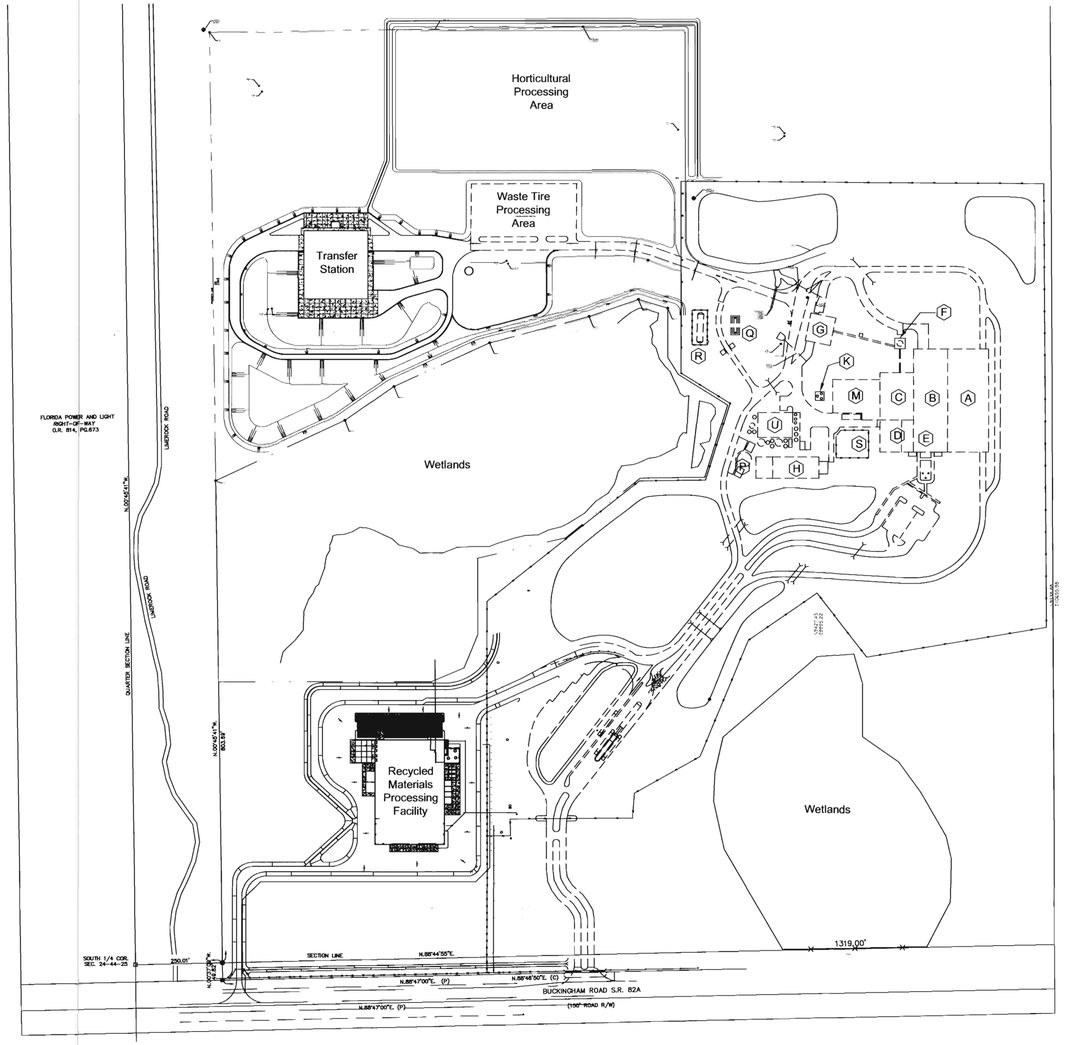
ADDITIONAL REQUIREMENTS FOR ALL APPLICATIONS

MALCOLM PIRNIE

FACILITY PLOT PLAN

EXHIBIT 1

1971051



0 6/19/03

MALCOLM PIRNIE Independent Environmental Engineers, Scientists & Consultants 104 Corporate Park Drive, White Plains, NY 10602 CA# 00000067					VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 — 1" IF NOT ONE INCH ON THIS SHEET,ADJUST SCALES ACCORDINGLY	DESIGNER C. Tilman	APPROVED	SEAL	Malcolm Pirnie, Inc. - Fort Myers 1533 Hendry Street, Suite 201 Fort Myers, FL 33904 Phone (239) 332-1300 Fax (239) 332-1789	SCALE 1" = 200'
						DRAWN BY C. Tilman				PROJECT NO. 1971-051
						ENGINEER C. Tilman	APPROVED		Lee County Solid Waste Division Resource Recovery Facility Facility Plot Plan	DRAWING NO. 1971051G001
						PROJECT MGR. C. Tilman				
DATE	ISSUED FOR	NO.	REVISION	DATE	ENG.	CHECKED BY R. French	DATE 03-03-2005	Christopher C. Tilman, P.E. FL. REG. NO. 61903		SHEET 1 OF 1

User:TILMAN Spec:PIRNIE STANDARD2 File:P:\Lee County\Solid Waste\1971051 Engineer of Record FY 04-05\Deliverables\Additional Services\Title V Permit Renewal\FACILITY PLOT PLAN.DWG Scale:1:1 Date:04/27/2005 Time:16:13 Layout:Layout 1

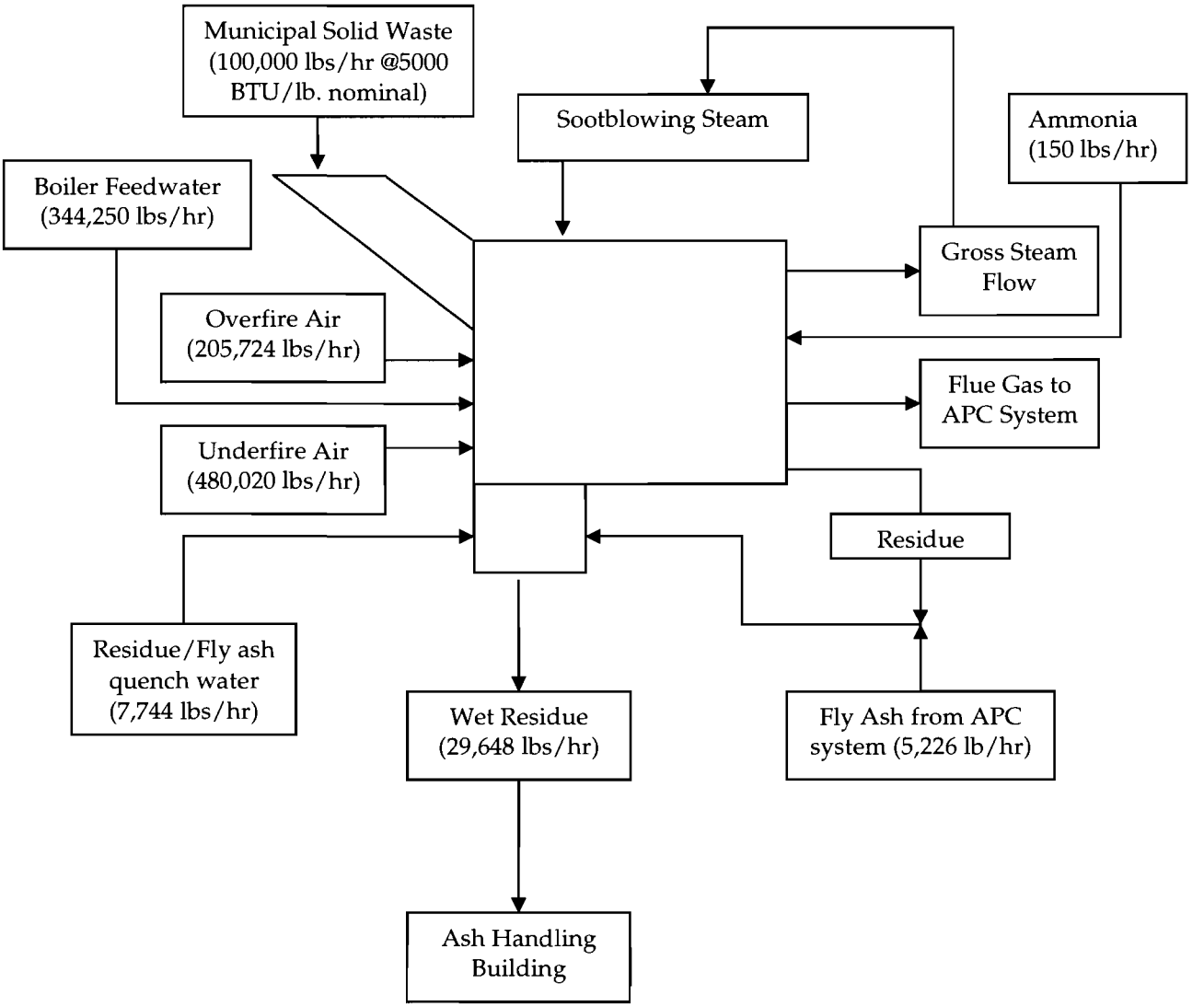
MALCOLM PIRNIE

4

GENERAL PROCESS FLOW DIAGRAMS

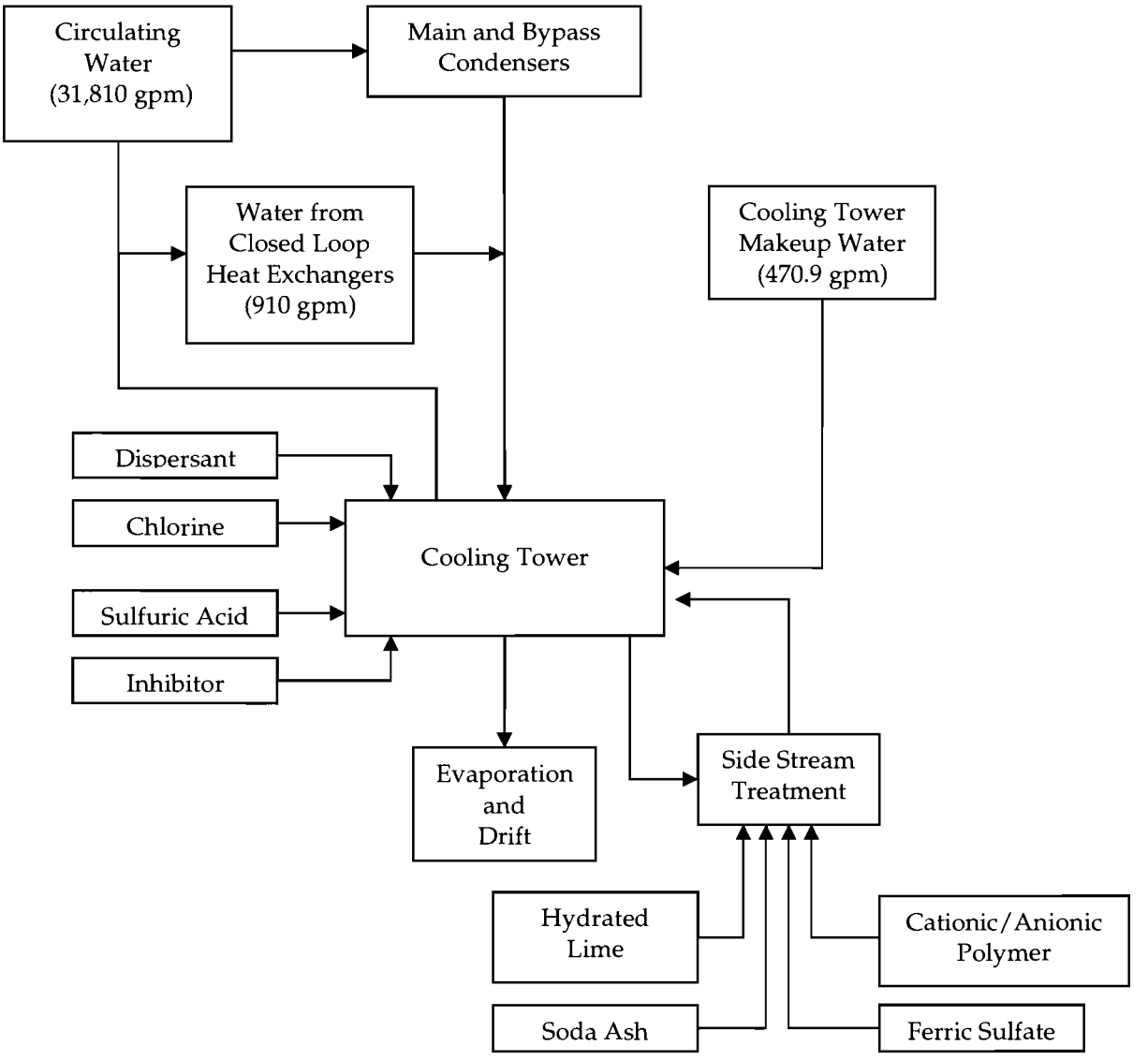
EXHIBIT 2

PROCESS FLOW DIAGRAM
WMC COMBUSTORS (EMISSIONS UNITS -001 AND -002)



Note: This diagram for reference purposes only. Values shown based on Maximum Continuous Rating of 1,200 tons per day, HHV = 5,000 BTU/Lb, and Generator Terminal Output = 36.5 MW.

PROCESS FLOW DIAGRAM
COOLING TOWER (UNREGULATED EMISSIONS UNIT-003)



Note: This diagram for reference purposes only. Values shown based on Maximum Continuous Rating of 1,200 tons per day, HHV = 5,000 BTU/Lb, and Generator Terminal Output = 36.5 MW.

MALCOLM PIRNIE

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONTROLLED PARTICULATE MATTER

EXHIBIT 3

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONTROLLED PARTICULATE MATTER

Unconfined particulate matter emissions from the baghouses and ash handling system may occur in small quantities during Facility operations. The baghouses are specifically designed to capture particulate matter emissions from the boilers, but a very small fraction of the particulate matter may pass through the baghouses and escape to the stack. Covanta Lee, Inc. has developed operation and maintenance procedures (see Exhibit 11) for all particulate control devices. In addition, the Facility installed opacity monitors on each boiler exhaust to monitor compliance with the particulate opacity standard established in PSD-FL-151B. Covanta personnel carefully monitor and maintain the baghouses to ensure particulate matter emissions remain negligible.

Unconfined particulate matter emissions from the ash handling system are controlled by the ash quenching operations at the boilers. Residue from the boilers and fly ash from the APC system are combined in the quench tank, which increases the moisture content of the combined ash. The moisture content in the ash discharged onto the main vibrating conveyor averages 10-20%, which minimizes particulate emissions.

OK
SEE SC 8
IN TITLE V PERMIT

MALCOLM PIRNIE

4

FACILITY ADDITIONAL INFORMATION

ADDITIONAL REQUIREMENTS FOR TITLE V AIR OPERATIONS PERMIT APPLICATIONS

MALCOLM PIRNIE

LIST OF INSIGNIFICANT ACTIVITIES

EXHIBIT 4

LIST OF INSIGNIFICANT ACTIVITIES

The process or production units or other pollutant-emitting activities listed below are located on the Title V site addressed in this application are, by virtue of size or operating rate, eligible for treatment as insignificant emission units in accordance with the criteria of Rule 62-213.430(6)(b), F.A.C., and are requested to be treated as such pursuant to Rule 62-213.420(3), F.A.C. Emissions estimates for these insignificant activities/sources are included on the pages that follow.

Activity/Source	Estimated Emissions, Tons/Year					*Comments*
	PM/PM10	*NO_x*	*CO*	*VOC*	*SO_2*	
Lime System Enclosure						Emissions < Threshold
Ash Handling System						Emissions < Threshold
Boiler Chemicals ✓				1.40		Listed as trivial source in White Paper No. 1 (1995)
Cooling Tower Chemicals ✓						No photochemically reactive volatiles
Solvent Degreaser ✓				0.33		Emissions < Threshold
Ferric Sulfate Tank ✓						Meets criteria of Rule 62-213.430(6)(b)
Caustic Soda Tank ✓						Meets criteria of Rule 62-213.430(6)(b)
Sulfuric Acid Tank ✓						Meets criteria of Rule 62-213.430(6)(b)
Soda Ash Silo ✓						Meets criteria of Rule 62-213.430(6)(b)
Carbon Silo ✓						Meets criteria of Rule 62-213.430(6)(b)
Truck Traffic ✓						Listed as trivial source in White Paper No. 1 (1995)
1,000-hp Diesel Wood Grinder	5.14	46.87	10.10	3.73	3.10	Emissions < Threshold
Transfer Station	0.07					Emissions < Threshold
325-hp Diesel Tire Shredder	Negligible	Engine emissions exempt under FAC 62-210.300(3)				
Diesel Generator	Engine emissions exempt under FAC 62-210.300(3)					
Diesel Fire Pumps (3)	Engine emissions exempt under FAC 62-210.300(3)					
Portable Diesel Air Compressor	Negligible					Listed as trivial source in White Paper No. 1 (1995)
Sandblasting Pot (100 lb.)	Negligible					Listed as trivial source in White Paper No. 1 (1995)
Portable Diesel Welding Machine	Negligible					Listed as trivial source in White Paper No. 1 (1995)

Emission Estimate Calculations

Lime System Enclosure

Pebble lime is used at the Facility to make lime slurry for sulfur dioxide and acid neutralization in the dry scrubber. The lime system enclosure was manufactured by Pittsburgh Tank Corporation, and includes the lime storage bin, vent filter, diverter, rotary feeder, and lime slakers. The lime storage bin comprises the top 70 feet of the lime system enclosure and has a 60-ton capacity. Pebble lime is delivered to the Facility via self-contained pneumatic truck trailers. Conveying air vented from the lime storage bin during loading operations passes through the lime vent filter before exhausting to the atmosphere. The vent filter uses fabric media to remove entrained lime from the vented air, and is activated only during loading operations. The filter has an automatic air pulse cleaning system that prevents clogging of individual filter bags.

The manufacturer's specifications for the lime system enclosure set the emissions from the vent filter at 0.0150 grains/dscf. Based on the lime delivery frequency and the volume of conveying air used during loading operations, the potential particulate emissions were estimated to be approximately 0.033 tons/year. These emissions are far less than the major source threshold value of 100 tons/yr and should be considered insignificant.

Ash Handling System

The Facility's ash handling system is comprised of conveyors, scalpers, a ferrous and nonferrous recovery system, and storage bunkers. Residue from the boilers and fly ash from the APC system are combined in the quench tank, which increases the moisture content of the combined ash. The moisture content in the ash discharged onto the main vibrating conveyor averages 10-20%, which minimizes particulate emissions. A scalper removes large (>8") items from the ash, which is then carried via incline conveyor to the ash building.

The ash building is an enclosed prefabricated metal structure at the terminus of the ash collection system that contains ferrous and nonferrous separation equipment and concrete storage bunkers. Finished wet ash is discharged to storage bunkers for later transport to the Lee-Hendry landfill.

The existing Title V operation permit limits particulate emissions from the ash building under Florida permit no. PSD-FL-151B. The existing Title V permit (0710119-003-AV) waived compliance testing for particulate matter emissions from the ash building and imposed an alternate standard of 5% opacity.

The pre-control emissions factor for the wetted ash was calculated using the predictive emission factor equation in AP-42 Section 13, *Aggregate Handling and Storage Piles.* AP-42 references landfill fly ash with 27% moisture content as a typical material used in the predictive equation. The wetted ash stored in the ash building is a similar material, with moisture content ranging from 13-16%. In order to provide a conservative estimate, the largest particle size multiplier (0.74) and the lowest measured moisture content (13%), and the highest recorded wind speed (5 mph) was used in the equation. Wind speed data was taken from opacity measurements during the most recent (2004) stack test, and are included in Exhibit 13. Potential pre-control particulate emissions estimates for the wetted ash were calculated below.

Pre-Control PM Estimate

E = Emission Factor[1]
k = Particle size multiplier (0.74)
U = Mean wind speed (5 mph)
M = Material moisture content (13%)

$$E = k*(0.0032)* \frac{(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$E = 0.74*(0.0032)* \frac{(5/5)^{1.3}}{(13/2)^{1.4}} = 1.72 \text{ E-04 lb./ton}$$

Emission factor x ton conversion x design feed rate[2] x operating time[3] = PM emissions estimate

(1.72 E-04 lb./ton) x (ton/2,000 lb.) x (55 tons/hr.) x (8,760 hrs./yr.) = 0.04 tons/yr.

0.04 tons/yr. < 100 tons/yr. (major source threshold for PM), so CAM rules are not applicable to PM for the ash building.

[1] Emission factor from AP-42, Vol. 1, Chapter 13, predictive emission factor equation 1)
[2] Design feed rate includes both MWC units discharging at 27.5 tons per hour.
[3] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

The estimated potential uncontrolled emissions are below the major source threshold for PM, so emissions from the ash handling system should be considered insignificant.

Boiler Chemicals

Chemical	Usage Rate (tons/yr)	% volatile by weight
CL-2871	0.2	80
BL-1357	2.9	81
BL-1280	0.7	93
BL-1551	0.7	100
BL-1748	1.0	89
BL-1749	5.9	88

Only two of the listed chemicals (BL-1280 and BL-1551) contain volatiles that are photochemically reactive. Assuming that 100% of the volatile content of these chemicals is released to the atmosphere, VOC emissions would be as follows:

$$((0.7) \times (0.93)) + ((0.7) \times (1.0)) = 1.4 \text{ tons/yr. VOC}$$

These emissions are less than the major source threshold value of 100 tons/yr and should be considered insignificant. Also, boiler water treatment operations are listed as trivial in the *White Paper for Streamlined Development of Part 70 Permit Applications (EPA, 1995).*

Cooling Tower Chemicals

Chemical	Usage Rate (tons/yr)	% volatile by weight
Sodium Hypochlorite	4.0	---
CL-4123	2.7	82
CL-1491	26.4	65
CL-2150	1.3	96

None of the listed chemicals contain volatiles that are photochemically reactive, so cooling tower emissions should be considered insignificant.

Solvent Degreaser

The Facility has a cold cleaner unit in the maintenance area. The unit has a workspace opening surface area of 6 ft^2.

VOC emissions
Emission Factor: 0.08 lbs./hr./ft^2 (AP-42 Table 4.6-2 04/81)
Calculations: (0.08 lbs./hr./ft^2) x (6 ft^2) x (8,760 hrs/yr.) x (0.0005 ton/lb.) = 2.1 tons/yr

VOC emissions are less than the threshold quantity of 100 tons per year and should be considered insignificant.

Ferrous Sulfate Tank

The emissions activity associated with this tank meets the criteria of Rule 62-213.430(6)(b), F.A.C. and should be considered insignificant.

Caustic Soda Tank

The emissions activity associated with this tank meets the criteria of Rule 62-213.430(6)(b), F.A.C. and should be considered insignificant.

Sulfuric Acid Tank

The emissions activity associated with this tank meets the criteria of Rule 62-213.430(6)(b), F.A.C. and should be considered insignificant.

Soda Ash Silo

The emissions activity associated with this tank meets the criteria of Rule 62-213.430(6)(b), F.A.C. and should be considered insignificant.

Activated Carbon Silo

The emissions activity associated with this tank meets the criteria of Rule 62-213.430(6)(b), F.A.C. and should be considered insignificant.

Truck Traffic

Combustion emissions from propulsion of mobile sources are listed as trivial in the *White Paper for Streamlined Development of Part 70 Permit Applications (EPA, 1995).*

Wood Grinder

The horticultural processing facility (HPF) is a 6.8-acre asphalt paved pad adjacent to the transfer station on the Facility site. The HPF was designed to handle clean horticultural waste (tree limbs, brush, grass clippings, etc.) collected from residences and businesses. Collection vehicles deliver horticultural waste to the HPF, where it is placed in rows by front-end loaders for easy access during mulching operations. A portable 1,000-hp diesel tub grinder is used to grind the waste into marketable-quality mulch. Finished mulch is stored in piles until front-end loaders load it into transfer trucks for transport off site.

The grinder is brought to the Facility for 3-6 week periods several times per year, totaling approximately 18 weeks. When the grinder is on site, mulching operations can occur for up to 24 hours per day. The grinder can process up to 100 tons per hour and consumes approximately 40 gallons of diesel fuel per hour at normal engine speeds.

The emissions factor for particulate emissions from the mulch storage piles was calculated using the predictive emission factor equation in AP-42 Section 13, *Aggregate Handling and Storage Piles.* The moisture content was estimated at 40% (Estimates based on ranges published in AASHTO MP-10). In order to provide a conservative estimate, the largest particle size multiplier (0.74) and the average winter season wind speed (15 mph) was used in the equation. Wind speed data was taken from climatological site data submitted in the 2003 Supplemental Application for Power Plant Site Certification. Potential particulate emissions estimates for the mulch piles are calculated below.

PM Estimate (Mulch Storage Piles)

E = Emission Factor[1]
k = Particle size multiplier (Max = 0.74)
U = Mean wind speed (Max recorded wind speed = 15 mph)
M = Material moisture content[2] (40%)

$$E = k*(0.0032)* \frac{(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$E = 0.74*(0.0032)* \frac{(15/5)^{1.3}}{(40/2)^{1.4}} = 1.49 \text{ E-04 lb./ton}$$

Emission factor x ton conversion x processing rate[3] x operating time[4] = PM emissions estimate

(1.49 E-04 lb./ton) x (ton/2,000 lb.) x (100 tons/hr.) x (3,024 hrs./yr.) = 0.02 tons/yr.

[1] Emission factor from AP-42, Vol. 1, Chapter 13, predictive emission factor equation 1)
[2] Moisture content for from AASHTO MP-10
[2] Maximum processing rate. Actual rate may vary.
[3] Operating time is based on 100% availability and 24-hour operations. Actual operating time is less than 3,024 hours per year.

The HPF's asphalt-paved surface minimizes unconfined particulate emissions from vehicle traffic. The only particulate matter emissions at the facility are associated with grinding operations and windblown material from storage piles. AP-42 does not contain an emissions factor for wood grinding, but does list general land clearing, which is a similar operation. The equation for bulldozing (overburden) in Table 11.9-1 was used for estimating particulate emissions from the wood grinding operation. In order to provide a conservative estimate the bulldozer equation for TSP ≤ 30 μm was used. The silt content of the mulch was estimated at 10% and the moisture content was estimated at 40% (Estimates based on ranges published in AASHTO MP-10). The particulate emissions estimate for the HPF is calculated below.

PM Emissions Factor Calculations (Tub Grinder)

E = Emission Factor[1]
s = Silt content, %
M = Material moisture content (40%)

$$E = \frac{5.7 \times (s)^{1.2}}{(M)^{1.3}}$$

$$E = \frac{5.7 \times (0.10)^{1.2}}{(0.40)^{1.3}} = 1.18 \text{ lb/hr}$$

[1] Emission factor equation from AP-42, Table 11.9-1)

PM/PM10 emissions (wood grinder)
Emission Factor: 1.18 lbs./hr (from AP-42 Table 11.9-1 10/98)
Calculations: 1.18 lbs./hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 1.79 tons/yr

PM/PM10 emissions (1,000-hp diesel engine)
Emission Factor: 2.2 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.2 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.33 tons/yr

Total PM/PM10 emissions = 1.79 + 3.33 +.02 (storage piles) = 5.14 tons/yr.

NO_x emissions (1,000-hp diesel engine)
Emission Factor: 0.031 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 0.031 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 46.87 tons/yr

CO emissions (1,000-hp diesel engine)
Emission Factor: 6.68 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 6.68 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 10.10 tons/yr

VOC emissions (1,000-hp diesel engine)
Emission Factor: 2.47 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.47 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.73 tons/yr

SO_2 emissions (1,000-hp diesel engine)
Emission Factor: 2.05 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.05 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.10 tons/yr

Total unconfined emissions for the grinder and diesel engine are less than the major source threshold value of 100 tons/yr., so this emissions source should be considered insignificant.

Transfer Station

The transfer station is an enclosed prefabricated metal structure located approximately ¼ mile west of the ash building on the Facility site, designed to handle up to 1,800 tons of solid waste per day (75 tons per hour). Collection vehicles deliver solid waste to the transfer station, where it is drop loaded into transfer trucks for transport to the Lee-Hendry landfill. The transfer station is not equipped with a control device to control particulate emissions. Solid waste is not stored in the facility for more than 72 hours, so gas generation is assumed to be negligible.

The pre-control emissions factor for solid waste handled in the transfer station was calculated using the predictive emission factor equation in AP-42 Section 13, *Aggregate Handling and Storage Piles.* AP-42 references landfill miscellaneous fill materials as a typical material used in the predictive equation. The solid waste in the transfer station is a similar material by composition and moisture content. In order to provide a conservative estimate, the largest particle size multiplier (0.74) and the highest recorded wind speed (5 mph) was used in the equation. Wind speed data was taken from opacity measurements for the ash building (a similar fully-enclosed structure on the same site) during the most recent (2004) stack test, and are included in Exhibit 13. Potential pre-control particulate emissions estimates for the transfer station are calculated below.

Pre-Control PM Estimate

E = Emission Factor[1]
k = Particle size multiplier (Max = 0.74)
U = Mean wind speed (Max recorded wind speed = 5 mph)
M = Material moisture content[2] (11%)

$$E = k*(0.0032)* \frac{(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$E = 0.74*(0.0032)* \frac{(5/5)^{1.3}}{(11/2)^{1.4}} = 2.18 \text{ E-04 lb./ton}$$

Emission factor x ton conversion x design feed rate[3] x operating time[4] = PM emissions estimate

(2.18 E-04 lb./ton) x (ton/2,000 lb.) x (75 tons/hr.) x (8,760 hrs./yr.) = 0.07 tons/yr.

0.07 tons/yr. < 100 tons/yr. (major source threshold for PM), so CAM rules are not applicable to PM for the transfer station.

[1] Emission factor from AP-42, Vol. 1, Chapter 13, predictive emission factor equation 1)
[2] Moisture content for miscellaneous fill materials from AP-42, Vol. 1, Chapter 13
[2] Maximum design feed rate. Actual rate is currently 1,200 tons per day, or 50 tons/hr.
[3] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

The estimated potential uncontrolled emissions are below the major source threshold for PM, so the particulate emissions from the transfer station should be considered insignificant.

Tire Shredder

A 325-hp diesel portable tire shredder is at the Facility for 3-6 week periods, totaling approximately 16 weeks during the year. When the shredder is on site, tire shredding operations can occur approximately 12 hours per day. The shredder is a low-speed, high-torque design, which slowly shreds tires into pieces approximately 6" in size. The diesel engine consumes approximately 20 gallons per hour. The only particulate emissions are associated with the diesel engine emissions. The diesel engine that powers the shredder satisfies the exemption requirements for general-purpose internal combustion engines in Rule 62-210.300(3)(a)(21), F.A.C., so this emissions source should be considered insignificant.

Diesel Generator

The emergency generator satisfies the categorical exemption requirements under Rule 62-210.300(3)(a), F.A.C. and should be considered insignificant.

Fire Pumps (3)

Fire and safety equipment are categorically exempt under Rule 62-210.300(3)(a), F.A.C. and should be considered insignificant.

Portable Diesel Air Compressor

Air compressors and pneumatically operated equipment are listed as trivial in the *White Paper for Streamlined Development of Part 70 Permit Applications (EPA, 1995)* and should be considered insignificant.

Sandblasting Pot (100 lb.)

Air compressors and pneumatically operated equipment are listed as trivial in the *White Paper for Streamlined Development of Part 70 Permit Applications (EPA, 1995)* and should be considered insignificant.

Portable Diesel Welding Machine

The diesel engine that powers the welder satisfies the categorical exemption requirements for general-purpose internal combustion engines in Rule 62-210.300(3)(a)(21), F.A.C. and should be considered insignificant.

MALCOLM PIRNIE

IDENTIFICATION OF APPLICABLE REQUIREMENTS

EXHIBIT 5

LIST OF APPLICABLE REGULATIONS

FEDERAL REGULATIONS

40 CFR 52.21 (All terms and conditions of Florida permit PSD-FL-151B)

40 CFR 60, Subparts A, Cb, Db, Ea

40 CFR 60, Appendix A, B, and F

40 CFR 60.8

40 CFR 60.11

40 CFR 60.12

40 CFR 60.13

40 CFR 60.17

40 CFR 60.31b

40 CFR 60.33b

40 CFR 60.34b

40 CFR 60.35b

40 CFR 60.36b

40 CFR 60.38b

40 CFR 60.39b

40 CFR 60.40b

40 CFR 60.51b

40 CFR 60.52b

40 CFR 60.53b

40 CFR 60.54b

40 CFR 60.55b

40 CFR 60.56b

40 CFR 60.58b(a) and (j)

40 CFR 60.59b

40 CFR 60.761.20(e)

LIST OF APPLICABLE REGULATIONS

FLORIDA ADMINISTRATIVE CODE		*FLORIDA STATUTES*
62-2.250	62-213.420	Ch. 252.941
62-4.030	62-213.430	Ch. 403.706(5)
62-4.040	62-213.440	Ch. 403.7186(2) and (3)
62-4.050	62-213.450	Ch. 403.7192(3)
62-4.070	62-213.460	
62-4.130	62-213.900	
62-4.160	62-296.310(3)	
62-17.191	62-296.320	
62-103.150	62-296.401(2)	
62-204.800	62-296.416(3), (4), (5)	
62-210.200	62-296.800(3), (4)	
62-210.300	62-297.310	
62-210.350	62-297.330	
62-210.360	62-297.340	
62-210.370	62-297.345	
62-210.400	62-297.350	
62-210.650	62-297.400	
62-210.700	62-297.401	
62-212.400	62-297.570	
62-213.205	62-297.620	
62-213.210		
62-213.220		
62-213.400		
62-213.410		
62-213.412		

MALCOLM PIRNIE

COMPLIANCE ASSURANCE MONITORING (CAM) PLAN

EXHIBIT 6

COMPLIANCE ASSURANCE MONITORING (CAM) PLAN

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INTRODUCTION

On October 3, 1997 EPA promulgated new rules under 40 CFR Part 64 and revised 40 CFR Parts 70 and 71 to implement Compliance Assurance Monitoring (CAM) for major stationary sources of air pollution that are required to obtain permits under Title V of the Clean Air Act (the "Act"). Subject to certain exemptions, the CAM rule requires owners or operators of such sources to conduct monitoring that satisfies particular criteria provided in the rule to provide a reasonable assurance of compliance with applicable requirements under the Act. The CAM rule applies to all new and renewal Title V applications submitted after April 22, 1998.

The CAM rule is directed at large emission units that rely on control equipment to achieve compliance with the Act. The goal of CAM is to assure that the control devices for these emission units are properly operated and maintained. Monitoring is conducted to ensure that the control devices continue to maintain a level of control that complies with applicable requirements.

APPLICABILITY DETERMINATION

The first step in the CAM process is the determination of the applicability of the CAM rules in 40 CFR Part 64 to each pollutant-specific emissions unit ("unit"). Any unit subject to CAM rules must satisfy all of the criteria included in Section 64.2, which include the following:

1. The unit must be located at a major source that is required to obtain a Part 70 or 71 permit
2. The unit is subject to an emission limitation or standard for the applicable pollutant
3. The unit uses a control device to achieve compliance with the emission limitation or standard
4. Potential pre-control emissions of the applicable pollutant from the unit are at least 100% of major source amount
5. The unit is not otherwise exempt

40 CFR 64.2(b) lists several specific exemptions to the CAM rule, one of which includes New Source Performance Standards proposed after November 15, 1990. The Clean Air Act mandated that specific emissions standards written after 1990 must contain sufficient periodic monitoring to insure continuous compliance. 40 CFR 60 Subparts Cb and Eb (promulgated post 1990) contained emission standards for several pollutants, including particulate matter and hydrogen chloride. Due to the mandate, EPA is presumed to have adequately addressed

sufficient periodic monitoring during the development of the industry specific standards. EPA has indicated that in most cases monitoring that complies with Subpart Eb requirements will also provide the assurance of compliance required by part 70 or part 64 for other emissions limitations or standards for the same or similar pollutants.

Malcolm Pirnie completed a CAM applicability determination for each unit at the Lee County Resource Recovery Facility (the "Facility"). The rationale for the determination is presented in the sections that follow. Whenever possible, estimates of potential pre-control emissions were calculated using actual stack test data or emission factors obtained from the EPA's *Compilation of Air Emission Factors (AP-42)*. Potential pre-control emission estimates for pollutants not listed in AP-42 were calculated from stack test data and known (or assumed) control device efficiencies. Post-control estimates for pollutant subject to CAM were based on published emission factors, stack test data, or Continuous Emissions Monitoring System (CEMS) data. Emission factors calculated in the EPA's *Compilation of Air Emission Factors (AP-42)* assumed a waste HHV of 4,500 Btu/lb. and were corrected for the 5,000 Btu/lb assumption used at the Facility. A summary of the determination results is included as Table 1.

Municipal Waste Combustor Units 1 and 2

Description

The Facility is equipped with two identical Distral Termica mass-burn waterwall municipal waste combustor (MWC) units, each rated for 275 MMBtu/hr. The MWC rating is comparable to a design feed rate of approximately 27.5 tons per hour at 5,000 Btu/lb. Emissions are controlled by a dry scrubber, fabric filter baghouse, and mercury and nitrogen (SNCR) abatement systems. Using lime slurry, the scrubber neutralizes acid-forming gases such as hydrogen fluoride, sulfur dioxide, and hydrogen chloride. Activated carbon slurry is injected into the scrubber to control mercury emissions. The baghouse captures particulate matter entrained in the flue gas. Captured dry ash particles fall into hoppers where they are discharged to the ash collection system.

Both MWC units are permitted major sources under the existing Title V operations permit No. 0710119-003-AV. The pollutants regulated under that permit and their CAM applicability are as follows:

Particulate (PM/PM10)

Particulate matter is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Table 1 – CAM Applicability Review Summary

CAM Applicability								
Parameter	40 CFR 60 Subpart Cb NSPS Emission Limit	PSD-FL-151 Emission Limit	(1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1)	(2) The unit uses a control device to achieve compliance with any such emission limitation or standard	(3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source	CAM applicable? If Columns D,E, and F are all yes, then CAM applies.	Monitored By CEMS	Comments
Municipal Waste Combustor Units 1 and 2								
Particulate (PM/PM10)	27mg/dscm	0.010 gr/dscf, 5.34 lbs./hr, 21.3 tons/yr per unit	No - Regulated under Subpart Cb	Yes - Baghouse	Yes - PTE >100 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Opacity (VE)	10%	10%	No - Regulated under Subpart Cb	Yes - Baghouse	No - Major source threshold not defined	No	X	Regulated under 40 CFR Subpart Cb - Exempt
Cadmium (Cd)	0.040 mg/dscm		No - Regulated under Subpart Cb	Yes - Baghouse	No - PTE <10 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Lead (Pb)	0.44 mg/dscm	0.0006 lbs/Mbtu , 0.165 lbs/hr, and 0.66 tons/year per unit	No - Regulated under Subpart Cb	Yes - Baghouse	Yes - PTE >5 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Mercury (Hg)	0.080mg/dscm or 15% of potential mercury emission concentration, whichever is less stringent	In no case more than 0.000138 lbs/MMBtu, 0.0379 lbs/hr and 0.166 tons/year per unit or at least 70% removal efficiency by weight.	No - Regulated under Subpart Cb	Yes - Carbon System	No - PTE <10 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Sulfur Dioxide (SO2)	29 ppm or 25% of the potential SO2 emission concentration, whichever is less stringent	30 ppmdv or minimum 80% removal efficiency. In no case more than 0.150 lbs/MMBtu, 41 lbs/hr and 163.3 tons/year per unit.	No - Regulated under Subpart Cb	Yes - Scrubber	Yes - PTE >100 tpy	No	X	Regulated under 40 CFR Subpart Cb - Exempt
Hydrogen Chloride (HCl)	29 ppm or 5% of the potential HCl emission concentration, whichever is less stringent	25 ppmdv or minimum 95% removal efficiency. In no case more than 0.064 lbs/MMBtu, 17.7 lbs/hr and 70.7 tons/year per unit.	No - Regulated under Subpart Cb	Yes - Scrubber	Yes - PTE >10 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Dioxins/Furans	For non-electrostatic precipitator controls, 30 ng/dscm	In no case more than 30 ng/dscm, 2.54x10-8 lbs/MMBtu, 7.0x10-6 lbs/hr and 2.80x10-5 tons/year per unit.	No - Regulated under Subpart Cb	Yes - Carbon System	No - PTE <10 tpy	No		Regulated under 40 CFR Subpart Cb - Exempt
Nitrogen Oxides (NOx)	185 ppmv	180 ppmdv or minimum 24 daily block avg. In no case more than 0.029 lbs/MMBtu, 80 lbs/hr and 320 tons/year per	No - Regulated under Subpart Cb	Yes - Thermal Denox (Ammonia)	Yes - PTE >100 tpy	No	X	Regulated under 40 CFR Subpart Cb - Exempt
Carbon Monoxide (CO)	100 ppmv, averaging time is a 4-hour block average.	100 ppmdv or minimum 4 hr block avg. In no case more than 0.10 lbs/MMBtu, 27.2 lbs/hr and 108 tons/year per unit.	No - Regulated under Subpart Cb	No	Yes - PTE >100 tpy	No	X	Regulated under 40 CFR Subpart Cb - Exempt
VOC		37 ppmdv. In no case more than 0.021 lbs/MMBtu, 5.80 lbs/hr and 23 tons/year per unit.	Yes - Regulated under PSD-FL-151	No	No - PTE <100 tpy	No		No control device for VOC
Sulfuric Acid Mist (SAM)		In no case more than 0.036 lbs/MMBtu, 9.85 lbs/hr and 39.3 tons/year per unit.	Yes - Regulated under PSD-FL-151	Yes - Scrubber	No - Major source threshold not defined	No		
Fluoride (F)		5 ppmdv. In no case more than 0.0035 lbs/MMBtu, 0.96 lbs/hr and 3.8 tons/year per unit.	Yes - Regulated under PSD-FL-151	Yes - Scrubber	No - PTE <10 tpy	No		PTE based on 2000 stack test data and assumed 90% control efficiency
Beryllium (Be)		In no case more than 0.000000135 lbs/MMBtu, 0.000037 lbs/hr and 0.000147 tons/year per unit.	Yes - Regulated under PSD-FL-151	Yes - Baghouse	No - PTE <10 tpy	No		PTE based on 2000 stack test data and assumed 99.9% control efficiency
Arsenic (As)		In no case more than 9.10x10-6 lbs/MMBtu, 2.50x10-3 lbs/hr and 0.01 tons/year per unit.	Yes - Regulated under PSD-FL-151	Yes - Baghouse	No - PTE <10 tpy	No		Pre-control PTE based on uncontrolled emission factor from AP-42
Ammonia (NH3)		In no case shall ammonia slip exceed 50 ppmv.	Yes - Regulated under PSD-FL-151	No	No - Major source threshold not defined	No		
Lime Silo								
Opacity (VE)	10%	5%	No - Regulated under Subpart Cb	Yes - Baghouse	No - Major source threshold not defined	No		Lime storage and feed system for control device
Ash Building								
Particulate (PM/PM10)	27mg/dscm	0.010 gr/dscf	No - Regulated under Subpart Cb	Yes - Baghouse	No - PTE < 100 tpy	No		Pre-control PTE based on uncontrolled emission factor from AP-42
Transfer Station								
Particulate (PM/PM10)			No	No	No - PTE < 100 tpy	No		PTE based on uncontrolled emission factor from AP-42
Horticultural Processing Facility								
Particulate (PM/PM10)			No	No	No - PTE < 100 tpy	No		PTE based on emission factor from AP-42
Portable Tire Shredder								
Particulate (PM/PM10)			No	No	No - PTE < 100 tpy	No		PTE based on emission factor from AP-42

Opacity (VE)

Opacity is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Cadmium (Cd)

Cadmium is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Lead (Pb)

Lead is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Mercury (Hg)

Mercury is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Sulfur Dioxide (SO_2)

Sulfur Dioxide is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Hydrogen Chloride (HCl)

Hydrogen Chloride is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Dioxins/Furans (PCDD/PCDF)

Dioxins/Furans are regulated under 40 CFR 60, Subpart Cb and are therefore exempt from Part 64 CAM requirements.

Nitrogen Oxides (NO_x)

Nitrogen Oxides are regulated under 40 CFR 60, Subpart Cb and are therefore exempt from Part 64 CAM requirements.

Carbon Monoxide (CO)

Carbon Monoxide is regulated under 40 CFR 60, Subpart Cb and is therefore exempt from Part 64 CAM requirements.

Volatile Organic Compounds (VOCs)

Volatile organic compounds are formed during the combustion of solid waste and may be present in the flue gas. VOCs can be effectively controlled by designing the combustor to provide an adequate supply of combustion air and maximizing combustion efficiency. The Facility's MWC units control emissions of VOCs through good combustion design and operational practices.

The existing Title V operation permit limits emissions of VOCs from the MWC units under Florida permit no. PSD-FL-151B. The Facility does not use a control device to achieve compliance with emission limitations, so the CAM rule does not apply to the MWC units at the Facility for emissions of VOCs.

Sulfuric Acid Mist (SAM)

A small amount of SO_2 generated during solid waste combustion is further oxidized to SO_3, which combines with water to form sulfuric acid (H_2SO_4) mist, or SAM. SAM can be effectively controlled by contact with the finely atomized alkaline (lime) slurry in the dry scrubber. The alkaline slurry chemically reacts with the sulfuric acid in the flue gas, forming neutralized calcium compounds that settle out in the scrubber hopper or are captured on the baghouse filters.

The existing Title V operation permit limits SAM emissions from the MWC units under Florida permit no. PSD-FL-151B. The Facility uses a control device (scrubber) to achieve compliance with emission limitations, but there is no major source threshold defined for SAM in 40 CFR 60. Therefore, the CAM rule does not apply to the MWC units at the Facility for SAM emissions.

Fluoride (F)

Fluoride production during solid waste combustion is a function of the fluorine content of the waste (primarily in fluorinated plastics and other fluorocarbons), combustion temperature, and thermally-driven chemical reactions between the combustion air and the

fluorine-containing wastes. Fluorides are highly soluble in water and can be effectively controlled by contact with the finely atomized alkaline (lime) slurry in the dry scrubber.

The existing Title V operation permit limits fluoride emissions from the MWC units under Florida permit no. PSD-FL-151B. The MWC units use a control device (scrubber) to achieve compliance with the fluoride emission limitation. Potential pre-control fluoride emissions estimates are calculated below. No fluoride emission factors were published in AP-42, so the most recent (2000) stack test data for fluoride was used in conjunction with an assumed scrubber control efficiency of 90% to obtain the pre-control emission estimate. The 90% control efficiency was referenced in the PSD application in the calculation of the 5 ppmdv F limit. The 5 ppmdv limit was included in the final PSD permit, indicating FDEP concurre with the 90% scrubber efficiency assumption. Malcolm Pirnie has no direct data on dry scrubber control efficiencies for fluoride, but will continue to use the 90% efficiency assumption unless FDEP objects.

Assuming 90% control efficiency, the pre-control fluoride emission estimate is below the major source threshold. Therefore, the CAM rule does not apply to the MWC units at the Facility for fluoride emissions. The potential pre-control fluoride emissions estimate calculation is shown below.

Pre-Control F Estimate

Emission rate[1] x ton conversion x operating time[2] x scrubber efficiency factor = F emissions estimate

(0.038 lb./hr.) x (ton/2,000 lb.) x (8,760 hrs./yr.) x (100/100-90) = 1.66 tons/yr.

1.66 tons/yr. < 10 tons/yr. (major source threshold for F), so CAM rules are not applicable to F for both MWC units.

[1] Maximum fluoride emissions rate from 2000 stack test
[2] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

Beryllium (Be)

Beryllium is a metal found only in trace quantities in solid waste, and is much less volatile than lead or mercury. Therefore, most of the beryllium in the solid waste will be retained in the bottom ash after combustion. Small amounts of beryllium vapor will solidify in the cooler areas of the heat recovery equipment by condensing on the surface of entrained particles in the flue gas. These particles are carried in the flue gas stream to the baghouse, where they settle out by gravity or are captured on the filter bag surface and removed. Therefore, the capture of particulate matter in the baghouse results in the capture of beryllium.

A small fraction of the beryllium remains as fine particulate and will escape capture in the control device.

The existing Title V operation permit limits beryllium emissions from the MWC units under Florida permit no. PSD-FL-151B. The MWC units use a control device (baghouse) to achieve compliance with the beryllium emission limitation. Potential pre-control beryllium emissions estimates are calculated below. No beryllium emission factors were published in AP-42, so the most recent (2000) stack test data for beryllium was used in conjunction with an assumed scrubber control efficiency of 99.9% to obtain the pre-control emission estimate. Malcolm Pirnie has no data on dry scrubber control efficiencies for beryllium, but an efficiency assumption of 99.9% produces a very conservative estimate of pre-control emissions.

Assuming 99.9% control efficiency, the pre-control beryllium emission estimate is below the major source threshold. Therefore, the CAM rule does not apply to the MWC units at the Facility for beryllium emissions. The potential pre-control beryllium emissions estimate calculation is shown below.

Pre-Control Be Estimate

Emission rate[1] x ton conversion x operating time[2] x scrubber efficiency factor = Be emissions estimate

(1.5 E-05 lb./hr.) x (ton/2,000 lb.) x (8,760 hrs./yr.) x (100/100-99.9) = 0.066 tons/yr.

0.066 tons/yr. < 10 tons/yr. (major source threshold for Be), so CAM rules are not applicable to Be for both MWC units.

[1] Maximum beryllium emissions rate from 2000 stack test
[2] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

Arsenic (As)

Arsenic is a metal found only in trace quantities in solid waste. The arsenic content of municipal solid waste is generally in the combustible fraction and is considered to be fully volatilized in the combustion process. Therefore, most of the arsenic is entrained in the flue gas and only small amounts remain in the bottom ash. Arsenic vapor will solidify in the cooler areas of the heat recovery equipment by adsorbing or condensing on the surface of entrained particles in the flue gas, especially fine particulate matter. These particles are carried in the flue gas stream to the baghouse, where they settle out by gravity or are captured on the filter bag surface and removed. Therefore, the capture of particulate matter in the baghouse results

in the capture of arsenic. A small fraction of the arsenic remains as fine particulate and will escape capture in the control device.

The existing Title V operation permit limits arsenic emissions from the MWC units under Florida permit no. PSD-FL-151B. The MWC units use a control device (baghouse) to achieve compliance with the arsenic emission limitation. However, the pre-control arsenic emission estimate is below the major source threshold, so the CAM rule does not apply to the MWC units at the Facility for arsenic emissions. Potential pre-control arsenic emissions estimates are calculated below.

Pre-Control As Estimate

Emission factor[1] Btu conversion

(4.37 E-03 lb./ton) x (5,000/4,500) = (4.85 E-03 lb./ton)

Emission Factor x ton conversion x design feed rate[2] x operating time[3] = As emissions estimate

(4.85 E-03 lb./ton) x (ton/2,000 lb.) x (27.5 tons/hr.) x (8,760 hrs./yr.) = 0.58 tons/yr.

0.58 tons/yr. < 10 tons/yr. (major source threshold for As), so CAM rules are not applicable to As for both MWC units.

[1] Uncontrolled Arsenic Emission Factor for Mass Burn Combustors (from AP-42, Vol. 1, Chapter 2) used a heating value of 4,500 Btu/lb. The Facility reference waste heating value is 5,000 Btu/lb.
[2] MWC design feed rate used as a conservative estimate. Actual feed rate may be less.
[3] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

Ammonia (NH_3)

The Facility uses ammonia in the Thermal Denox System for NO_x emissions control. The existing Title V operation permit limits ammonia emissions from the MWC units under Florida permit no. PSD-FL-151B. However, the MWC units do not use a control device to achieve compliance with the ammonia emission limitation, so the CAM rule does not apply to the MWC units at the Facility for ammonia emissions.

Lime Silo

Description

The Facility is equipped with one lime storage silo that stores pebble lime used in the production of lime slurry for the dry scrubbers. The silo is equipped with a fabric vent filter to remove entrained lime from conveying air vented during loading operations.

Opacity (VE)

Opacity is regulated under Florida permit no. PSD-FL-151B. However, there is no major source threshold defined for opacity in 40 CFR 60. Therefore, the CAM rule does not apply to the lime silo at the Facility for opacity emissions.

Ash Building

Description

The ash building is an enclosed prefabricated metal structure at the terminus of the ash collection system that contains ferrous and nonferrous separation equipment and concrete storage bunkers. Fly ash discharged to the collection system from various points in the combustion trains is wetted to prevent fugitive emissions and mixed with bottom ash. The wet combined ash is then conveyed to the ash building, where ferrous and nonferrous metals are removed from the ash. The finished wet ash is then discharged to a storage bunker for later transport to the Lee-Hendry landfill. The ash bulding is equipped with a small baghouse to control particulate emissions.

Particulate (PM/PM10)

The existing Title V operation permit limits particulate emissions from the ash building under Florida permit no. PSD-FL-151B. The ash building has a control device (baghouse), but it is not required to achieve compliance with the particulate emission limitation. The pre-control emissions factor for the wetted ash was calculated using the predictive emission factor equation in AP-42 Section 13, *Aggregate Handling and Storage Piles.*

AP-42 references landfill fly ash with 27% moisture content as a typical material used in the predictive equation. The wetted ash stored in the ash building is a similar material, with moisture content ranging from 13-16%. In order to provide a conservative estimate, the largest particle size multiplier (0.74) and the lowest measured moisture content (13%), and the highest recorded wind speed (5 mph) was used in the equation. Wind speed data was taken from

opacity measurements during the most recent (2004) stack test, and are included in Exhibit 13. Potential pre-control particulate emissions estimates for the wetted ash were calculated below.

Pre-Control PM Estimate

E = Emission Factor[1]
k = Particle size multiplier (0.74)
U = Mean wind speed (5 mph)
M = Material moisture content (13%)

$$E = k*(0.0032)* \frac{(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$E = 0.74*(0.0032)* \frac{(5/5)^{1.3}}{(13/2)^{1.4}} = 1.72 \text{ E-04 lb./ton}$$

Emission factor x ton conversion x design feed rate[2] x operating time[3] = PM emissions estimate

(1.72 E-04 lb./ton) x (ton/2,000 lb.) x (55 tons/hr.) x (8,760 hrs./yr.) = 0.04 tons/yr.

0.04 tons/yr. < 100 tons/yr. (major source threshold for PM), so CAM rules are not applicable to PM for the ash building.

[1] Emission factor from AP-42, Vol. 1, Chapter 13, predictive emission factor equation 1)
[2] Design feed rate includes both MWC units discharging at 27.5 tons per hour.
[3] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

The estimated potential uncontrolled emissions are below the major source threshold for PM, so the CAM rule does not apply to the ash building at the Facility for particulate emissions.

Transfer Station

Description

The transfer station is an enclosed prefabricated metal structure located approximately ¼ mile west of the ash building on the Facility site, designed to handle up to 1,800 tons of solid waste per day (75 tons per hour). Collection vehicles deliver solid waste to the transfer station, where it is drop loaded into transfer trucks for transport to the Lee-Hendry landfill. The transfer station is not equipped with a control device to control particulate emissions. Solid waste is not stored in the facility for more than 72 hours, so gas generation is assumed to be negligible.

Particulate (PM/PM10)

The pre-control emissions factor for solid waste handled in the transfer station was calculated using the predictive emission factor equation in AP-42 Section 13, *Aggregate Handling and Storage Piles.* AP-42 references landfill miscellaneous fill materials as a typical material used in the predictive equation. The solid waste in the transfer station is a similar material by composition and moisture content. In order to provide a conservative estimate, the largest particle size multiplier (0.74) and the highest recorded wind speed (5 mph) was used in the equation. Wind speed data was taken from opacity measurements for the ash building (a similar fully-enclosed structure on the same site) during the most recent (2004) stack test, and are included in Exhibit 13. Potential pre-control particulate emissions estimates for the transfer station were calculated below.

Pre-Control PM Estimate

E = Emission Factor[1]
k = Particle size multiplier (Max = 0.74)
U = Mean wind speed (Max recorded wind speed = 5 mph)
M = Material moisture content[2] (11%)

$$E = k*(0.0032)* \frac{(U/5)^{1.3}}{(M/2)^{1.4}}$$

$$E = 0.74*(0.0032)* \frac{(5/5)^{1.3}}{(11/2)^{1.4}} = 2.18 \text{ E-04 lb./ton}$$

Emission factor x ton conversion x design feed rate[3] x operating time[4] = PM emissions estimate

(2.18 E-04 lb./ton) x (ton/2,000 lb.) x (75 tons/hr.) x (8,760 hrs./yr.) = 0.07 tons/yr.

0.07 tons/yr. < 100 tons/yr. (major source threshold for PM), so CAM rules are not applicable to PM for the transfer station.

[1] Emission factor from AP-42, Vol. 1, Chapter 13, predictive emission factor equation 1)
[2] Moisture content for miscellaneous fill materials from AP-42, Vol. 1, Chapter 13
[2] Maximum design feed rate. Actual rate is currently 1,200 tons per day, or 50 tons/hr.
[3] Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.

The estimated potential uncontrolled emissions are below the major source threshold for PM, so the CAM rule does not apply to the transfer station at the Facility for particulate emissions.

Horticultural Processing Facility

Description

The horticultural processing facility (HPF) is a 6.8-acre asphalt paved pad adjacent to the transfer station on the Facility site. The HPF was designed to handle clean horticultural waste (tree limbs, brush, grass clippings, etc.) collected from residences and businesses. Collection vehicles deliver horticultural waste to the HPF, where it is placed in rows by front-end loaders for easy access during mulching operations. A tub grinder is used a few days each month to grind the waste into marketable-quality mulch. Front-end loaders load the finished mulch into transfer trucks for transport off site.

Particulate (PM/PM10)

The HPF's asphalt-paved surface minimizes unconfined particulate emissions from vehicle traffic and wind. The only appreciable particulate matter emitted at the facility occurs during grinding operations. AP-42 does not contain an emissions factor for wood grinding, but does list general land clearing, which is a similar operation. The equation for bulldozing (overburden) in Table 11.9-1 was used for estimating particulate emissions from the wood grinding operation. In order to provide a conservative estimate the bulldozer equation for TSP $\leq$ 30 μm was used. The silt content of the mulch was estimated at 10% and the moisture content was estimated at 40% (Estimates based on ranges published in AASHTO MP-10). The particulate emissions estimate for the HPF is calculated below.

PM Emissions Factor Calculations (Tub Grinder)

E = Emission Factor[1]
s = Silt content, %
M = Material moisture content (40%)

$$E = \frac{5.7 \times (s)^{1.2}}{(M)^{1.3}}$$

$$E = \frac{5.7 \times (0.10)^{1.2}}{(0.40)^{1.3}} = 1.18 \text{ lb/hr}$$

[1] Emission factor equation from AP-42, Table 11.9-1)

PM/PM10 emissions (wood grinder)
Emission Factor: 1.18 lbs./hr (from AP-42 Table 11.9-1 10/98)
Calculations: 1.18 lbs./hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 1.79 tons/yr

PM/PM10 emissions (1,000-hp diesel engine)
Emission Factor: 2.2 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.2 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.33 tons/yr

Total PM/PM10 emissions = 1.79 + 3.33 = 5.12 tons/yr.

NO_x emissions (1,000-hp diesel engine)
Emission Factor: 0.031 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 0.031 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 46.87 tons/yr

CO emissions (1,000-hp diesel engine)
Emission Factor: 6.68 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 6.68 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 10.10 tons/yr

VOC emissions (1,000-hp diesel engine)
Emission Factor: 2.47 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.47 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.73 tons/yr

SO_2 emissions (1,000-hp diesel engine)
Emission Factor: 2.05 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 1,000 hp x 2.05 E-03 lb./hp-hr x 3,024 hrs/yr. x 0.0005 ton/lb. = 3.10 tons/yr

The estimated potential uncontrolled emissions are below the major source thresholds, so the CAM rule does not apply to the HPF at the Facility.

Tire Shredder

Description

A 325-hp diesel portable tire shredder is at the Facility for 3-6 week periods, totaling approximately 16 weeks during the year. When the shredder is on site, tire shredding operations can occur for up to 12 hours per day. The shredder is a low-speed, high-torque design, which slowly shreds tires into pieces approximately 1" in size. The diesel engine consumes approximately 20 gallons per hour. The only appreciable emissions are associated with the diesel engine emissions, which are calculated below.

PM/PM10 emissions (325-hp diesel engine)
Emission Factor: 2.2 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 325 hp x 2.2 E-03 lb./hp-hr x 1,344 hrs/yr. x 0.0005 ton/lb. = 0.48 tons/yr

NO_x emissions (325-hp diesel engine)
Emission Factor: 0.031 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 325 hp x 0.031 lb./hp-hr x 1,344 hrs/yr. x 0.0005 ton/lb. = 6.77 tons/yr

CO emissions (325-hp diesel engine)
Emission Factor: 6.68 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 325 hp x 6.68 E-03 lb./hp-hr x 1,344 hrs/yr. x 0.0005 ton/lb. = 1.46 tons/yr

VOC emissions (325-hp diesel engine)
Emission Factor: 2.47 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 325 hp x 2.47 E-03 lb./hp-hr x 1,344 hrs/yr. x 0.0005 ton/lb. = 0.54 tons/yr

SO_2 emissions (325-hp diesel engine)
Emission Factor: 2.05 E-03 lb./hp-hr (AP-42 Table 3.3.1 10/96)
Calculations: 325 hp x 2.05 E-03 lb./hp-hr x 1,344 hrs/yr. x 0.0005 ton/lb. = 0.45 tons/yr

The estimated potential uncontrolled emissions are below the major source thresholds, so the CAM rule does not apply to the tire shredder at the Facility.

MALCOLM PIRNIE

VERIFICATION OF RMP SUBMISSION

EXHIBIT 7

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Covanta Lee, Inc. (operator)
10500 Buckingham Road
Suite 400
Fort Myers, FL 33905

July 21, 2004

EPA Facility ID#: **1000 0006 8749**
Postmark Date: **06/17/2004**
Anniversary Date: **06/17/2009**

NOTIFICATION LETTER: COMPLETE RMP

The U.S. Environmental Protection Agency (EPA) received your Risk Management Plan (RMP) dated with the above postmark date. **This letter notifies you that your RMP is "complete" according to EPA's completion check.** The completion check is a program implemented by EPA to determine whether a submitted RMP includes the minimum amount of information every RMP must provide. The completion check does not assess whether a submitted RMP should have provided additional information or whether the information it provides is accurate or appropriate. In other words, it does not indicate that the RMP meets the requirements of 40 CFR Part 68.

Please note the anniversary date indicated above. Your RMP must be revised and updated by this date or earlier as required by 40 CFR §68.190. Please also note your EPA Facility ID number as identified at the top of this letter; all future Risk Management Plan submissions, corrections and other correspondence must include this number.

If you have any questions, please call one of the following numbers:

(1) For RMP rule interpretation questions, call the EPCRA Hotline at (800) 424-9346 or (703) 412-9810 (in the D.C. Metro area).

(2) For RMP*Submit installation and software questions, or information on the status of your RMP, contact the RMP Reporting Center at (301) 429-5018, or write to the:

RMP Reporting Center
P.O. Box 1515
Lanham-Seabrook, MD 20703-1515

(3) For more information on the Risk Management Program, you can contact your Implementing Agency. Your Implementing Agency is

Florida Department of Community Affairs, 2555 Shumard Oak Boulevard, Tallahassee, FL, 32399, Phone: 850-413-9970.

Thank you for your cooperation in this matter.

Sincerely,

RMP Reporting Center

Enclosure:
Risk Management Plan (if submitted on paper)

MALCOLM PIRNIE

REQUESTED CHANGES TO TITLE V AIR OPERATIONS PERMIT

EXHIBIT 8

Requested Changes to Title V Air Operation Permit

1. Request deletion of Permit Condition Section III A.4, the continuous emission monitoring requirement for combustion efficiency (CE). CE is not a regulatory requirement under either federal Subpart Cb standard or applicable State regulations. Combustion efficiency is an indirect surrogate calculation parameter of boiler performance. The Facility continuously monitors carbon monoxide emissions on a four-hour block averaging period, which is more restrictive than the 8-hour block average for CE.

2. In accordance with Permit Condition Section III A.72, the County requests Department approval to remove the stack carbon monoxide monitor. Each combustion unit currently has two carbon monoxide emission monitors, one upstream and one downstream of the air pollution control system. The effectiveness of combustion is the only means of controlling carbon monoxide. The downstream (stack) monitor is an additional monitor that requires daily calibration, quarterly calibration, RATA, and other maintenance. The upstream monitor provides adequate monitoring availability and has higher CO range detection. The stack analyzer (downstream monitor) is nearing the end of its service life and will need to be replaced within the next 2-3 years. The County requests approval from the Department to remove this redundant monitor rather than replace it.

3. EPA did not address an activated carbon consumption averaging period during the promulgation of 40 CFR 60 Subpart Cb. EPA later recognized the industry had posed questions on this matter. The County proposes the following language be inserted in Permit Condition Section III A.103(2):

   "The carbon injection rate must meet or exceed, on a 24-hour daily averaging period, the level demonstrated during the most recent successful mercury or dioxin/furan compliance stack test."

   Since EPA did not include an averaging period, the proposed language clarifies the following conditions:

   (a) If the carbon injection rate was low for one hour, the carbon injection rate could be adjusted accordingly to meet or exceed that level over the next subsequent hours, and

   (b) The average carbon input over this period would meet or exceed the 'established rate'.

4. Request permitting note:

   "The equivalent emissions in lb/MMBtu and lb/hour are listed in Section III Permit Condition A.21-A.36 for informational purposes only and are not emission compliance standards".

   The Federal Subpart Cb emission limits are in terms of concentration corrected for 7 percent oxygen content. Wherever possible, emission factors in this application are listed in terms of ppmdv corrected to 7% O_2. Mass emission standards on a short term basis or based upon heat content are not available except during annual stack testing. In addition, the limits in these alternate forms are not always equivalent due to variability of the heat content of the MSW and the difference in combustion air flow.

5. Request removal of the 90-day source test protocol notice submittal requirement cited in Section III Permit Condition A.44. Request maintenance of Section III Permit Condition A.66, which requires the submission of the Facility's source test protocol within 15 days of the scheduled start of a formal compliance test in accordance with state regulations (62-297 F.A.C.).

6. Request clarification of reporting requirements in Section III Permit Condition A.95, which states:

   "...in case of excess emission resulting from malfunction the Department shall be notified in accordance with 62-140.130..."

   Chapter 62-140.130, F.A.C. refers to immediate reporting of these types of events. Since the Department is not available at all times and the Facility is operational 24-hours a day, 7 days a week, excess emissions are allowed by permit for specific durations for certain types of startup, shutdown, and malfunction events. The following language is suggested to clarify the reporting requirement:

   "The Florida Department of Environmental Protection South District will be notified within one working day of an excess emission resulting from a malfunction as defined in 62-210.200(179) regarding the nature, extent, and duration of the excess emissions: the cause of the excess emission, and the action taken to correct the problem".

MALCOLM PIRNIE

5

EMISSIONS UNIT ADDITIONAL INFORMATION

ADDITIONAL REQUIREMENTS FOR ALL APPLICATIONS

MALCOLM PIRNIE

FUEL ANALYSIS OR SPECIFICATIONS

EXHIBIT 9

FUEL SPECIFICATION

The primary fuel for the Facility is municipal solid waste (MSW), including the items and materials that fit within the definition of MSW contained in either 40 CFR 60.51b or Section 403.706(5), Florida Statutes. Secondary fuel is propane gas for the auxiliary burners used during boiler startups and shutdowns.

The specification for the solid waste fuel for the Facility was included in the original PSD application dated June 25, 1990. Municipal solid waste (MSW) collected from residences and businesses in Lee and Hendry counties continues to fuel the Facility, and the original assumptions regarding higher heating value and composition of the waste material remain unchanged. A copy of the PSD application section describing the MSW fuel is included in this Exhibit 9.

The Facility landscaping plan is intended to provide a natural appearance and limit the visibility of the Facility buildings. In addition to the buffer requirements of local zoning and development ordinances, the plan shall incorporate primary, secondary, and minor trees and shrubbery. Primary trees shall be at least 10 to 12 feet in height, secondary trees at least 6 to 10 feet, and minor shrubs less than 6 feet. Landscaping shall be provided along the entrance road and adjacent to the administration building and parking area. Plants species shall be native wherever possible.

3.3 FUEL

3.3.1 FUEL SUPPLY

The energy recovery facility will obtain its fuel supply from municipal solid waste collected in Lee and Hendry counties. The term "municipal solid waste" applies to all of the non-recycled solid waste generated within the two counties, excluding hazardous and pathogenic wastes and sewage sludges. Since this waste is heterogeneous, characteristics such as heating value, moisture content, and ash content of the waste will vary. However, the solid waste may be classified according to the following general characteristics and sources of generation.

- Residential Wastes - Mixed domestic household wastes (including non-composted yard wastes) generated by individuals or families in single-family or multiple-family dwellings (comprises approximately 46 percent of the waste stream).

- Commercial/Institutional Wastes - Wastes generated by the commercial and retail sector of the counties, including wastes from hospitals, schools, and churches. The physical characteristics of these wastes are similar to residential wastes, consisting primarily of combustible materials in the form of paper and food wastes from offices, restaurants, and retail establishments (comprises approximately 40 percent of the waste stream).

- o Special Wastes - Wastes generated by the construction industry, including construction and demolition debris and white goods. Any wastes classified as infectious by federal and state regulations will be excluded (comprises approximately 11 percent of the waste stream).

- o Industrial Wastes - Wastes generated by industrial process and manufacturing operations, excluding any wastes classified as hazardous or infectious by federal and state regulations. These wastes also include general housekeeping and support activity wastes associated with industry (comprises approximately 3 percent of the waste stream).

All calculations, analyses, and performance data for the energy recovery facility have been based on the as-fired solid waste higher heat value of 5,000 Btu per pound, with a 21 percent moisture content by weight. Table 3-1 presents the as-received reference solid waste composition, and Table 3-2 lists the reference waste ultimate analysis.

3.3.2 FUEL STORAGE

The energy recovery facility will be equipped with an automatic weighing station to weigh and record the quantity of solid waste delivered. The waste will be delivered in standard municipal-type packer vehicles, open-bodied dump trucks, and transfer trailers with capacities up to 110 cubic yards. The Facility will receive solid waste deliveries 6 days per week, 52 weeks per year. The fuel storage design capacity is based on the ultimate expanded Facility capacity of 2,400 tpd.

The energy recovery facility will include a totally enclosed tipping floor with 18 tipping bays, each 15 feet wide. Back-up barriers will be provided at each tipping bay to prevent vehicles from backing into the solid waste storage pit. Solid waste will be stored in a completely enclosed pit with a floor elevation below that of the tipping floor. The pit will be sized for a minimum storage capacity of 7,200 tons of solid waste at a density of 450 pounds per cubic yard, which will provide at least three days storage at the Facility's ultimate capacity of 2,400 tpd.

TABLE 3-1

REFERENCE SOLID WASTE COMPOSITION

Waste Category	Nominal Percentage By Weight
Combustibles	58.4
Moisture	20.7
Non-Combustibles	20.9
TOTAL	100.0

TABLE 3-2

REFERENCE SOLID WASTE ULTIMATE ANALYSIS

Component	Nominal Percentage By Weight
Moisture	20.7
Total Inert	20.9
Carbon	28.5
Hydrogen	3.8
Oxygen	25.1
Nitrogen	0.5
Chlorine	0.4
Sulfur	0.1
TOTAL	100.0
Higher Heat Value (HHV)	5,000 Btu/lb

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DETAILED DESCRIPTION OF CONTROL EQUIPMENT

EXHIBIT 10

LEE COUNTY RESOURCE RECOVERY FACILITY
DRY SCRUBBER
SYSTEM DESCRIPTION

INDEX

1.0 INTRODUCTION

1.1 PURPOSE

The Dry Scrubber System neutralizes acidic chemical compounds (hydrogen chloride, hydrogen fluoride, sulphur dioxide and mercury vapor) from the exhaust gas of the two refuse-fired boilers. The spray dryer absorber carries out the chemical neutralization. The lime system is used to prepare and supply lime slurry to the spray dryer absorber for use in the chemical neutralization process. The carbon system is used to prepare and supply carbon slurry to the reactor feed tank for mercury abatement.

1.2 SYSTEM OVERVIEW

1.2.1 Lime System

The lime system prepares lime slurry for use in the sulfur dioxide and acid neutralization process in a sufficient quantity and concentration to maintain continuous flue gas treatment in the spray dryer absorber. The system has been designed for batch mixing to provide this service.

Pebble size lime (CaO) is delivered to the plant via selfcontained pneumatic truck trailers. The lime is unloaded from the truck trailer to the lime silo, above the lime preparation area. The silo is sized to hold enough lime to maintain several days of system operation of each flue gas cleaning train at the maximum combustion rate of the boilers. Normal operation requires that 9.24 tons of lime per day consumed to maintain air pollution control system operation. The. silo can, hold 60 tons of lime. Maximum design operation requires 84 tons of lime per week.

The lime silo has one conical discharge. Lime is discharged through a bifurcated chute discharging to a slaking train. Two slaking trains are supplied. Normally, only one slaking train, and therefore, one silo discharge, is operational to supply the system. However, both slaking trains may be operated simultaneously during periods of high slurry demand. Knife gates are installed in the chute beneath the lime silo (feed bin) to select whichever slaking train is operational.

The flow of the material from the silo discharge is aided by a bin vibrator. Variable speed screw feeders are then used to meter lime to the slakers in the proportions required for slaking. During normal operation, up to 770 lbs/hr of lime must be metered through one or both of the slakers to maintain the operation of the spray dryer absorbers.

The pebble sized lime flows by gravity from the screw feeders to detention type slakers where it is slaked to a slurry of hydrated lime and water. The slakers mix and slake the lime, using abrasion resistant rotating paddles, and provide a vessel for the slaking reaction to occur. Approximately four pounds of water are required to slake each pound of quicklime.

22 gallons per minute of slaked lime slurry, with a solids content of 15% to 20%

Water is sprayed onto the surface of the grit screens at a rate of approximately 3 1/2 GPM to remove grit and large particles of lime that will not pass the #20-mesh screens. Wet grit is discharged from each screen for disposal. Lime slurry passing the grit screen flows by gravity to the lime slurry tank.

A total of approximately 4 lbs of water must be mixed with each pound of lime, at the slakers and grit screens, to obtain the required lime slurry feed concentration at the discharge of the slurry tank. The variable feed adjustments of the screw feeder and the manual water control valves at the grit screens and slakers allow water and lime to be combined at a rate that will maintain a batch mode of mixing.

The water sprayed onto the grit screen is mixed with the lime slurry as it passes through the screen before entering the lime slurry storage tank. The rate that water is added to the lime slurry may be varied so that a desired 15% to 20% lime solids concentration can be achieved in the slurry tank. An agitator, in the slurry tank, incorporates and mixes the slaked lime slurry to maintained the suspension of lime solids.

Lime feed slurry is pumped from the lime slurry tank at 15 GPM directly to the atomizer via a duplex strainer during normal operation.Lime system has the capability of going directly to the slurry head tank. Where the overflow recirculation back to the slurry tank prevents the separation of the water and lime and sustains a liquid head capable of enhancing the turn down capability of the system.

The slurry pump also discharges to the dilution water treatment tank. There a small amount of slurry is added to the tank to raise the pH of the dilution water which comes from the waste water system. The dilution water is then pumped to the reactor penthouse to the atomizer. Dilution water is added to the reactor feed tank at a constant rate of normally 21 GPM.

The reactor feed tank discharges to the atomizer through regulating valve. There the flow is regulated to maintain both reactor temperature of 285°F and the 30 PPM S02 permit levels.

2.1 2 Spray Dry Absorber (SCRUBBER)

Untreated flue gas and reactor lime/carbon slurry combine in the spray dryer absorber, resulting in the neutralization and removal of the acid and mercury components contained in the gas stream. The two streams, lime/carbon slurry and boiler exhaust gas, combine, and result in a dry product and scrubbed gas exiting the absorber chamber. The absorber and its support equipment are designed to maintain the reaction between lime/carbon slurry and flue gas necessary for S02, acid neutralization, carbon abatement and for moisture evaporation. The result of maintaining this balance between slurry and gas is the desired absorber exit flue gas conditions.

Slurry flow to each atomizer is metered by a flow control valve to obtain the proper feed concentration to the spray dryer absorber atomizer. Automatic adjustment to the flow is made as a function of the output from an S02 analyzer monitoring the gas discharge from the scrubber. The quantity of slurry metered to the atomizer is proportional to the concentration of S02 monitored.

The reactor tank liquid level is held constant by adding dilution water through a automatic make-up float valve. The amount of water required to maintain the tank level varies with the amount of carbon metered to the reactor tank from the carbon pumps and the outlet temperature of the spray dryer absorber.

Dilution water from the reactor tank flows by gravity through the atomizer feed pipe. The flow of dilution water from the head tank is metered by a flow control valve. The flow through the control valve is increased or decreased based on the temperature of the flue gas exiting the spray dryer absorber. A feedback signal from the atomizer power transmitter verifies that slurry flow to the atomizer increases or decreases in proportion to the spray dryer absorber outlet temperature. The reactor tank level maintains a constant liquid head to improve the turn down capability of the flow control valve.

The slurry passes through a stationary swirl-type liquid distributor into the atomizer wheel where induced centrifugal force, from the rapidly spinning wheel, discharges the slurry through the wheel nozzles at high velocity. The design of the atomizer wheel, its rate of spin, and the discharge velocity of the slurry creates a cloud of finely divided droplets around the periphery of the atomizer wheel.

Flue gas enters from the top of the spray dryer absorber through a cyclonic roof gas dispenser. The dispenser directs the flue gas into the zone filled by the atomized slurry cloud where violent mixing occurs. Most of the chemical absorption occurs in this zone.

The temperature differential across a spray dryer absorber is termed "spraydown". At a constant gas rate, a large slurry flow rate to the atomizer, will produce a large spraydown. The temperature across each spray dryer absorber in the air pollution control system drops from approximately 425°F at the absorber inlet to 285°F at the absorber outlet.

The absorber spraydown would be 140°F under normal operation at the incinerator maximum combustion rate.

The absorption efficiency and the amount of lime used in the absorption process are a function of the flue gas humidity. The closer the outlet temperature is to the adiabatic saturation temperature (dewpoint), the lower the stoichiometry or lime usage. This means that at lower temperatures the humidity will be greater, absorption efficiency will increase, and lime utilization will be optimized. However, low temperature operation presents the risk of condensation, plugging, and deposit formations. An outlet operating temperature of 285°F at the spray dryer absorber outlet insures safe operation and adequate lime utilization. A lower temperature will improve lime consumption but may also present the risks mention previously.

The spray dryer absorber features a two-point product discharge. A portion of the dried spent chemicals and ash settle to the bottom of the chamber. This material discharged at the base of the powder discharge cone, passes through a hopper and is discharged to the ash handling system. The remainder of the spent chemical and ash, entrained in the flue gas, is carried from the module through the gas outlet in the side of the discharge cone.

2.0 COMPONENTS

2.1 LIME SYSTEM

The lime slurry preparation systems includes a lime storage silo fitted with bin vibrators at the discharge of the silo, a vent system on the silo roof, screw type lime feeders, detention type lime slakers, vibratory screens, grit conveyors, and lime slurry storage tank with appropriate controls and instruments. All lime slurry preparation plant equipment is housed in an enclosure below the lime silo.

2.1.1 Lime Storage Bin

The lime storage bin comprises the top 70' of the height of the lime system enclosure. The bin is a mass flow vessel used for the storage of pebble lime.

The lime storage bin storage has a capacity of 120,000 pounds. A conical bifurcated chute discharge is located at the bottom of a 60 degree conical hopper. The storage bin is constructed of carbon steel. The bin is also equipped with a vacuum/pressure relief valve to relieve excess pressure or vacuum that may occur within the bin. The relief valve is part of the roof-mounted manway access cover.

Pebble lime is delivered to the plant via pneumatic selfunloading truck trailers. The lime is conveyed vertically from grade to the top of the lime storage bin through 4 inch diameter piping.

2 1.2 Lime Bin Vent Filter

Manufacturer: Flex-Kleen
Type: 84-BVDS-16

Conveying air, vented from the lime storage bin during lime unloading, passes through the lime bin vent filter before exhausting to atmosphere. The lime bin vent filter utilizes a fabric media to remove entrained lime from the vented air.

The bin vent filter is activated only when the silo is being refilled with product. When activated, the filter has an automatic cleaning system which prevents the individual filter bags from becoming choked with an accumulation of dust. Cleaning is accomplished with a short impulse of compressed air.

2.1.3 Lime Bin Activator

The lime storage bin incorporates an electrical bin activator to facilitate the discharge of lime to downstream components of the lime system. The activator is equipped with a mechanically adjustable vibrator motor to adjust the intensity of the vibration at the bin bottom. The vibrator is activated by a timer that allows the bin activator to operate only 10 seconds every three minutes. Should the feeder receiving insufficient flow, this time can be adjusted.

2.1.4 Diverter

A two-way flow diverter has been provided at the discharge of the bin activator. This valve allows flow of pebble lime to only one feeder at a time. The operator must select which system is to run either train A or train B.

The following components are included in both trains.

2.1.5 Rotary Feeder

Manufacturer: CHEMCO

The rotary vane feeder provides a complete seal between the storage silo and the slaker. This eliminates the possibility of flooding which exists with the screw and the belt feeder. This feeder has a feed rate of 25 lbs to 1600 lbs of pebbles lime per hour. This is simply achieved by increasing of decreasing the speed of the feeder.

2.1.6 Lime Slaker

Manufacturer: CHEMCO

Pebble sized lime must be reduced in size and hydrated for use in the absorption process. Sizing and hydration of the lime occurs in the lime slaker.

The slaker is designed such that after the water to lime ration has been set by the operator, any further changes in the feed rate will not affect the feeder to lime ratio since the feeder control will correct the water feed rate to maintain an 4 - 1 ratio. There are four water sources that are introduced into the slaker. They are as follows Slaking water; Temperature control water; Torque or consistency control water; Dilution water. All of the above courses of water are accurately measured period to entering the slaker by a rotameter panel. The slacking water is continually controlled by the feeder, thus any change in the feed rate will automatically result in changes in slaking water to maintain the 4 - 1 ratio.

The high quality quicklime will generate exothermic heat to a mean temperature of 175°F F in a range of 170°F to 180°F when added to water at a rate of one part lime to four parts water by weight. Agitator breaker bars through the length of the slaker provide an immediate mixing action and full suspension of the mix to facilitate dispersion and breakdown of lumps.

Over 99% of the water introduced in the slacking chamber is introduced with the slaking and temperature control. The slaking water provides approximately 90% of the required in the slaking process to maintain a 4 - 1 water to lime ratio. The cooling water provides the 10 balance to maintain the proper temperature control of 170°F.

2 1.7 Slurry Grit Screen

Manufacturer: SWECO

Slaked lime slurry flows by gravity from the slakers to a slurry grit screen located beneath each slaker. The grit screens are oscillating, replaceable, stainless steel wire #20-mesh screens. Slurry, deposited on the grit screens, is washed with water to cleanse the slurry of grit particles. Grit free slurry passes through screen and flows by gravity into the lime slurry tank. Collected grit is carried from each screen by a grit screw to a hopper for disposal.

Each grit screen is sized to handle 30 GPM of lime slurry. The size #20 mesh screens are 30 inches in diameter. Oscillation of the screens is maintained by a 1/2 HP electric motor. The vibrating grit screens are controlled using "Hand-OffAuto" switches on the lime system control panel. When the auto position has been selected, the associate grit screen begins to vibrate, and the grit spray starts automatically, when a slurry tank low level indication activates slaking. Continuous operation of the grit screens and sprays occurs when the selector switch is placed in the "HAND" position. Power to the grit screens is removed and grit spray operation is discontinued when the control switch is placed in the OFF position.

Water flow to the grit sprays is controlled automatically by the dilution water spray set at approximately 3 1/2 GPM or manually via a hand valve in series with a solenoid operated cutoff valve.

2.1.8 Grit Screw

Grit removed from the slaked lime slurry by the slurry grit-screens is carried from each screen through a 6-inch diameter screw conveyor. The grit screw extends beyond the exterior of the lime system enclosure. Grit is deposited in collection containers for disposal.

The grit screw utilizes a auger type screw, and is powered by an electric motor.
The grit screw is controlled through a Hand-Off-Auto switch on the lime system control panel.

The grit screw operates automatically whenever the control switch is in the "Auto" position and the slurry tank level detector indicates a low slurry level. With the control switch in the "Hand" position, the grit screw will operate continuously. The "OFF" position of the selector switch de-energizes the grit screw.

The grit screw will continue operation, along with the grit screens and grit sprays, from 0 to 10 minutes after the slurry tank level detector indicates a high level and shuts down the slaking system.

2.1.9 Lime Slurry Storage Tank

Slaked lime is mixed, stored, and kept in suspension within the slurry tank, for use when required by the dryer absorber. The 13'-0" diameter slurry tank includes a sloped bottom to allow complete drainage, and openings for slaked lime feed, recirculation from the slurry head tank, an agitator, a level probe, an overflow, three slurry outlets, internal baffles, 24" man-way and the tank drain. The slurry tank is constructed of high carbon steel with a capacity of approximately 6,500 gallons.

A level detector senses the slurry level in the tank which sends a signal to the DCS and used for local slaking controls. Lime slurry tank low low is set at 20" and will trip the agitator and the pumps. A double impeller agitator for mixing and suspending the slurry solids is also supplied.

2.1.10 Slurry Tank Mixer

Manufacturer: SEW-Eurodrive
Type: FAF70DT100SC4

The slurry tank mixer is mounted on top of the slurry tank. The shaft of the mixer passes through the top of the slurry tank. A 4811 diameter impeller agitates the slurry, blending and maintaining the solids suspended in water.

2.1.11 Slurry Feed Pumps

Manufacturer: Goulds
Type: SC 1.5 X 2.11 II
Capacity: 45 GPM

Three slurry pumps, one operating, one on standby, and one for emergency back-up are used to pump lime slurry to the atomizer.

Each slurry pump is a centrifugal type pump with erosion resistant hi-chrome impeller and scroll liner. The pumps are V-belt driven. Each slurry pump is rated for 45 GPM at 140 ft. total dynamic head.

2.1.12 Dilution Tank

Dilution water is neutralized, stored, and kept in dilution tank within the scrubber area, for use when required by the dryer absorber. The 10' diameter by 10' high tank includes a fill off the wastewater system a recirculation line from the dilution water head tank and a small line from the slurry feed pump discharge. The slurry feed is used to neutralize the acidic nature of the supplied waste water. The tank also includes an agitator, a level probe, an overflow, three dilution pump outlets, and the tank drain. The dilution water tank is constructed of carbon steel with a capacity of 2000 gallons.

2.1.13 Dilution Feed Pumps

Manufacturer: Goulds
Type: 1 X 1.5 - 6

Three dilution pumps, one operating and one standby and one emergency, are used to pump dilution water to the head tanks located within the spray dryer absorber penthouses.

Each dilution pump is a centrifugal type pump with erosion resistant hi-chrome impeller and scroll liner. Each slurry pump is rated for 75 GPM at 130 ft. total dynamic head.

2.2 DRY SCRUBBER

The Dry Scrubber consists of a slurry head tank, dilution head tank, reactor feed tank, reactor feed tank agitator, slurry atomizer, spray dryer absorber.

2.2.1 Slurry Head Tank

The slurry head tank, located in the penthouse above the spray dryer absorber chamber, creates a gravity head pressure sufficient to allow proper operation of the reactor feed tank. This tank also stores lime slurry in case of a slurry feed pump malfunction. The tank hold sufficient material to give approximately 1 1/2 minutes of scrubber operation while the slurry feed pump is down.

The head tank is 7" in diameter by 10' in height. The carbon steel tank is equipped with a 1 1/2" slurry inlet, a 1 1/2" slurry outlet to the atomizer, and a 2" overflow. The slurry flow to the atomizer is controlled by a flow control valve from the SO2 controller. The slurry used is proportional to the flue gas SO2.

2.2.2 Dilution Head Tank

The head tank, located in the penthouse above the spray dryer absorber chamber, creates a gravity head pressure sufficient to allow proper operation of the reactor feed tank. This tank also stores dilution water in case of a dilution feed pump malfunction. The tank hold sufficient material to give approximately 1 1/2 minutes of scrubber operation while the dilution feed pump is down.

The head tank is 7" in diameter by 10' in height. The carbon steel tank is equipped with a 1 1/2" dilution inlet, a 1 1/2" dilution outlet to the reactor feed tank, and a 2" inch overflow. The outlet flow is controlled by the level in the reactor feed tank

2.2.3 Reactor Feed Tank

The reactor feed tank, located in the penthouse above the spray dryer absorber chamber, creates a gravity head pressure sufficient to allow proper operation of the atomizer.

The head tank is 24" in diameter by 44" in height. The carbon steel tank is equipped with a 1 1/2" slurry inlet for back purposes only, a.1 1/2" dilution water inlet, a 3/8" inlet from the carbon feed system, and a 2" overflow and a 2" feed to the atomizer.

An agitator maintains solids in suspension and provides blending of carbon and water as dictated by process requirements. A removable 40a open perforated stainless steel grit screen, at the head tank outlet to the atomizer feed line, removes particles in the tank that might adversely affect atomizer operation.

A flow/SO2 cascaded controller in the spray dryer absorber control panel adjusts the control valve position based on the flow feed back signal from the magnetic flowmeter. The setpoint for the lime slurry flow to the atomizer is generated by the S02 controller based on the SO2 emission as measured by the analyzer at the gas discharge of the baghouse. Make-up water is added to the head tank from the dilution water head 'tank a level control valve to maintain the required liquid level in the reactor feed tank.

An overflow connection returns lime slurry that overflows the head tank to the trench.

2.2.3 Reactor Feed Tank Agitator

The feed tank has a direct drive mixer. All wetted parts are fabricated of 316 stainless steel. The mixer includes a 3/4" x 26" long shaft and one 3 1/2" diameter impeller. The mixer is driven by a 1.0 HP electric motor.

2.2.4 Atomizer (11,295 rpm's)

Manufacturer: ABB

Three rotary atomizers, two operating and one spare, are used in the spray dryer absorbers. Each atomizer has its own service stand.

The atomizer is driven by a vertical, flange mounted 75 HP electric motor. The motor shaft is connected via flexible coupling to the atomizer gear box.

Power is transferred through the atomizer gear box by a double helical toothed gear to the atomizer spindle. Turning within special high speed ball bearings, the spindle is supported at its lower extremity by a selflubricating guide bearing made of antimony impregnated carbon.

An atomizer wheel is fitted to the end of the spindle at the bottom of the atomizer. The atomizer wheel is specially designed to resist the high temperatures and high abrasion associated with its operation in the spray. dryer absorber. A wear resistant base plate protects the lower wheel body from abrasion.

The atomizer wheel is designed to optimize lime slurry feed atomization. The wheel is dynamically balanced to resist the centrifugal forces associated with its high speed operation.

The atomizer oil return oil pump takes suction from the lower sump where it discharges to the oil cooler. The cooled oil then collects in the oil reservoir. The supply oil takes suction from the oil reservoir and discharges to the gear box cooling oil supply and the flex shaft oil supply. The atomizer's internal oil supply pump distributes the oil through a filter to the internal bearings and wheel. The internal oil pump also supplies oil to an external oil pressure transducers. These transducers will shut down the atomizers upon low lube oil pressure.

The oil sump is located in the lower part of the atomizer. Also included, in the lower portion of the atomizer, are the spindle, spindle bearing supports, the feed pipe bracket, and the conical skirt.

Atomizer power cable connections are made through a combination plug/receptacle.

2 2.4 Spray Dryer Absorber Module

The spray dryer absorber modules are mixing chambers for the process exhaust gas and the atomized lime slurry. Each module includes an inlet gas dispenser, a mixing chamber for the slurry and flue gas, a penthouse, and a powder discharge cone.

Untreated flue gas enters the spray dryer absorber module through the inlet gas dispenser.

The gas dispenser is a cyclonic inlet on the roof of the spray dryer absorber chamber. Gas exits the dispenser and spirals downward through vanes located between the upper segment of the atomizer support cone and the spray dryer absorber chamber roof . As the gas enters the spray dryer absorber chamber, it comes in contact with the atomized slurry sprayed from the atomizer wheel.

The atomizer is supported from an inverted cone-shaped structure, formed by upper and lower dispenser cone segments, extending into the absorber chamber from the spray dryer absorber chamber roof. The atomizer wheel extends into the absorber module through the lowermost portion of the support cone. The location of the atomizer wheel ensures optimum mixing of the atomized cloud of lime slurry with untreated flue gas entering the chamber from the gas dispenser.

One atomizer support stand is supplied in each spray dryer absorber penthouse. An additional support stand is supplied for the spare atomizer. The support stand is for storage of the atomizer, when it is removed from the spray dryer absorber during atomizer or absorber chamber maintenance. An electric hoist with a monorail trolley to facilitate service and movement of equipment within the
penthouse, and to transport equipment and material between the penthouse and grade.

A powder discharge cone is at the. bottom of the spray dryer absorber. This inverted cone-shaped hopper directs spent chemicals and ash, that have settled out of the gas stream, to a discharge point at the base of the cone.

A 24-inch manway is located in the lower cylindrical portion of each spray dryer absorber chamber and at the lower extremity of each powder discharge cone to provide access to the spray dryer absorber chamber interior during maintenance and service.

Treated flue gas exits the spray dryer absorber chamber horizontally trough square discharge opening in the powder discharge cone. Flue gas ducting carries the treated flue gas from the chamber's gas discharge point to the respective baghouse of each air pollution control system.

The outlet duct temperature of each spray dryer absorber is monitored by a thermocouple. A temperature signal is transmitted by a temperature transmitter to the spray dryer absorber control panel where it is recorded on a temperature recorder and used by the temperature controller to control slurry feed to the atomizer. Low and high spray dryer absorber outlet temperature alarms, displayed on the spray dryer control panel, are monitored through the temperature controller using the same temperature signal.

2.3 CARBON INJECTION SYSTEM

2.3.1 Bag Loading

The bag unloading system is designed to lift and transfer individual 900 pound bags (super sacks) of dry powdered activated carbon and dump them on a routine operating into one of two storage bins. Each bin will have a usable storage capacity of 1800 lbs and will required refilling once a day based on an average use of 50 pounds per hour. Each bin is equipped with a high level switch and remote alarm contact to signal overfill and a low level switch and alarm to signal a low material supply.

2.3.2 Carbon slurry Make-up

The carbon make up system cover the material as it moves between the day bin and the slurry tank.. One of the two feed lines (day bin and feeder) is selected to operate and the other is for standby. Then manual shut off gate at the bottom of the selected bin is open allowing material to flow to the feeder where is transferred into the slurry tank at a controlled rate.

The feeder is fixed to handled the average usage rate of 50 lbs/hr, the maximum rate of 75 lbs/hr, and the minimum of 25 lbs/hr. the feeder is started and stopped from the main control station (DCS); feeder speed is locally controlled by the operator through a variable frequency drive. A 4-20ma signal proportional to the feeder speed is sent to the DCS. The feeder also has a locally mounted counter to totalize throughput.

2 3.3 Slurry Pumping

Two carbon pumps make up the carbon pumping system one normally operating, one standby for additional capacity, if required, and one off-line standby for pump failure. The pumps are started and stopped from the DCS whenever the entire FGD system is required to run. Since the water flow rate into the carbon tank is at a fixed rate, the carbon concentration, can be varied by adjusting the speed of the feeder. At the average feed rate of 50 lbs/hour, the concentration of the carbon will be approximately 5%. The pumping rate can be adjusted by changing the speed of the pump; however, this will require adjusting the variable pitch sheaves on the pump drive.

3.0 OPERATION

3.1 START UP

3.1.1 Verify the following:

a. Lime slurry tank drain valve is closed.

b. Pebble lime silo has adequate level.

c. Instrumentation and service air is available for service.

d. Grit screen is clean.

e. Grit screw collection bin is in place.

f. Adequate slaking water pressure.

g. Lime feed pump drain and flush valves are closed.

h. Atomizer is in the operating position.

i. Lime and water feed hose connected to atomizer.

j. Air seal line is connected to atomizer base plate.

k. Atomizer motor power cable is connected.

1. Vibration monitoring cable is connected.

m. Instrumentation cable is connected.

n. Atomizer oil level is normal (via dipstick).

o. Reactor tank strainer is clean.

p. Reactor tank drain valve is closed.

q. Reactor tank cover is closed.

r. Reactor tank flow control valve to atomizer is closed.

s. Carbon silo has adequate level.

t. Carbon slaking water has adequate pressure.

3.1.2 Open the lime silo knife gate to the train that is to be placed in service.

3.1.3 Select the slurry feed pump switch to the pump that is to be placed in service.

3.1.4 Start the lime slurry tank agitator.

3.1.5 Open the water supply valve to the slaker.

3.1.6 Select the dilution, cooling water, torque water and slaking water control valves switch to "Auto".

3.1.7 Select the screw feeder control switch to "Auto".

3.1.8 Select the lime silo bin vibrator control switch to "Auto".

3.1.9 Select slurry feed pumps control switch to "Off".

3.1.10 Select grit screen control switch to "Auto".

3.1.11 Select grit screw control switch to "Auto".

3.1.12 Select slaker control switch to "Auto".

3.1.13 Select screw feeder control switch to "Auto". Slaker system will now automatically start and produce slurry.

3.1.14 Place the slurry control value (atomizer head tank fill valve) to manual and close it.

3.1.15 Verify that the discharge of the selected slurry pump and open its suction and discharge valves.

3.1.16 When the slurry storage tank has reached approximately midpoint start the slurry feed pump.

3.1.17 verify return flow from scrubber.

3.1.18 Fill the reactor head tank to 10% of normal operating level (via the slurry control valve and slurry head tank).

3.1.19 While filling the slurry system fill the dilution water treatment tank with waste water. Ensuring the lime slurry tank is supplying adequate slurry to neutralize the waste water.

3.1.20 Line up the dilution water pump and fill the dilution head tank observing an overflow back to the dilution water treatment tank.

3.1.21 Open the dilution water supply valve to the reactor tank. The reactor water supply float valve will automatically establish and maintain normal operating level.

3.1.22 Ensure carbon slaking water pressure.

3.1.23 Select carbon train to be put in service.

3.1.24 Open manual shut off gate at the bottom of the selected bin align material to flow to the feeder.

3.1.25 The feeder is started for the DCS locally set the screw feed to obtain a set rate of 50 lbs of carbon per hour.

3.1.26 Adjust the carbon slurry pumps to maintain 5 GPM and align system to the reactor feed tank.

3.1.27 Start reactor tank agitator.

3.1.28 Ensure Flyash Handing System is in service.

3.1.29 Place Baghouse in service. (See System Description No. 20)

3.1.30 Start atomizer and verify all its associated alarms clear.

3.1.31 Ensure atomizer flow/temperature controller is in manual with its output at 00.

3.1.32 Open reactor tank isolation valve to atomizer.

3.1.33 Place the atomizer flow/temperature controller to "Auto" with a setpoint of 285°F.

3.1.34 When the economizer outlet temperature reaches 285°F. set the lime flow controller to 300.

3.1.35 Verify slurry flow atomizer.

3.1.36 Monitor Scrubber outlet temperature and ensure that it stabilizes.

3.1.37 Place the SO2 controller to "Auto" and adjust the setpoint to the desired stack S02 concentration.

3.1.38 Monitor actual SO2 Emissions.

3.2 NORMAL OPERATION

3.2.1 The lime slaking operates as bach process. The slaking equipment automatically starts up when the slurry tank lowers to a predetermined level and shuts down when the slurry tank is full.

3.2.2 The slurry feed pump runs continuously with approximately half of its discharged flow being directed to the two atomizers. The remainder of its discharge is recirculated back to the slurry storage tank.

3.2.3 The quantity of slurry that is admitted into a individual atomizers is automatically regulated based on stack SO2. As SO2 rises the slurry flow is increased.

3.2.4 At least once per shift perform the following:

a. Inspect scrubber discharge to ash handling system. Confirm its flow and dryness.

b. Inspect head tank for build-up and clean (via hose) as required.

c. Verify flood valve operation to make sure valve shuts off on high level.

d. Inspect and clean (as required) reactor tank screens. e. Inspect slurry tank for build-up. Clean as required.

3.2.7 Slurry feed lump switchover is performed as required.

3.2.7.1 Stop operating pump and close its discharge valve.

3.2.7.2 Close slurry feed to atomizer valve.

3.2.7.3 Open back-up pump suction and discharge valves

3.3.7.4 Start back-up pump.

3.2.7.5 Open slurry head tank feed line value.

3.2.7.6 Open previously operating pump's flush water valve and backflush slurry line into slurry tank for 2 minutes.

3.2.7.7 Close previously operating pump's suction valve.

3.2.7.8 Connect previously operating pump's discharge to drain.

3.2.7.9 Open previously operating pump discharge valve and flush into drain for 2 minutes.

3.2.7.10 Close previously operating pump discharge valve and flush water valve.

3.3 SHUTDOWN

3.3.1 Coordinate the time to shutdown versus available lime slurry in slurry tank in order to use all the lime slurry inventories.

3.3.2 Close lime bin knife gate.

3.3.3 Select lime screw feeder control switch to "Off". 3.3.4 Select water control valve switch to "Close".

3.3.5 Select bin vibrator control switch to "Off".

3.3.6 Select slaker and slaker water controls switch to

3.3.7 Select grit screen control switch to "Off".

3.3.8 Select grit screw control switch to "Off".

3.3.9 When slurry tank level drops below the low level place the SO2 controller in manual and set to 0%.

3.3.10 Close head tank isolation valve.

3.3.11 Open atomizer flush water valve.

3.3.12 As economizer outlet temperature reduces the automatic temperature controller will reduce the feed flow (to atomizer) to 0.

3.3.13 Place temperature controller in manual and set output to 0.

3.3.14 Open head tank outlet isolation and drain valves. Flush water will now clear the tank outlet nozzle and overflow into the head tank and overflow to the slurry tank.

3.3.15 Close head tank outlet isolation valve. All slurry lines within the penthouse and between the penthouse and lime slaking system and the head tank are to be flushed and drained of all liquids and kept empty during. shutdown.

3.3.16 Close flush water valve. Atomizer and head tank flushing is now complete.

3.3.17 Momentarily set output of temperature controller to 50%, then reset it to 0%, to drain any residual liquid from the atomizer slurry feed line.

3.3.18 Stop Atomizer.

3.3.19 Verify that the wheel protection water valve closes when temperature drops below 250°F.

3.3.20 Stop slurry feed pump and flush.

3.3.21 Close pump suction valve and open. pump flush water valve. Flush discharge piping for 2-5 minutes.

3.3.25 Stop heat tank agitator.

3.3.26 Close head tank dilution water valve.

4.0 REFERENCES

4.1 PIPING AND INSRTUMENTATION DRAWINGS

DESCRIPTION	DRAWING NUMBER
Flue Gas Cleaning System Cover Sheet	726-PD-01
Flue Gas Cleaning System Reactor	726-PD-02
Flue Gas Cleaning Atomizer Machine	726-PD-04
Flue Gas Cleaning Line Preparation	726-PD-05
Flue Gas Cleaning Rector	726-PD-06
Flue Gas Cleaning Dilution	726-PD-07
Flue gas Cleaning Reagent	726-PD-08
Flue Gas Cleaning Air System	726-PD-09
Flue Gas Cleaning Carbon	726-PD-10
Flue Gas Cleaning Water Supply	726-PD-11
Flue Gas Cleaning Potable Water	729-PD-12

4.2 VENDOR MANUALS

ABB Flue Gas Cleaning Systems Volume 1-4

LEE COUNTY RESOURCE RECOVERY FACILITY
BAGHOUSE
SYSTEM DESCRIPTION

INDEX

1.0 INTRODUCTION

1.1 PURPOSE

Treated flue gas is directed from the spray dryer absorber to the baghouse for cleaning. Entrained particulate is filtered from the gas stream as the gas passes through cloth filter bags within the baghouse. This particulate forms a "filter cake" of lime and flyash on the bag surfaces. Once formed, the filter cake acts as an additional filter medium. The filter cake also aids in the removal of acids in the flue gas. Filtered gas is delivered to the stack via the induced draft fan for exhaust. Captured particulate is periodically cleaned from the bags and released into the baghouse hoppers for delivery to the ash conveying system by a pneumatically operated pulse air system.

1.2 SYSTEM OVERVIEW

The baghouse is a self-cleaning modular dust collector designed to remove dust particles from the flue gas streams. It consists of 8 modules per unit, each containing 320 woven fiberglass bags. The inlet and outlet of each of the 8 modules are connected to common inlet and outlet manifolds. Each module is provided with a manually operated inlet damper (butterfly type) and a pneumatically operated outlet damper (poppet type).

Fabric bags within each baghouse module filter collect dust from the flue gas. The dust laden gas enters the baghouse modules below the filter bags, slows down, changes direction, and passes through the filter bags from the outside to the inside of the bag. The mechanics of turning and slowing the gas results in some of the dust falling directly into the hopper. The remainder is deposited on the outside of the filter bags. Each filter bag is supported from within by a wire cage. The wire cages prevent the collapse of the filter bags during the filtering operation.

To keep system draft pressure drop at an acceptable level, the filter bags are periodically cleaned of some of the collected material. The baghouse cleans the bags using a short pulse of compressed air directed into the clean interior of the bags from their top ends which are open. The compressed air pulse, opposite to the direction of gas flow, expands the bag which causes some of the collected filter cake on the outside of the bag to fall into the hopper below.

A bypass duct and damper is provided around the baghouse. The bypass damper is never opened.

2.0 COMPONENTS

The overall baghouse design criteria and performance guarantees are as follows. Individual component descriptions and information are contained in the following sections.

Flue gas flow (design)	149,292 ACFM per train
Gas temperature (inlet)	285° F
Type	Pulse jet
Number of modules	8
Bags per module	320
Filter media area per module	7288 square feet
Air to Cloth Ratios:	
Gross	2.88 ACFM/Ft² of cloth
Net	3.29 ACFM/Ft² of cloth

FILTER BAGS

Material	Woven fiberglass
Finish	Teflon coated acid resistant
Weight	16 ounces/square yard
Maximum temperature	500° F (for 30 minutes)

PERFORMANCE GUARANTEES

Outlet dust load	.0033 Grains/ACF 7% oxygen
Fabric pressure drop	7" WC design
Opacity	10% permit maximum
Bag Life	2 years

2.1 MODULES

The baghouse is comprised of 8 individual modules or compartments. These modules provide the needed sectionalization for off line cleaning and/or maintenance. Each module contains 320 filter bags. A module consists of a hopper, outlet plenum, tube sheet, and compressed air distribution system.

2.1.1 Hopper

The hopper has two main purposes; 1) to serve as the dirty flue gas inlet into each module and 2) to collect dust for removal by the dust removal system. A turning vane and baffle design in each hopper minimizes turbulence and promotes even distribution of gases at the bottom of the bags. An access door is provided for inspecting each hopper interior. Each hopper is installed with a vibrator to dislodge any potential bridging. These are pneumatically operated hammers.

A discharge flange connects the hopper to the flyash system via a knife valve. All compartment hoppers discharge to a common baghouse conveyor. The two baghouse conveyers discharge to a common flyash conveyor via rotary air lock valves. See the Flyash Handling System Description for details.

2.1.2 Compartment Outlet Plenum

Each module serves as the housing for the filter bags and contains an outlet plenum for the clean flue gas. The dirty gas and outlet plenum are separated by a tube sheet, to which the filter bags are mounted. An access door is provided for entry into the outlet plenum. This allows access to the top of the tube sheet for inspection, removal, or installation of the filter bag and cage assemblies. Clean gas exits the outlet plenum of each module through the outlet poppet damper and flows into the outlet manifold.

2.1.3 Tube Sheet

Each tube sheet is fabricated of one quarter inch A-36 steel. The tube sheet supports the filter bags and separates the clean and dirty sides of the baghouse. It also serves as a filter bag inspection platform inside the plenum. The tube sheet filter bag array is arranged in 20 rows, with 16 filter bags in each row. The filter bag is inserted into the tube sheet and at the top of the bag a snap band attaches the bag to the tube sheet. The bag cage

assemblies are inserted into the bag and held in place by the top retainer flange. The cage assembly is in two pieces to allow for retrieval in the limited space of the upper casing.

2.1.4 Pulse Air Distribution System

Included in this system is a 400 gallon receiver located in the APC area, solenoid actuated diaphragm valves, the pulse pipes, and the cleaning cycle timer panel. A single pulse pipe is positioned over each row of filter bags and connected to the air receiver with a solenoid actuated diaphragm valve.

The amount of compressed air delivered to the bags is a function of air pressure inside the air receiver and the length of time the diaphragm valve remains open. A pressure regulator on each air receiver is used to indicate and control air pressure within the air receiver. The operation of the valves is controlled by the cleaning cycle timer panel.

The duration of the pulse of air is very short. The quick response time is achieved by the use of double diaphragm valves. Compressed air inside the air receiver pressurizes both sides of the trigger diaphragm and the main diaphragm, holding the valve in the closed position. Upon energization of a solenoid valve, a pressure differential across the trigger diaphragm results. The diaphragm then lifts, allowing air to be vented from one side of the main diaphragm. The induced pressure differential across the main diaphragm causes it to be lifted and admit air to the pulse pipe which directs air into the filter bags.

The air burst passes through a venturi installed at the top of the bag/cage assembly which accelerates the pulse. The air quickly travels down the filter bags. This sudden acceleration of the fabric from the cage followed by deceleration causes most of the accumulated filter cake to separate from the outside of the filter bag. De-energization of the solenoid valve closes the atmospheric vent and allows air pressure to close the diaphragm valve.

2.2 ACCESS DOORS

There are two access doors on each module. One for the outlet plenum and one for the hopper. During operation, it is important that the doors are closed sealed to prevent leakage. In leakage of outside air cools the steel which is a potential corrosion problem and will cause bag deterioration.

CAUTION: EXTREME CARE MUST BE TAKEN WHEN OPENING ANY OF THE ACCESS DOORS ON THE BAGHOUSE.

WARNING: HOT DUST CAN CAUSE SEVER BURNS AND FATAL INJURIES.

BEFORE OPENING HOPPER DOORS, LOCK IT OUT. BE SURE THE HOPPER IS EMPTY AND RESIDUAL DUST HAS HAD ADEQUATE TIME TO COOL. DO NOT STAND IN FRONT OF THE DOOR WHEN OPENING IT.

2.3 FILTER BAG

Each module contains 320 filter bags. Each bag is 6" in diameter and 14'- 6" in length. The bag material is woven fiberglass with an acid resistant finish. The fabric weight is sixteen ounces per square yard. A two inch wear cuff at the bottom of the bags prevents premature failure caused by bag to bag abrasion. Support for the fabric is provided by wire cages which are inserted into each bag.

Because of the need to minimize excessive flexing of the fiberglass yarns, a tight fit between the filter bag and the cage is provided. In addition to this, the vertical cage wires are spaced less than an inch apart to provide good support for the fabric. To provide adequate rigidity, the cages are constructed of 12 gauge wire with annular rings spaced on six inch centers.

The filter bags are removed and installed from the clean flue gas outlet plenum. There is no need to enter the dirty side of the baghouse to replace bags. Once the pulse pipes are disconnected, each filter bag and cage assembly can be inserted or removed through an opening in the tube sheet.

The method utilized to seal the filter bag against the tube sheet is accomplished by a metal snap ring that is integral to the upper collar of the bag. Once the bags are inserted and positioned in the inlet plenum tube sheet, a snap ring is used to attach it to the tube sheet. Snap ring spring pressure forms a tight seal to the tube sheet around the upper portion of the bag. A rigid flange on the cage assembly maintains the correct bag alignment. The cage is fabricated in two pieces to facilitate removal in the tight space. To reinstall the cage, first insert bottom portion into bag and angle top portion of the cage into bottom portion while inserting. The filter cage then slides into the bag as one unit.

2.4 INLET AND OUTLET MANIFOLDS

The inlet and outlet manifolds distribute the flue gases into and out of each individual module. The manifolds are centrally located between the two rows of modules. The flue gas passages and manifolds have been designed to optimize the following essential criteria:

a. Minimize the plenum, compartment damper and system pressure drop

b. Balance the flow and dust distribution between compartments and between filter bags within a compartment

c. Minimize the potential for particulate dropout in the inlet manifold.

These objectives have been ensured by these key design features; a stepped inlet manifold, multiple turning vanes in each elbow, low flue gas velocities at critical transitions and a system of turning vanes and baffles in each hopper.

2.5 EXPANSION JOINTS

Expansion joints are located at the flue gas inlet and outlet plenums of each module. This allows relief of thermal stress at the points where the modules are connected to the manifolds. Stresses occur as a result of taking one module off line while the remaining modules are operating at higher gas temperatures. The forces generated by thermal expansion and contraction, if not accommodated, will result in misaligned dampers and structural damage to the modules and manifolds. Non-metallic joints are used because they are corrosion resistant and can handle three dimensional movement and extreme temperature variances without cracking or splitting.

2.6 BAGHOUSE DAMPERS

Isolation dampers are located at the flue gas inlet and outlet plenums to each module. The module inlet dampers are 24 inch by 72 inch butterfly dampers. The outlet dampers are 39 inch poppet type dampers. The baghouse bypass duct damper is a 50 inch poppet type damper.

Each damper has open and shut limit switches that provide position indication to the distributed control system (DCS).

2.6.1 Poppet Dampers

The baghouse is designed to operate under negative pressure, i.e., less than atmospheric pressure. Under these conditions, when a baghouse module is isolated, the damper closest to the induced draft fan is closed. Since this is the only damper that closes during off line compartment cleaning, poppet dampers are used at this location. These dampers are selected for their minimal leakage characteristics.

Poppet dampers consist of a flat circular plate, or blade, connected to a shaft. The shaft is either raised to close or lowered to open the outlet damper (the action is reversed for the bypass damper). In the closed position, the blade is seated against an opening in the duct work. The duct opening is fitted with a raised collar onto which the circular blade seals. The poppet damper actuator provides enough force to cause a deflection of the blade as it seals around the collar, similar to the action of a diaphragm seal. The blade is flexible enough to provide a uniform metal seal without creating permanent deformation.

A guide bar provides alignment of the poppet shaft and prevents rotation of the blade, thereby allowing consistent sealing after repeated use. A machined packing gland is used to seal the poppet shaft at the point where it penetrates the duct.

A double acting air cylinder provides the force necessary to open and close the poppet damper. The position of the damper is indicated by magnetic limit switches. The air cylinder is mounted on a pedestal support with oversized handholes for easy access during maintenance. A pin and lock assembly is used to mechanically lock the poppet damper in the closed position for on line maintenance. The damper must be locked in a closed position before entering the module.

2.6.2 Butterfly Dampers

Butterfly dampers are used at the flue gas inlet of each module. Leakage is not as critical through this damper, because during module isolation, the poppet damper at the module outlet will also be closed. The primary concern is to use a damper that provides minimal pressure drop characteristics and functions well in a dirty flue gas stream. The reason for vaning the manifold turn preceding the damper is to provide uniform gas flow distribution.

Several design features are incorporated into the butterfly inlet dampers to minimize leakage and corrosion. Spring type blade seals fabricated of mild steel are installed around the perimeter of the damper frame. The damper shaft is carbon steel with teflon packing glands. A hand operated, rotary chain wheel actuator provides the necessary torque to open and close the damper. Limit switches are included to indicate damper position. This damper is also mechanically locked in the closed position to ensure safety during maintenance periods. The damper must be locked in a closed position before entering the module.

2.7 INSULATION AND LAGGING

Insulation and lagging are applied to all hot surfaces including modules, hoppers, inlet and outlet manifolds. The insulation is fiberglass rigid board material. The lagging is a ribbed aluminum.

2.8 HOPPER HEATERS

Manufacturer: HotFoil
Type: HB

The hopper heaters are low watt density blanket types. The total heat load is five kilowatts per hopper with a design voltage of 460 VAC, single phase. The junction box is dust and water tight (NEMA 4). The heater is controlled by a temperature sensor mounted on the hopper wall. There are two heaters per hopper, one operating and the other as a spare.

The hopper heaters are designed to maintain the lower one third of the hopper surface area at 270 to 310^0 F. The temperature controllers automatically maintain this temperature when the selector switch is in the automatic position.

2.9 HOPPER LEVEL INDICATOR

There is one level indicator per hopper to detect a high ash level. Each hopper level detectors provide a high hopper ash level alarm to the control room DCS when the hopper level is 3' above the outlet flange.

2.10 HOPPER VIBRATORS

There is one pneumatic hopper vibrator per hopper which produces a pattern of pulsating vibrations to keep the dust particles agitated and in a free flowing condition. The hopper vibrators are interlocked with the flyash system to prevent the hopper vibrators from operating when the associated hopper screw conveyer is secured.

2.11 COMPRESSED AIR SYSTEM

Compressed air is supplied to the baghouse by the plant air compressors. The air for each baghouse is collected and stored in its own air receiver. Air receivers for the baghouse bypass dampers are also installed at the baghouse.

2.12 BAGHOUSE CONTROL BY BAILEY INFI 90

A screen on the Bailey INFI 90 (DCS) displays the control system logic. The displays are arranged in a graphic layout which indicates the status of various modes in which the system is operating and monitors the overall pressure drop. It also allows remote control of the following functions:

a. System startup or shut down

b. Manual or automatic cleaning cycle

c. Manual cleaning of an individual compartment

d. On line or off line cleaning or on line simultaneous cleaning.

e. Control of the bypass and outlet dampers

3.0 OPERATION

3.1 STARTUP

3.1.1 Putting Baghouse In Service

The baghouse will always be in service whenever the induced draft fan is in service.

3.1.2 Verify that all doors and access hatches into the flue gas path are closed and sealed.

3.1.3 Ensure that the hopper heaters are energized at least twenty four hours before startup and the hopper temperature "low" alarms are not activated.

3.1.4 Inspect instrument tubing and fittings for leaks.

3.1.5 Ensure that all of the local cleaning cycle timer control panels are in the off position

3.1.6 Ensure that the baghouse control panel is energized.

3.1.7 Start the flyash handling system and verify complete operation.

3.1.8 Verify that the scraficial modules inlet and outlet dampers are open and that the bypass damper is closed.

3.1.9 Start the ID and FD fans and purge the furnace. After purging is complete shut down the FD fan and place the auxiliary gas burner in service. See the Combustion Air and Flue Gas System Description for details.

3.1.10 Verify that the pulse air is lined up to all eight compartments and that the pulse air regulator is set at 45 PSIG.

3.1.11 When the baghouse outlet gas temperature reaches 285^{0} F, you can start to place the remaining modules in service.

3.1.12 Place all of the local cleaning cycle timer control panels to the on position.

3.1.13 Set the cleaning control switch to "off line". This is preferred for initial cleaning and will be the normal operating mode.

3.2 NORMAL OPERATION

With the baghouse in the normal filtering mode of operation all the modules are on line, filtering flue gas. Fabric filter bag cleaning is accomplished by cleaning the modules one at a time in sequence until all modules have been cleaned or the baghouse differential is less than 7" WC. Each module is taken off line, in sequence, for cleaning and returned to service before the cleaning cycle continues for the next module. Only one module is off line

for cleaning at a time. All operations associated with fabric filter cleaning are controlled automatically or manually through the DCS.

Under most operating conditions modules are taken off line for cleaning to eliminate the force of the gas pressure drop across the bag which holds the filter cake against the bag. Elimination of the gas pressure force makes dislodging of the filter cake much easier. Stopping the flue gas flow through the module also eliminates partial entrainment and attachment of the removed dust. The dust is dislodged from the bags and falls directly into the hopper. In contrast, if the flue gas continues to flow into the compartment during cleaning, the bags may not be cleaned well enough. As the filter cake is dislodged and falls toward the hopper it becomes partially entrained in the flue gas. Some of the dust may then reattach to the bags resulting in a higher pressure drop.

In applications where the dust is easy to dislodge from the bags and pressure drop is low, it may be possible to clean the modules on line while filtering of flue gas continues. The baghouse control provides the option for on line cleaning. On line cleaning may be necessary when one module has been taken out of service for maintenance or repairs. In this condition, taking a second module off line for cleaning will result in an excessive baghouse differential pressure.

Bag cleaning within a module is accomplished using short duration, low pressure (45 PSIG) compressed air pulses blown down into the venturi of each bag from blow pipes mounted just above the tube sheet in the module outlet plenum. The air pulses travel down the bags in the direction opposite to the direction of the flue gas flow with the module on line. The filter cake on the bags is dislodged by a combination of the dynamic pressure of the air pulses as they travel down the bags, and by the shock waves generated by the air exhausting from the blow pipe orifices near the speed of sound.

The baghouse differential pressure will serve, in general, as the best indicator of overall baghouse performance. In particular, the differential pressure across the individual modules will be the best indicator of the condition of the filter bags. A sudden increase or decrease in pressure drop can mean blinded bags, leaks from holes in the fabric, an inoperative damper, cleaning system malfunction or full hoppers. Immediate action is required to isolate and solve the problem and prevent bag failures.

3.2.1 Filter Bag Cleaning

3.2.1.1 The automatic cleaning mode is initiated at a differential pressure of 6" WC across the baghouse and stops when all modules have been cleaned.

If the differential pressure has not exceeded the setpoint within six hours in the automatic mode, a timed cleaning cycle will be initiated automatically. The bags are cleaned, one row at a time, with a momentary high pressure burst of air from the compressed air system. Each module is supplied with its own compressed air cleaning system. This system is comprised of one common receiver and a number of diaphragm valves, each provided with a blow pipe which is aligned over a row of bags. The compressed air flows from the receiver, through the diaphragm valve and into the blow pipe. The compressed air is directed downward through a venturi at the mouth of the blowpipe.

3.2.1.2 The operation of the diaphragm valve is controlled by a solenoid valve, while the duration and frequency of energization (on and off times) of the solenoid valve are controlled by the cleaning cycle timer. Cleaning can also be initiated manually.

3.2.2 System Cleaning Cycle

3.2.2.1 The differential pressure across the bags will prevent some of the dust from falling off the bags during cleaning unless the module is isolated from the gas flow. The baghouse allows the module being cleaned to be isolated from the gas flow. This is known as off line cleaning. The baghouse also has the capability to clean the modules on line. Under normal conditions, off line cleaning is recommended to promote longer bag life.

3.2.2.2 The Bailey DCS sequentially controls the operation of all module outlet poppet dampers and timers. The cleaning operation begins with the outlet poppet damper of the module closing, preventing further filtering of dust laden gases in that module. A signal is sent from the DCS to the module cleaning cycle timer, which sequentially pulses each row of bags. After all rows are pulsed, a null period allows the dust which has been cleaned from the filter bags to settle into the hopper from where it is removed. The outlet damper is then reopened, returning this module to service.

3.2.2.3 Each module will be out of service approximately four minutes for cleaning.

The times allotted for damper closing, the null period or settling period, are programmed into and controlled by the DCS. The duration of the pulse cleaning cycle is adjustable at the cleaning cycle timer for each specific module.

3.3 SHUT DOWN

Shut down of the baghouse should be accomplished in such a manner so as to prevent fabric filter damage due to lowering gas temperature, as there is potential for moisture or acid condensation on the bags.

Pulse jet cleaning should be manually initiated prior to shut down to remove any excess dust from the filter bags. Initiating a cleaning cycle prior to shut down reduces the likelihood of blinding the filter bags with hard caked dust resulting from moisture condensing on the bags as the unit cools. In addition, falling dust hazards are reduced should module entry be required.

3.3.1 Baghouse Shut Down

Shut down of the entire baghouse can be accomplished once the incinerator grates are completely clear of garbage and the spray dryer atomizer has been shut down.

3.3.1.1 Stop feeding refuse and close the feed chute damper when refuse level drops below the acceptable level.

3.3.1.2 Place the auxiliary gas burner in service and burn off the remaining refuse. See the Martin Stoker System Description and the Combustion Air and Flue Gas System Description for details.

3.3.1.3 Monitor the spray dryer inlet SO_2 level and inlet temp. After the level has dropped and remains below 30 PPM and 300_0 F, secure the spray dryer atomizer. See the Spray Dryer Absorber System Description for details.

3.3.1.4 After all the refuse is burned out, secure the auxiliary burner.

3.3.1.5 Close the module outlet dampers via their associated "open/close" selector switches as flue gas flow allows.

3.3.1.6 Place all of the local cleaning cycle timer control panels to the off position.

3.3.1.7 Isolate the modules by closing the module inlet dampers via their associated manual chain operators.

3.3.1.8 Run the flyash handling system for at least 30 minutes after the baghouse is off line.

3.3.1.9 In order to preclude any condensation on bags, the hopper heaters should be left in service whenever possible.

4.0 REFERENCES

4.1 PIPING AND INSTRUMENTATION DRAWINGS

Description	Drawing Number
Flyash Handling System	7102-E-2200113
Flue Gas	7102-E-2200103
Flue Gas Cleaning System ABB	726-PD-03

4.2 VENDOR MANUALS

Vendor	Equipment	Equipment Manual
ABB	Flue Gas Cleaning	Volume I-IV

MALCOLM PIRNIE

PROCEDURES FOR STARTUP AND SHUTDOWN

EXHIBIT 11

LEE COUNTY RESOURCE RECOVERY FACILITY
BOILER
SYSTEM DESCRIPTION

INDEX

1.0 INTRODUCTION

1.1 PURPOSE

The combustion of refuse (by the Martin Stoker System) **converts the chemical energy in the refuse to thermal energy in the furnace**. The boiler is aligned with the stoker so that when the combustion unit is operating, a seal is formed to prevent air in-leakage into the furnace. The boiler is comprised of furnace waterwalls forming an enclosed area for the refuse to burn and a flow path for the hot flue gases to pass through. **The boiler contains and absorbs the thermal energy generated by the combustion of refuse and converts the, feedwater into high pressure, superheated steam**. This steam is supplied to the facility for in-house consumption and to a main steam turbine and generator, where it is then converted into electrical energy.

1.2 SYSTEM OVERVIEW

The two refuse fired steam generators are each single drum, top supported, three pass, water tube types, with an integral welded waterwall cooled furnace, superheater, and economizer.

Each combustion unit has a nominal capacity of 250,000,000 BTU/hr heat input when firing refuse having a higher heating value (HHV) of 5000 Btu/lb.

The following table lists the design boiler performance data:

NOTE: Actual temperatures, pressures, and flows may be slightly different than design, due to normal. fouling of heat transfer. surfaces, refuse HHV, excess air, and other factors.

Operating Performance Data (at MCR)

Steam Flow	169,049	lbs/hr
Fuel Burned (Refuse)	25	Tons/hr
Steam Temp at SH Outlet	830	DEG F
Water Temp at Economizer inlet	300	DEG F
Water Temp at Economizer outlet	520	DEG F
Flue Gas Temp at Economizer outlet	425	DEG F*
Overfire Air Temp	300	DEG F
Underfire Air Temp	300	DEG F
Excess Air in Flue Gas	110	Percent
Furnace Draft	-0.3	In. W.C.
Steam Pressure at SH Outlet	865	PSIG

* 400 F for a clean boiler. Maximum of 500 F for an in service boiler. The major sections of the boiler (in the order of water/steam flow) are the economizer tubes, drum, convection tubes, waterwall tubes and superheater tubes.

Boiler feedwater first passes through the economizer tubes where it is heated from 300° F

to 520° F. Feedwater then enters the drum which has a maximum capacity of 6000 gals and provides the water storage to supply the convection and waterwall tube supply headers. It also provides for the separation of the steam and water. The water is boiled in the convection (generating) tubes and in the waterwall tubes. The waterwall tubes, in addition to providing steam generation surface area, act as a physical and thermal barrier between the hot furnace gases and the outside of the boiler. The steam generated in these tubes naturally rises to the drum.

The saturated steam (550° F) is separated from the water in the drum and then routed to the primary superheater section where the temperature is raised from 550° F (saturated) to 658° F (superheated). The steam then passes the primary attemperator where it is mixed with a feedwater spray to keep it no higher than the design temperature of 658° F.

Steam is then routed to the intermediate superheater section where the steam temperature is raised from 658° F to 761° F. The steam then passes the secondary attemperator where it is mixed with a feedwater spray to keep it no higher than design temperature of 761° F.

Steam is then routed to the final superheater section where the temperature is raised to 830° F. From here, the steam exits the boiler and is distributed to the various auxiliary steam loads, the turbine generator and/or the main condenser.

The boiler is equipped with sootblowers which use steam to remove ash deposits adhering to the economizer, convection and superheater tubes. Removal of these ash deposits ensures maximum boiler efficiency and performance.

Two auxiliary gas burners per unit, are designed to maintain a minimum furnace temperature during periods of startup prior to the firing of refuse, normal operation and refuse burn out during shutdown.

Maintaining the top of furnace temperature at 1260 F ensures that a minimum combustion zone temperature of 1800 F with a flue gas residence time of greater than one second. Combustion products must remain at or above 1800 F for at least one second to ensure elimination of any dioxins which may be present.

The forced draft, overfire air, and seal air fans are supplied to provide air for combustion. The induced draft fan provides a negative draft in the furnace. For details, see the Combustion Air and Flue Gas System Descriptions.

2.0 COMPONENTS

Boiler Manufacturer: Distral Energy Corp.

2.1 DRUM

The drum serves as the storage area for the water that is supplied to the convection tube

and waterwall tube supply headers.

The water level is maintained by a 3 element feedwater regulator.

It also serves to collect the steam generated in the waterwall and convection tubes and separates the water by the use of 52 centrifugal and 26 channel steam separators to produce a dry saturated steam.

Penetrations exist in the drum for:

- Saturated steam outlet (crossover)
- Water sampling
- Continuous blowdown
- Drum level indications
- Feed water inlet
- Safety valves (two)
- Pressure indication
- Access manholes (two)
- Vents (two)
- Chemical feed
- Steam sample
- Downcomers

2.2 DOWNCOMERS/HEADERS

Steam produced in the generating tubes rises to and collects in the drum. Downcomers and headers serve to naturally circulate water from the drum to the generating tubes.

Two downcomers, one on either side of the boiler, connect the bottom of the drum to the bottom of the generating bank and waterwall headers. These Headers serve to distribute the water to an entire tube bank or waterwall.

2.3 TUBES

Tubes act as the heat transfer interface between the hot gases on the outside and the cooler water or steam on their inside. The waterwall tubes have a membrane (metal strip) welded between them, thus forming walls. This makes the water walls an air tight boundary, preventing any air in-leakage into the furnace.

The generator, superheater, and economizer tubes are spaced apart to allow the flue gas to flow around them.In order to prevent tube (gas side) erosion, the first two rows of the superheater and economizer banks are fitted with stainless steel tube shields. The first row of tubes on each side of the sootblowe cavities are also equiped with shields.

HEATING SURFACE AREAS	SQUARE FOOTAGE
Screen between 1st and 2nd pass	146 ft2
Convection Evaporator	5,637 ft2
Screen between Evap and Superheater	177 ft2
Superheater III	5,069 ft2
Superheater II	5,150 ft2
Superheater I	12,327 ft2
Economizer	33,720 ft2

2.4 SUPERHEATER

The superheater accepts saturated steam from the drum and raises the steam temperature via additional furnace heat. This extra heat increases thermal efficiency by raising the steam quality to 100% (0o moisture) and raising the temperature above saturation (superheated). This dry superheated steam is then directed to the turbine.

The superheater is divided into three. sections: primary, intermediate and final. The primary superheater is divided into two sets of tube banks (Primary Superheater SH1A and Primary Superheater SH1B). The intermediate superheater is comprised of a single tube bank. The final superheater also consists of a single tube bank. The primary superheater has 12 rows of tubes in each bank, the intermediate and final only have 10 rows per bank.

Spray water attemperators are provided- between primary superheater and the intermediate superheater, and between the intermediate superheater and the final superheater. These attemperators are used to control the final boiler outlet temperature.

The superheater is protected from over pressurization by a mechanical safety valve, set at 920 PSIG, and an electromatic relief valve (power safety), set at 900 PSIG. Indication and control of the power safety is provided in the control room.

2.5 ATTEMPERATORS (MS-DS-101A, MS-DS-101B)

The superheater outlet steam temperature is controlled by spraying feedwater, as required, into the superheated steam path.

Superheater outlet steam temperature is controlled via two spray valves. The primary attemperator (MS-DS-101B), controlled by the coordinated action of temperature controllers TIC-0106 and TIC-0107, sprays feed water into the superheater steam line

between the primary and intermediate superheater tube banks. The secondary attemperator (MS-DS-101A.), controlled by the coordinated action of temperature controllers TIC-0104 and TIC0105, sprays feedwater into the superheater steam line between the intermediate and finishing tube banks

2.6 ECONOMIZER

The economizer accepts feedwater from the feedwater system and heats it to 501° F prior to being delivered to the drum.. This accomplishes two objectives. Firstly, heat is extracted from the furnace exhaust gases, which increases overall unit efficiency. Secondly, the feedwater being heated before it enters the drum, is at a closer temperature to the water in the drum which lowers thermal stress in the drum.

2.7 AUXILIARY BURNER

Manufacturer: Peabody

Each auxiliary burner is equipped with its own fan to supply combustion air too the auxiliary gas burner and purge combustible gases from the burner prior to startup. The **auxiliary gas burner warms the boiler during startup. It is used to bring the furnace roof temperature to approximately 11-1200° F prior to lighting off refuse, to maintain 11-1200° F furnace temperature when necessary during operation and while burning off** grates during shutdown. The burner design provides positive mixing of air and natural gas- at. all loads without stratification.

There are two auxiliary burners per boiler. **An auxiliary burner windbox purge air fan provides continuous burner purge/cooling air for each burner while the burner is in standby during normal combustion of refuse.** The auxiliary burners are located in opposite furnace sidewalls approximately 25 feet above the stoker grate.

The auxiliary burner safety system is designed to act independently of any analog controls or human operator. action. The burners are installed and operated in accordance with all applicable codes. The fuel safety logic includes automatic burner purge and required functions in preparation for lighting off. For more information on the 'auxiliary burners, consult the Auxiliary Burner System Description.

2.8 SOOTBLOWERS

Manufacturer: Copes-Vulcan

Model: 16 Retractable T-20E
32 Rotary D-5E

Sootblowers are used to remove the ash deposits that adhere to the economizer, convection and superheater tube surfaces, utilizing high pressure superheated steam. Removing fly ash from boiler surfaces prevents:

a. Loss of steaming capacity from the reduction of heat transfer.

b . Fan efficiency loss due to blockage of flue gas paths

Sootblower supply steam is superheated steam (400 PSIG at the sootblower header) with a blowing pressure of 150 PSIG. The system is operated via a sootblower control panel mounted in the control room.

The convection section is equipped with eight sootblowers (retractable), the superheater is equipped with twenty (8 retractable and twelve rotary), and the economizer is equipped with twenty sootblowers (rotary). The rotary sootblowers are designed to have a blowing duration of ten seconds each and the retractable elements operate with a blowing duration of six and a half minutes each.

2.9 BLOWDOWN SYSTEM

The purpose of the boiler blowdown system is to control the concentration of solids in the boiler water. Boiler blowdown is comprised of continuous blowdown and intermittent blowdown systems.

The continuous blowdown consists of the following continuous streams which are received and cooled in the continuous blowdown flash tank and the continuous blowdown heat exchanger.

a. Boiler 1 drum continuous blowdown

b. Boiler 2 drum continuous blowdown

c. Water sample cooler drains

The flashed steam recovered in the continuous blowdown flash tank is vented to the deaerator. The. cooled blowdown from the continuous blowdown heat exchanger is drained to the intermittent blowdown tank.

Periodically, the boiler water headers, downcomers, sootblower headers and water columns are blown down. This intermittent blowdown is routed directly to the intermittent blowdown tank.

The boiler intermittent miscellaneous drains and continuous and intermittent to the cooling tower basin blowdown tank also accepts steam trap returns. The mixed streams are cooled and discharged

2.9.1 Continuous Blowdown Tank (BD-TK-001)

The continuous blowdown flash tank allows for flashing and recovery of steam. The boiler steam drums may be continuously blown down (i.e. a portion of the water

circulating in the steam drum is removed) to reduce the level of dissolved solids from the boiler water. Blowdown water is "flashed" in the continuous blowdown flash tank and the flashed steam is vented to the deaerator to improve steam cycle efficiency. **Flashing is the process whereby a high temperature and high pressure liquid is suddenly reduced in pressure without a significant change in temperature**. A portion of the water (approx. 33%) will flash to wet steam, the rest will remain in liquid form.

The continuous blowdown flash tank operating pressure 80 PSIG at 440 °F is determined by the operating pressure of the deaerator since the vapor line from the flash tank is connected directly to the deaerator.

The level in the continuous blowdown flash tank is maintained by a local level controller (LC-2206) and a drain control valve (LV-2206).
The flow rate from the continuous blowdown flash tank is monitored by FT-2207.

The continuous blowdown flash tank is protected against over pressurization by a relief valve (PSV-2203), which is set at **88 psig**.

2.9.2 Continuous Blowdown Heat Exchanger (BD-HX-001)

The continuous blowdown heat exchanger transfers heat from the boiler blowdown water to the deaerator make-up water. By extracting this energy before discharging the blowdown water to the Intermittent Boiler Blowdown Tank BD-HX-002, the plant efficiency is maintained.

2.9.3 Intermittent Boiler Blowdown Tank (BD-TK-001)

The intermittent boiler blowdown tank serves to receive blowdown from the sources listed below and vent the associated steam to the atmosphere:

a. Continuous blowdown heat exchanger

b. Boiler and superheater upper drain headers

c. Boiler and superheater lower drain headers.

d. Main steam header drains

e. Turbine extraction header drains f. Sootblower drains

The intermittent boiler blowdown tank vents through the roof of the facility and exhausts any flashed steam to atmosphere. The water from the intermittent boiler blowdown tank is routed through a static mixer (BD-AG001) to the cooling tower basin.

The water is cooled when necessary by circulating water return in the static mixer prior to entering the settling basin. Temperature Controller TIC-0432 maintains this temperature.

3.0 OPERATION

3.1 MSW UNIT START-UP (REFER TO ENVIRONMENTAL COMPLIANCE MANUAL SECTION 4)

3.2 COMBUSTION UNIT START UP (HOT PLANT) (REFER TO ENVIRONMENTAL COMPLIANCE MANUAL SECTION 4.)

3.3 COMBUSTION UNIT SHUT DOWN (REFER TO ENVIRONMENTAL COMPLIANCE MANUAL SECTION 4)

3.4 NORMAL OPERATION

3.4.**1 Boiler drum level is maintained by a three element feedwater control loop** utilizing, the coordinated operation of Drum Level Controller LIC-004 and Feedwater Flow Controller FIC-0028.

3.4.2 Boiler outlet pressure is maintained by the main turbine governor (operating in the "inlet pressure" control mode) and/or the main steam bypass condenser (via Inlet Pressure Controller PIC-123)

3.4.3 Boiler load (steaming rate) is maintained by the automatic operation of the stoker system. See the Martin Stoker System Description for details.

3.4.4 Boiler outlet steam temperature is maintained by the automatic operation of the primary attemperator (TIC0106) and the secondary attemperator (TIC-0104).

3.4.5 Boiler water should be sampled and tested for chemistry at least once per shift. Boiler chemicals are. continuously introduced at a metered rate. See the Chemical Feed System Description for details.

3.4.6 As required by boiler water analysis, adjust the boiler continuous blowdown.

3.4.7 Auxiliary Burner

The auxiliary gas burner should be started at this time. The furnace roof temperature will be maintained at an average temperature as set by Furnace Temperature Controller TAL-0601. The burner should be left in service until the refuse fire has stabilized and is maintaining a minimum furnace temperature of 11-1200° F.

If the furnace side wall temperature as sensed by the average of TE-0601A1 and TE-0601A2 is below 800° F, a ventilation (air purge) of the furnace will be required prior to burner light off. This would normally only occur on boiler startup.

3.4.8 Sootblowers

The sootblowers are operated as required to maintain the boiler operating parameters within design specifications. Sootblowing is performed when there is an increase in boiler exit gas temperature, increase in boiler gas path differential pressure, a decrease in boiler gas flow or when buildup of deposits on boiler tubes is noted from the temperature and pressure trends in the boiler. The sootblowers may be operated manually or by the automatic sequencing unit. For detailed instructions, see the Copes Vulcan Equipment Operations. Manual.

3.5 BOILER BLOWDOWN

The design normal continuous blowdown rate is 2375 lb/hour for each boiler. Boiler drum and steam samples will normally be taken once per shift. The blowdown and chemical feed rates are dependant upon the results of the laboratory analysis and adjusted accordingly.

3.5.1 The boiler headers and downcomers must be blown down at a frequency recommended by the water treatment chemical supplier to remove sediment which may collect there. Manually operated valves are opened to blow water to the intermittent blowdown tank. It is advisable to blow the headers and downcomers when the boiler is not firing but still pressurized (i.e., when the unit is taken off line immediately after the auxiliary burner is secured) . If the headers or downcomers need to be blown down while the boiler is on line, the following should be observed:

A short, rapid blowdown is most effective in removing the sediment from the header and preventing tube overheating and possible damage (when boiler is firing). Limit the duration of the blowdown (from time flow starts until the valve is shut and flow stops) to 20 seconds.

3.5.2 The water columns are periodically blown down. A "level hold" pushbutton is located next to each water column and level chamber blowdown valve set to disable the boiler low level trip when blowing down the column and chamber.

3.5.3 The continuous blowdown heat exchanger is not intended to maintain any specific makeup water temperature for the deaerators. The purpose is to recover a portion of the heat in the blowdown water, which would otherwise be wasted. Blowdown water and makeup water flows are regulated independently. Demineralized water makeup flowing from the continuous blowdown heat exchanger to the deaerator is regulated by a deaerator level control valve (LV-2206).

3.5.4 Sediment will collect on the bottoms of the continuous blowdown flash tank and boiler intermittent blowdown tank. This sediment must be blown down before it builds up to the point where it interferes with flow. This is done by periodically opening the appropriate drain valve for a short duration. Ensure that the drain valve is fully closed after the sediment has been blown down.

4.0 REFERENCES

4.1 PIPING AND INSTRUMENTATION DRAWINGS

Description	Drawing Number
Superheater and Economizer	7102-E-220101
Combustion Air and Stoker	7102-E-220102
Flue Gas	7102-E-220103
Air Heater	7102-E-220106
Boiler Feedwater	7102-E-220107
Turbine Generator Steam	7102-E-220108
Boiler Blowdown and Sample Steam	7102-E-220112
Boiler Furnace	7102-E-220118
Boiler Drums and Drains	7102-E-220119
Burner Management and Propane gas	7102-E-220122

4.2 LOGIC DIAGRAMS

Burners Control Interface	510014
Induced Fan Draft	510022
Forced Draft Fans	510023
Overfire Air Fan	510024
Seal Air Fan	510025
Boiler Ventilation Sequence	510026

4.3 VENDOR MANUALS

Vendor	Equipment	Equipment Manual
Martin GMBH	Martin Stoker	Appendix A
Distral	Boilers	O&M Manual
ABB	Baghouse/Scrubber	O&M Manual
Peabody	Auxiliary Burners	O&M Manual

COVANTA LEE, INC
BOILER SHUTDOWN CHECK OFF SHEET

	Boiler #_____ Date___/___/_____	INT.
1	Ensure best available fuel feed three hours before shutdown	
2	Blow Soot approx. two hours before shutdown	
3	Increase grate and clinker roll speed to thin beds (2hrs. Before shutdown)	
4	Test Aux. Burners for proper operation, then secure	
5	Stop refuse feed approx. 1/2 hour before closing the feed chute damper	
6	Clean off the hopper front of refuse and cut any streamers (secure hopper)	
7	Close feed chute when refuse level is low enough Record time:_____	
8	Select the feed chute "Closed" command on CEM computer	
9	Open PV-0126 to Augment Med. Press. header, set PV-0209 and TV-0222	
10	Start Aux. Burners approx. 15 minutes after closing feed chute	
11	As refuse burns out and steam flow decreases ramp burners to control CO	
12	Select the optimizer to "off" and begin increasing feeder speed and stroke length	
13	Lower OFA header pressures (as needed) to 5"wc (enough to keep feeders and grates on)	
14	Feeders/grates set to "non-interlock" and steam flow < 100Klbs/hr, lower OFA as needed to control CO. Reduce OFA to as close to zero scfm as possible.	
15	Set automatic furnace draft control set point to -.1"wc to help control CO	
16	Adjust (down) UFA dampers as needed (as high as possible 10-15kscfm) to get good burn out yet to maintain an elevated roof temp. so as to keep CO below 100 ppm.	
17	O2>16%, steam flow due to refuse < 30Klbs/hr & burners at 100%, S/S visually verifies fires out. Unit is not considered off line until the criteria of Step #17 are met.	
18	Shift Supv. And C.R.O verify fires are essentially burned out. On CEM computer "Visible flames on grates" selected to "No Flames" Verify flag & Record Time:_____	
19	Secure Aux. Burners	
20	Increase furnace draft setpoint and increase UFA/OFA flow to force cool unit	
21	Ensure clinker roll, grates and feeders are in "non-interlock" at 100%	
22	Once unit load drops below 30Klbs/hr open S/H outlet vent, isolate the header stop, and crack open the 6" Cooldown valve to the bypass condenser. Verify flow & isolate vent	
23	The UFA rate and position of 6" valve should be consistent with the cool down curve	
24	Secure carbon, lime slurry (after fresh water flush), and ammonia to the unit.	
25	Isolate propane root valves to unit	
26	Isolate UFA coil system	
27	Place riddlings system in short run time. Also run several manual cycles.	
28	Once baghouse outlet temp reaches 230F start isolating compartments A - F	
29	Maintain unit cool down with Maximum UFA. Not to exceed 10" D/P across B/H	
30	Ensure pulse air is isolated to the unit baghouse	
31	Ensure all baghouse and SDA hopper heaters are placed in manual	
32	Secure atomizer. Ensure oil pump operation until SDA inlet temp. < 150F	
33	Blowdown all boiler water wall headers at 300# and reseat.	
34	Once are grates are run off of ash secure OFA. Continue to run UFA fan for cooldown	
35	Crack open feed chute to assist cooldown	
36	Open all drum, cross-over, and superheater vents at 25#	

MALCOLM PIRNIE

OPERATION AND MAINTENANCE PLAN

EXHIBIT 12

LEE COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY

OPERATION AND MAINTENANCE MANUAL

COVANTA ENERGY
OF
LEE, INC.

INTRODUCTION

This manual is designed to provide policies, procedures, instructions, and references for the daily operation and maintenance of the Lee County Facility. The purpose of this facility is to dispose of municipal solid waste by combustion in two Martin Stokers. The heat from the combustion process is converted into electricity and sold to Seminole Electric.

This manual is to be used as a general reference and guide by all employees, contractors, consultants, and other personnel involved in the management, operation, maintenance, or support of this facility. This manual is not intended to replace vendor manuals, permitting documents, or federal, state or local regulations related to the operation and maintenance of this facility.

OPERATION AND MAINTENANCE MANUAL

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RECOVERY FACILITY

OPERATION AND MAINTENEANCE PLAN

COVANTA ENERGY
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1.0 PROJECT RESPONSIBILITIES

1.1 Covanta Energy Group Inc.

Covanta Energy Group Inc. is responsible for the construction, operation and maintenance of the Lee County Solid Waste Resource Recovery Facility (the Facility) by agreement between Covanta & Lee County.

1.2 Covanta Energy Group Inc.

Covanta Energy Group Inc. retains liaison with Martin GmbH and provides engineering, technical and administrative support as well as overall operational and business direction for the facility. Located in the Covanta office in Fairfield, New Jersey, the Executive Vice President, Facility Operations has overall responsibility for the Lee County Project.

1.3 Covanta Energy Group Inc.

Covanta Energy Group Inc. furnishes the management, supervisory and hands-on personnel for the Facility as well as technical and administrative support as required to properly operate and maintain the Facility. Located in the Covanta Fairfield, NJ office, the Vice President, Resource Recovery Operations is responsible for Covanta services at the Lee County Resource Recovery Facility as well as other Covanta plants.

2.0 FACILITY MANAGEMENT

2.1 Management Responsibilities

Working in accordance with operational guidelines and business directives set forth by Covanta, the Facility Manager and Facility Manager of Administration have dual responsibility for implementing Covanta contractual obligations with Lee County. The Facility Manager, and the Manager of Administration have full authority for operational coordination and business dealings with the County and relations with the community in general.

The Chief Engineer will assume the Facility Manager's role during his/her absence from the plant. In the event that either the Manager or the Chief Engineer is not in the plant, the Maintenance Supervisor is in charge. During off normal working hours, weekends and Holidays, the Shift Supervisor on watch at the time has first-hand responsibility for the operation and well being of the Facility. However, all of the above-mentioned management personnel are on call when not actually in the plant.

2.2 Coordination with Lee County

The Facility Manager with the County will conduct routine day-to-day coordination of waste deliveries and residue disposal as well as other matters related to the operation of the Facility.

Based on current operating conditions, equipment availability, maintenance schedules, and storage and handling capabilities, the Facility Manager will provide the County

representative with information that will allow advanced planning and anticipation of alternate disposal requirements. Conversely, where possible, the Facility will be advised of any anticipated changes in traffic flow, type of waste or amounts of waste to be delivered and thus will be in better position to handle unusual situations by rescheduling personnel, modifying maintenance plans or adjusting operating conditions.

This coordination will provide the means of responding to emergency condition or forced outages at the Facility by immediate notification and, if necessary the implementation of prearranged, alternate routing of deliveries.

In accordance with the Service Agreement, county representatives may, with reasonable prior notice, observe and inspect the Facility for any purpose. While on the plant property, the representatives shall comply with the safety rules as well as any emergency orders that may be issued by the Facility management.

2.3 Procedures and Documentation

A list of the Facility procedures and other documentation is provided below:

REFERENCE LIBRARY

The Facility Reference Library is an organized collection of vendor, engineering and construction documentation. Manufacturer data and information such as manuals, diagrams, shop drawings and ordering information is catalogued and stored by equipment number or system, as appropriate, and cross-referenced by manufacturer as well as purchase order number. In addition, installation and start-up data, set points and calibration readings, and as built diagrams are filed together with the manufacturer's information.

A complete file of plant as-built drawings is maintained in the Reference Library.

OPERATING MANUAL

The Facility Operating Manual comprises eight (8) major sections including Operating Plan, environmental compliance Plan, Spill Prevention, Fire & General Emergency Plan, Crisis Plan, Waste Control Plan, Hazard Communication Program, and System Descriptions.

The System Descriptions are primarily related to the design and components of individual systems of the plant. Each is based on specific manufacturer data as well as the design engineers intentions, philosophy and operational criteria for the system. The Operating Instructions are based on actual, as-built arrangements and the specific operational requirements of the facility.

The system Descriptions describe, in detail, the purpose, components, instrumentation/control and interlocking as well as the start-up, operation and shutdown of individual systems of the Facility. Each Description includes technical references, precautions, set points, indications and other such information that is specific to the individual system and necessary or helpful to its safe and efficient operation.

Maintenance Management System – Implementation Manual

This manual provides detailed information regarding the computer based maintenance program and the various input data the must be developed and loaded into the program. Covanta will utilize Maximo as the computerized maintenance management system. The purpose of Maximo is to provide greater control of maintenance functions by automating the flow of maintenance information. The manual is tailored for specific codes and information related to the Facility.

The major sections of the manual include:

A- General Description
B- Computer Location
C- System Description
D- Commands
E- Backing Up
F- Diskette Maintenance
G- Creating the Database
H- System Management
I- Specific Operating Procedures
J- Reports/Menus
K- Glossary

Employee Manual

Upon reporting to the Facility, each new employee is issued a copy of the Employee Manual, which he/she retains throughout the period of his/her employment at the facility. Revisions and additions to the Manual are issued to each employee as they occur. Periodically all Manuals are called in, checked for completeness and condition, corrected as necessary and returned to the employees.

The Employee Manual is a compendium of documents and information that is critical to the employee's conduct and well being in his/her job. The Manual comprises:

A- Employee Handbook
B- Employee Work Rules
C- Safety Orientation

The following is a brief description of the various sections of the Manual:

Employee Handbook and Work Rules, jointly prepared by the Plant Manager and the Covanta Fairfield staff, contain specific information regarding work rules, policies and guidelines for the employee.

Hazard Communication (Hazcom) Program, in accordance with OSHA rules, addresses chemical safety, personnel training and the chemicals and other materials used at the Facility. The Haxcom Program includes management and employee responsibilities, manufacturers data and instructions for personnel protection, precautions, cleanup procedures, first aid, and other pertinent information.

2.4 Reporting

The Facility Manager is responsible for preparing periodic reports, which are to be distributed to Covanta Fairfield as well as various documentation, required by the County and appropriate governmental agencies.

Reports Required by the Service Agreement:

Local Monthly Reports, submitted by Covanta on or before the fifteenth (15) day of each month to the County. These reports include: (1) hourly electricity generated each day and summary totals of electricity delivered to Florida Power & Light during the preceding month; (2) the anticipated operating schedule for the next preceding month; (3) the total amount of any materials consumed with respect to the operation of the facility during such preceding month; (4) the quantities of Recovered Resources generated other than electricity during such preceding month; (5) Pass Through Costs incurred during such preceding month; (6) waste received during such preceding month; (7) waste processed during such preceding month; (8) estimated higher heating valve of waste processed during such preceding month; (9) Residue shipped during such preceding month; (10) steam generated during such preceding month; (11) steam generated per ton of waste processed during such preceding month; (12) boiler make-up water during such preceding month; (13) Facility electric usage during such preceding month; (14) availability during such preceding month; and (15) boiler utilization for such preceding month.

The following are brief descriptions of the various reports required by Covanta/Fairfield:

Daily Status Report provides a verbal update of operating conditions and major problems or events. By telephone to the Covanta Fairfield offices each Friday.

Weekly Activities Report, providing detailed information covering operating parameters, equipment status and problems. Telecopied to the Covanta Fairfield offices each Friday.

Monthly Operations Report, providing a summary of facility operations, maintenance, safety, personnel, community relations and environmental compliance during the preceding month.

2.5 Quality Control

The Facility has implemented an on going Quality Assurance/Quality Control Program (QA/QC). The goal of the QA/QC Program is to monitor several key conditions or adverse trends.

The basis of the program is the routine review and evaluation of key operating data and plant activities, supplemented by the periodic, first hand inspection of the Facility. Utilizing the information and data provided in the reports described in Section 2.4, the Covanta Operations Department examines specific aspects of Facility mutually, if appropriate, review and evaluate information and data looking for trends or indications of:

A- Declining equipment performance or reliability.
B- Potential equipment failures
C- Reoccurring problems or failures.

3.0 FACILITY STAFF

3.1 Organization

The Facility is operated round the clock, seven (7) days per week, fifty-two (52) weeks per year by a staff of full time Covanta employees. The Facility is organized into three (3) major groups or departments:

- Management/Administration
- Operations
- Maintenance

Position Descriptions

Facility Manager, reporting to the Covanta Vice President of Regional Operations, has overall responsibility for the safe, efficient, and reliable functioning of the Facility. In carrying out these responsibilities, the Facility Manager manages and directs the operational and maintenance requirements of the plant through the Chief Engineer and Maintenance Supervisor. In addition, the Facility Manager oversees the support, administrative and business functions carried out by the Facility office staff.

The Facility Manager is responsible for coordination and liaison with the County and for assuring cooperation with local authorities and appropriate government agencies.

The position of Facility Manager requires an individual with not less than fifteen (15) years of experience that includes in plant management and supervisory responsibilities for day-to-day operating and/or maintenance functions. A minimum of two (2) of the required fifteen (15) years experience must be in a mass burn electric generating facility with a processing capacity of four hundred (400) TPD or greater. While a degree is most preferable directly related management experience with proven performance, is acceptable.

Manager of Administration, reporting to the Covanta Assistant Vice President – Facility Administration in Fairfield, NJ and working in conjunction with the Facility Manager, will act as a liaison with community officials, customers, subcontractors and suppliers. The Manager of Administration will review, determine appropriate cost coding and approve all Vouchers for payment from local vendors. He/she also assists plant personnel in implementation of maintenance and inventory control programs, preparation of reports, budgets and scheduling of events.

The position of Manager of Administration requires an individual having a Bachelor's Degree in Accounting or Finance and preferably previous experience in the solid waste or electrical utility industries.

Chief Engineer, reporting to the Facility Manager, is second in command and responsible for the operation of the Facility. The Chief Engineer organizes and coordinates the day-to-day activities of the operations personnel, establishes priorities for repair work and projects, helps plan and schedule outage work and provides technical guidance or, if required, direction during unusual operations or in regard to problems associated with equipment repairs.

The Chief Engineer conducts or participates in studies to improve the plant operations, maintenance, or equipment and will monitor the effectiveness of plant manuals and procedures, instituting changes or additions, as required.

The Chief Engineer, having responsibility for safety, environmental compliance and the technical aspects of the plant operation, assists in recruiting, interviewing and selecting operations personnel and directs their initial training. The Chief Engineer oversees the training of operations for upgrading and general proficiency to ensure the availability of promoting people, the plant's readiness to meet emergency or unusual situations and safe and efficient day-to-day operations.

The position of Chief Engineer requires an individual having at least ten (10) years experience, including supervision of the day-to-day operation of mass-burn, resource recovery equipment or fossil-fueled electric generating units. While a degree is desirable, hands-on operating experience and utility training is acceptable.

Maintenance Supervisor, reporting to the Facility Manager, coordinates and supervises the day-to-day activities of the maintenance group and administers the Maintenance Management System.

The Maintenance Supervisor's duties include reviewing and assisting in establishing day-to-day work order priorities, planning and scheduling maintenance work, and inspecting and approving completed work. He oversees tasks, and provides technical assistance, and safety training as required.

The Maintenance Supervisor directs the development of maintenance procedures and instructions and assists in the evaluation and development of recommendations for plant improvements. He monitors tool and spare parts requirements and verifies that adequate provisions for such items are included in the inventory control systems.

The position of Maintenance Supervisor requires an individual having at least ten (10) years experience in power and/or industrial plant mechanical or electrical maintenance. While a degree is desirable, a management/supervisory background that crosses craft boundaries and encompasses maintenance planning and support areas such as spare parts control and subcontractor coordination is acceptable.

Fifth Supervisor, Reports to the Plant Manager and Chief Engineer, is responsible for implementing and maintaining the facility Safety and environmental programs. This includes record keeping, conducting required employee training, coordinating with regional safety coordinator. This position also covers shift supervisors for vacation or other needed coverage, assist with special projects with-in the facility and gives back-up support to the purchasing agent and other administrative personnel.

Shift Supervisor, reporting to the Chief Engineer, is responsible for the safe and efficient operation of the Facility during an assigned shift. The Shift Supervisor supervises the personnel assigned to his shift and directs their actions as necessary. During the period of the assigned shift, he routinely tours the plant and oversees the activities of the operators.

In the event of emergencies or unusual operations, the Shift Supervisor will, if necessary, direct or personally perform the required operations or corrective actions as well as coordinate the activities of all personnel involved.

The Shift Supervisor is responsible for approving all requests for removing equipment from service for maintenance, or other purposes, in accordance with plant procedures.

During nighttime hours, weekends, and holidays, the Shift Supervisor has on-the-scene responsibility for the plant's well being in the absence of the Facility Manager and the Chief Engineer.

The position of Shift Supervisor requires at least eight (8) years experience in power or resource recovery plant operations. Background should include hands-on operations and supervisory experience with high-pressure boilers and electric generation equipment. A high school education and/or formal technical or utility operator training is required.

Shift Engineer, working under the direction of the Shift Supervisor, is responsible for remotely monitoring and controlling plant equipment and systems from the control room.

The duties of the Shift Engineer includes the safe and efficient operation of the plant equipment in accordance with established operating procedures, as well as coordinating operators throughout the plant, logging operating activities and recording pertinent data. The Shift Engineer must report equipment malfunctions or trends, which indicate possible trouble and take appropriate action to correct abnormal operating conditions or emergency situations, without first-hand supervision or direction.

The position of Shift Engineer requires at least five (5) years experience in the hands-on operation of high-pressure boilers and electric generation equipment. A high school education and/or formal technical or utility operator training are required.

Auxiliary Engineer, working the general supervision of the Shift Supervisor and the direction of the Shift Engineer, is responsible for the operation and inspection of various systems and equipment as assigned. Normally, the assigned areas include the boilers, turbine generator and associated systems such as fans, grates, ash and scrubber systems and water plant operations.

In addition, the Auxiliary Engineer operates the refuse cranes and is responsible for proper pit management including mixing, stacking and monitoring of refuse. He is also responsible for maintaining correct levels of effuse fuel in the furnace charging hoppers.

The duties of the Auxiliary Engineer include the safe and efficient operation of the assigned equipment in accordance with established operating procedures. He is responsible for recording data, reporting equipment malfunctions or trends, which indicate possible trouble, and performing actions as directed to correct abnormal operating conditions or emergency situations.

In performing his duties, the Auxiliary Engineer normally works under the direction of the Shift Supervisor. However, during emergencies or unusual situations, the Auxiliary Engineer must take appropriate action on his own initiative to prevent equipment damage or injury to personnel.

The position of Auxiliary Engineer requires previous experience in the operation of mechanical equipment. A high school education and/or formal technical or apprentice training is required.

Equipment Operator, working under the direction of the Shift Supervisor, is responsible for the safe and effective operation and maintenance of front-end loaders and other mobile equipment as assigned. Primary assignment includes supporting efficient tipping operations by policing the floor, controlling traffic and inspecting for unacceptable waste. Assignments may also include sweeping roadways and paved areas of the site, loading residue and ferrous trucks and supporting the maintenance or operating groups, as necessary.

The position of Equipment Operator requires previous experience in operating front-end loaders and other mobile equipment. A high school education and/or technical or apprentice training is required.

Maintenance Mechanic, working under the supervision of the Maintenance Supervisor, is responsible for performing various maintenance and repair work. Typically, the Maintenance Mechanic's principal duties include the inspection and maintenance work required for rotating machinery and equipment. The mechanic may inspect and adjust, as necessary, the mechanical alignment, balance, level, and general condition of pumps, fans, and other rotating equipment throughout the plant and as required, check, repair, adjust or replace couplings, bearings, and mounts.

The mechanic performs preventative maintenance tasks including routine vibration tests and will actively participate in the periodic tear down and internal inspection of major equipment.

The Maintenance Mechanic uses various shop equipment in the performance of his/her assigned tasks, such as the repair or rebuilding of sootblower drives, gearboxes, speed reducers, pumps, and other assemblies.

The position of Maintenance Mechanic requires at least five (5) years experience in the repair and maintenance of mechanical equipment. A high school education and/or formal technical or apprentice training is required.

Instrument/Electrical (I&E) Technician, working under the supervision of the Maintenance Supervisor, is responsible for performing routine maintenance and emergency repairs of the plant instrumentation and control systems and all electrical equipment.

Typically, the I&E Technician's assignments include preventative maintenance as well as troubleshooting and repair of generator instrumentation, control circuits, combustion control systems, drum level controls, recorders, and alarms.

The I&E Technician is capable of testing and trouble-shooting pneumatic, electrical, and electronic control equipment and components down to the individual printed circuit board or equivalent, as well as troubleshooting and repair of circuit breakers, motor control centers, generator, transformers, electrical metering, protective relays, and preventative maintenance.

The position of I&E Technician requires at least five (5) years experience in maintenance, trouble-shooting and repair pneumatic devices, electrical and electronic systems and components. A high school education and/or formal technical training are required.

Purchasing/Warehouse Person, reporting to the Facility Manager, is responsible for the day-to-day computer operation of the Maintenance Management System, planning and scheduling of materials and supplies for work projects, purchasing, shipping, receiving and inventory control. The Purchasing/Warehouse Person works closely with the Chief Engineer and Maintenance Supervisor to ensure the ready availability of consumables, parts, maintenance tools and supplies at all times.

The position of Purchasing/Warehouse Person requires at least five (5) years experience in purchasing, and planning work assignments and/or projects including materials availability and manpower scheduling.

Experience should include first hand knowledge of computer operations. A high school education and formal technical or business administration training is required.

Secretary, working under the directions of the Facility Manager, is responsible for performing various administrative and clerical duties. Areas of involvement include personnel administration, payroll, reports preparation and records retention.

The position of Secretary requires at least five (5) years experience in clerical/administrative work including computer/word processor operations as well as a typing speed of 45 words per minute. A high school education and business school training is required.

A/P Clerk, reporting to the Facility Manager, is responsible for performing various typing, filing, bookkeeping, or other clerical assignments as directed.

The position of A/P Clerk requires previous experience in clerical assignments and typing speed of 45 words per minute. A high school education and/or formal business training is required. Training and experience with computer word processing such as Word Perfect is a must.

Utility Person, working under the direction of the Shift Supervisor, will perform various hands-on manual tasks as assigned.

The position requires a high school education or equivalent training.

3.2 Recruiting

In the event of vacancies within the staff, current Covanta employees, in particular management and senior hands-on supervisory personnel at our other resource recovery plants will be reviewed as candidates. Where possible, subject to the needs of the plants, and budget restraints, qualified Covanta employees are first reassigned to any open positions before outside advertising is utilized to obtain potential candidates.

Clerical, administrative and hourly, hands-on personnel are recruited from the local area. Recruiting is expanded outside the area only if qualified candidates are unavailable locally.

3.3 Training

A comprehensive in-house training program is used to prepare newly hired personnel to assume positions at the Facility. The program supplements basic on-the-job training with various specific classroom instructions.

All employees are encouraged to pursue outside education and home study through the Education Assistance Program.

PERSONNEL TRAINING PLAN

To prepare Covanta personnel at all position levels within the plant, a comprehensive training program is initiated and implemented during the construction/start-up phase and is an ongoing program throughout the life of the plant. The program serves as the basis for plant familiarization and upgrading training as well as covering the training of candidates who are required to satisfy the Qualification and Certification of Resource Recovery Operators Standard, ASME, QRO-1-1989.

The training is separated into two district phases, familiarization training and on-going training.

FAMILIARIZATION TRAINING

The familiarization-training course commences with an introduction to the Company, which includes its history, organizational structure, policies and procedures. This is immediately followed by an introduction to safety, stressing its importance at all times. The Hazard Communication Standard lesson reviews labeling, Material Safety Data Sheets, including the handling and use of ammonia, propane, acids and caustics.

It also includes a review of the safety/emergency equipment and a tour of the facility in order to sight safety lockers and their contents, Material Safety Data Sheets in their correct locations, emergency eye baths and emergency showers. An explanation of the Company Safety Program covers such topics as accident investigation and reporting while a review of Company safety rules includes eye protection, clearance and locking procedures and confined space entries. The next subject to be addressed is that of environmental concerns and includes a study of the various legislation which has been introduced since 1970 with a special emphasis on the Clean Air Act (1990), especially relating to the New Source Performance Standard and Emission Guidelines. The facility's permit to operate is then reviewed directly. Instruction is given on the Waste Control Plan, which includes the definitions of the various waste classifications, screening procedures and the handling of hazardous, nonprocessible, unacceptable and untreatable waste. The four plans, which comprise the Contingency Plan, are then presented; these plans are the Environmental Compliance Plan, the Spill Prevention Plan and the Crisis Management Plan.

During the facility construction/start-up phase shift supervisors and company training staff prepare plant specific system descriptions. Each system description gives the purpose of the system, an overview of the system, specific details of each major component within the system together with design capabilities and pertinent parameters. System operational modes are also described. The system descriptions are used as the standard text in conjunction with Logic Diagrams, Piping and Instrument Drawings and Electrical One Line Drawings to provide a detailed overall technical training presentation of the plant on a system-by-system basis. In addition major equipment and chemical supply vendors' training staff provides specific training according to the identified training need. This instruction is conducted in the classroom and when appropriate is supplemented by hands on demonstrations on the actual equipment. Correct operating and maintenance of the equipment, in accordance with the vendor's instructions is emphasized.

Key personnel are required to attend a First Aid and Cardiac Pulmonary Resuscitation (CPR) training course. This course is organized as soon as possible after commercial operation of the plant has been achieved and it is to be conducted by the American Red Cross or an equivalent certified instructor.

ON-GOING TRAINING

The on-going basic training program consists of five training sections:

1. Power Plant Fundamentals
2. Martin Stoker Training Modules
3. Systems Training Enhancement Program (STEP)
4. Environmental Compliance Training Program
5. Other identified training needs by vendors, community colleges and vocational training schools as well as in-house specialists.

The Power Plant Fundamentals is a computer assisted training program, which take on average, ninety hours to complete, and is administered by the Chief Engineer assisted by the Facility Training Coordinator. The objective of this course is to present a thorough explanation of the technical and safety related aspects found in modern power generation facilities. It is not specific to any process or technology except for the final module that specifically addresses the Martin Stoker. The program touches on a wide range of generic power generation topics intended to prepare the trainee to understand the complex, site specific systems.

The primary target audience for this program is those employees that have limited formal power plant training. However, it also refines the knowledge base of experienced personnel. Although written from an operations perspective maintenance personnel benefit greatly from its subject matter and are consequently included in the program.

Each computerized lesson commences and proceeds with presentations on the monitor screen of written text, graphics and simple animation sequences. On completion of these sequenced the computer goes into a testing sequence and requires the student to respond to questions displayed on the screen.

When the trainee has completed the test the computer complies and records the score. The trainee must maintain a running average of seventy percent on all lessons completed to move on to the next lesson. The student cannot progress to the next lesson unless a score of seventy percent is achieved.

The Martin Stoker Training Program is divided into two separate parts, the first part consisting of a ten-hour formal classroom session followed by approximately five hours of individual instruction (One on One training) in the plant.

The formal classroom-training instructor utilizes the lesson method of instruction in order to maximize verbal interaction and ensure active trainee participation. These lessons are enhanced by the use of videotapes and overhead transparencies. Safety, good combustion practices and environmental compliance are stressed and explained throughout the program.

Martin Stoker instruction in the plant consists of both hands on and observation training and all trainees are required to complete a One on One Checklist and sign off on it.

The second part of the Martin Stoker Training Program consists of the trainee working through the twenty-two modules contained within the Martin Stoker Training Manual. Each module covers specific subject matter related to Martin Stoker construction and operation. These modules are stand alone in that they may be given in any sequence, however, suggested prerequisites are provided for each one and should normally be adhere to. The modules follow a uniform format, which includes prerequisites and objectives of the module, followed by the purpose, description, operation and checks of the specific system/equipment.

These operations oriented modules contain information on the recognition and prevention of specific problems besides addressing specific safety and environmental concerns.

The Chief Engineer administers this program. Questions that arise during the study of materials are directed to the trainee's immediate supervisor. After studying the material the trainee requests to take the Qualification Test for that module. The Chief Engineer administers and scores the test. A score of seventy percent is an acceptable score and allows the trainee to progress to the next module. The trainee continues working through the modules until all modules associated with his specific job duties have been completed.

The Systems Training Enhancement Program (STEP) is the site-specific on-going training program for all systems and equipment with the exception of the Martin Stoker. It consists of study assignments that identified trainees must complete to gain the knowledge required to perform specific job tasks. The STEP materials focus on the job tasks that must be performed for the proper operation of equipment rather than the engineering or construction associated with it.

The assignments are developed from job specific task lists identified and compiled in job analyses of the utility person, equipment operator, auxiliary engineer and shift engineer positions for the Covanta facility. The assignments are usually categorized within each of the four job positions according to the engineering systems, which make up the plant.

All STEP assignments follow a uniform format and learning sequence directing the trainee to plant reference materials such as Piping and Instrumentation Drawings, Operating Instructions, system descriptions and vendor materials. The assignments also guide the trainee in system walk downs. The study questions play a major role in each study assignment.

After completing all of the assignments for a particular system, the student takes the System Qualification Examination. This examination is a pencil and paper test that the Chief Engineer administers and scores. The trainee must obtain a score of seventy percent to be considered qualified. Upon successful completion of the examination, the student advance to the next system assignments.

Maintenance training is an on-going requirement and is prepared and implemented according to the identified need using vendor training sourced, technical seminars, and in-house maintenance specialists such as Martin Stoker maintenance specialists, continuous emissions monitoring specialists and other support staff.

The purpose of the Environmental Compliance Training Program is to raise the level of Environmental awareness among the employees at the Covanta facilities by providing the necessary knowledge to operate and maintain the plant in an environmentally sound manner. Included in this program is a general overview of environmental compliance and its importance to Covanta and the community, an overview of environmental legislation, permits and regulations, pollution control systems, enforcement agencies, critical housekeeping areas and employees environmental responsibilities. A detailed presentation of the entire combustion train and combustion process is given, including the Continuous Emissions Monitoring System (CEMS). Proper maintenance on the Air Pollution Control System is emphasized.

The ongoing supervisory training is intended to prepare hourly personnel for advancement into supervisory positions as well as to enhance the skills of existing management people. The materials for this course include existing corporate programs as well as purchased training courses and various specifically developed information.

The Chief Engineer in coordination with Covanta training management identifies and schedules refresher training on an annual basis. Refresher training courses are primarily concerned with Federal State and local laws and regulations, environmental permit compliance, emergency operations and response procedures. Changes or revisions to systems or equipment are also addressed as necessary. The facility supervisory staff, Covanta home office personnel or outside vendors and consultants may conduct such training.

In addition, instruction is provided immediately, as required, for specific key operations or maintenance personnel covering changes or modifications to laws, regulations, or permits affecting facility operations.

A detailed outline has been developed for the provisional Resource Recovery Operator Examination (QRO-1-89) and is supported with recommended reference materials. In addition it is anticipated that a booklet of typical examination question examples will be developed by the American Society of Mechanical Engineers and will be available as a further study aid. A review of the outline and examination question examples will be conducted for those persons required to qualify, specifically the Facility Manager, the Chief Engineer and the Shift Supervisors.

TRAINING RECORDS

To ensure accurate training records are maintained at the Covanta Facility and by the Training Department at the Fairfield office the following training forms are used:

1. Personal Training Record
2. Training Course Record
3. Monthly Training Report

A Personal Training Record form is maintained in each employee's Personnel File and all training courses and seminars attended by the employee are entered on this form. In addition a record of each training course and seminar including the names of attenders, dates, duration are entered on a Training Course Record form.

This original form is placed in the Training Register, which is a loose leaf binder, the Training Coordinator being responsible for ensuring copies of the completed original forms are sent to the Fairfield office for inclusion in the duplicate Training Register. Finally the Training Coordinator ensures that the Monthly Training Report form is completed in a timely manner and dispatched to the Fairfield office with all other Facility Monthly Returns by the due date.

4.0 FACILITY OPERATIONS

4.1 Shift Organization

The Operations Department consists of four (4) shift crews, each comprising one Shift Supervisor, one Shift Engineer and four auxiliary Engineers and one Utility Operator. The shift crews provide 24-hour coverage, seven days per week on a rotating shift basis with the support of Equipment Operators scheduled to cover normal receiving hours.

Reporting to the Chief Engineer, each Shift Supervisor is responsible for the safe and efficient operation of the boilers, turbine generator, water plant, and all auxiliary systems and equipment during an assigned shift. In carrying out these responsibilities, it is the Shift Supervisor's duty to oversee the work of all operators and other personnel assigned to the shift and to direct and supervise the operation of the plant equipment and other related activities, as necessary. While using the Central Control Room as the base of operations, the Shift Supervisor routinely inspects or visits all areas of the plant in accordance with the conditions or events taking place at the time.

Working under the direction of the Shift Supervisor, each crew includes a Shift Engineer assigned as control room operator. It is the Shift Engineer's responsibility to operate and monitor the boilers and water plant from the control room and to coordinate operating functions of the Auxiliary Engineers. Auxiliary Engineers receive control room training for the purpose of advancement, as well as for relief in the event of illness or vacations. Each shift normally assigns one Auxiliary Engineer to operate the refuse crane while the others serve as roving and water plant operators, monitoring various equipment and systems throughout the plant.

During normal refuse receiving hours one Equipment Operator will control and maintain the tipping floor while the second handles ash loading and/or other various assignments. If required by waste deliveries or pit management needs, the Equipment Operator may also be assigned to operate the second refuse crane during receiving hours.

4.2 Refuse Receiving

The facility will be open to receive processable waste from 6:00 a.m. to 4:00 p.m. Monday through Saturday except for legal holidays when the scales are closed.

All haulers are provided a copy of the Rules and Regulations for Waste Delivery/Scale House Operations, which are included in the Waste Control Plan.

4.3 Residue Removal

Covanta will, during the receiving hours listed in 4.2, load out ash as well as sludge from the on site water treatment plant. The County shall transport and dispose of this residue at an appropriate landfill.

4.4 By-Pass Waste

The Facility Manager, routinely coordinating with the County, shall notify them of any anticipated bypassing requirements due to scheduled outage of equipment or other planned reduction of capacity. In such cases, no more than 50% reduction in throughput will normally be scheduled at any time. However, in the event of an expected shutdown of the remainder of the plant during an outage period or an unplanned total plant shutdown, the County will be notified as soon as possible that bypassing of waste to the landfill may be necessary.

4.5 Facility Shutdown

In the event that the facility is forced to shut down waste processing operations, the following actions will be taken:

Refuse haulers will be directed to the alternate disposal site if storage is not available at the Facility.

The Facility Manager or Emergency Coordinator will initiate the use of odor control chemicals in the refuse pit if waste odor can be detected outside the plant.

A fire watch shall be assigned to the charging floor when refuse is stored in the pit, and the pit shall be observed continuously. The fire watch shall be in radio contact with the control room.

4.6 Waste Screening

As a normal part of the assigned duties, the Facility personnel working in the tipping area observes the waste being discharged into the refuse pit. Typically, it is the crane and equipment operators who watch for unacceptable materials and those items that may contain or be hazardous waste. In addition, on a routine, periodic basis, solid waste trucks are directed to empty their load on the tipping floor for inspection. The trucks are normally selected based on areas of pickup or type of industry being served. Haulers having a history of bringing hazardous or unacceptable waste into the Facility are checked more frequently.

If unacceptable waste is found in the refuse pit, it is removed with the overhead crane and set aside for disposal at the appropriate landfill.

In cases where the material is considered to be a possible immediate threat, such as explosives or ruptured drums, the materials is left in place, roped off if possible, and personnel and traffic evacuated from the area. The appropriate governmental agency or local authority is contacted immediately. Removal of all hazardous materials from the Facility is in accordance with State and Federal regulations, utilizing only licensed or approved hazardous waste haulers and approved disposal sites.

Refer to the Waste Control Plan for specific details.

4.7 Recovered Ferrous and Non Ferrous Materials

The Facility operates a ferrous and a non ferrous recovery system, which removes the vast majority of ferrous and non ferrous from the residue stream produced in the combustion process. This materials will be sold on the open market with the purchaser responsible for removal from the Facility.

4.8 Communications

Facility communications incorporates four systems to ensure effective response to emergencies as well as efficient conduct of routine operations and maintenance. The following is a brief description of the systems.

Telephones

Telephones are located in each office, control room, and shop. These phones allow communication to agencies off-site as well as between sets in the plant. The plant telephone system is used for emergency services contact as well as for everyday transfer of information.

Page/Address

The Page/Address system has stations throughout the plant including the control room, crane pulpit, and key offices. The system provides the capability of public address announcements, as well as two-way private conversation by cutting out the speakers when a handset at one of the speaker stations is picked up. Five channels are provided which allows five separate conversations at once.

Radio

Supervisors, shift operators and key maintenance personnel carry handheld radios. Base stations are located in the control room and crane pulpit and mobile units are located in each loader. These radios assure that prompt communication is available at anytime.

E-Mail System

Each personnel computer, which is part of the Local Area Network (LAN) and tied, via modem, to Covanta in Fairfield is, equipped with electronic mail (E-mail) capability. The modem link to Fairfield allows Covanta to network to both Fairfield and all plants on the link. This system allows for the transfer of electronic data such as word processed reports, operational and maintenance data and spare parts availability either intra-Covanta or to other Covanta locations.

4.9 Security

The Facility is located within a seven-foot high-galvanized chain link fence, which will follow the site perimeter and include manually and motor controlled gates. Covanta also requires that all visitors to the facility sign in on the 4th floor at which time they will be issued visitor badges.

The gates will be closed at all times except during receiving hours.

The entry gate shall be monitored via CCTV and 2-way communication from the control room. During non-receiving hours no person shall be admitted to the Facility unless cleared by the control room.

5.0 FACILITY MAINTENANCE

5.1 Organization

The maintenance department consists of hands-on maintenance personnel working under the coordinator and supervision of the Maintenance Supervisor. The maintenance force normally works from 6:00 a.m. to 2:30 p.m., with one half hour for lunch, five days per week, Monday through Friday. Off-hour repairs or emergencies will be covered, as required, by on-duty personnel, or by overtime help.

Working under the direction of the Facility Manager, the Maintenance Supervisor plans and schedules routine repairs and day-to-day preventative maintenance work. It is intended that the permanent maintenance staff will be sufficient to conduct normal, running maintenance work to troubleshoot and repair routine equipment problems and failures. However, major repair, replacement, or outage work necessitates the use of outside contract forces, as do requirements for unusual or highly specialized expertise such as scale maintenance and calibration. Basing maintenance work assignments on operational priorities established by the Chief Engineer, the Maintenance Supervisor is responsible for the effective and efficient utilization of manpower and materials.

The permanent Facility personnel perform most major outage work while a few are assigned to conducting running maintenance on the equipment and systems that remain in service. During such outages, specific members of the maintenance staff are utilized to supervise the work of outside personnel in particular areas such as major equipment disassemble, inspection and/or repairs as well as electrical or control systems calibration and testing. In the event of a total plant shutdown, the entire staff, including operations personnel together with outside assistance, is utilized as required to return the plant to operation as soon as possible.

Minimization of Cooling Tower Cell downtime is to be given priority status. In the event a Cooling Tower Cell comes out of service efforts will be concentrated on placing it back on line as soon as possible. This will include calling in additional labor and working continuously if need be until the unit is stared back up.

5.2 Maintenance Management System

Covanta will utilize a fully interactive Maintenance Management System called Maximo. The purpose of the Maximo system is to provide greater control of maintenance functions by automating the flow of maintenance information. The flow of information through the system is designed to be the same as the flow of information through the Covanta maintenance organization.

The System consists of five interrelated modules:

WORK ORDERS
INVENTORY CONTROL
EQUIPMENT DATA
PERSONNEL
PURCHASING

Following are descriptions of each of the modules that make up the Maintenance Management System.

Work Orders

The work order module allows control of maintenance activities by scheduling corrective and preventive maintenance, generating work orders, and maintaining an equipment history file of closed work orders. The system allows for initiation, planning, costing, and tracking of work orders. Interfaces are provided with the inventory control, purchasing and equipment data modules.

Two types of work orders can be initiated, schedules and closed by the system based on the type of maintenance involved:

Corrective: This work order is for maintenance that occurs in response to a problem with an equipment item. The user schedules the work order on a one-time basis.

Preventive: This work order convert repetitive maintenance of an equipment item and is automatically scheduled based on either elapsed calendar time and/or equipment operating hours.

Inventory Control

The inventory control module tracks the spare parts that are purchased, received, stored, issued and used in the plant. This module includes a spare parts database that stores information on all spare parts in the plant. This information can be used in planning of scheduling maintenance and in procuring spare parts. It can also be used to maintain configuration control of the warehouse.

Equipment Data

The equipment data module contains the reference information for plant equipment. The equipment information is used as the basis for writing work orders and drives all Maximo. The equipment data module contains two databases: the equipment

database and the master parts database. There is also a capability to update meter reading information. Meter readings are used to schedule certain preventive maintenance activities.

Purchasing

The purchasing module represents the purchasing process, from submitting purchasing requisitions to receiving parts and invoicing matching. The system distinguishes between purchase requisition and purchase orders. The purchase module will allow creation of purchase orders, receiving against purchase orders, creation of contracts of "blanket" orders and matching against supplier's invoices.

Personnel

The personnel module contains employee information. This information is used when scheduling work orders and calculating labor costs. Special features of this module are: Employee information; Labor projections; and time card entries.

Reports

The system allows for multiple management reports. The following are only a small representative sample:

- Delinquent Work Orders – Preventative Maintenance
- Work Order Status – Preventative Maintenance Ready to Issue
- Work Order Status – Preventative Maintenance Issued
- Work Order Status – Repairs
- Overdue Work Orders – Repairs
- Completed Work Orders – Repairs
- Work Order Variance – Repairs
- Maintenance History Analysis – Preventative Maintenance & Repairs

5.3 Preventative Maintenance Implementation

The preventative maintenance program at the facility covers all systems and component equipment. Initially, the recommendations provided by each manufacturer are incorporated with our own experience at existing plants as well as the expertise of our Facility and home office staffs. Each piece of equipment is reviewed for inspection, testing, lubrication and routine adjustment and/or change-out recommendation and time frequency requirements. Work orders are prepared for each independent task and time frequency. These work orders then form the basic preventative maintenance program that is modified – increased, decreased or adjusted – as the actual work is conducted and specific needs become apparent.

At the beginning of each week, the Preventative Maintenance portion of the Maintenance Management System prints out individual work order cards, each a specific preventative maintenance task that must be performed within a given time period – usually within one week. The Maintenance Supervisor assigns the work to his/her personnel in accordance with the craft required and the priority needs of repair work. Except in emergency cases, preventative maintenance work shall be

conducted as an on-going, continuous function of the maintenance group and not allowed to be side-tracked by other activities.

After performing the assigned preventative maintenance work, each mechanic reports back to the Maintenance Supervisor and returns the work order card. The mechanic will note all work performed, materials used and hours expended on the work card and also will mote the as-found conditions, if appropriate, and any changes or recommendations which are felt to be necessary. With the Supervisor's approval, the information provided by the mechanic is entered into the computer and the work order is closed out. The information and the work completed become part of the history for the equipment and the work order is then set back on the computer calendar for issuing again at the proper frequency.

5.4 Outage Work

Scheduled outages include the periodic inspection, cleaning and repair, as required, of each boiler and associated grate system and auxiliaries. Overall the facility supervisory staff and the inspection tasks supervised or conducted by the Facility personnel and manufacturer's reprenentatives provide management and liaison for the outage work.

Through strict adherence to manufacturer's operating recommendations and preventative maintenance procedures as well as sound power plant management and engineering practices, unscheduled outages resulting from unforeseen failures will be kept to an absolute minimum. However, since such occurrences can happen at any time, the Facility staff is prepared to properly evaluate conditions and take immediate action to commence repairs. The Facility Manager and Chief Engineer are notified immediately on the event of a trip or forced shutdown of a major system resulting in reduced capacity of the Facility. Working in conjunction with the Chief Engineer and the Maintenance Supervisor, the Facility Manager determines the extent of the damage or problem and then type of assistance or service required to accomplish the necessary repairs and return the equipment to service as soon as possible. In reacting to an emergency shutdown and in managing and directing the resultant outage, the Facility Manager has the capability to call upon the Covanta engineering staff, or any other division as appropriate, as well as the design engineer, equipment manufacturer, local contractors, and other suppliers.

5.5 Spare Parts and Supplies

The facility is stocked with a proper inventory of spare parts for all equipment, as well as materials and supplies necessary to sustain on-going operations and maintenance activities. The facility staff monitors and maintains a predetermined level of inventory of such parts and supplies. The staff also tracks specific items that are more frequently used as well as those that are used less than originally anticipated. Normal inventory levels of such items are adjusted as necessary.

The initial stock of spare parts is based primarily on the recommendations of the equipment manufacturers, and the operational requirements contained in the service agreement. That information, supplemented by Covanta's experience at our other resource recovery plants, the specific objectives and operating conditions at the facility and the first-hand experience of the facility staff and technical support

personnel, is utilized to purchase and establish inventory levels for the parts. Similarly, consumable materials, supplies, tools and related equipment are purchased and stocked based on vendor recommendations and our experience.

The objects of our parts and supplies inventory program is to ensure that every possible effort is made to anticipate the normal preventative maintenance needs of the major equipment as well as critical subsystems or components in the plant. In addition, consideration is given to potential failures or reoccurring problems.

Our goal is to achieve maximum availability of the plant and at least the design efficiency and intended effectiveness of its systems as well as to ensure the safety of the plant staff and our neighbors. The inventory program seeks to find a level of stock that is optimum for the needs of the facility in achieving those goals.

6.0 ADMINISTRATION

Administrative functions including, but not being limited to, payroll, purchasing, inventory control, facility reporting, personnel administration, records retention and operation of the computer-based maintenance program are carried out by the clerical and administrative group of the facility.

6.1 Personnel Administration

The various requirements of personnel administration for the employees at the Facility include:

- Weekly Payroll
- Health and Welfare Programs
- Equal Employment Opportunity Reporting
- Promotions, Transfers, and Terminations
- Travel Expense Reimbursement
- Labor Relations and Employee Discipline
- Accident and Incident Report Processing

6.2 Inventory Control

Utilizing the system-wide, Covanta inventory program, the staff monitors and conducts storeroom operations including the receiving, inspecting, storing, and requisitioning of stock items, the proper withdrawals and accounting of materials, periodic inventory counts and security of all materials and supplies.

6.3 Purchasing

Routine purchasing of inventory replacement as well as additional stock items is conducted by the Facility staff and is subject to the approval of the Facility Manager.

When purchasing materials, parts, tools, equipment or services, the facility staff prepares and reviews al quotations, selects or recommends the vendor, prepares the purchase order forms, received the material and approves vendor invoices for payment.

Minor purchases are paid locally and reported on the Business Manager.

6.4 Records Retention

All plant records pertaining to the operation and maintenance of the Facility are retained in a central location in the record storage room. The individual so designated by the Facility Manager directly controls the files. The records, including all operating logs and reports, purchasing information, and maintenance reports kept on file for a period of five years. The company may dispose of such records; provided, however, that prior to any such records to the County.

7.0 ENVIRONMENTAL CONTROLS

7.1 Compliance Assurance

The objectives of the Environmental Compliance Assurance Program, included as Appendix 1, are to ensure that the specific operating limits of each permit are strictly adhered to and that all monitoring, records and reporting requirements are followed.

7.2 Pest Control

Pest/vector control for the Facility is subcontracted to a qualified local company. Priority of selection of the contractor is based on qualifications and experience with similar types of plants and/or large industrial or commercial facilities having significant pest control requirements.

The control program is intended to provide, at least once per month, applications of spray and traps throughout the refuse handling areas and administrative areas. Selection of the contractor has also been based on the program that the vendor proposes to implement. The program will be closely monitored by the designated Facility Safety Coordinator and will be adjusted, as required, to seasonal changes, throughout variations or simply the actual effectiveness of the program.

7.3 Litter Control

Litter control throughout the site is routinely conducted on a daily basis. Under the direction of the Shift Supervisor, the tipping floor is policed and swept as an on-going procedure during hours of receiving waste. In addition, the access roads, parking facilities and other paved areas and unpaved areas of the site including fences are policed, as needed each waste delivery day. Various areas within the building themselves are policed by the operation or maintenance group who utilizes or is assigned responsibility for them.

7.4 Odor Control

All doors at the tipping building are closed at times other than receiving hours.

The tipping building is designed to operate at a negative pressure. The forced draft fans take air from the tipping building for the combustion process thereby maintaining the negative pressure in the building. Odors are removed along with the air for combustion.

7.5 Noise Control

The Facility will maintain noise levels in accordance with those levels referenced in the Lee County Noise Ordinance. Energy releasing equipment such as safety valves and vents are equipped with silencers. Trucks not properly equipped and exceeding the permitted noise level (66 dBA at the Facility boundary from 7:00 a.m. to 10:00 p.m. and 55 dBA from 10:00 p.m. to 7:00 a.m.) will be denied access to the Facility.

8.0 RISK MANAGEMENT

8.1 Safety Program

The Safety Program utilized at the Facility was developed specifically for Covanta resource recovery plants and is currently in use at all of our sites. The overall program is centrally coordinated and monitored from the Fairfield office but each plant in accordance with its specific needs conducts implementation. The program provides initial training followed by on-going review and updating on safety practices, techniques and problems and encourages employee awareness and active participation.

The Facility will designate one key personnel to serve as the Safety Coordinator for the plant. Working under the overall guidance and support of the Manager, the Facility Safety Coordinator is responsible for accomplishing the various prerequisite procurement and arrangements as well as implementing, coordinating and maintaining the on-going program.

Basically, the Program includes the following major components:

- Newly hired employees receive orientation on the Facility ECOM, Facility Safety Program and specific instruction regarding HazCom, work rules, personal safety and the Clearance and Tagging Procedure.
- A full-plant safety meeting is conducted once quarter. Its purpose is to introduce the Safety Themes for the quarter and present basic training or information concerning that subject. Typically, the meeting program includes videotapes, workbooks, demonstrations, handout materials and active participation by the employees. The Safety Manager's system-wide report, for the preceding month, is summarized and pertinent points, such as findings of unsafe conditions and/or significant accidents or near-accidents, are discussed in detail.
- Individual tailgate safety meetings are held weekly, during the normal workday for the maintenance and administrative/clerical staffs and during the assigned shift of each operations team. The agenda of each meeting is established in accordance with the monthly theme. The meetings typically address a particular safety rule, procedure, tool, protective equipment, or potentially hazardous condition. In addition,

the details and conditions of any recent accidents within the plant, especially those relating to the tasks performed by the individual work group are fully discussed with emphasis on avoiding previous mistakes. Where appropriate, the meeting utilizes visual aids and demonstration gear and always allows ample time for questions and discussion.

- Minutes of all safety meetings are recorded and filed in the facility. The minutes include the leader's name and main topics of discussion, a list of the attenders, unanswered questions, if any, and recommendations which may have been brought up. The Safety Coordinator will follow up on all questions or recommendations with the assistance of the Safety Manager, if necessary.
- First Aid instruction is provided for all members of the facility staff. Arrangements are usually made with a local agency or association that is qualified to conduct American Red Cross First Aid instruction.
- In compliance with the Federal Hazard Communication Standard, operators and maintenance personnel as well as administrative employees, where appropriate, receive specific instruction regarding the hazards associated with the chemicals utilized at the facility precautions to be followed, and the location of the manufacturer's information concerning each chemical. This file is maintained in up-to-date condition in the control room, with the master set kept in the Administrative office.
- Fire prevention and fire fighting instruction are periodically conducted for all employees in the facility.
- In accordance with OSHA requirements, detailed accident reports and records are prepared and maintained at the facility. In addition, Workmen's Compensation reports are forwarded to the appropriate insurance carrier and copies of all reports are forwarded to the Covanta Fairfield office.
- A thorough investigation of all accidents is conducted to ascertain the cause and methods of preventing a reoccurrence. If appropriate, the facility staff is assisted by members of the Covanta Fairfield staff.
- Routine inspection and testing of all safety related equipment and protective devices includes emergency breathing gear, fire fighting equipment, first aid supplies, and gas detectors. The objective is to demonstrate the correct operability of the piece of equipment, its availability for use in an emergency and its physical condition with regard to its future use.
- Safety bulletins or posters are posted on the Facility bulletin boards. Such bulletins include information concerning accidents, hazards or hazardous conditions occurring elsewhere in the industry as well as safety reminders.
- The Facility Safety Committee conducts monthly plant inspections. This committee consists of the Safety Coordinator and one member from management, operations and maintenance. The inspections are intended to seek out potential or current safety hazards including permanent equipment and building features, housekeeping problems, personnel working habits, clearance violations, and tool failures. In addition to the inspections by the Safety Committee, the Covanta Fairfield staff periodically surveys the plant. These inspections also cover safety

equipment, training, records and other aspects of the Facility Safety Program. All inspections are followed by a written report of the findings and recommendations where necessary. The home office staff performs follow up inspections when serious safety problems are found. Copies of all reports are retained in the facility as well as forwarded to the Covanta Fairfield office.

8.2 Safety Equipment

In order to maintain and enhance worker safety, Covanta is outfitted with all required and up-to-date plant and personnel safety devices. Each plant worker is issued personnel devices such as safety harnesses; hard hats sight protection, hearing protection and protective clothing. The shift supervisors are required to maintain and issue the larger and limited stocked item such as portable SCBA units, respirators, hazardous gasses detection meter, and stretchers. There are also a number of fully stocked first-aid stations through out the plant. This device along with user training ensures the plant meets all OSHA and local worker safety mandates.

8.3 Contingency Plan

The Facility Manager has developed comprehensive Emergency Plans of response for the following conditions:

- Spill Prevention Control and Counter Measure Plan
- Fire and General Emergency Plan
- Crisis Management Plan

These procedures are designed to permit frame of reference for all types of emergencies and will in all cases provide for close coordination and cooperation with local agencies.

8.4 Fire Prevention/Fire Fighting

An integral part of the Safety Program and the Emergency Plans, fire prevention and inspection, and fire fighting capability is among the top priority requirements of the Facility. Employee awareness of the possibility and dangers of fire as well as the means of preventing fires shall be a frequent topic if Safety Meetings and the subject of bulletin board posters. Training sessions and drills will also instruct employees in:

- Emergency escape procedures and route assignments
- Emergency equipment operation or shutdown procedures
- Emergency rescue and medical assignments
- Fire fighting team assignments and response procedures
- Fire reporting, communications and coordination procedures with local fire authorities.

The designated Facility Safety Coordinator contacts the Local Fire Department to review the Facility's fire procedures and to establish an effective method of communication and coordination with that authority. The local authority has

been invited to offer recommendations for in-plant fire response and assistance in training the Facility staff.

LEE COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY

ENVIRONMETAL COMPLIANCE ASSURANCE PLAN

COVANTA ENERGY OF LEE, INC.

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APPENDICES

I. Environmental Compliance Assurance Plan

Objective:

This Environmental Compliance Assurance Plan has been established to assure compliance with all environmental permits and regulations including all Federal, State, County, Regional and Local requirements.

Plan Responsibility

The Facility Manager has the responsibility to:

- Implement this plan
- Train facility employees to the plan
- Record and maintain training records
- Review and up-date the plan yearly

Procedure:

In order to assure environmental compliance, the following activities shall be carried out on an ongoing basis:

- The Environmental Compliance Engineer (assisted by the Facility Manager) shall maintain a current file of all environmental permits and applicable regulations. These permits and regulations must be reviewed periodically and all applicable changes must be reflected in facility practice.
- An Environmental Operating Instruction covering the limits imposed by all environmental permits shall be prepared for the facility operators routine use, see Appendix A.
- Inspection, repair, and calibration instructions for all environmental monitoring instrumentation and equipment shall be prepared. Implementation of a preventive maintenance program for environmental equipment is part of the Facility Maintenance System. This includes the routine, periodic inspection and calibration of the monitoring equipment.
- All personnel associated with the operation of the plant equipment, the maintenance of the environmental monitoring systems or the retention of records and preparation of reports, shall receive specific training, and periodic refresher sessions, covering the permit requirements, their responsibilities and functions, and in the case of Control Room Operators, Auxiliary Engineers, and Shift Supervisors, detailed response instructions.

- Records of all monitoring information shall be maintained for three years and made available to Florida Department

of Environmental Protection (DEP) personnel within ten working days from the time a request is made.

- The Environmental Compliance Engineer shall monitor the daily operating records, logs and readings as well as regularly check control room operations to ensure operational compliance with permits. In addition, the Environmental Compliance Engineer shall routinely inspect calibration and equipment to ensure schedules and adjustments are correctly performed.
- Periodically, a member of the Covanta Fairfield staff will visit the facility for an unannounced review of the Environmental Compliance Plan, its implementation and the facility's compliance with the limits imposed by each permit.

II. Compliance Excursions and Response Actions

Listed below are typical step-by-step responses to Continuous Emission Monitoring (CEM) excursions.

High Carbon Monoxide (CO)

1. Verify excess air and increase O2 as necessary.
2. Checks refuse composition and verify proper mixing.
3. Verify that fugitive air is not entering the furnace.
4. Increase combustion air temperature as necessary.
5. Inspect refuse fire and adjust feeders, grates and clinker rolls as necessary.
6. Verify that the Carbon Monoxide analyzer has passed recent calibration.
7. Reduce load and shutdown the unit if necessary to prevent a permit violation.

High Opacity

1. Immediately notify the Shift Supervisor and if possible, obtain visual verification if high opacity.
2. Verify that airflows, ID Fan damper position, bag house differential pressure and furnace pressure are within normal operating limits.
3. Isolate individual bag house compartments to see if opacity drops and verify that no bypass dampers have come open.
4. Verify that the Opacity monitor has passed recent calibrations and compares with actual visible stack emissions.
5. Reduce load and shutdown the unit if necessary to prevent a permit violation.

High Sulfur Dioxide (SO2)

1. Verify the Spray Dryer Atomizer (SDA) is running.
2. Verify proper slurry flow to the Spray Dryer Atomizer Head.
3. Verify that proper slurry density is supplied to the SDA.
4. Verify that the flue gas inlet conditions are suitable for optimum SO2 absorption in the reactor. (400 – 450 degrees F).

5. Verify that the tipping floor operator and the crane operator are locating ad removing high SO2 fuel sources and a homogeneous blend of refuse is being fed to the furnace.
6. Verify whether the SO2 analyzer has passed recent calibration.
7. Reduce boiler load, and if necessary, take the unit off line to prevent a permit violation.

High Nitrogen Oxides (NO)

1. Verify gaseous ammonia is flowing to the SNCR nozzles.
2. Verify excess air and decrease O2 as appropriate.
3. Verify that the temperature at the nozzles is between 1500 & 1600 degrees F
4. Check refuse composition and verify proper mixing.
5. Verify under fires air temperature is correct fro BTU content of the refuse.
6. Verify that bed thickness is correct and even across the width of the grates.
7. Verify that the Nitrogen Oxide analyzer has passed recent calibrations.
8. Reduce load and shutdown the unit if necessary to prevent a permit violation.

Low Furnace Temperature

1. Verify temperature is decaying or returning to an acceptable level.
2. If decaying, change stoker control furnace temperature.
3. Adjust the furnace temperature to 1800 degrees F above the grate.
4. Slowly decrease UFA curve steps until temperature begins to rise.
5. When temperature is back to normal change stoker control to modified O2.
6. If needed, fire the propane gas burners during this procedure to maintain the furnace roof temperature above 1270 degree F and a minimum temperature of 1800 degree F above the grate.

III. LIST OF ENVIRONMENTAL COMPLAINCE COORDINATORS

Environmental Compliance Engineer: Chief Engineer

Alternate, Environmental Compliance Engineer: Maintenance Supervisor

Environmental Compliance Coordinators: Shift Supervisor

At all times, a Compliance Coordinator, (Shift Supervisor) will be on duty at the facility and will be responsible for coordinating all environmental response measures.

The environmental Compliance Engineer, his/her alternate and all Compliance Coordinators shall be thoroughly familiar with all aspects of this program, all operations and activities, the location of all records and the facility layout. The Compliance Engineers and Coordinators shall have the authority to commit the resources necessary to carry out this program.

IV. DUTIES AND RESPONSIBILITIES OF THE COORDINATOR

1. During a non-compliance event the Compliance Coordinator (Shift Supervisor) will be notified immediately by the person discovering the problem. The Compliance Coordinator will assess the situation, and take corrective action, as determined by the problem and his/her evaluation of it.
2. Should the Compliance Coordinator decide that a non-compliance event exists, he/she will notify the Environmental Compliance Engineer (or alternate) who will then notify the Facility Manager and appropriate emergency response agencies. The agencies are listed in Appendix D, and will be notified if a potential for severe health and/or environmental hazards exist.
3. In the event that neither the Environmental Compliance Engineer nor his/her alternate can be contacted, the Coordinator will notify the Facility Manager.
4. The Facility Manager will contact the Vice President, Resource Recovery Operations or his designed alternate.
5. The above notification procedure will be located in the Control Room.

V. NOISE, ODOR, AND DUST CONTROL

Noise Control

The facility will maintain noise levels in accordance with those levels referenced in the Lee County Noise Ordinance. Energy releasing equipment such as safety valves and vents are equipped with silencers. Trucks not properly equipped and exceeding the permitted noise level (66 dBA from 10:00 p.m. to 7:00 a.m.) will not be denied access to the facility.

Odor Control

All doors at the tipping building are closed at times other then receiving hours.

The refuse is sprayed with a deodorizer as needed.

The tipping building is designed to operate at a negative pressure. The forced draft fans take air from the tipping building for the combustion process thereby maintaining a negative pressure in the building. Odors are removed along with the air for combustion.

Dust Control

As a means of dust control, it is normal routine that all doors to the main building and auxiliary structures throughout the facility site are kept closed except when being used.

Dust control in the main building is further achieved by drawing boiler combustion air from the tipping hall. Air-borne dust is this carried into the combustion process with the combustion air.

During periods of dry weather or other times of heavy dust conditions, the refuse pit is sprayed with water. Roadways and other paved areas throughout the

facility site are routinely cleaned with a mechanical sweeper. Particular attention is paid to the entrance and exit roadways at the ash handling building.
APPENDIX A

Environmental Operating Instructions

1. **Emission Limits**

   a. Opacity:
   In no case shall visible emissions from each bag house exhaust exceed 10% opacity (six minute average)

   b. Sulfur Dioxide (SO2):
   29 ppmdv corrected to 7% O2; 24 hour geometric or at least 80% removal efficiency, which ever is least restrictive. In no case shall SO2 emissions exceed 0.150 lbs/MMBtu per unit, 41 lbs/hr/unit, and 163.3 tons/year, per unit.

   c. Carbon Monoxide:
   100 ppmdv at 7% O2, 4-hour block average beginning at midnight. In no case shall CO emissions exceed .10 lbs/MMBtu, 27.2 lbs/hr/unit, and 108 tons/year, per unit.

   d. Nitrogen Oxides (NOx):
   180 ppmdv at 7% O2, 24 hour daily block average (midnight to midnight). In no case shall NOx emissions exceed 0.290 lbs/MMBtu, 80 lbs/hr/unit, and 320 tons/year, per unit.

2. **Fuel Limits**

The two mass burn municipal waste combustion units have a maximum permitted capacity of 660 tons/day/unit for a total capacity not to exceed 1320 tons/day; and a maximum heat input of 275 MMBtu/hr/unit for a total heat input not to exceed 550 MMBtu/hr, based on a municipal solid waste average heating valve of 5000 Btu/lb.

Auxiliary burners for each unit shall be fired only by propane gas and shall not exceed a 10% capacity factor.

APPENDIX B

Environmental Instrumentation

As required by the DEP, CEM monitors with recorders shall be installed, calibrated, maintained and operated for the following:
Carbon Monoxide, Oxygen, Nitrogen Oxide, Opacity, Sulfur Dioxide (for Sulfur Dioxide one monitor shall be located upstream of the Scrubber and one shall be located downstream of the Bag house), total steam production (lbs/hr, pressure, and temperature), power generation, ammonia injection rate, slacked lime, activated carbon injection or usage rates, and combustion zone temperature.

APPENDIX C

Reporting Requirements

1. **Excess Emissions**

   a. The DEP shall be notified immediately of any period of non-compliance.

   b. Excess Emission Reports (EER) for any calendar quarter during which there are excess emissions from the facility shall be submitted to the DEP. If there are no excess emissions during the calendar quarter a quarterly report stating that no excess emissions occurred shall be submitted.

2. **Records**

   a. Records shall be maintained for all data collected from in-stock monitoring instruments, the results of all source or performance tests, CEM maintenance and repair, calibration logs for all instruments and daily records of operating hours, tons of MSW processed, steam production, electrical generation, propane gas use and the amount of ammonia, activated carbon, or other chemicals used for NOx and mercury control.

   b. All monitoring information shall be retained for at least three years following the date of each report. Records of MSW fired to each combustor and the weight percent of tires being combusted on an estimated weekly basis shall be kept for the life of the facility. All records shall be available for inspection by the DEP and Lee County upon request.

Covanta Energy, Lee County
Emergency Notification

Regional Manager
Mr. Oscar Allen
(256) 603-8686 or (256) 586-7751

Facility Manager
Mr. Jody Howard
(239) 633-3940 or (239) 561-6463

Chief Engineer
Mr. Mike Duff
(239) 633-5314 or (239) 772-8838

Maintenance Supervisor
Mr. Russell Harbison
(239) 633-5615 or (239) 728-9800

Spill Notification phone numbers for release of hazardous substances.

National Response Center
US Coast Guard/USEPA
800-424-8802

DEP – South Florida District
(239) 332-6975

OSHA – Tampa Office
(813) 228-2821

Fire Department (Tice)
911

Ambulance
911

Police Department
911

Chlorine Emergency
800-424-9300

NOTE: USE 911 FOR ALL FIRE & MEDICAL EMERGENCIES

MALCOLM PIRNIE

COMPLIANCE REPORT

EXHIBIT 13

COMPLIANCE REPORT AND PLAN

A copy of the Executive Summary of the Environmental Test Report for the most recent stack testing (performed June 22-24, 2004) is included in this Exhibit 13. The report indicated no instances of noncompliance, so a Compliance Plan is not included. A full report is on file with the Department.

Covanta Lee, Inc.
A Covanta Energy Company
10500 Buckingham Road
Fort Myers, FL 33905
Tel 239 337 2200
Fax 239 337 2510

ENVIRONMENTAL TEST REPORT

VOLUME I

EXECUTIVE SUMMARY - COV REPORT NO. 3010

August 6, 2004

PREPARED FOR:	Covanta Lee, Inc. 10500 Buckingham Road Suite 400 Ft. Myers, FL 33905
REGULATORY AGENCY:	Florida Department of Environmental Protection Title V Permit No. 0710119-003-AV.
TEST DATES:	June 22 - 24, 2004
ASSOCIATED REPORT:	COV Report No. 3010
PREPARED BY:	Covanta Lee, Inc.

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1.0 INTRODUCTION

This Executive Summary is intended to present data collected during the test program which demonstrates compliance with permit emission limits. All test procedures conducted during the test program are listed in the Section 3.0, Schedule of Activities (Table 3.2). The Schedule of Activities includes a brief description of any sampling problem or issue with normal plant operation. The testing Contractor Report (Volume 2) includes all data gathered at the site and all laboratory analytical data. A review of both the Executive Summary and Contractor Report should be done for complete understanding of the test program.

Covanta Lee, Inc. performed compliance emission tests at the Lee County Solid Waste Resource Recovery Facility from June 22-24, 2004. The objective of this test program was to demonstrate compliance with the emission limit provisions of the Florida Department of Environmental Protection Title V, Permit No. 0710119-003-AV. The testing was performed by TESTAR, Inc. in accordance with procedures in the test protocol.

The Lee County Solid Waste Resource Recovery Facility is located in Ft. Myers, FL. The facility consists of two identical municipal solid waste-fired boilers of Martin GmbH Stoker Combustion System design. The facility is nominally rated at 1320 tons of municipal solid waste per day (660 TPD/boiler) and generates approximately 40 megawatts of electricity.

A summary of emission test results for Units 1 and 2 is presented in Section 2.0, Tables 2.1-2.4. A complete summary of all data and events that occurred during the test program is presented in the Contractor Report.

The test program, as indicated in the Source Test Plan (COV Report No. 2693) is presented in Section 3.0, Table 3.1. The Schedule of Activities at the site is presented in Table 3.2. Test observers and test participants are presented in Table 3.3. The maximum demonstrated particulate matter device inlet temperature, carbon injection rate and steam rate is presented in the Appendix A.

Arsenic, beryllium, fluoride, sulfuric acid mist, ammonia and VOC parameters were tested during the 2000 base year compliance tests. These parameters will be tested again prior to the renewal of the Title V permit during the 2005 base year.

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	RUN (1) 1	2	3	Average	Permitted Maximum Emission Limit
INLET					
Hydrogen Chloride ppm @ 7% O_2	703	717	799	740	____
Mercury ug/DSCM @ 7% O2	154	126	240	173	____
Sulfur Dioxide ppmvd @ 7% O_2	60.8	46.7	84.6	64.0	____
STACK					
Carbon Monoxide ppm @ 7% O_2	8.08	7.50	6.99	7.52	100
Dioxins/Furans ng/DSCM @ 7% O_2	7.98	7.20	7.61	7.60	30
Hydrogen Chloride ppm @ 7% O_2	22.9	21.3	20.3	21.5	25
Mercury ug/DSCM @ 7% O_2	24.4	15.0	28.9	22.8	70
Cadmium mg/DSCM @ 7% O_2	0.000157	0.000258	0.000266	0.000227	0.44
Lead mg/DSCM @ 7% O_2	0.00192	0.00478	0.00334	0.00334	0.040
Nitrogen Oxides ppm @ 7% O_2	162	161	162	162	180
Particulate Gr/DSCF @ 7% O_2	0.000958	0.00113(2)	0.000626	0.000906	0.010
Sulfur Dioxide ppm @ 7% O_2	1.246	0.115	0.141	0.501	29

(1) Run number used in this report for valid data. Actual field replicate number may vary owing to conditions existing at site.

(2) Conducted under normal soot blowing conditions.

TABLE 2.1 A

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, lb/hr					
Carbon Monoxide	2.17	2.04	1.91	2.04	27.2
Dioxins/Furans	1.92E-06	1.73E-06	1.89E-06	1.85E-06	7.0E-06
Hydrogen Chloride	7.82	7.27	7.05	7.38	17.70
Mercury	5.50E-03	3.43E-03	6.72E-03	5.22E-03	0.0379
Lead	4.31E-04	1.10E-03	7.77E-04	7.68E-04	0.165
Nitrogen Oxides	71.5	72.2	72.6	72.1	80
Particulate	0.533	0.613 (1)	0.320	0.489	5.34
Sulfur Dioxide	0.765	0.072	0.088	0.308	41

(1) Conducted under normal soot blowing conditions.

TABLE 2.1 B

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, Ton/Year [1]					
Carbon Monoxide	9.5	8.9	8.4	8.9	108
Dioxins/Furans	8.41E-06	7.58E-06	8.28E-06	8.10E-06	2.80 E -06
Hydrogen Chloride	34.25	31.84	30.88	32.32	70.7
Mercury	0.0241	0.0150	0.0294	0.0229	0.166
Lead	0.0019	0.0048	0.0034	0.0034	0.66
Nitrogen Oxides	313	316	318	316	320
Particulate	2.33	2.68 [2]	1.40	2.14	21.3
Sulfur Dioxide	3.35	0.32	0.39	1.35	163.3

(1) The ton/yr emission rate is based on 8,760 hr/yr, which is derived from 100% boiler availability during the year. The facility did not operate at 100% boiler availability during the 2003 calendar year. Thus, the actual emissions in tons per year are less than the value above based upon actual boiler availability.

(2) Conducted under normal soot blowing conditions.

TABLE 2.1 C

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, lb/MMBtu [1]					
Carbon Monoxide	0.008	0.008	0.007	0.008	0.10
Dioxins/Furans	7.17E-09	6.47E-09	6.84E-09	6.83E-09	2.54E-08
Hydrogen Chloride	0.0312	0.0290	0.0276	0.0293	0.644
Mercury	2.20E-05	1.34E-05	2.60E-05	2.05E-05	0.000138
Lead	1.72E-06	4.29E-06	3.00E-06	3.00E-06	0.00060
Nitrogen Oxides	0.279	0.277	0.278	0.278	0.290
Sulfur Dioxide	0.003	0.000	0.000	0.001	0.150

[1] Calculated based on an F_d factor of 9570 dscf/10^6 Btu (40 CFR 60 Appendix A, Method 19, Section 3.1).

TABLE 2.1 D

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Alternate Emission Limit
Removal Efficiencies, %(1)					
Hydrogen Chloride ppm @ 7% O_2	96.7	97.0	97.5	97.1	≥95%
Mercury ug/DSCM @ 7% O2	84.2	88.1	88.0	86.7	≥85%
Mercury lb/hr	83.3	87.9	87.2	86.2	≥85%
Sulfur Dioxide ppm @ 7% O_2	98.0	99.8	99.8	99.2	≥80%

(1) Removal efficiencies are alternative compliance limit that can be satisfied to demonstrate compliance with a pollutant's emission standard.

TABLE 2.2

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	RUN [1] 1	2	3	Average	Permitted Maximum Emission Limit
INLET					
Hydrogen Chloride ppm @ 7% O_2	648	900	786	778	----
Mercury ug/DSCM @ 7% O2	89.5	83.3	110	94.2	----
Sulfur Dioxide ppmvd @ 7% O_2	70.5	97.6	95.2	87.8	----
STACK					
Carbon Monoxide ppm @ 7% O_2	5.74	7.50	6.19	6.47	100
Hydrogen Chloride, ppm @ 7% O_2	20.6	32.9	28.8	27.4	25
Mercury, ug/DSCM @ 7% O_2	16.7	13.5	14.3	14.8	70
Cadmium mg/DSCM @ 7% O_2	0.000586	0.000383	0.000737	0.000569	0.040
Lead mg/DSCM @ 7% O_2	0.0116	0.00466	0.00966	0.00863	0.44
Nitrogen Oxides ppm @ 7% O_2	159	156	154	156	180
Particulate Gr/DSCF @ 7% O_2	0.00351	0.00146 [2]	0.00136	0.00211	0.010
Sulfur Dioxide ppm @ 7% O_2	0.925	10.0	6.84	5.93	29

(1) Run number used in this Executive Summary is used to represent valid data. Actual field replicate number may vary owing to conditions existing at site.

(2) Conducted under normal soot blowing conditions.

TABLE 2.2 A

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, lb/hr					
Carbon Monoxide	1.55	2.00	1.65	1.74	27.2
Hydrogen Chloride	7.03	11.2	9.54	9.26	17.70
Mercury	3.76E-03	2.95E-03	3.13E-03	3.28E-03	0.0379
Lead	2.60E-03	1.02E-03	2.11E-03	1.91E-03	0.165
Nitrogen Oxides	70.6	68.5	67.4	68.8	80
Particulate	1.76	0.720 (1)	0.701	1.06	5.34
Sulfur Dioxide	0.571	6.10	4.18	3.62	41

(1) Conducted under normal soot blowing conditions.

TABLE 2.2 B

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, Ton/year [1]					
Carbon Monoxide	6.8	8.8	7.2	7.6	108
Hydrogen Chloride	30.79	49.06	41.79	40.56	2.80 E -06
Mercury	0.0165	0.0129	0.0137	0.0144	0.166
Lead	0.01	0.00	0.01	0.01	0.66
Nitrogen Oxides	309	300	295	301	320
Particulate	7.71	3.15 [2]	3.07	4.64	21.3
Sulfur Dioxide	2.50	26.72	18.31	15.86	163.3

(1) The ton/yr emission rate is based on 8,760 hr/yr, which is derived from 100% boiler availability during the year. The facility did not operate at 100% boiler availability during the 2003 calendar year. Thus, the actual emissions in tons per year are less than the value above based upon actual boiler availability.

(2) Conducted under normal soot blowing conditions.

TABLE 2.2 C

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
Emission Rate, lb/MMBtu [1]					
Carbon Monoxide	0.006	0.008	0.006	0.007	0.10
Hydrogen Chloride	0.0281	0.0448	0.0392	0.0374	0.644
Mercury	1.50E-05	1.21E-05	1.28E-05	1.33E-05	0.000138
Lead	1.04E-05	4.18E-06	8.68E-06	7.75E-06	0.00060
Nitrogen Oxides	0.273	0.269	0.264	0.269	0.290
Sulfur Dioxide	0.002	0.024	0.016	0.014	0.150

[1] Calculated using an F_d factor of 9570 dscf/10^6 Btu (40 CFR 60 Appendix A, Method 19, Section 3.1).

TABLE 2.2 D

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Alternate Emission Limit
Removal Efficiencies, %					
HCl ppm @ 7% O_2	96.8	96.3	96.3	96.5	≥95%
Mercury ug/DSCM @ 7% O2	81.3	83.8	87.0	84.0	≥85%
Mercury lb/hr	80.8	84.1	87.0	84.0	≥85%
Sulfur Dioxide ppm @ 7% O_2	98.7	89.7	92.8	93.7	≥80%

(1) Removal efficiencies are alternative compliance limit that can be satisfied to demonstrate compliance with a pollutant's emission standard.

TABLE 2.3

SUMMARY OF SOURCE TEST RESULTS - DIOXINS AND FURANS - UNIT 1 (1)

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
STACK					
ng/DSCM @ 7% O_2	7.98	7.20	7.61	7.60	30
lbs/hr	1.92E-06	1.73E-06	1.89E-06	1.85E-06	7.0E-06
Tons/yr (2)	8.41E-06	7.58E-06	8.28E-06	8.10E-06	2.80 E -06
lbs/MMBtu (3)	1.92E-06	1.73E-06	1.89E-06	1.85E-06	7.0E-06

(1) Results are based on total Dioxins and Furans (tetra thru octa-chlorinated dioxins and furans).

(2) The ton/yr emission rate is based on 8,760 hr/yr, which is derived from 100% boiler availability during the year. The facility did not operate at 100% boiler availability during the 2003 calendar year. Thus, the actual emissions in tons per year are less than the value above based upon actual boiler availability.

(3) Calculated using an F_d factor of 9570 dscf/10^6 Btu (40 CFR 60 Appendix A, Method 19, Section 3.1).

TABLE 2.4

SUMMARY OF SOURCE TEST RESULTS - Ash Building and Lime Silo

Pollutant	RUN 1	RUN 2	RUN 3	Average	Permitted Maximum Emission Limit
Ash Building					
Opacity, %	0	0	0	0	5
Lime Silo					
Opacity, %	0	0	0	0	5
Ash Handling System					
Fugitive Emissions, %	0	0	0	0	5

3.0 TEST PROGRAM

TABLE 3.1

TEST PROGRAM

Parameter	Permit Condition	Method	Location	Unit
Particulate Matter (PM) [1]	A.46	EPA Method 5	Stack	1, 2
Sulfur Dioxide (SO_2)	A.49	EPA Method 6C	Stack	1, 2
Hydrogen Chloride (HCl) [3]	A.50	EPA Method 26	Inlet/Stack	1, 2
Carbon Monoxide (CO)	A.56	EPA Method 10	Stack	1, 2
Nitrogen Oxides (NOx)	A.52	EPA Method 7E	Stack	1, 2
Multi-metals (MMTL) [3]	A.47, A.48	EPA Method 29	Inlet/Stack	1, 2
Dioxins/Furans (PCDD/PCDF) [4]	A.51	EPA Method 23	Stack	1
Oxygen (O_2)		EPA Method 3A	Inlet/Stack	1, 2
Carbon Dioxide (CO_2)				
Opacity [1] [2]	A.46	EPA Method 9	Stack, Ash Bldg., Ash, Lime Silo	1, 2
Fugitive Emissions	A.60	EPA Method 22	Ash conveyor	

(1) One compliance test run was conducted under normal soot blowing conditions. A sampling duration of 120 minutes was used to ensure that the required volume of gas (60 ft^3) is captured.

(2) One hour runs were conducted simultaneously with one particulate test run. In addition, opacity was observed during operation of the lime silo.

(3) HCl and Hg were sampled at the inlet and stack locations. Each parameter was sampled at the inlet and outlet simultaneously.

(4) In accordance with 60.58b(g)(5)(ii), the alternate testing schedule for dioxin/furan performance testing was conducted on Unit 1. Unit 2 was tested during 2003 compliance testing.

TABLE 3.2
SCHEDULE OF ACTIVITIES

Run Date	Run Time	Run Number	Sampling Method	Flue Gas Parameter	Test Location
6/22/2004	0830-1034	1-S-M5-1	EPA 5	Particulate	Unit #1 Stack
	0830-1034	2-S-M5-1	EPA 5	Particulate	Unit #2 Stack
	0900-1000	1-S-M9-1	EPA 9	Opacity	Unit #1 Stack
	0900-1000	2-S-M9-1	EPA 9	Opacity	Unit #2 Stack
	1056-1418	1-S-M5-2	EPA 5	Particulate	Unit #1 Stack
	1100-1419	2-S-M5-2	EPA 5	Particulate	Unit #2 Stack
	1130-1240	M22-1	EPA 22	Fugitive Emissions	Ash Handling System
	1505-1709	1-S-M5-3	EPA 5	Particulate	Unit #1 Stack
	1506-1710	2-S-M5-3	EPA 5	Particulate	Unit #2 Stack
	1515-1625	M22-2	EPA 22	Fugitive Emissions	Ash Handling System
6/23/2004	0740-0810	ABB-M9-1	EPA 9	Opacity	Ash Building Baghouse
	0815-0925	M22-3	EPA 22	Not Applicable	Fugitive Emissions
	0815-1222	1-S-M23-1	EPA M23	Dioxins/Furans	Unit #1 Stack
	0930-1040	M22-4	EPA 22	Fugitive Emissions	Ash Handling System
	1135-1420	2-S-M29-1	EPA 29	Metals	Unit #2 Stack
	1135-1422	2-I-M29-1	EPA M29	Mercury	Unit #2 SDA Inlet
	1136-1236	2-I-MM26-1	EPA MM26	Hydrogen Chloride	Unit #2 SDA Inlet
	1136-1236	2-S-MM26-1	EPA MM26	Hydrogen Chloride	Unit #2 Stack
	1201-1322	2-I-CEM-4/5	EPA 3A & 6C	Sulfur Dioxide	Unit #2 SDA Inlet
	1201-1322	2-O-CEM-4/5	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #2 FF Outlet
	1301-1714	1-S-M23-2	EPA 23	Dioxins/Furans	Unit #1 Stack
	1329-1429	2-I-MM26-2	EPA 26	Hydrogen Chloride	Unit #2 SDA Inlet
	1329-1429	2-S-MM26-2	EPA 26	Hydrogen Chloride	Unit #2 Stack
	1345-1457	2-I-CEM-6/7	EPA 3A & 6C	Sulfur Dioxide	Unit #2 SDA Inlet
	1345-1457	2-O-CEM-6/7	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #2 FF Outlet
	1500-1530	LS-M9-1	EPA 9	Opacity	Lime Silo Vent

Run Date	Run Time	Run Number	Sampling Method	Flue Gas Parameter	Test Location
	1510-1622	2-I-CEM-8/9	EPA 3A & 6C	Sulfur Dioxide	Unit #2 SDA Inlet
	1510-1622	2-O-CEM-8/9	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #2 FF Outlet
	1527-1723	2-S-M29-2	EPA 29	Metals	Unit #2 Stack
	1527-1727	2-I-M29-2	EPA 29	Mercury	Unit #2 SDA Inlet
	1550-1650	2-I-MM26-3	EPA 26	Hydrogen Chloride	Unit #2 SDA Inlet
	1550-1650	2-S-MM26-3	EPA 26	Hydrogen Chloride	Unit #2 Stack
	1805-2026	2-S-M29-3	EPA 29	Metals	Unit #2 Stack
	1805-2028	2-I-M29-3	EPA 29	Mercury	Unit #2 SDA Inlet
6/24/2004	0856-1122	1-S-M29-1	EPA 29	Metals	Unit #1 SDA Inlet
	0856-1125	1-I-M29-1	EPA 29	Mercury	Unit #1 SDA Inlet
	0857-0957	1-I-MM26-1	EPA 26	Hydrogen Chloride	Unit #1 Stack
	0857-0957	1-S-MM26-1	EPA 26	Hydrogen Chloride	Unit #1 Stack
	0931-1042	1-I-CEM-2/3	EPA 3A & 6C	Sulfur Dioxide	Unit #1 SDA Inlet
	0931-1042	1-O-CEM-2/3	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #1 FF Outlet
	1000-1414	1-S-M23-3	EPA 23	Dioxins/Furans	Unit #1 Stack
	1035-1135	1-I-MM26-2	EPA 26	Hydrogen Chloride	Unit #1 SDA Inlet
	1035-1135	1-S-MM26-2	EPA 26	Hydrogen Chloride	Unit #1 Stack
	1055-1210	1-I-CEM-4/5	EPA 3A & 6C	Sulfur Dioxide	Unit #1 SDA Inlet
	1055-1210	1-O-CEM-4/5	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #1 Stack
	1210-1433	1-S-M29-2	EPA 29	Metals	Unit #1 Stack
	1210-1437	1-I-M29-2	EPA 29	Mercury	Unit #1 Stack
	1211-1311	1-I-MM26-3	EPA 26	Hydrogen Chloride	Unit #1 SDA Inlet
	1211-1311	1-S-MM26-3	EPA 26	Hydrogen Chloride	Unit #1 Stack
	1224-1338	1-I-CEM-6/7	EPA 3A & 6C	Sulfur Dioxide	Unit #1 SDA Inlet

Run Date	Run Time	Run Number	Sampling Method	Flue Gas Parameter	Test Location
	1224-1338	1-O-CEM-6/7	EPA 3A, 6C, 7E, & 10	Sulfur Dioxide, Nitrogen Oxides, and Carbon Monoxide	Unit #1 Stack
	1513-1730	1-S-M29-3	EPA 29	Metals	Unit #1 SDA Inlet
	1513-1732	1-I-M29-3	EPA 29	Mercury	Unit #1 Stack

TABLE 3.3

TEST PARTICIPANTS

Covanta Projects, Inc.

Daryll Fickling

Covanta Lee, Inc.

Becky Macionski

TESTAR, Inc.

Herb Dixon, PE
Jeff Coppedge
Bill Harris
Chris Wrenn
Sean Daley
Tom McDonald
Mike McDonald

4.0 OPERATIONAL DATA DURING EMISSION TESTING

4.0 OPERATIONAL DATA DURING EMISSION TESTING

Operational data were collected from process recorders connected to plant instruments. The operator logs are in Volume 3.

5.0 METHODOLOGY

TABLE 5.1

REFERENCES

Parameter	Test Method	Reference
PM	EPA 5	40 CFR 60, App. A
SO_2	EPA 6C	40 CFR 60, App. A
HCl	EPA 26	40 CFR 60, App. A
CO	EPA 10	40 CFR 60, App. A
NOx	EPA 7E	40 CFR 60, App. A
PCDD/PCDF	EPA 23	40 CFR 60, App. A
O_2 / CO_2	EPA 3A	40 CFR 60, App. A
Opacity	EPA 9	40 CFR 60, App. A
MMTL [1]	EPA 29	40 CFR 60, App. A
FE	EPA 22	40 CFR 60, App. A

[1] Multi-metals testing include Pb, Cd, and Hg.

Lee County Solid Waste Resouce Recovery Facility
2004 Compliance Stack Test Established Limits

	Unit Load	B/H Inlet Temp.[1]	Carbon[2]
Unit	*kilo-pounds/hour*	*degrees Fahrenheit*	*pounds/hour*
1-Train B	185	322	33.4
2-Train C	185	322	33.4

(1) In accordance with 40 CFR 60, Subpart Cb, the maximum fabric filter inlet temperature established is based on a four-hour block average.

(2) In accordance with EPA's Federal Implementation plan guidance, the activated carbon injection rate is established based on a total amount of carbon injected during an eight-hour period.

Maximum Demonstrated Unit Load
EPA Method 23 Compliance Stack Test Parameters

Unit #1	Date	Time	4 Hr Avg.*	Unit #2 **	Date	Time	4 Hr Avg.*
Unit #1- Run 1	06/23/04	0815-1222	169	Unit #1- Run 1	06/25/03	0815-1222	169
Unit #1- Run 2	06/23/04	1301-1714	168	Unit #1- Run 2	06/25/03	1301-1714	168
Unit# 1- Run 3	06/24/04	1000-1414	168	Unit# 1- Run 3	06/26/03	1000-1414	168

Permitted Limit - 110% of the HFHBA is the Maximum Unit Load
(HFHBA- Highest Four Hour Block Average) 185 kilo pounds/ hour

Permitted Limit - 110% of the HFHBA is the Maximum Unit Load
(HFHBA- Highest Four Hour Block Average) 185 kilo pounds/ hour

***The 4 hour average is based on the average of all the valid 1 minute data collected during the specified Run start time to stop time.**

****In accordance with 40 CFR 60.38(b) the facility elected the alternative test schedule for Dioxin/Furan in the 2004 compliance year. Unit #1 was tested, and the Unit #1 test conditions will apply as the operating limits for Unit #2.**

Maximum Demonstrated Particulate Matter Control Device Inlet Temperature
EPA Method 23 Compliance Stack Test Parameters

Unit #1	Date	Time	4 Hr Avg.*	Unit #2 **	Date	Time	4 Hr Avg.*
Run 1	06/23/04	0815-1222	292	Unit #1- Run 1	06/25/03	0815-1222	292
Run 2	06/23/04	1301-1714	292	Unit #1- Run 2	06/25/03	1301-1714	292
Run 3	06/24/04	1000-1414	292	Unit#1- Run 3	06/26/03	1000-1414	292

Permit Limit - 30 deg. Fahrenheit above the HFHBA is the Max. FF Inlet Temp.

(HFHBA- Highest Four Hour Block Average) 322 degrees Fahrenheit

Permit Limit - 30 deg. Fahrenheit above the HFHBA is the Max. FF Inlet Temp.

(HFHBA- Highest Four Hour Block Average) 322 degrees Fahrenheit

***The 4 hour average is based on the average of all the valid 1 minute data collected during the specified Run start time to stop time.**

****In accordance with 40 CFR 60.38Db) the facility elected the alternative test schedule for Dioxin/Furan in the 2004 compliance year. Unit #1 was tested, and the Unit #1 test conditions will apply as the operating limits for Unit #2.**

Estimated Carbon Mass Feed Rate

EPA Method 29

Unit #1	Date	Time	Average*
Run 1	06/24/04	0856-1122	33.4
Run 2	06/24/04	1210-1433	33.4
Run 3	06/26/03	1513-1730	33.4

Permitted Limit - operating parameters that are primary indicators of *the feed rate must equal the levels documented* 33.4 pounds/hour

EPA Method 23

Unit #1	Date	Time	Average*
Unit #1- Run 1	06/23/04	0815-1222	33.4
Unit #1- Run 2	06/23/04	1301-1714	33.4
Unit# 1- Run 3	06/24/04	1000-1414	33.4

Permitted Limit - operating parameters that are primary indicators of *the feed rate must equal the levels documented* 33.4 pounds/hour

***The average carbon injection rate (pounds per hour) is based upon the average of all the valid 1-minute data points collected during the specified Run start time to stop time.**

MALCOLM PIRNIE

OTHER INFORMATION REQUIRED BY RULE OR STATUTE

EXHIBIT 14

OTHER INFORMATION REQUIRED BY RULE OR STATUTE

As of the submittal date of this document, no other information related to the emissions units addressed in this application was identified as required by applicable air pollution statutes of the State of Florida or rule of the Department of Environmental Protection.