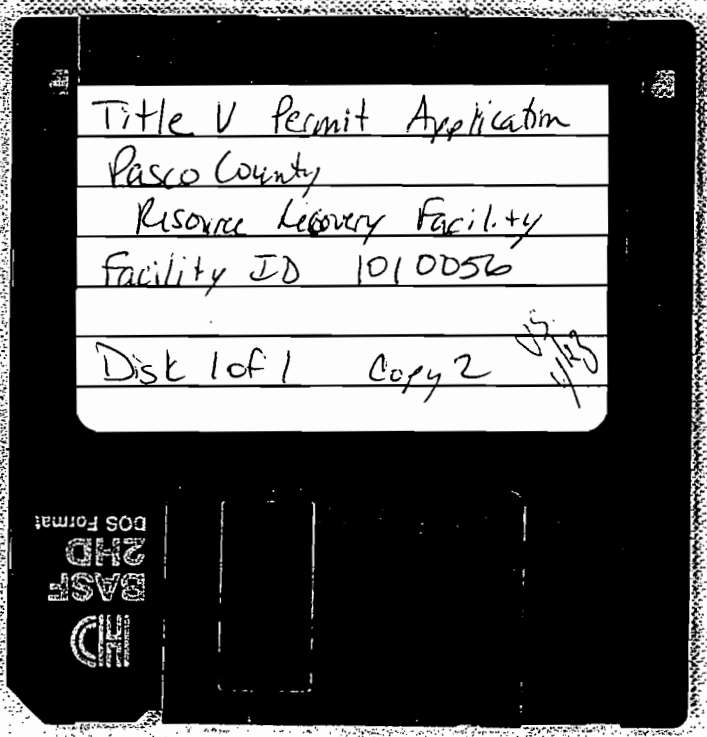
Title V Permit Application
Pasco County
Resource Recovery Facility
Facility ID 1010056
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4. Professional Engineer Statement :

I, the undersigned, hereby certified, 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 pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

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

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

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

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions 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

June 14 1996
Date

002

* Attach any exception to certification statement.

Facility Supplemental Information

Facility Applicable Regulations

LIST OF APPLICABLE REGULATIONS
PASCO COUNTY WASTE-TO-ENERGY FACILITY
INITIAL TITLE V OPERATION PERMIT APPLICATION

Facility Applicable Regulations:

Florida Title V "Core List" regulations (dated 3/25/96) applicable to the facility and any other regulations applicable to the facility or specific emission units are given below

40 CFR 52.21	Prevention of Significant Deterioration
40 CFR 82	Protection of Stratospheric Ozone (Core List)
FAC 62-4	Permits (Core List)
FAC 62-17	Electric Power Plant Siting Certification
FAC 62-103	Rules of Administrative Procedure (Core List)
FAC 62-210	Stationary Sources-General Requirements (as listed below)
FAC 62-210.300	Permits Required
FAC 62-210.300(3)(a)5	Exemption for internal combustion engines in boats, aircraft and vehicles used for transportation of passengers or freight (earth moving equipment and solid waste delivery vehicles at resource recovery facility and landfill areas)
FAC 62-210.300(3)(a)16	Exemption for brazing, soldering or welding equipment
FAC 62-210.300(3)(a)20 -(3)(a)21	Exemption for emergency electrical generators, heating units, and general purpose internal combustion engines not subject to Acid Rain Program
FAC 62-210.300(3)(b)	Temporary Exemptions (for sources on page 4)
FAC 62-210.300(1)	
FAC 62-210.300(5)	Notification of Startup (for sources shutdown > 1 year)
FAC 62-210.300(6)	Emission Unit Reclassification
FAC 62-210.350	Public Notice and Comment
FAC 62-210.350(3)	Additional Public Notice Requirements...for Title V Sources
FAC 62-210.360	Administrative Permit Corrections
FAC 62-210.370 (3)	Annual Operating Reports
FAC 62-210.550	(GEP) Stack Height Policy
FAC 62-210.650	Circumvention
FAC 62-210.700	Excess Emissions
FAC 62-210.900	Forms and Instructions
FAC 62-212.300	
FAC 62-212.400	Prevention of Significant Deterioration
FAC 62-212.410	Best Abailable Control Technology
FAC 62-213	Operating Permits for Major Sources of Air Pollution (Core List)
FAC 62-256	Open Burning and Frost Protection Fires (Core List)
FAC 62-296	Stationary Sources-Emission Standards (as listed below)

FAC 62-296.320 (2)	Objectionable Odor Prohibited
FAC 62-296.320 (3)	Industrial, Commercial, and Municipal Open Burning Prohibited
FAC 62-296.320(4)(c)	Unconfined Emissions of Particulate Matter
FAC 62-296.416	Waste-to-Energy Facilities
FAC 62-296.416(3)(e)	Specific Emission Limiting and Performance Standards Mercury Emissions Inventory (Testing Requirements)

Facility Applicable Regulations (Concluded):

Exemptions from Regulations for Facility and Specific Emission Units:

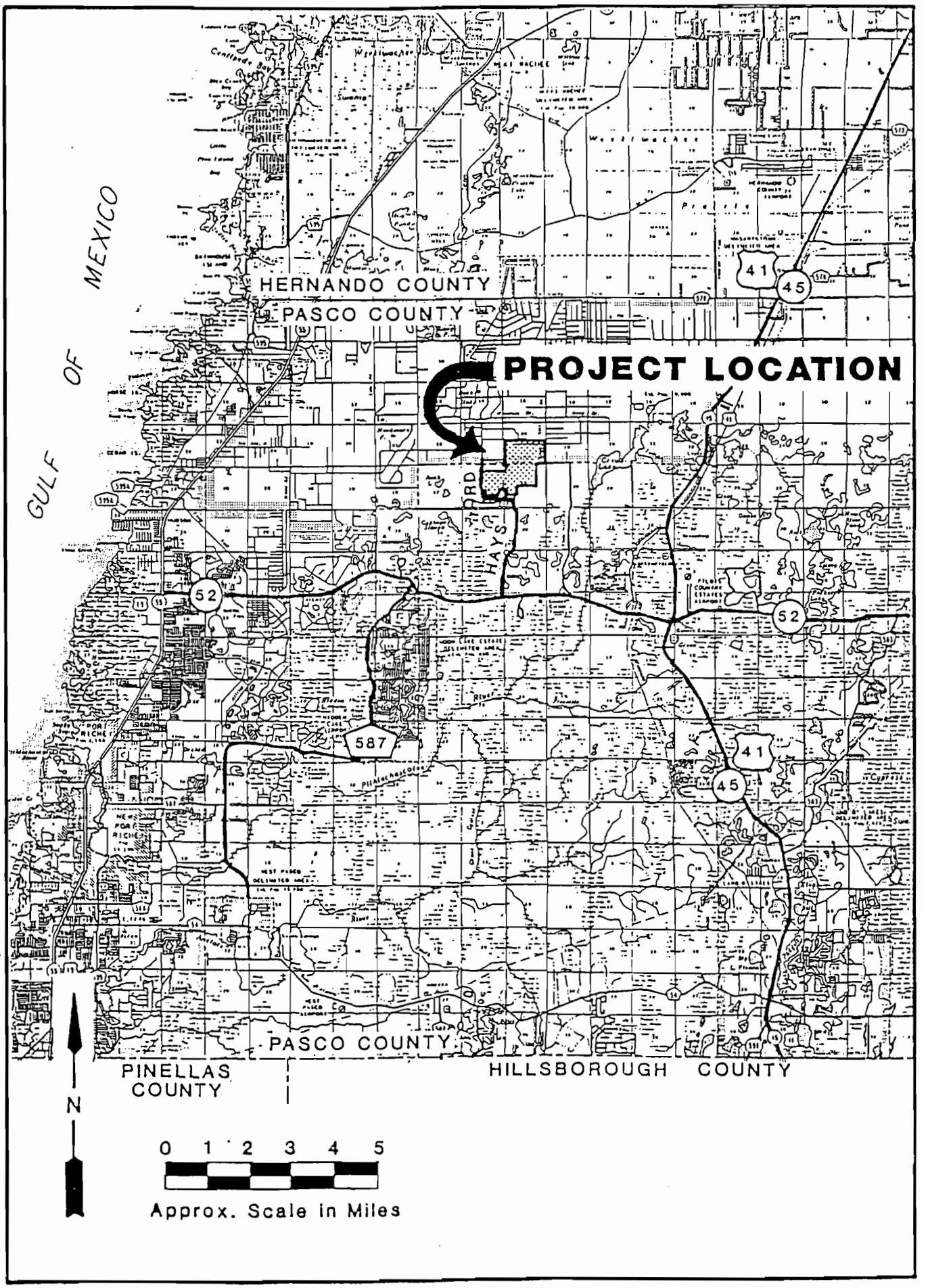
FAC 62-296.320 (4)(a)	General Particulate Emission Limiting Standards
FAC 62-296.500	RACT - VOC and NO_x Emitting Facilities NOT APPLICABLE
FAC 62-296.600	RACT - Lead NOT APPLICABLE
FAC 62-296.700	RACT - Particulate matter NOT APPLICABLE to all emission units except cyclone/wet scrubber
FAC 62-296.800	New Source Performance Standards

WC Units 1 through 3 Applicable Regulations:

40 CFR 60 Subpart A	New Source Performance Standards-General Provisions
40 CFR 60 Subpart E	Standards of Performance for Incinerators
FAC 62-210.700	Excess Emissions
FAC 62-296.320(4)(b)	General Visible Emission Standards
FAC 62-296.401(3)	Specific Emission Limiting and Performance Standards Requirements (PM/Odor) for New Incinerators (after 1/18/72) with Charging Rates equal to or greater than 50 tons per day
FAC 62-297.310(1)	Required Number of Tests
FAC 62-297.310(2)	Operating Rate during Testing
FAC 62-297.310(3)	Calculation of Emission Rate
FAC 62-297.310(4)	Applicable Test Procedures
FAC 62-297.310(5)	Required Stack Sampling Facilities
FAC 62-297.310(6)	Frequency of Compliance Tests
FAC 62-297.310(7)	Test Reports
FAC 62-297.330(1)(b)	
FAC 62-297.340	
FAC 62-297.420	
FAC 62-297.520	
FAC 62-297.570	

Facility Location Map

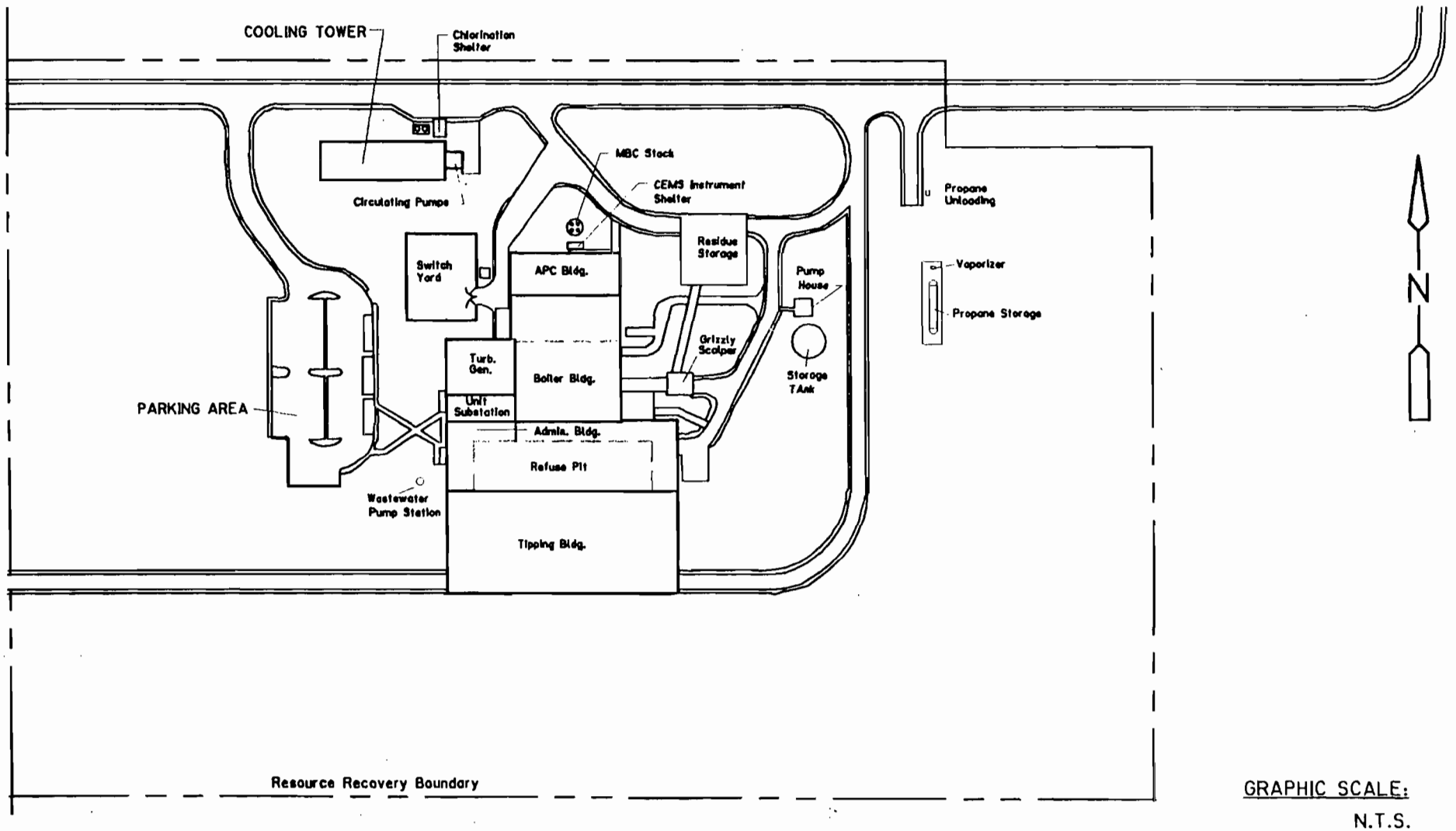
PS6T1.2



General Location Map

Facility Plot Plan

PS6T1.2



GRAPHIC SCALE:
N.T.S.

PASCO COUNTY RESOURCE RECOVERY FACILITY

SITE PLAN

CDM
environmental engineers, scientists, planners, & management consultants

Process Flow Diagram

PS6T1.2

Precautions to Prevent Emission of Unconfined Particular Matter

PS6T1.2

ATTACHMENT 5

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

Reasonable precautions include the following:

a. Roads, parking areas and yards are paved.

b. A street sweeper equipped with a vacuum system is used to remove particulate matter from roads and other paved areas.

c. The unpaved areas of the facility are maintained and either sodded or landscaped.

d. Hoods, fans, filters, or similar equipment is used to contain, capture, and/or vent particulate matter.

e. The conveyor systems of the facility are enclosed.

Fugitive Emissions Identification

PS6T1.2

ATTACHMENT 6

FUGITIVE EMISSIONS IDENTIFICATION

The following processes have been identified as contributing to fugitive emissions:

a. Mobile operating equipment including the front-end loaders, street sweeper and forklift.

b. The cooling tower.

List of Proposed Exempt Activities

ATTACHMENT 7

LIST OF PROPOSED EXEMPT ACTIVITIES

The following activities are proposed to be exempt:

1. Fire and safety equipment (Chapter 62-210.300(3)(a)22, F.A.C.).
2. Paint (Chapter 62-210.300(3)(a)23, F.A.C.).
3. Diesel storage tanks (1100 gallons and 300 gallons) (Estimated emission of VOCs were <= 1 lb/yr).
4. Vehicular traffic (Chapter 62-210.300(3)(a)5, F.A.C.).
5. Generator (Chapter 62-210.300(3)(a)25, F.A.C.).
6. Refuse pit (insignificant source, below reporting thresholds for any of the criteria pollutants).
7. Mineral spirit drums (grouped with the paint, below reporting thresholds).
8. Cooling water treatment bulk drum (container is sealed).
9. Flanges and valves (insignificant source, below reporting thresholds for any of the criteria pollutants).
10. The adjoining landfill contains only ash from the WTE facility.
11. The adjoining natural gas dryer or the leachate treatment facility.

List of Equipment Activities Regulated under Title V

ATTACHMENT 8

LIST OF EQUIPMENT/ACTIVITIES REGULATED UNDER TITLE VI

The following item at the facility is regulated under Title VI:

a. AC unit located in the administration area with a refrigerant (R22) capacity of 95 pounds.

A Typical Ogden Martin Facility

Refuse collection trucks are weighed at the scalehouse and monitored for safety. Once cleared, they enter the tipping building and dump their waste into the storage pit. An overhead crane mixes the waste in the pit and lifts the waste up into a feed chute leading to the furnace.

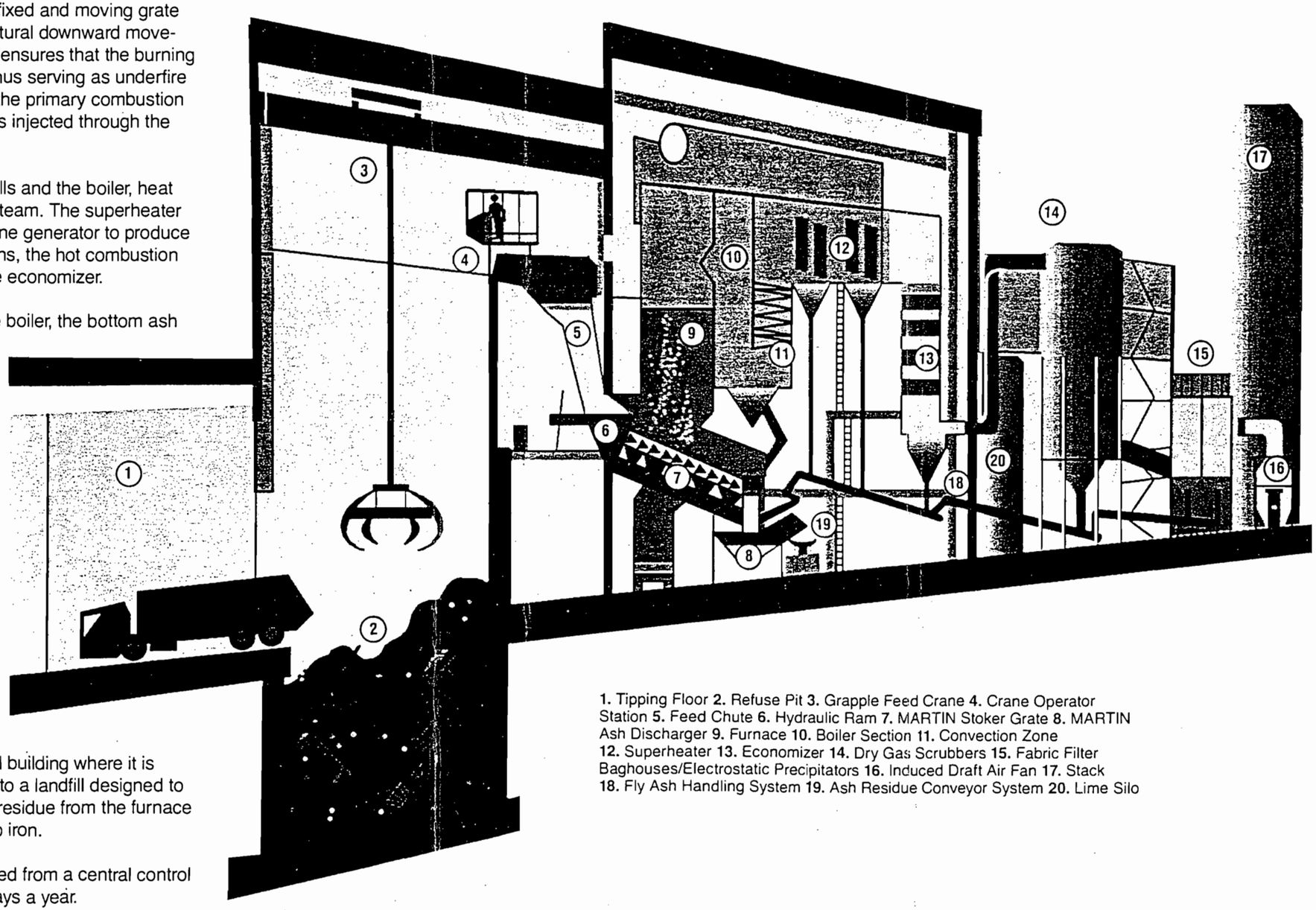
From the feed chute, waste is pushed by hydraulic ram feeders onto a stoker grate. The MARTIN Reverse-Reciprocating Stoker Grate is sloped downward and is composed of alternate rows of fixed and moving grate bars. The grate bars push upward against the natural downward movement of the waste bed. This constant movement ensures that the burning waste is continually agitated and pushed back, thus serving as underfire for freshly-fed waste. A forced draft fan supplies the primary combustion air underneath the grate. In addition, overfire air is injected through the front and rear walls of the furnace.

Inside the steel tubes that form the furnace walls and the boiler, heat from the combustion process converts water to steam. The superheater further heats the steam before it is sent to a turbine generator to produce electricity. After passing through the boiler sections, the hot combustion gases are used to preheat boiler feedwater in the economizer.

While the combustion gases move through the boiler, the bottom ash slowly makes its way to the end of the grate where it falls into the water quench trough of the Martin Ash Discharger. From the boiler, the cooled gases enter the advanced air pollution control system. Using lime slurry, the dry scrubber neutralizes any acid-forming gases, such as sulfur oxides and hydrogen chloride.

Next, particulates are captured by a high-efficiency electrostatic precipitator or by a baghouse. As the gas stream travels through these filter devices, more than 99 percent of particulate matter is removed. Captured fly ash particles fall into hoppers and are transported by an enclosed conveyor system to the Martin Ash Discharger where they are wetted to prevent dust, and mixed with the bottom ash from the grate. The ash residue is then conveyed to an enclosed building where it is loaded into covered, leak-proof trucks and taken to a landfill designed to protect against groundwater contamination. Ash residue from the furnace can be processed for removal of recyclable scrap iron.

All aspects of the plant's operation are monitored from a central control room 24 hours a day, seven days a week, 365 days a year.



1. Tipping Floor **2.** Refuse Pit **3.** Grapple Feed Crane **4.** Crane Operator Station **5.** Feed Chute **6.** Hydraulic Ram **7.** MARTIN Stoker Grate **8.** MARTIN Ash Discharger **9.** Furnace **10.** Boiler Section **11.** Convection Zone **12.** Superheater **13.** Economizer **14.** Dry Gas Scrubbers **15.** Fabric Filter Baghouses/Electrostatic Precipitators **16.** Induced Draft Air Fan **17.** Stack **18.** Fly Ash Handling System **19.** Ash Residue Conveyor System **20.** Lime Silo

Power Plant Siting Certification

PS6T1.2

BEFORE THE GOVERNOR AND CABINET OF THE STATE OF FLORIDA

In re:	APPLICATION FOR POWER PLANT SITE CERTIFICATION OF PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY	DOAH CASE NO. 87-5337 CERTIFICATION NO. PA-87-23 OGC FILE NO. 87-1587

FINAL ORDER

BY THE GOVERNOR AND CABINET

On August 23, 1988, this matter came before the Governor and Cabinet, sitting as the Siting Board pursuant to the Florida Electrical Power Plant Siting Act, Section 403.501 et seq., Florida Statutes (1987), for final action concerning a Recommended Order dated July 20, 1988, attached as Exhibit 1, which recommends certification of the Pasco County Solid Waste Resource Recovery Facility. On August 1, 1988, as allowed by Rule 17-103.200(1), F.A.C. Intervenor Shady Hills Park and Civic Association, Inc., ("the Association") filed timely exceptions to the Recommended Order. On August 9, 1988, Applicant Pasco County Board of County Commissioners ("the County") filed a timely response to the Association's exceptions.

The Association directs six exceptions to findings of fact contained in the Recommended Order. The Association challenges findings by the hearing officer that metals will be removed from incinerator ash prior to landfilling; that the County considered source separation and recycling when considering Best Available Control Technology (BACT) for the facility; and that hazardous waste, hospital waste, and infectious waste will

B. Environmental Control Program

An environmental control program shall be established under the supervision of a Florida registered professional engineer to assure that all construction activities conform to applicable environmental regulations and the applicable conditions of certification. If harmful effects or irreversible environmental damage not anticipated by the application or the evidence presented at the certification hearing are detected during construction, the Permittee shall notify the Southwest District Office as required by Condition II.

C. Reporting

1. Notice of commencement of construction shall be submitted to the Southwest District Office within 15 days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southeast District Office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the resource recovery facility or a phase thereof and upon or immediately prior to completion of all necessary preparation for the operation of each landfill cell, the Southwest District Office will be notified of a date on which a site or facility inspection should be performed in accordance with Condition V, and the inspection shall be performed within fourteen (14) days of the date of notification by Permittee.

XIV. OPERATION

A. Air

The operation of the Resource Recovery Facility shall be in accordance with all applicable provisions of Chapter 17-2, 17-5, and 17-7, Florida Administrative Code. In addition to the

foregoing, the Permittee shall comply with any and all applicable air emission standards for municipal waste incinerators adopted by the Department and the EPA under Sections 111 or 112 of the Clean Air Act, or its sucessor. The Permittee shall also comply with the following specific conditions of certification: *

1. Emission Limitations upon Operation of Units 1-3

a. Stack emissions from each unit shall not exceed the following assuming a Btu content of 4800 Btu/lb of MSW:

(1) Particulate matter: 0.015 grains per standard cubic foot dry gas corrected to 12% CO_2.

(2) SO_2: 60 ppmdv at 12% CO_2, 6-hour rolling average; or 70% reduction by weight of uncontrolled SO_2 emissions; not to exceed 100 ppmdv corrected to 7% O_2.

(3) Nitrogen Oxides: 0.643 lbs/MBtu heat input.

(4) Carbon Monoxide: 100 ppmdv corrected to 7% O_2, 8-hour rolling average.

(5) Lead: 0.0007 lbs/MBtu heat input.

(6) Mercury: 8.0 x E-4 lb/MBtu

(7) Odor: there shall be no objectionable odor at or outside the site boundary.

(8) Visible emissions: opacity shall be no greater than 15% 6-minute average except that visible emissions with no more than ~~20%~~ opacity may be allowed for up to three consecutive minutes in any one hour except during start up, shut down or malfunction when the provisions of 17-2.250,FAC, shall apply. Opacity compliance shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9, DER Method 9.

New code (62-297.401)

(9) Fluoride: 0.0080 lb/MBtu heat input.

(10) Arsenic: 9.1 x E-6 lb/MBtu heat input.

(11) Beryllium: 1.35 x E-7 lb/MBtu heat input.

(12) VOC: 0.021 lb/MBtu heat input.

(13) Hydrogen Chloride: 0.127 lb/MBtu heat input.

* Approved by Siting Board 8/23/88

b. The height of the boiler exhaust stack shall not be less than 275 feet above grade.

c. The resource recovery facility's boilers shall not be loaded in excess of either 115% of their rated nameplate capacity of 29,167 pounds of MSW or 115% of 140 x 10^6 Btu per hour each.

d. The incinerator boilers shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, and rated capacity.

e. Compliance with the limitations for particulates, sulfur oxides, nitrogen oxides, carbon monoxide, fluoride, VOC and lead shall be determined in accordance with Florida Administrative Code Rule 17-2.700, DER Methods 1,2, 3, 4, and 6 and 40 CFR 60, Appendix A, Methods 5, 7, (modified with prefilter), 10, 12, 13A or 13B (or modified method 5 for fluorides), and 18 or other methods as approved by the DER. The stack test for each unit shall be performed at ±10% of the maximum heat input rate of 140 x 10^6 Btu heat input per hour or the maximum charging rate of 29,167 pounds of MSW per hour. Compliance with the beryllium emission limitation shall be determined in accordance with 40 CFR 61, Method 103 or 104, Appendix B. Compliance testing for mercury shall be determined in accordance with 40 CFR 61, Method 101A, Appendix B. Particulate testing shall include one run during representative soot blowing which shall be averaged proportionally to normal daily operations. Visible emission testing shall be conducted simultaneously with soot blowing and non-soot blowing runs. Compliance with the opacity limit shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9., DER Method 9. Compliance with SO_2 emissions when firing supplemental oil may be determined by submission of a chemical analysis of the oil as fired.

f. Combustion efficiency shall be calculated by: $\%CE = (1/(1+(CO/CO_2))) \times 100$, and shall be at least 99.5% for an 8 hour average.

2. Emission Control Equipment

a. The boiler particulate control system shall be designed constructed and operated to achieve a maximum emission rate of 0.015 grains per dscf corrected to 12% CO_2. All other particulate control devices shall be designed to meet the provisions of Section 17-2.610, FAC.

b. The facility shall be equipped with dry scrubbers which are designed, constructed and operated to remove SO_2 at an efficiency of 70% by weight or to achieve an emission rate of 100 ppmdv at 7% O_2 which ever is less stringent and to cool the flue gases to an average temperature not to exceed 300^0F (3-hour rolling average).

c. The Permittee must submit to the Department within thirty (30) days after it becomes available, copies of technical data pertaining to the selected emissions control systems. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters. The data shall be processed and approved or denied in accordance with Condition XIII above.

3. Air Monitoring Program

a. The Permittee shall install and operate continuously monitoring devices to measure combustion temperature and flue gas temperature at the exit of the acid gas control equipment plus SO_2, CO, and CO_2 levels and opacity for each unit. The monitoring devices shall meet the applicable requirements of Chapter 17-2, Section 17-2.710, FAC, and 40 CFR 60.45, and 40 CFR 60.13, including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7 (a)(5). Re-certification shall be conducted annually from initial certification. Data on monitoring equipment specifications, manufacturer, type, calibration and maintenance needs, and its proposed location after the economizer or in the air pollution control equipment outlet duct shall be provided to the Southwest District Office for approval prior to installation together with and subject to the same provisions as submittal of air pollution

control equipment pursuant to Paragraph XIII hereof.

b. The Permittee shall provide sampling ports in the air pollution control equipment outlet duct or stack and shall provide access to the sampling ports in accordance with Section 17-2.700, FAC. Drawings of testing facilities including sampling port locations as required by Section 17-2.700 shall be submitted to the Department for approval at least 60 days prior to construction of the sampling ports and stack.

c. The Permittee shall have a sampling test of the emissions performed by a commercial testing firm within 60 days after achieving the maximum rate at which the boilers will be operated but not later than 180 days of the start of operation of the boilers and annually for particulate and NO_x from the date of testing thereafter. Thirty (30) days prior notice of the initial sampling test shall be provided to the Southwest District Office and fifteen (15) days notice before subsequent annual testing. The notification requirements of 40 CFR parts 60 and 61 will also be observed.

4. Reporting

a. Two copies of the results of the emissions tests for the pollutants listed in XIV.A.1.a. shall be submitted within forty-five days of the last sampling run to the Southwest District Office.

b. Emissions monitoring shall be reported to the Southwest District Office on a quarterly basis in accordance with Section 17-2.710, FAC, 40 CFR, Part 60, Subsection 60.7 or 40 CFR Part 61 as appropriate..

c. Notice of anticipated and actual start-up dates of each incinerator boiler shall be submitted to the DER Southwest District Office.

5. Unconfined Emissions

Proper dust control techniques such as water sprays or chemical wetting agents or other containment method shall be used to control visible unconfined (fugitive) emissions to the outside air no more than 10% opacity as determined by DER Method 9 for

FDEP Prevention
of
Significant Deterioration Permit

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

PERMITTEE:
Pasco County
7536 State Street
New Port Richey, FL 33553

Permit Number: PSD-PL-127
County: Pasco
Latitude/Longitude: 28° 22' 05"N
82° 33' 30"W
Project: Pasco County Resource Recovery Facility Units 1, 2, and 3

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a municipal solid waste (MSW) resource recovery facility with an ultimate capacity of 1200 TPD (tons per day), generating 29 MW of electricity. Initially, three combustors will be installed each with a design capacity of 350 TPD (total of 1050 TPD for the facility). The design rated heat input capacity of each unit will be 140 MMBTU/hr. The normal operating range of each unit will be between 30% and a maximum of 114% of the design rated capacity. Acid gases and particulates will be controlled by dry scrubber and baghouse technology. DER will be notified of the final choice of control/combustor equipment. The power plant site certification number for this project is PA 87-23.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted in the Specific Conditions.

Attachments are as follows:

1. Power Plant Site Certification package PA 87-23 and its associated attachments, dated April 4, 1988.
2. Letter from David Dee, for Pasco County, of August 10, 1988.
3. Letter from EPA dated September 8, 1988.
4. DER's Final Determination dated September 14, 1988.

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

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

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

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(x) Determination of Best Available Control Technology (BACT)
(x) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Municipal Solid Waste Combustor

a. Each of the three municipal waste combustors (MWC) shall have a design rated capacity of 350 tons municipal solid waste (MSW) per day, 140 million Btu heat input per hour, assuming a heating value of 4,800 Btu per pound.

b. The maximum individual MWC's throughput shall not exceed 114% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBTU/hr.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

c. The furnace mean temperature at the fully mixed zone of the combustor shall not be less than 1,800°F.

d. The normal operating range of the MWC shall be 80% to a maximum of 114% of design rated capacity.

e. The MWC shall be fueled with municipal solid waste only. Other wastes shall not be burned without specific prior written approval of Florida DER.

f. Auxiliary fuel burner(s) shall be fueled only with natural gas. If the annual capacity factor for gas is greater than 10%, as determined by 40 CFR 60.43b(d), the facility shall be subject to 40 CFR 60.44b, standards for nitrogen oxides.

g. Auxiliary fuel burner(s) shall be used at start up during the introduction of MSW fuel until design furnace gas temperature is achieved.

h. The facility may operate continuously (8760 hrs/yr).

2. Air Pollution Control Equipment Design

a. Each MWC shall be equipped with a baghouse for particulate emission control.

b. Each MWC shall be equipped with a dry scrubber for acid gas control, to remove at least 70% of SO_2 and 90% of other acid gases (namely HCL, H_2SO_4 mist, and fluorides.

c. The acid gas emission control system shall be capable of cooling flue gases to an average temperature not exceeding 300°F (3-hour rolling average).

d. DER shall be notified of the control devices chosen.

3. Flue gas emissions from each unit shall not exceed the following:

a. Particulate: 0.0150 grains/dscf corrected to 12% CO_2

b. Sulfur Dioxide: 104 ppmdv corrected to 7% O_2 3-hour (rolling) average, and 60 ppmdv corrected to 7% O_2 6-hour rolling average;

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

	or 70% reduction of uncontrolled SO_2 emissions, 6-hour rolling average. Not to exceed 100 ppmdv corrected to 7% O_2, 6-hr rolling average.
c. Nitrogen Oxides:	0.643 lb/MMBtu heat input.
d. Carbon Monoxide:	400 ppmdv corrected to 7% O_2, 1-hr average, and 100 ppmdv corrected to 7% O_2, 8-hr rolling average.
e. Volatile Organic Compounds:	0.021 lb/MMBtu heat input
f. Lead:	0.0007 lb/MMBtu heat input
g. Fluoride:	0.008 lb/MMBtu heat input
h. Beryllium:	1.35×10^{-7} lb/MMBtu heat input
i. Mercury:	0.0008 lb/MMBtu heat input
j. Visible Emissions:	Opacity of MWC emissions shall not exceed 15% opacity (6-min. average), except for one 6-min. period per hour of not more than 20% opacity. Excess emissions resulting from startup, shut down, or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions are minimized.

For each pollutant for which a continuous emissions monitoring system is required in Condition No. 5, the emission averaging time specified above shall be used to establish operating limits and reportable excess emissions.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

Compliance with the permit emission limits shall be determined by EPA reference test methods included in 40 CFR Parts 60 and 61, 1987 version, and listed in Condition No. 4 of this permit. Other DER approved methods may be used only after prior Departmental approval.

For the purpose of establishing specific increment consumption for TSP and SO_2 at the facility, an hourly emission rate shall be established for each pollutant at the time of performance testing using flue gas flow rates (corrected to 12% CO_2 or 7% O_2 at furnace capacity as appropriate) and the applicable concentration limits established above for TSP and SO_2. Projected emissions are listed below, based on 4800 Btu/lb heat content and 350 TPD MSW charging rate for each combustor (140 MMBTU/hr). Maximum emissions will be 14% above the tabulated values below and will occur at 114% of the design heat input rate.

Pollutant	lb/MMBtu Heat Input	Projected Emissions lb/hr 100%
Particulate	0.0322	4.5
Sulfur Dioxide	0.224	31.4
Nitrogen Oxides	0.643	90.0
Carbon Monoxide	0.098 [1], 0.391 [2]	13.7 [1], 54.7 [2]
Volatile Organics	0.021	2.9
Fluoride	0.008	1.1
Hydrogen Chloride	0.127	17.8
Sulfuric Acid Mist	0.035	5.0
Lead	7×10^{-4}	0.098
Mercury	8×10^{-4}	0.112
Beryllium	1.35×10^{-7}	1.9×10^{-5}
Arsenic	9.1×10^{-6}	1.3×10^{-3}

[1] 8-hr average
[2] 1-hr average

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

The combustors are subject to 40 CFR Part 60, Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements within the permit are more restrictive, the requirements of the permit shall apply.

4. Compliance Tests

a. Initial compliance tests for particulate matter, SO_2, nitrogen oxides, CO, VOC, lead, fluorides, mercury and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Annual compliance test(s) for particulate matter and nitrogen oxides shall be performed.

c. Compliance with the opacity standard shall be determined in accordance with 40 CFR 60.11(b) and (e).

d. Compliance with the requirement for 70% control of sulfur dioxide emissions will be determined by using the test methods in Condition 4.f. below or a continuous emission monitoring system for SO_2 emissions, before and after the air pollution control equipment, which meets the requirements of Performance Specification 2 of 40 CFR 60, Appendix B.

e. The compliance tests shall be conducted within ±10% of the design rated capacity for each permitted fuel.

f. Prior DER approval shall be obtained for the location of the source sampling platform(s). The following test methods and procedures of 40 CFR Parts 60 and 61 (1987 version) or other DER approved methods with prior DER approval shall be used for compliance testing:

(1) Method 1 for selection of sample site and sample traverses.
(2) Method 2 for determining stack gas flow rate.
(3) Method 3 or 3A for gas analysis for calculation of percent O_2 and CO_2.
(4) Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet.
5) Method 5 or Method 17 for concentration of particulate matter.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

(6) Method 9 for visible determination of the opacity of emissions as required in this permit in accordance with 40 CFR 60.11.

(7) Method 6, 6C, or 8 for concentration of SO_2.

(8) Method 7, 7A, 7B, 7C, 7D, or 7E for concentration of nitrogen oxides.

(9) Method 10 for determination of CO concentration.

(10) Method 12 for determination of lead concentration.

(11) Method 13B for determination of fluoride concentrations.

(12) Method 25 for determination of VOC concentration.

(13) Method 101A for determination of mercury emission rate.

(14) Method 104 for determination of beryllium emission rate.

g. The permittee shall submit to DER a list of the pertinent operating parameters which indicate proper operation of the control equipment.

5. Continuous Emission Monitoring

Continuous emission monitors for opacity, oxygen, carbon monoxide, carbon dioxide, and sulfur dioxide shall be installed, calibrated, maintained and operated for each unit.

a. Each continuous emission monitoring system (CEMS) shall meet performance specifications of 40 CFR 60, Appendix B. The SO_2 CEMS sample point shall be located downstream of control devices for each unit.

b. CEMS data shall be recorded during periods of startup, shutdown and malfunction but shall be excluded from emission averaging calculations for CO, SO_2, and opacity.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation and operation of all CEMS.

e. Opacity monitoring system data shall be reduced to 6-minute averages, based on 36 or more data points, and gaseous CEMS data shall be reduced to 1-hour averages, based on 4 or more data points, in accordance with 40 CFR 60.13(h).

f. Average CO and SO_2 emission concentrations, corrected for O_2, shall be computed in accordance with the appropriate averaging time periods included in Condition No. 3.

g. For purposes of reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. 5 herein, which exceeds the applicable emission limit in Condition No. 3.

6. Operations Monitoring

a. Devices shall be installed to continuously monitor and record steam production, furnace exit gas temperature (FEGT) and flue gas temperature at the exit of the acid gas control equipment. A FEGT to combustion zone correlation shall be established to relate furnace temperature at the temperature monitor location (as close to fully mixed zone as possible) to furnace temperature in the overfire air fully mixed zone.

b. The furnace heat load shall be maintained between 80% and 114% of the design rated capacity during normal operations. The lower limit may be extended provided compliance with the carbon monoxide emissions limit and the FEGT within this permit at the extended turndown rate are achieved.

7. Reporting

a. A minimum of fifteen (15) days prior notifi compliance testing shall be given to the DER District Office.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

SPECIFIC CONDITIONS:

b. The results of compliance test shall be submitted to the DER district office within 45 days after completion of the test.

c. The owner or operator shall submit excess emission reports for any calendar quarter during which there are excess emissions from the facility. If there are no excess emissions during the calendar quarter, the owner or operator shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measured adopted (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs of adjustments (60.7(c)(3)).

(4) When no excess emissions have occured or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) The owner or operator shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; monitoring systems or monitoring device calibration; checks; adjustments and maintenance performed on these systems or devices; and, all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

SPECIFIC CONDITIONS:

8. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing (Rule 17-2, F.A.C.).

9. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's district office.

10. This facility shall be operated in such a manner so as to preclude objectionable odors pursuant to F.A.C. Rule 17-2.600(1).

11. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with F.A.C. Rule 17-2.610(3).

12. The permittee shall comply with all the applicable provisions of F.A.C. Chapter 17-2, 17-4, and 40 CFR 60 and 61.

Issued this 22 day of Sep, 1988

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

Compliance Report and Plan

PS6T1.2

ATTACHMENT 10

COMPLIANCE REPORT AND PLAN

The Ogden Martin Systems Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. Compliance emission testing for the pollutants was performed at the stack.

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission tests at the Pasco County Resource Recovery Facility from May 22 through May 24, 1995. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Protection, Air Quality Permit No. PSD-FL-127, Specific Condition 4. The testing was performed by Entropy Environmentalists, Inc.

The results of the stack testing, presented in the Environmental Compliance Test Report, was submitted to DEP on July 6, 1995. In addition a test for Mercury was conducted on October 25 through October 27,1995, and the results were submitted to DEP on December 20, 1995. A copy of the test results is attached.

The results demonstrated the facility is in compliance with FDEP regulation permit number PSD-FL-127.

CDM has reviewed the applicable regulations and the results of the compliance emission tests appear to conform to the regulations.

OGDEN MARTIN SYSTEMS, INC.

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FAIRFIELD, NJ 07007-2615
(201) 882-9000

Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Pasco, Inc. 1387 Hays Road Spring Hills, FL 34610
REGARDING:	Pasco County Resource Recovery Facility Units 1, 2, 3
REGULATORY AGENCY:	Florida Department of Environmental Regulation
PURPOSE:	To determine compliance with Air Quality Permit No. PSD-FL-127
TEST DATES:	May 2-5, 1994
ASSOCIATED REPORTS:	OPI Report No. 738
PREPARED BY:	Jay Weber Jay J. Weber Environmental Engineer
	Michelle Herman Michelle L. Herman Environmental Engineer
	G. J. Aldina, Sr. Vice President, Environmental Testing/CEM

June 10, 1994
OPI Report No. 795

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VOLUME 2: Entropy Environmentalists, Inc. Report on Compliance Testing (Bound Separately)

VOLUME 3: Confidential Process Data (Bound Separately)

1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission tests at the Pasco County Resource Recovery Facility from May 2 through May 5, 1994. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Regulations (DER), Air Quality Permit No. PSD-FL-127, Specific Condition 4. The testing was performed by Entropy Environmentalists, Inc. Entropy in accordance with all procedures in the DER approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. Compliance emission testing for the pollutants was performed at the stack.

A summary of emission test results for the facility is presented in Section 2.0, Tables 2.1 - 2.3. The Entropy report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 738), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF TEST RESULTS - UNIT 1

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00152	0.00166	0.00177	0.00165	0.0150
Mercury	6.86E-05	7.36E-05	8.56E-05	7.59E-05	———
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.436	0.405	0.397	0.413	0.643
Mercury	1.46E-04	1.54E-04	1.82E-04	1.61E-04	———
Visible Emissions					
Opacity %	0	0	0	0	15

[1] Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.2

SUMMARY OF TEST RESULTS - UNIT 2

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00154	0.00164	0.00148	0.00155	0.0150
Mercury	4.89E-05	5.28E-05	3.24E-05	4.47E-05	———
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.518	0.513	0.531	0.521	0.643
Mercury	1.09E-04	1.15E-04	7.05E-05	9.28E-05	———
Visible Emissions					
Opacity %	0	0	0	0	15

(1) Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.3

SUMMARY OF TEST RESULTS - UNIT 3

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00136	0.00151	0.00147	0.00145	0.0150
Mercury	5.65E-05	5.23E-05	7.79E-05	6.22E-05	———
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.481	0.502	0.522	0.502	0.643
Mercury	1.22E-04	1.13E-04	1.66E-04	1.34E-04	———
Visible Emissions					
Opacity %	0	0	0	0	15

[1] Calculated with Fd factor of 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

3.0 TEST PROGRAM

TABLE 3.1

TEST PARTICIPANTS

Ogden Martin Systems, Inc.

Jay J. Weber

Entropy Environmentalists, Inc.

Wayne D. Abbott
Stephen Miller
Danny L. Speer
Allan F. Lowe

TABLE 3.2

TEST PROGRAM

Parameter	Testing Method	Location
TSP	U.S. EPA Method 5	Stack
NO_x	U.S. EPA Method 7E	Stack
Opacity	U. S. EPA Method 9	Stack
Hg	U.S. EPA Method 101A	Stack

TABLE 3.3

SCHEDULE OF ACTIVITIES

DATE/ TIME	UNIT	LOCATION	SAMPLING METHOD	RUN	PARAMETER
5/02/94					
1006-1106	2	Stack	EPA 7E	1	NO_x
1006-1216	2	Stack	EPA 5	1	PM
1130-1230	2	Stack	EPA 7E	2	NO_x
1254-1354	2	Stack	EPA 7E	3	NO_x
1320-1542	2	Stack	EPA 5	2	PM
1652-1709	2	Stack	EPA 5	3	PM
5/03/94					
0910-1117	3	Stack	EPA 5/101A	1	PM/Hg
0912-1012	3	Stack	EPA 7E	1	NO_x
1048-1148	3	Stack	EPA 7E	2	NO_x
1212-1312	3	Stack	EPA 7E	3	NO_x
1235-1440	3	Stack	EPA 5/101A	2	PM/Hg
1535-1740	3	Stack	EPA 5/101A	3	PM/Hg
5/04/94					
0854-0954	1	Stack	EPA 7E	1	NO_x
0918-1140	1	Stack	EPA 5/101A	1	PM/Hg
1012-1112	1	Stacl	EPA 7E	2	NO_x
1130-1230	1	Stack	EPA 7E	3	NO_x
1228-1436	1	Stack	EPA 5/101A	2	PM/Hg
1512-1719	1	Stack	EPA 5/101A	3	PM/Hg
5/05/94					
0755-1004	2	Stack	EPA 101A	4[1]	Hg
1016-1227	2	Stack	EPA 101A	5	Hg
1239-1442	2	Stack	EPA 101A	6	Hg

[1] Runs 1, 2, and 3 were aborted due to sampling problems.

4.0 OPERATIONAL DATA DURING EMISSION TESTING

5.0 METHODOLOGY

TABLE 5.1

REFERENCES

Parameter	Test Method	Reference
TSP	U.S. EPA Method 5	40 CFR 60, App. A
NO_x	U.S. EPA Method 7E	40 CFR 60, App. A
Opacity	U.S. EPA Method 9	40 CFR 60, App. A
Hg	U.S. EPA Method 101A	40 CFR 61, App. B

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.

OGDEN MARTIN
SYSTEMS, INC.

40 LANE ROAD, CN 2815
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201. 882-9000

Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Pasco, Inc. 1387 Hays Road Spring Hills, FL 34610
REGULATORY AGENCY:	Florida Department of Environmental Regulation
PURPOSE:	To determine compliance with Air Quality Permit No. PSD-FL-127.
TEST DATES:	May 22-24, 1995
ASSOCIATED REPORTS:	OPI Report No. 937
PREPARED BY:	Michelle L. Herman Environmental Engineer

Giuseppe

G. J. Aldina
Sr. Vice President, Environmental Testing/CEM

July 6. 1995
OPI Report No. 981

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VOLUME 2: Entropy Environmentalists, Inc. Report on Compliance Testing (Bound Separately)

VOLUME 3: Confidential Process Data (Bound Separately)

1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission testing at the Pasco County Resource Recovery Facility from May 22-24, 1995. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Regulations (DER), Air Quality Permit No. PSD-FL-127, Specific Condition 4. The testing was performed by Entropy, Inc. in accordance with all procedures in the DER approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. Compliance emission testing for the pollutants was performed at the stack.

A summary of emission test results for the facility is presented in Section 2.0, Tables 2.1 - 2.3. The Entropy report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 937), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF TEST RESULTS - UNIT 1

Pollutant Limit	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00194	0.00205	0.00299	0.00233	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.435	0.448	0.438	0.441	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1] Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.2

SUMMARY OF TEST RESULTS - UNIT 2

Pollutant Limit	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00215	0.00189	0.00176	0.00193	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.469	0.433	0.451	0.451	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1] Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.3

SUMMARY OF TEST RESULTS - UNIT 3

Pollutant	Run Number			Average	Permitted Maximum Emission Limit
	1	2	3		
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00191	0.00191	0.00219	0.00200	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.458	0.490	0.494	0.481	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1] Calculated with Fd factor of 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

3.0 TEST PROGRAM

TABLE 3.2

TEST PROGRAM

Parameter	Testing Method	Location
TSP	U.S. EPA Method 5	Stack
NO_x	U.S. EPA Method 7E	Stack
Opacity	U. S. EPA Method 9	Stack

TABLE 3.3

SCHEDULE OF ACTIVITIES

DATE/ TIME	UNIT	LOCATION	SAMPLING METHOD	RUN	PARAMETER
5/22/95					
0840-1047	1	Stack	EPA 5	1	Particulate
1055-1303	1	Stack	EPA 5	2	Particulate
1310-1517	1	Stack	EPA 5	3	Particulate
0900-1000	1	Stack	EPA 7E	1	Nitrogen Oxides
1012-1112	1	Stack	EPA 7E	2	Nitrogen Oxides
1124-1224	1	Stack	EPA 7E	3	Nitrogen Oxides
0850-0950	1	Stack	EPA 9	1	Visible Emissions
1058-1158	1	Stack	EPA 9	2	Visible Emissions
1322-1422	1	Stack	EPA 9	3	Visible Emissions
5/23/95					
0815-1029	3	Stack	EPA 5	1	Particulate
1045-1250	3	Stack	EPA 5	2	Particulate
1302-1508	3	Stack	EPA 5	3	Particulate
0818-0918	3	Stack	EPA 7E	1	Nitrogen Oxides
0930-1030	3	Stack	EPA 7E	2	Nitrogen Oxides
1042-1142	3	Stack	EPA 7E	3	Nitrogen Oxides
0838-0938	3	Stack	EPA 9	1	Visible Emissions
1056-1156	3	Stack	EPA 9	2	Visible Emissions
1313-1413	3	Stack	EPA 9	3	Visible Emissions
5/24/95					
0841-1047	2	Stack	EPA 5	1	Particulate
1058-1305	2	Stack	EPA 5	2	Particulate
1315-1522	2	Stack	EPA 5	3	Particulate
0836-0936	2	Stack	EPA 7E	1	Nitrogen Oxides
0948-1048	2	Stack	EPA 7E	2	Nitrogen Oxides
1100-1200	2	Stack	EPA 7E	3	Nitrogen Oxides
0857-0957	2	Stack	EPA 9	1	Visible Emissions
1103-1203	2	Stack	EPA 9	2	Visible Emissions
1328-1428	2	Stack	EPA 9	3	Visible Emissions

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
TSP	U.S. EPA Method 5	40 CFR 60, App. A
NO_x	U.S. EPA Method 7E	40 CFR 60, App. A
Opacity	U.S. EPA Method 9	40 CFR 60, App. A

OGDEN

Ogden Projects, Inc.
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Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR: Ogden Martin Systems of Pasco, Inc.
1387 Hays Road
Spring Hills, FL 34610

PURPOSE: To determine compliance with Air Quality Permit No. PSD-FL-127 and Florida DEP Rule 62-296.416(3)(a)1.

TEST DATES: October 25-27, 1995 and November 7, 1995

ASSOCIATED REPORTS: OPI Report No. 1024

PREPARED BY:

Michelle L. Herman (FOR)
Derek A. Porter
Manager, CEM Systems Technical Quality

(FOR)
G. J. Aldina,
Sr. Vice President, Environmental Testing/CEM

December 20, 1995
OPI Report No. 1075

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VOLUME 2: Environmental Science & Engineering, Inc.
(Bound Separately)

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1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed mercury emission tests at the Pasco County Resource Recovery Facility from October 25-27, 1995 and November 7, 1995. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Protection (DEP), Air Quality Permit No. PSD-FL-127 and Florida DEP Rule 62-296.416(3)(a)1. The testing was performed by Environmental Science & Engineering, Inc. (ESE) in accordance with all procedures in the DEP approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. Emission testing for mercury was performed at the inlet and outlet of the fabric filter baghouse.

A summary of emission test results for the facility is presented in Section 2.0, Table 2.1. The ESE report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 1024), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	Replicate [1] 1	2	3	Average	Permit Limit
INLET					
Conc., ug/dscm @ 7% O_2					
Mercury	164.46	81.00	137.98	127.81	----------
FABRIC FILTER BAGHOUSE OUTLET					
Conc. ug/dscm @ 7% O_2					
Mercury	11.24	13.43	16.67	13.78	70
Emission Rate, lb/hr					
Mercury	0.0016	0.0021	0.0022	0.0020	0.112
Emission Rate, lb/mm BTU[2]					
Mercury	1.01E-05	1.21E-05	1.50E-05	1.24E-05	8.00E-04
Removal Efficiency, %[3]					
Mercury	93.17	83.43	87.92	88.17	80

[1] Data presented as repitition number. Actual sample run number may differ.

[2] Calculated with Fd factor = 9570 dscf/mm BTU (40 CFR 60, Appendix A, Rm 19).

[3] Based on ug/dscm @ 7% O_2

TABLE 2.2

SUMMARY OF SOURCE TEST RESULTS - UNIT 2 - October 26, 1995

Pollutant	Replicate 1	Replicate 2	Replicate 3	Average	Permit Limit
INLET					
Conc., ug/dscm @ 7% O_2					
Mercury	132.56	117.48	255.58	168.54	----------
FABRIC FILTER BAGHOUSE OUTLET					
Conc. ug/dscm @ 7% O_2					
Mercury	31.26	38.21	30.62	33.37	70
Emission Rate, lb/hr					
Mercury	0.0043	0.0054	0.0043	0.0047	0.112
Emission Rate, lb/mm BTU[1]					
Mercury	2.82E-05	3.45E-05	2.76E-05	3.01E-05	8.00E-04
Removal Efficiency, %[2]					
Mercury	76.41	67.47	88.02	77.30	80

(1) Calculated with Fd factor = 9570 dscf/mm BTU (40 CFR 60, Appendix A, Rm 19).

(2) Based on ug/dscm @ 7% O_2

TABLE 2.3

SUMMARY OF SOURCE TEST RESULTS - UNIT 3

Pollutant	Replicate 1	Replicate 2	Replicate 3	Average	Permit Limit
INLET					
Conc., ug/dscm @ 7% O_2					
Mercury	131.67	223.94	111.00	155.54	----------
FABRIC FILTER BAGHOUSE OUTLET					
Conc. ug/dscm @ 7% O_2					
Mercury	9.93	15.09	25.57	16.86	70
Emission Rate, lb/hr					
Mercury	0.0014	0.0021	0.0035	0.0023	0.112
Emission Rate, lb/mm Btu[1]					
Mercury	8.97E-06	1.36E-05	2.31E-05	1.52E-05	8.00E-04
Removal Efficiency, %[2]					
Mercury	92.46	93.26	76.96	87.56	80

(1) Calculated with Fd factor = 9570 dscf/mm BTU (40 CFR 60, Appendix A, Rm 19).

(2) Based on ug/dscm @ 7% O_2

TABLE 2.2A

SUMMARY OF SOURCE TEST RESULTS - UNIT 3 - November 7, 1995

Pollutant	Replicate 1	Replicate 2	Replicate 3	Average	Permit Limit
INLET					
Conc., ug/dscm @ 7% O_2					
Mercury	55.63	72.70	64.60	64.31	----------
FABRIC FILTER BAGHOUSE OUTLET					
Conc. ug/dscm @ 7% O_2					
Mercury	21.72	26.32	27.74	25.26	70
Emission Rate, lb/hr					
Mercury	0.0031	0.0037	0.0039	0.0036	0.112
Emission Rate, lb/mm Btu[1]					
Mercury	1.96E-05	2.38E-05	2.50E-05	2.28E-05	8.00E-04
Removal Efficiency, %[2]					
Mercury	60.95	63.80	57.06	60.60	80

(1) Calculated with Fd factor = 9570 dscf/mm BTU (40 CFR 60, Appendix A, Rm 19).

(2) Based on ug/dscm @ 7% O_2

3.0 TEST PROGRAM

TABLE 3.1

TEST PARTICIPANTS

Ogden Martin Systems, Inc.

G. J. Aldina
Derek A. Porter

Environmental Science & Engineering, Inc.

Bill Mayhew
Norm Czarniak
Jamie Clark
Lee Garcia
Keith Glynn

TABLE 3.2

TEST PROGRAM

PARAMETER	METHOD
Mercury (Hg)	U.S. EPA Method 101A

TABLE 3.3

SCHEDULE OF ACTIVITIES

Date/ Time	Unit	Location	Sampling Method	Replicate	Parameter
10/25/95					
1110-1339	1	Inlet/Stack	EPA 101A	1	Hg
1445-1656	1	Inlet	EPA 101A	2	Hg
1502-1713	1	Stack	EPA 101A	2	Hg
1756-1935	1	Inlet	EPA 101A	3	Hg
1756-2004	1	Stack	EPA 101A	3	Hg
10/26/95					
0830-1037	2	Inlet/Stack	EPA 101A	1	Hg
1109-1314	2	Inlet/Stack	EPA 101A	2	Hg
1420-1624	2	Inlet/Stack	EPA 101A	3	Hg
10/27/95					
0825-1031	3	Inlet/Stack	EPA 101A	1	Hg
1104-1311	3	Inlet/Stack	EPA 101A	2	Hg
1341-1556	3	Inlet	EPA 101A	3	Hg
1341-1557	3	Stack	EPA 101A	3	Hg
11/7/95					
0930-1137	2	Inlet/Stack	EPA 101A	1	Hg
1220-1427	2	Inlet/Stack	EPA 101A	2	Hg
1502-1708	2	Inlet	EPA 101A	3	Hg
1502-1709	2	Stack	EPA 101A	3	Hg

4.0 OPERATIONAL DATA DURING EMISSION TESTING

4.1 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
Hg	U.S. EPA Method 101A	40 CFR 61, App. B

Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Pasco, Inc. 1387 Hays Road Spring Hills, FL 34610
REGARDING:	Pasco County Resource Recovery Facility Units 1, 2, 3
REGULATORY AGENCY:	Florida Department of Environmental Regulation
PURPOSE:	To determine compliance with Air Quality Permit No. PSD-FL-127
TEST DATES:	May 4 through May 6, 1993
ASSOCIATED REPORTS:	OPI Report No. 503
PREPARED BY:	Jay Weber Environmental Engineer
	Derek Porter Senior Environmental Engineer
	G. J. Aldina Vice President, Environmental Testing/CEM

June 2, 1993
OPI Report No. 550

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VOLUME 2: Entropy Environmentalists, Inc. Report on Compliance Testing (Bound Separately)

VOLUME 3: Confidential Process Data (Bound Separately)

1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission tests at the Pasco County Resource Recovery Facility from May 4 through May 6, 1993. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Regulations (DER), Air Quality Permit No. PSD-FL-127, Specific Condition 4. The testing was performed by Entropy Environmentalists, Inc. Entropy in accordance with all procedures in the DER approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. Compliance emission testing for the pollutants was performed at the stack.

A summary of emission test results for the facility is presented in Section 2.0, Tables 2.1 - 2.3. The Entropy report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 503), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00247	0.00221	0 .00215	0.00228	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.515	0.517	0.486	0.506	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.3

SUMMARY OF SOURCE TEST RESULTS - UNIT 3

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					17.1%
Total Suspended Particulate (TSP)	0.00314	0.00316	0.00168	0.00266	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.480	0.519	0.489	0.496	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Calculated with Fd factor of 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.2

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.00222	0.00235	0.00231	0.00229	0.0150
Emission Rate, lb/MMBtu[1]					
Oxides of Nitrogen (NO_x)	0.447	0.489	0.507	0.481	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

3.0 TEST PROGRAM

TABLE 3.1

TEST PARTICIPANTS

Ogden Martin Systems, Inc.	Derek Porter
Entropy Environmentalists, Inc.	Herbert T. Dixon

TABLE 3.2

TEST PROGRAM

Parameter	Testing Method	Location
TSP	U.S. EPA Method 5	Stack
NO_x	U.S. EPA Method 7E	Stack
Opacity	U. S. EPA Method 9	Stack

TABLE 3.3

SCHEDULE OF ACTIVITIES

DATE/ TIME	UNIT	LOCATION	SAMPLING METHOD-	RUN	PARAMETER
5/04/93					
805-1015	1	Stack	EPA M5/9	1	TSP/Opacity
808-908	1	Stack	EPA M7E	1	NO_x
922-1022	1	Stack	EPA M7E	2	NO_x
1106-1206	1	Stack	EPA M7E	3	NO_x
1035-1245	1	Stack	EPA M5/9	2	TSP/Opacity
1305-1512	1	Stack	EPA M5/9	3	TSP/Opacity
5/05/93					
810-1016	2	STACK	EPA M5/9	1	TSP/Opacity
842-942	2	STACK	EPA M7E	1	NO_x
1012-1112	2	STACK	EPA M7E	2	NO_x
1040-1245	2	STACK	EPA M5/9	2	TSP/Opacity
1142-1242	2	STACK	EPA M7E	3	NO_x
1400-1605	2	STACK	EPA M5/9	3	TSP/Opacity
5/06/93					
806-906	3	STACK	EPA M7E	1	NO_x
815-1020	3	STACK	EPA M5/9	1	TSP/Opacity
930-1030	3	STACK	EPA M7E	2	NO_x
1054-1154	3	STACK	EPA M7E	3	NO_x
1040-1257	3	STACK	EPA M5/9	2	TSP/Opacity
1330-1535	3	STACK	EPA M5/9	3	TSP/Opacity

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
TSP	U.S. EPA Method 5	40 CFR 60, App. A
NO_x	U.S. EPA Method 7E	40 CFR 60, App. A
Opacity	U.S. EPA Method 9	40 CFR 60, App. A

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Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Pasco, Inc. 1387 Hays Road Spring Hills, FL 34610
REGARDING:	Pasco County Resource Recovery Facility Units 1, 2, 3
REGULATORY AGENCY:	Florida Department of Environmental Regulation
PURPOSE:	To determine compliance with Air Quality Permit No. PSD-FL-127
TEST DATES:	April 29 through May 1, 1992
ASSOCIATED REPORTS:	OPI Report No. 392

PREPARED BY:

Todd B. Westersund
Senior Environmental Engineer

G. J. Aldina
Vice President, Environmental Testing/CEM

June 1, 1992
OPI Report No. 440

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VOLUME 2: Entropy Environmentalists, Inc. Report on Compliance Testing (Bound Separately)

VOLUME 3: Confidential Process Data (Bound Separately)

1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission tests at the Pasco County Resource Recovery Facility from April 29 through May 1, 1992. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Regulations (DER), Air Quality Permit No. PSD-FL-127, Specific Condition 4. The testing was performed by Entropy Environmentalists, Inc. (EEI) in accordance with all procedures in the DER approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. The sulfur dioxide emission control efficiency of the air pollution control system was determined by simultaneous sampling at the inlet of the spray dryer absorber and the stack. Compliance emission testing for other pollutants was performed at the stack only.

A summary of emission test results for the facility is presented in Section 2.0, Tables 2.1 - 2.3. The EEI report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 392), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1

SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	59	54	48	54	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0014	0.0020	0.0014	0.0016	0.0150
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	23	38	28	29	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Oxides of Nitrogen (NO_x)	0.507	0.518	0.532	0.519	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.

[2]Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.2

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	73	73	72	73	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0037	0.0038	0.0053	0.0043	0.0150
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	19	27	29	25	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Oxides of Nitrogen (NO_x)	0.555	0.535	0.514	0.535	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.

[2]Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

TABLE 2.3

SUMMARY OF SOURCE TEST RESULTS - UNIT 3

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	53	56	52	54	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0021	0.0023	0.0019	0.0021	0.0150
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	22	16	36	25	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Oxides of Nitrogen (NO_x)	0.499	0.506	0.519	0.508	0.643
Visible Emissions					
Opacity %	0	0	0	0	15

[1]Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.

[2]Calculated with Fd factor of 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

3.0 TEST PROGRAM

TABLE 3.1

TEST PARTICIPANTS

Ogden Martin Systems, Inc.

Todd B. Westersund

Camp, Dresser, McKee

Raymond Porter

Entropy Environmentalists, Inc.

Stuart Davis

TABLE 3.2

TEST PROGRAM

Parameter	Testing Method	Location
TSP	U.S. EPA Method 5	Stack
SO_2	U.S. EPA Method 6C	Inlet/Stack
NO_x	U.S. EPA Method 7E	Stack
Opacity	U. S. EPA Method 9	Stack

TABLE 3.3

SCHEDULE OF ACTIVITIES

DATE/ TIME	UNIT	LOCATION	SAMPLING METHOD	RUN	PARAMETER
4/29/92					
0954-1136	1	Inlet/Outlet	EPA 6C	1	SO_2
0954-1136	1	Stack	EPA 7E	1	NO_x
0954-1202	1	Stack	EPA 5	1	TSP
0954-1202	1	Stack	EPA 9	1	Opacity
1230-1412	1	Inlet/Stack	EPA 6C	2	SO_2
1230-1412	1	Stack	EPA 7E	2	NO_x
1230-1441	1	Stack	EPA 5	2	TSP
1230-1441	1	Stack	EPA 9	2	Opacity
1501-1642	1	Inlet/Stack	EPA 6C	3	SO_2
1501-1642	1	Stack	EPA 7E	3	NO_x
1500-1709	1	Stack	EPA 5	3	TSP
1500-1709	1	Stack	EPA 9	3	Opacity
4/30/92					
0830-1006	2	Inlet/Stack	EPA 6C	1	SO_2
0830-1006	2	Stack	EPA 7E	1	NO_x
0830-1035	2	Stack	EPA 5	1	TSP
0830-1035	2	Stack	EPA 9	1	Opacity
1106-1242	2	Inlet/Stack	EPA 6C	2	SO_2
1106-1242	2	Stack	EPA 7E	2	NO_x
1105-1310	2	Stack	EPA 5	2	TSP
1105-1310	2	Stack	EPA 9	2	Opacity
1330-1506	2	Inlet/Stack	EPA 6C	3	SO_2
1330-1506	2	Stack	EPA 7E	3	NO_x
1325-1535	2	Stack	EPA 5	3	TSP
1325-1535	2	Stack	EPA 9	3	Opacity
5/1/92					
0810-1034	3	Stack	EPA 5	1	TSP
0810-1034	3	Stack	EPA 9	1	Opacity
1000-1412	3	Inlet/Stack	EPA 6C	1	SO_2
1000-1412	3	Stack	EPA 7E	1	NO_x
1050-1409	3	Stack	EPA 5	2	TSP
1050-1409	3	Stack	EPA 9	2	Opacity
1442-1624	3	Inlet/Stack	EPA 6C	2	SO_2
1442-1624	3	Stack	EPA 7E	2	NO_x
1442-1800	3	Stack	EPA 5	3	TSP
1442-1800	3	Stack	EPA 9	3	Opacity
1648-1806	3	Inlet/Stack	EPA 6C	3	SO_2
1648-1806	3	Stack	EPA 7E	3	NO_x

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
TSP	U.S. EPA Method 5	40 CFR 60, App. A
SO_2	U.S. EPA Method 6C	40 CFR 60, App. A
NO_x	U.S. EPA Method 7E	40 CFR 60, App. A
Opacity	U.S. EPA Method 9	40 CFR 60, App. A

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Environmental Engineering Department

VOLUME I

EXECUTIVE SUMMARY

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Pasco, Inc. 1387 Hays Road Spring Hills, FL 34610
REGARDING:	Pasco County Resource Recovery Facility Units 1, 2, 3
REGULATORY AGENCY:	Florida Department of Environmental Regulation
PURPOSE:	To determine compliance with Air Quality Permit to Construct No. PSD-FL-127
TEST DATES:	April 15 through 19, 1991
ASSOCIATED REPORTS:	OPI Report No. 304

PREPARED BY:

Derek A. Porter
Environmental Engineer

G. J. Aldina, Assistant Vice President,
Environmental Testing

May 13, 1991
OPI Report No. 338

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VOLUME 2: Clean Air Engineering Report on Compliance Testing (Bound Separately)

VOLUME 3: Confidential Process Data (Bound Separately)

1.0 INTRODUCTION

Ogden Martin Systems of Pasco, Inc. (OMSP) performed compliance emission tests at the Pasco County Resource Recovery Facility from April 15 through 19, 1991. The purpose of this test program was for demonstration of compliance with the Florida Department of Environmental Regulations (DER), Air Quality Permit to Construct No. PSD-FL-127, Specific Condition 3 (see Appendix A). The testing was performed by Clean Air Engineering (CAE) in accordance with all procedures in the DER approved test protocol.

The OMS Pasco municipal solid waste combustion facility is located in Spring Hill, Florida. The facility consists of three identical mass-fired boilers of Martin GmbH Stoker Combustion System design. Each boiler is rated at 350 tons of municipal solid waste per day. The sulfur dioxide and hydrogen chloride emission control efficiency of the air pollution control system was determined by simultaneous sampling at the inlet of the spray dryer absorber and the outlet of the fabric filter (FF). Compliance emission testing for other pollutants was performed at the FF outlet only.

A summary of emission test results for the facility is presented in Section 2.0, Tables 2.1 - 2.3. The Clean Air Engineering report (Volume 2) includes all data gathered at the site and all laboratory analytical data.

The test program, as indicated in the Source Test Plan (OPI Report No. 304), is presented in Section 3.0, Table 3.2. The test observers are presented in Table 3.1. The Schedule of Activities at the site is presented in Table 3.3

2.0 SUMMARY OF RESULTS

TABLE 2.1
SUMMARY OF SOURCE TEST RESULTS - UNIT 1

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	46	42	43	44	---
Hydrogen Chloride (HCl)	416	826	449	564	---
Emission Rate, lb/MMBtu					
Hydrogen Chloride (HCl)	0.5639	1.1208	0.6096	0.7648	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0005	0.0004	0.0004	0.0004	0.0150
Conc., ppm @ 7% O_2					
Hydrogen Chloride (HCl)	36	33	29	33	---
Carbon Monoxide (CO)	19	21	24	21	400
Sulfur Dioxide (SO_2)	30	21	15	22	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Beryllium (Be)	<1.17E-8	<1.22E-8	<9.68E-9	<1.12E-8	1.35E-7
Lead (Pb)	5.06E-6	3.74E-6	5.11E-6	4.64E-6	7.0E-4
Mercury (Hg)	2.36E-4	2.63E-4	2.60E-4	2.53E-4	8.0E-4
Hydrogen Fluoride (HF)	<1.54E-4	<1.66E-4	<1.41E-4	<1.54E-4	8.00E-3
Hydrogen Chloride (HCl)	0.0548	0.0482	0.0425	0.0485	0.127[3]
Oxides of Nitrogen (NO_x)	0.5128	0.5334	0.5417	0.5293	0.643
Volatile Organic Compounds (VOC)	<0.0024	<0.0024	<0.0024	<0.0024	0.021
Visible Emissions					
Opacity %	<1	<1	<1	<1	15

[1] Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.
[2] Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).
[3] Projected emissions based on 4800 Btu/lb heat content and 350 TPD. Maximum allowable emissions are calculated at 114% of design heat input rate (14% above this value). See Permit No. PSD-FL-127 Specific Condition 3.

TABLE 2.2

SUMMARY OF SOURCE TEST RESULTS - UNIT 2

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	70	40	35	48	---
Hydrogen Chloride (HCl)	779	755	668	734	---
Emission Rate, lb/MMBtu					
Hydrogen Chloride (HCl)	1.0573	1.0251	0.9056	0.9960	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0001	0.0003	0.0001	0.0002	0.0150
Conc., ppm @ 7% O_2					
Hydrogen Chloride (HCl)	24	28	19	24	---
Carbon Monoxide (CO)	16	19	22	19	400
Sulfur Dioxide (SO_2)	22	15	7	15	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Beryllium (Be)	<8.76E-9	<9.02E-9	<8.92E-9	8.9E-9	1.35E-07
Lead (Pb)	3.95E-6	<3.48E-6	4.21E-6	3.88E-6	7.00E-04
Mercury (Hg)	2.74E-4	2.91E-4	2.62E-4	2.76E-4	8.00E-4
Hydrogen Fluoride (HF)	<1.28E-4	<1.34E-4	<1.52E-4	<1.38E-4	8.00E-3
Hydrogen Chloride (HCl)	0.0358	0.0414	0.0258	0.0344	0.127[3]
Oxides of Nitrogen (NO_x)	0.5037	0.5234	0.5477	0.5249	0.643
Volatile Organic Compounds (VOC)	<0.0023	<0.0022	<0.0023	<0.0023	0.021
Visible Emissions					
Opacity %	<1	<1	<1	<1	15

[1] Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.

[2] Calculated with Fd factor = 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).

[3] Projected emissions based on 4800 Btu/lb heat content and 350 TPD. Maximum allowable emissions are calculated at 114% of design heat input rate (14% above this value). See Permit No. PSD-FL-127 Specific Condition 3.

TABLE 2.3
SUMMARY OF SOURCE TEST RESULTS - UNIT 3

Pollutant	Run Number 1	Run Number 2	Run Number 3	Average	Permitted Maximum Emission Limit
INLET					
Conc., ppm @ 7% O_2					
Sulfur Dioxide (SO_2)	39	64	66	56	---
Hydrogen Chloride (HCl)	535	841	586	654	---
Emission Rate, lb/MMBtu					
Hydrogen Chloride (HCl)	0.7245	1.1406	0.7942	0.8864	---
STACK					
Conc. gr/dscf @ 12% CO_2					
Total Suspended Particulate (TSP)	0.0010	0.0016	0.0021	0.0016	0.0150
Conc., ppm @ 7% O_2					
Hydrogen Chloride (HCl)	49	57	50	52	---
Carbon Monoxide (CO)	24	26	24	25	400
Sulfur Dioxide (SO_2)	33	39	37	36	60(104)[1]
Emission Rate, lb/MMBtu[2]					
Beryllium (Be)	<9.08E-9	<9.76E-9	<8.87E-9	<9.24E-9	1.35E-07
Lead (Pb)	4.16E-6	4.74E-6	8.63E-5	3.17E-5	8.0E-04
Mercury (Hg)	3.03E-4	2.19E-4	2.98E-4	2.73E-4	8.00E-4
Hydrogen Fluoride (HF)	<1.77E-4	<1.54E-4	<1.43E-4	<1.58E-4	8.00E-3
Hydrogen Chlorjde (HCl)	0.0665	0.0767	0.0678	0.0703	0.127[3]
Oxides of Nitrogen (NO_x)	0.5210	0.5543	0.5111	0.5258	0.643
Volatile Organic Compounds (VOC)	<0.0025	<0.0023	<0.0023	<0.0024	0.021
Visible Emissions					
Opacity %	<1	<1	<1	<1	15

[1] Permit Number PSD-FL-127 Specific Condition 3B includes a 3-hour rolling average emission limit of 104 ppm_{dv} @ 7% O_2 and a 6-hour rolling average limit of 60 ppm_{dv} @ 7% O_2.
[2] Calculated with Fd factor of 9520 dscf/mmBtu (40 CFR 60, Appendix A, RM 19).
[3] Projected emissions based on 4800 Btu/lb heat content and 350 TPD. Maximum allowable emissions are calculated at 114% of design heat input rate (14% above this value). See Permit No. PSD-FL-127 Specific Condition 3.

3.0 TEST PROGRAM

TABLE 3.1

TEST PARTICIPANTS

Ogden Martin Systems, Inc.

Derek A. Porter
G. J. Aldina

Florida State Department of Environmental Regulation

Scott Sheplack

Camp, Dresser, McKee

G. Siple

Clean Air Engineering

Pete Kaufman
John Chapman

TABLE 3.2

TEST PROGRAM

Parameter	Testing Method	Location
TSP	U.S. EPA Method 5	Outlet
HCl	U.S. EPA Proposed Method 26	Inlet/Outlet
SO_2	U.S. EPA Method 6C	Inlet/Outlet
CO	U.S. EPA Method 10	Outlet
NO_x	U.S. EPA Method 7E	Outlet
Opacity	U. S. EPA Method 9	Outlet
Pb, Hg	U.S. EPA Method 12/101A	Outlet
VOC	U.S. EPA Method 25A	Outlet
Be	U.S. EPA Method 104	Outlet
HF	U.S. EPA Method 13B	Outlet

TABLE 3.3

SCHEDULE OF ACTIVITIES

DATE/ TIME	UNIT	LOCATION	SAMPLING METHOD	RUN	PARAMETER
4/16/91					
1130-1330	1	Outlet	EPA 5,12,13B,101A,104	1	TSP,Pb,HF,Hg,Be
1410-1630	1	Outlet	EPA 5,12,13B,101A,104	2	TSP,Pb,HF,Hg,Be
1412-1512	2	Inlet/Outlet	EPA 6C, 26	1	SO_2, HCl
1412-1512	2	Outlet	EPA 7E, 10, 25A	1	NO_x, CO, VOC
1542-1642	2	Inlet/Outlet	EPA 6C, 26	2	SO_2, HCl
1542-1642	2	Outlet	EPA 7E, 10, 25A	2	NO_x, CO, VOC
1607-1822	1	Outlet	EPA 13B	3	HF
1659-1859	1	Outlet	EPA 5,12,101A,104	3	TSP,Pb,Hg,Be
1710-1810	2	Inlet/Outlet	EPA 6C, 26	3	SO_2, HCl
1710-1810	2	Outlet	EPA 7E, 10, 25A	3	NO_x, CO, VOC
4/17/91					
0908-1118	3	Outlet	EPA 5,12,101A	1	TSP,Pb,Hg
0930-1150	3	Outlet	EPA 13B	1	HF
1005-1237	3	Outlet	EPA 104	1	Be
1100-1200	1	Inlet/Outlet	EPA 6C, 26	1	SO_2, HCl
1100-1200	1	Outlet	EPA 7E, 10, 25A	1	NO_x, CO, VOC
1150-1400	3	Outlet	EPA 101A	2	Hg
1225-1325	1	Inlet/Outlet	EPA 6C, 26	2	SO_2, HCl
1225-1325	1	Outlet	EPA 7E, 10, 25	2	NO_x, CO, VOC
1310-1600	3	Outlet	EPA 13B	2	HF
1355-1455	1	Inlet/Outlet	EPA 6C, 26	3	SO_2, HCl
1355-1455	1	Outlet	EPA 7E, 10, 25	3	NO_x, CO, VOC
1410-1610	3	Outlet	EPA 5, 12	2	TSP, Pb
1411-1620	3	Outlet	EPA 104	2	Be
1459-1710	3	Outlet	EPA 101A	3	Hg
1650-1930	3	Outlet	EPA 13B	3	HF
1659-1859	3	Outlet	EPA 5, 12	3	TSP, Pb
1707-1907	3	Outlet	EPA 104	3	Be
4/18/91					
0800-1010	2	Outlet	EPA 5,12,13B,101A,104	1	TSP,Pb,HF,Hg,Be
1025-1232	2	Outlet	EPA 5, 12, 101A	2	TSP, Pb, Hg
1045-1305	2	Outlet	EPA 13B, 104	2	HF, Be
1050-1150	3	Inlet/Outlet	EPA 6C, 26	1	SO_2, HCl
1050-1150	3	Outlet	EPA 7E, 10, 25	1	NO_x, CO, VOC
1210-1310	3	Inlet/Outlet	EPA 6C, 26	2	SO_2, HCl
1210-1310	3	Inlet	EPA 7E, 10, 25	2	NO_x, CO, VOC
1250-1500	2	Outlet	EPA 5, 12, 101A	3	TSP, Pb, Hg
1330-1430	3	Inlet/Outlet	EPA 6C, 26	3	SO_2, HCl
1330-1430	3	Outlet	EPA 7E, 10, 25	3	NO_x, CO, VOC
1348-1600	2	Outlet	EPA 13B, 104	3	HF, Be

4.0 OPERATIONAL DATA DURING EMISSION TESTING

4.0 OPERATIONAL DATA DURING EMISSION TESTING

Operational data were collected both manually from process recorders and with strip chart recorders connected to plant instruments.

The operator logs and strip charts are in Volume 3.

5.0 METHODOLOGY

TABLE 5.1

REFERENCES

Parameter	Test Method	Reference
TSP	U.S. EPA Method 5	40 CFR 60, App. A
SO_2	U.S. EPA Method 6C	40 CFR 60, App. A
NO_x	U.S. EPA Method 7E	40 CFR 60, App. A
CO	U.S. EPA Method 10	40 CFR 60, App. A
Pb, Hg	U.S. EPA Method 12/101A	40 CFR 60, App. A
HCl	U.S. EPA Proposed Method 26	40 CFR 60, App. A
VOC	U.S. EPA Method 25A	40 CFR 60, App. A
Be	U.S. EPA Method 104	40 CFR 60, App. A
HF	U.S. EPA Method 13B	40 CFR 60, App. A
Opacity	U.S. EPA Method 9	40 CFR 60, App. A

APPENDIX A

BEST AVAILABLE COPY

Florida Department of Environmental Regulatic

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2

PERMITTEE:
Pasco County
7536 State Street
New Port Richey, FL 33553

Permit Number: PSD-FL-127
County: Pasco
Latitude/Longitude: 28° 22' 05"N
82° 33' 30"W
Project: Pasco County Resource Recovery Facility Units 1, 2, and 3

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a municipal solid waste (MSW) resource recovery facility with an ultimate capacity of 1200 TPD (tons per day), generating 29 MW of electricity. Initially, three combustors will be installed each with a design capacity of 350 TPD (total of 1050 TPD for the facility). The design rated heat input capacity of each unit will be 140 MMBTU/hr. The normal operating range of each unit will be between 30% and a maximum of 114% of the design rated capacity. Acid gases and particulates will be controlled by dry scrubber and baghouse technology. DER will be notified of the final choice of control/combustor equipment. The power plant site certification number for this project is PA 87-23.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted in the Specific Conditions.

Attachments are as follows:

1. Power Plant Site Certification package PA 87-23 and its associated attachments, dated April 4, 1988.
2. Letter from David Dee, for Pasco County, of August 10, 1988.
3. Letter from EPA dated September 8, 1988.
4. DER's Final Determination dated September 14, 1988.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

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

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

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(x) Determination of Best Available Control Technology (BACT)
(x) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Municipal Solid Waste Combustor

a. Each of the three municipal waste combustors (MWC) shall have a design rated capacity of 350 tons municipal solid waste (MSW) per day, 140 million Btu heat input per hour, assuming a heating value of 4,800 Btu per pound.

b. The maximum individual MWC's throughput shall not exceed 114% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBTU/hr.

SPECIFIC CONDITIONS:

c. The furnace mean temperature at the fully mixed zone of the combustor shall not be less than 1,800°F.

d. The normal operating range of the MWC shall be 80% to a maximum of 114% of design rated capacity.

e. The MWC shall be fueled with municipal solid waste only. Other wastes shall not be burned without specific prior written approval of Florida DER.

f. Auxiliary fuel burner(s) shall be fueled only with natural gas. If the annual capacity factor for gas is greater than 10%, as determined by 40 CFR 60.43b(d), the facility shall be subject to 40 CFR 60.44b, standards for nitrogen oxides.

g. Auxiliary fuel burner(s) shall be used at start up during the introduction of MSW fuel until design furnace gas temperature is achieved.

h. The facility may operate continuously (8760 hrs/yr).

2. Air Pollution Control Equipment Design

a. Each MWC shall be equipped with a baghouse for particulate emission control.

b. Each MWC shall be equipped with a dry scrubber for acid gas control, to remove at least 70% of SO_2 and 90% of other acid gases (namely HCL, H_2SO_4 mist, and fluorides.

c. The acid gas emission control system shall be capable of cooling flue gases to an average temperature not exceeding 300°F (3-hour rolling average).

d. DER shall be notified of the control devices chosen.

3. Flue gas emissions from each unit shall not exceed the following:

a. Particulate:	0.0150 grains/dscf corrected to 12% CO_2
b. Sulfur Dioxide:	104 ppmdv corrected to 7% O_2 3-hour (rolling) average, and 60 ppmdv corrected to 7% O_2 6-hour rolling average;

SPECIFIC CONDITIONS:

	or 70% reduction of uncontrolled SO_2 emissions, 6-hour rolling average. Not to exceed 100 ppmdv corrected to 7% O_2, 6-hr rolling average.
c. Nitrogen Oxides:	0.643 lb/MMBtu heat input.
d. Carbon Monoxide:	400 ppmdv corrected to 7% O_2, 1-hr average, and 100 ppmdv corrected to 7% O_2, 8-hr rolling average.
e. Volatile Organic Compounds:	0.021 lb/MMBtu heat input
f. Lead:	0.0007 lb/MMBtu heat input
g. Fluoride:	0.008 lb/MMBtu heat input
h. Beryllium:	1.35×10^{-7} lb/MMBtu heat input
i. Mercury:	0.0008 lb/MMBtu heat input
j. Visible Emissions:	Opacity of MWC emissions shall not exceed 15% opacity (6-min. average), except for one 6-min. period per hour of not more than 20% opacity. Excess emissions resulting from startup, shut down, or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions are minimized.

For each pollutant for which a continuous emissions monitoring system is required in Condition No. 5, the emission averaging time specified above shall be used to establish operating limits and reportable excess emissions.

SPECIFIC CONDITIONS:

Compliance with the permit emission limits shall be determined by EPA reference test methods included in 40 CFR Parts 60 and 61, 1987 version, and listed in Condition No. 4 of this permit. Other DER approved methods may be used only after prior Departmental approval.

For the purpose of establishing specific increment consumption for TSP and SO_2 at the facility, an hourly emission rate shall be established for each pollutant at the time of performance testing using flue gas flow rates (corrected to 12% CO_2 or 7% O_2 at furnace capacity as appropriate) and the applicable concentration limits established above for TSP and SO_2. Projected emissions are listed below, based on 4800 Btu/lb heat content and 350 TPD MSW charging rate for each combustor (140 MMBTU/hr). Maximum emissions will be 14% above the tabulated values below and will occur at 114% of the design heat input rate.

Pollutant	lb/MMBtu Heat Input	Projected Emissions lb/hr 100%
Particulate	0.0322 ✓	4.5
Sulfur Dioxide	0.224 ✓	31.4
Nitrogen Oxides	0.643 ✓	90.0
Carbon Monoxide	0.098 [1], 0.391 [2]	13.7 [1], 54.7 [2]
Volatile Organics	0.021	2.9
Fluoride	0.008	1.1
Hydrogen Chloride	0.127	17.8
Sulfuric Acid Mist	0.035	5.0
Lead	7×10^{-4}	0.098
Mercury	8×10^{-4}	0.112
Beryllium	1.35×10^{-7}	1.9×10^{-5}
Arsenic	9.1×10^{-6}	1.3×10^{-3}

[1] 8-hr average
[2] 1-hr average

SPECIFIC CONDITIONS:

The combustors are subject to 40 CFR Part 60, Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements within the permit are more restrictive, the requirements of the permit shall apply.

4. Compliance Tests

a. Initial compliance tests for particulate matter, SO_2, nitrogen oxides, CO, VOC, lead, fluorides, mercury and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Annual compliance test(s) for particulate matter and nitrogen oxides shall be performed.

c. Compliance with the opacity standard shall be determined in accordance with 40 CFR 60.11(b) and (e).

d. Compliance with the requirement for 70% control of sulfur dioxide emissions will be determined by using the test methods in Condition 4.f. below or a continuous emission monitoring system for SO_2 emissions, before and after the air pollution control equipment, which meets the requirements of Performance Specification 2 of 40 CFR 60, Appendix B.

e. The compliance tests shall be conducted within ±10% of the design rated capacity for each permitted fuel.

f. Prior DER approval shall be obtained for the location of the source sampling platform(s). The following test methods and procedures of 40 CFR Parts 60 and 61 (1987 version) or other DER approved methods with prior DER approval shall be used for compliance testing:

(1) Method 1 for selection of sample site and sample traverses.
(2) Method 2 for determining stack gas flow rate.
(3) Method 3 or 3A for gas analysis for calculation of percent O_2 and CO_2.
(4) Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet.
(5) Method 5 or Method 17 for concentration of particulate matter.

SPECIFIC CONDITIONS:

(6) Method 9 for visible determination of the opacity of emissions as required in this permit in accordance with 40 CFR 60.11.

(7) Method 6, 6C, or 8 for concentration of SO_2.

(8) Method 7, 7A, 7B, 7C, 7D, or 7E for concentration of nitrogen oxides.

(9) Method 10 for determination of CO concentration.

(10) Method 12 for determination of lead concentration.

(11) Method 13B for determination of fluoride concentrations.

(12) Method 25 for determination of VOC concentration.

(13) Method 101A for determination of mercury emission rate.

(14) Method 104 for determination of beryllium emission rate.

g. The permittee shall submit to DER a list of the pertinent operating parameters which indicate proper operation of the control equipment.

5. Continuous Emission Monitoring

Continuous emission monitors for opacity, oxygen, carbon monoxide, carbon dioxide, and sulfur dioxide shall be installed, calibrated, maintained and operated for each unit.

a. Each continuous emission monitoring system (CEMS) shall meet performance specifications of 40 CFR 60, Appendix B. The SO_2 CEMS sample point shall be located downstream of control devices for each unit.

b. CEMS data shall be recorded during periods of startup, shutdown and malfunction but shall be excluded from emission averaging calculations for CO, SO_2, and opacity.

SPECIFIC CONDITIONS:

c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation and operation of all CEMS.

e. Opacity monitoring system data shall be reduced to 6-minute averages, based on 36 or more data points, and gaseous CEMS data shall be reduced to 1-hour averages, based on 4 or more data points, in accordance with 40 CFR 60.13(h).

f. Average CO and SO_2 emission concentrations, corrected for O_2, shall be computed in accordance with the appropriate averaging time periods included in Condition No. 3.

g. For purposes of reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. 5 herein, which exceeds the applicable emission limit in Condition No. 3.

6. Operations Monitoring

a. Devices shall be installed to continuously monitor and record steam production, furnace exit gas temperature (FEGT) and flue gas temperature at the exit of the acid gas control equipment. A FEGT to combustion zone correlation shall be established to relate furnace temperature at the temperature monitor location (as close to fully mixed zone as possible) to furnace temperature in the overfire air fully mixed zone.

b. The furnace heat load shall be maintained between 80% and 114% of the design rated capacity during normal operations. The lower limit may be extended provided compliance with the carbon monoxide emissions limit and the FEGT within this permit at the extended turndown rate are achieved.

7. Reporting

a. A minimum of fifteen (15) days prior notification of compliance testing shall be given to the DER Southwest District Office.

SPECIFIC CONDITIONS:

b. The results of compliance test shall be submitted to the DER district office within 45 days after completion of the test.

c. The owner or operator shall submit excess emission reports for any calendar quarter during which there are excess emissions from the facility. If there are no excess emissions during the calendar quarter, the owner or operator shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measured adopted (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs of adjustments (60.7(c)(3)).

(4) When no excess emissions have occured or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) The owner or operator shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; monitoring systems or monitoring device calibration; checks; adjustments and maintenance performed on these systems or devices; and, all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

SPECIFIC CONDITIONS:

8. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing (Rule 17-2, F.A.C.).

9. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's district office.

10. This facility shall be operated in such a manner so as to preclude objectionable odors pursuant to F.A.C. Rule 17-2.600(1).

11. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with F.A.C. Rule 17-2.610(3).

12. The permittee shall comply with all the applicable provisions of F.A.C. Chapter 17-2, 17-4, and 40 CFR 60 and 61.

Issued this 22 day of Sep, 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

Compliance Certification

PS6T1.2

COMPLIANCE CERTIFICATION

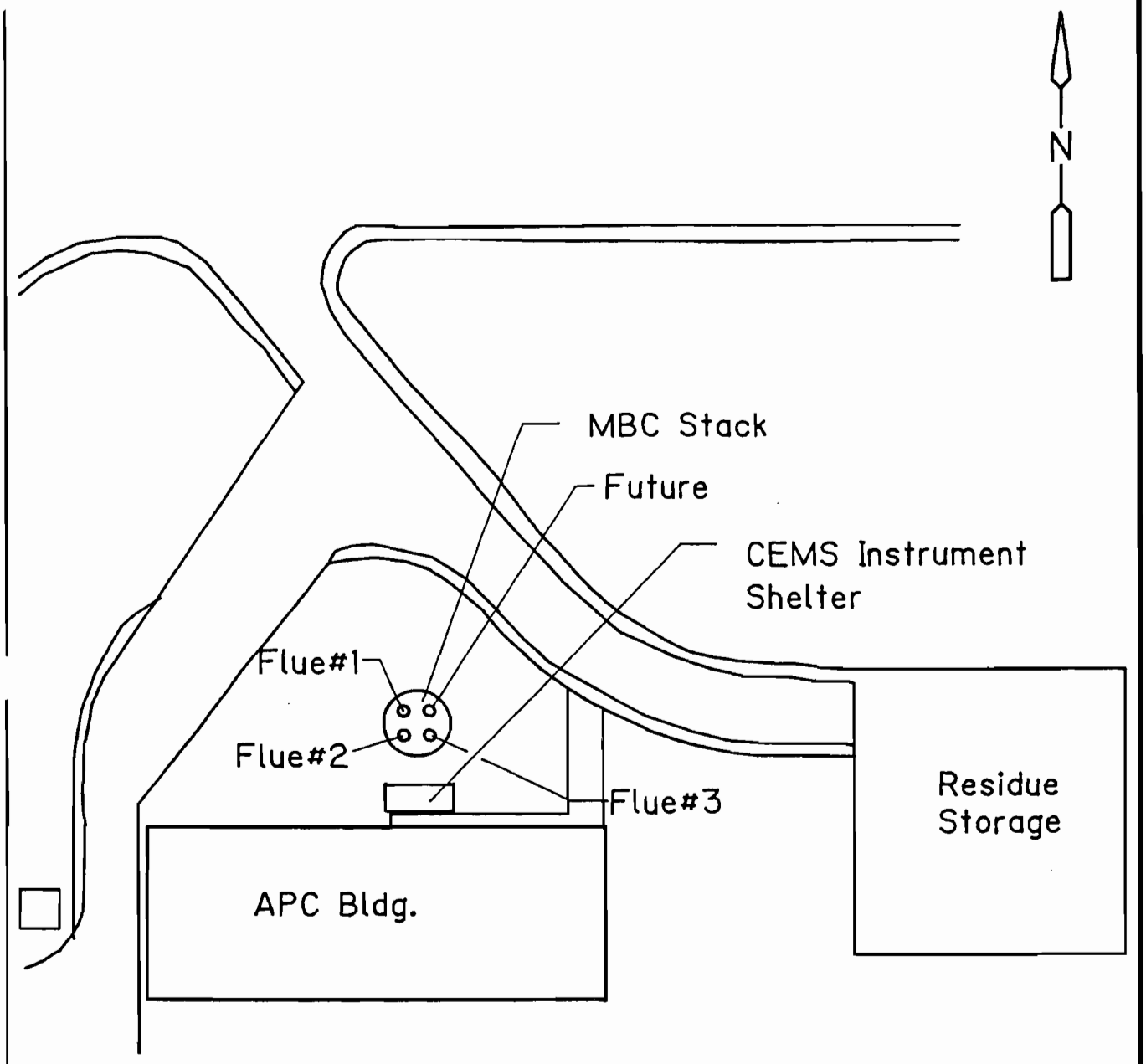
Compliance statements will be submitted to DEP on an annual basis, or as required throughout the permit term.

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

Responsible Official

Date

Emission Unit Flue



GRAPHIC SCALE:
N.T.S.

PASCO COUNTY RESOURCE RECOVERY FACILITY

Stack and Vicinity

CDM
environmental engineers, scientists, planners, & management consultants

Figure No. 1.3

Detailed description of Control Equipment

The facility air pollution control equipment consist of the following components:

1. Dry scrubber
2. Fabric filter (baghouse)
3. Activated carbon injection system

The dry scrubber utilizes lime slurry to neutralize acid-forming gases, such as sulfur oxides and hydrogen chloride. The bag house captures the particulates. Activated carbon is injected into the flue gases prior to the bag house to control the mercury emissions. The bag house recovers more than 99 percent of the particulate matter. Captured fly ash particles fall into hoppers and are transported by an enclosed conveyor system to the bottom ash discharger where they are wetted to prevent dust, and mixed with the bottom ash.

I, Darwish Q. El-Hajji, P.E., am satisfied that the air pollution equipment associated with the emission unit addressed in this section will achieve a control efficiency to meet the applicable emission limitations.

Darwish Q. El-Hajji Date

3.0 EQUIPMENT SPECIFICATIONS

3.1 DESIGN BASIS

The following criteria provided the basis for the design of the fabric filter particulate removal system described in this manual. Standard conditions are defined as 70 F and 14.7 psia.

3.1.1 Operating Conditions (Inlet)

Process Gas Volume, acfm	80,019
Inlet Gas Temperature, °F	300
Inlet Dust Concentration, gr/ACF	3.3
Operating Pressure, inches wg	-10

3.1.2 Design Criteria

Maximum Design Temperature, °F	500
Maximum Design Pressure, inches wg	±20
Snow Load, PSF	0
Wind Load, PSF	15-19
Live Load, PSF	50
Dust Load (hopper), PCF	100
Seismic Zone	ANSI Zone 0

3.1.3 Filter Data

Effective Filter Area (sf):	
Each bag	31.42
Each compartment	4,524
Each fabric filter	27,144
One (1) compartment out per fabric filter*	22,619
Filter (air-to-cloth) Ratio:	
All compartments active	2.95:1
One (1) compartment out per fabric filter*	3.54:1

3.1.4 Instrumentation Setpoints

Inlet Gas Temperature, °F:	
HI alarm	500
LO alarm	240
Differential Pressure, "wg:	
HI HI Delta P Alarm	10
HI Delta P Alarm	6
Hopper Heater setpoint, °F	285
Compressed Air Pressure, PSIG	50-60**

*One (1) compartment off line, cleaning
**Operation below 40 psig will void any performance guarantee

3.2 EQUIPMENT CONFIGURATION

Details regarding the specific configuration of the purchased equipment are summarized in this section.

3.2.1 Configuration

PULSEFLO® Fabric Filter Model	6 Module PF6020-144
Number of Fabric Filters	Three
Number of Modules per Fabric Filter	6
Module Arrangement	2 x 3
Module size (width depth)	6'-4" x 11"-0"
Inlet Configuration	Spool Inlet
Outlet Configuration	Spool Outlet

3.2.2 Filter Bags

Bag Arrangement	9 x 16
Number of Bags per Module	144
Total Number of Bags per Fabric Filter	864
Bag Size (1.57' net circumference):	
Nominal Diameter (inches)	6
Overall Length (feet)	20
Bag Type	Teflon Coated Fiberglass
Fabric Weight	16 Oz\Square Yard
Bag Cage	Electrozinc plated carbon steel
Bag Tube Sheet Connection	Snap Ring

3.2.3 Dampers

Inlet	Manual Butterfly
Outlet	Pneumatic Butterfly

3.2.4 Hoppers

Hopper Type	Pyramidal
Hopper Valley Angle	55°
Hopper Capacity	

3.2.5 Materials of Construction

Casing Plate	3/16" ASTM A36
Hopper Plate	1/4" ASTM A36
Shapes	ASTM A36
Pipe	A53 Grade B or A501
Bolts	ASTM A325

* One baghouse is installed Ryton on Ryton Scrim Felt Bags over an Empigard Epoxy coated cage.

3.3 OPTIONAL AUXILIARY EQUIPMENT

The PULSEFLO® fabric filter may be supplemented with accessories as necessary to meet individual requirements. Auxiliary equipment provided is identified on the "Table of Supplied Auxiliary Equipment"

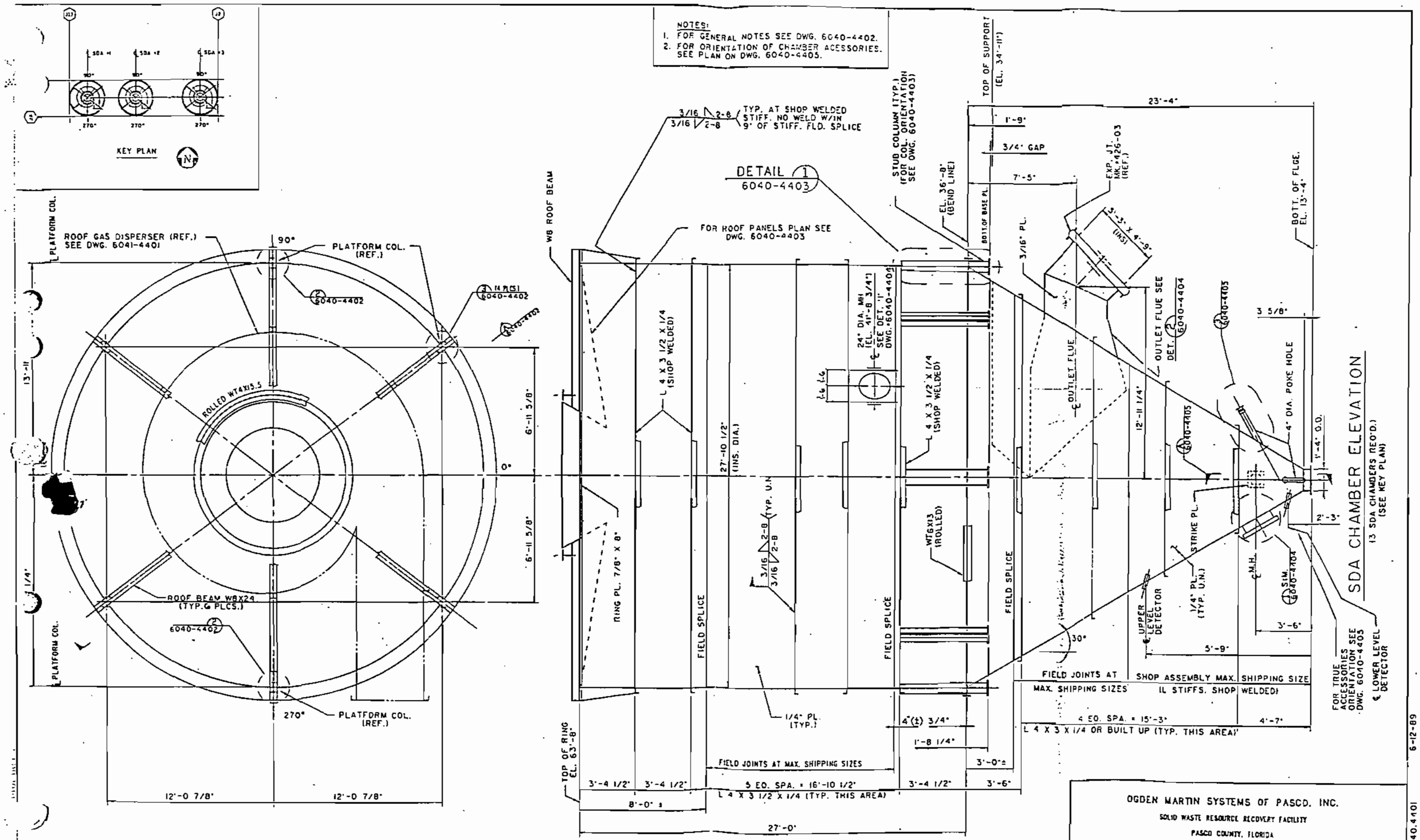
3.3.1 Table Of Supplied Auxiliary Equipment

EQUIPMENT	TYPE	SUPPLIED YES	SUPPLIED NO
Hopper Accessories			
Heaters	Blanket/Strip	X	
Vibrators	Electric	X	
Level Detectors	Capacitance	X	
Air Locks	-		X
Conveyors	-		X
Bypass Duct			
Dampers	Poppet	X	
Expansion Joints	Fabric	X	
Inlet Manifold			
Dampers	Butterfly/Chain Operated	X	
Outlet Manifold			
Dampers	Butterfly/Pneumatic	X	
Expansion Joints	Fabric	X	
Compressed Air			
Compressor	Screw	X	
Accumulator	Steel Tank	X	
Valves	-	X	
Gauges	-	X	
Electrical Equipment			
Control Room	-	X	
Motor Control Center	-	X	
Power Distribution Panel	-	X	
Switchgear	-		X
Interlocks	Key		X

3.3.1 Table Of Supplied Auxiliary Equipment - continued

EQUIPMENT	TYPE	SUPPLIED YES	SUPPLIED NO
Instrumentation			
Bag Failure	-		X
Fire Protection	-		X
Temperature	Thermocouple	X	
Pressure & Pressure Drop	Photohelic	X	
Outlet Damper Position Indicator	Limit Switches/Lights	X	-
Bypass Damper Position Indicator	Limit Switches/Lights		X

NOTES:
1. FOR GENERAL NOTES SEE DWG. 6040-4402.
2. FOR ORIENTATION OF CHAMBER ACCESSORIES, SEE PLAN ON DWG. 6040-4405.



DRAWN BY	DH 6-2-89
CHECKED BY	C.K. 5-4-89
ENGINEER	G.S. 9-12-89
ENG SUPERV	
PROJ ENG	

UNLESS SHOWN OTHERWISE, DIMENSIONS ARE IN INCHES AND THE FOLLOWING TOLERANCES SHALL APPLY.

JOY TECHNOLOGIES INC.
WESTERN PRECIPITATION DIVISION

OGDEN MARTIN SYSTEMS OF PASCO, INC.
SOLID WASTE RESOURCE RECOVERY FACILITY
PASCO COUNTY, FLORIDA

SDA CHAMBER
KEY PLAN AND ELEVATION

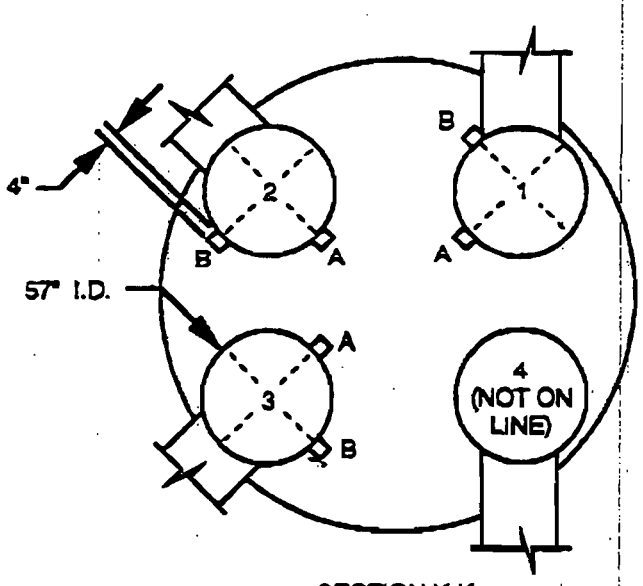
SCALE: NONE
JOB: D-89-078
DWG: 6040-4401
REV: 0

DWG. NO.	TITLE	REV. NO.	DATE	REV. BY	CKD BY	ENG. APP	ENG APP	REVISION RECORD

6-12-89
VP.ST.89078.6040.4401

Stack Sampling Facilities

PS6T1.2



SECTION K-K

TRAVERSE POINTS/STACK

2 AXES
6 POINTS / AXIS
12 TOTAL POINTS

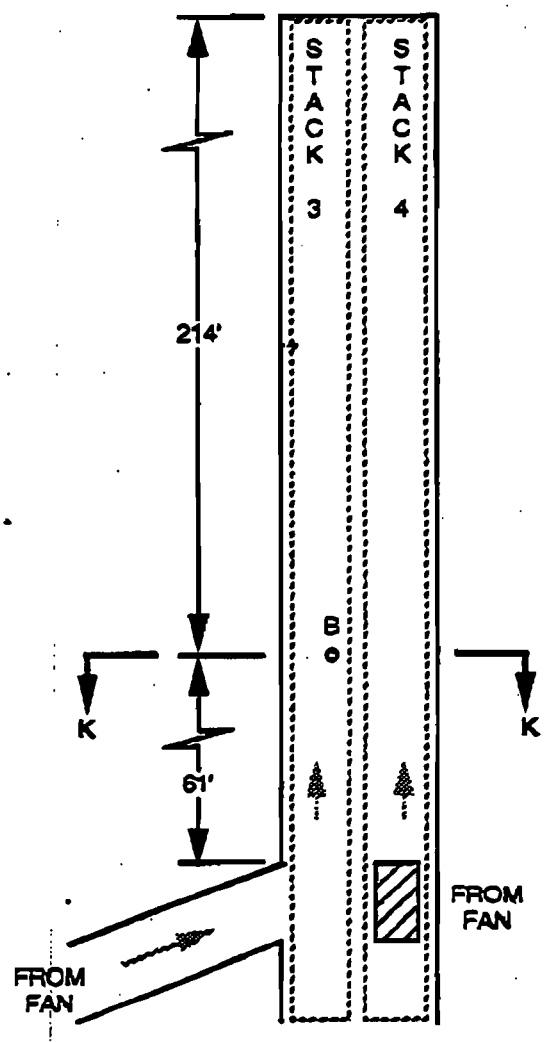


FIGURE 4-1 UNIT NOS. 1, 2, AND 3 STACKS TEST LOCATION.

OGDEN

Ogden Projects, Inc.
40 Lane Road, CN 2615
Fairfield, NJ 07007-2615 USA
Tel: 201 882 9000

SOURCE TEST PLAN

Source Information

Type Unit: Municipal Solid Waste-to-Energy Facility

Facility: Ogden Martin Systems of Pasco, Inc.
1387 Hays Road
Spring Hill, FL 34610

Purpose of Test: Demonstration of Compliance with Florida Department of Environmental Protection, Permit No. PSD-FL-127, Rule 62-296 and 40 CFR 60, Appendix F.

Person(s) to Contact: Mr. Robert Sitz, Facility Manager
(813) 856-2917

Mr. G. J. Aldina
Sr. Vice President, Environmental Testing/CEM
(201) 882-4136

Mr. Derek A. Porter
Director - CEM Systems
(201) 882-7259

Testing Firm Information

Company: Contractor to be selected

Testing Information

Procedure: Testing three (3) municipal solid waste-fired boilers for various air pollutant emissions. Perform a relative accuracy test audit of the continuous emission monitoring system.

Proposed Test Dates: June 4-6, 1996

Prepared by: Michelle L. Herman

April 12, 1996
OPI Report No. 1049

TABLE OF CONTENTS

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4.0	SOURCE TEST INFORMATION	6
5.0	OPERATIONAL PARAMETERS	8

APPENDIX A: PERMIT CONDITIONS

APPENDIX B: RULE 62-296

1.0 INTRODUCTION

1.0 INTRODUCTION

A contractor for Ogden Martin Systems of Pasco, Inc., will test the following air pollutant emissions from the Pasco County Resource Recovery Facility for determination of compliance with Florida Department of Environmental Protection, Permit No. PSD-FL-127, Specific Condition 4 and Rule 62-296.

Table 1-1: Emission Test Procedures

Pollutant	Permit Condition	Sampling Method	Unit No.	Replicates	Approximate Sampling Time (Minutes)
Particulate Matter (PM)	4B	U.S. EPA Method 5	Unit 1,2,3	1, 2, 3	120
Oxides of Nitrogen (NO_x)	4B	U.S. EPA Method 7E	Unit 1,2,3	1, 2, 3	60
Visible Emissions (VE)	4C	U.S. EPA Method 9	Unit 1,2,3	1, 2, 3	60
Mercury (Hg)	Rule 62-296	U.S. EPA Method 101A	Unit 1,2,3	1, 2, 3	90

1.0. INTRODUCTION - CONTD.

A relative accuracy test audit (RATA) will be performed on the continuous emission monitoring system (CEMS). The CEMS is a dedicated system consisting of the following analyzers.

Pollutant Monitor	Unit Number	Location	Emission Limit	Range	Monitor Manufacturer	Model Number	Serial Number
SO_2	1	Stack	104 ppmdv @ 7% O_2	0-200 ppm	Western Research	721AT	90-721AT2-7623-6
CO	1	Stack	400 ppmdv @ 7% O_2	0-500 ppm	Thermo Environmental	48	48-28459-231
CO_2	1	Stack	----------	0-20%	Auto Customs Systems	3300	N9J3748T
O_2	1	Stack	----------	0-25%	Servomex	1400	01420/701/285
SO_2	2	Stack	104 ppm @ 7% O_2	0-200 ppm	Western Research	721AT	90-721AT2-7623-5
CO	2	Stack	400 ppm @ 7% O_2	0-500 ppm	Thermo Environmental	48	48-28454-231
CO_2	2	Stack	----------	0-20%	Auto Customs Systems	3300	N9J3734T
O_2	2	Stack	----------	0-25%	Servomex	1400	01420/701/296
SO_2	3	Stack	104 ppmdv @ 7% O_2	0-200 ppm	Western Research	721AT	90-721AT2-7623-4
CO	3	Stack	400 ppmdv @ 7% O_2	0-500 ppm	Thermo Environmental	48	48-28469-231
CO_2	3	Stack	----------	0-20%	Auto Customs Systems	3300	N9J3741T
O_2	3	Stack	----------	0-25%	Servomex	1400	01420/701/297

2.0 SCHEDULE OF ACTIVITIES

2.0 SCHEDULE OF ACTIVITIES [1]

Day	Unit	Parameter	Reference Method	Replicates	Approximate Sampling Time (minutes)
1	-------	Setup			
2	1	PM	EPA 5	1, 2, 3	120
	1	VE	EPA 9	1, 2, 3	60
	1	NO_x	EPA 7E	1, 2, 3	60
	1	O_2, CO_2 SO_2, CO (RATA)	EPA 3A, 6C, 10	1-9	30
	1	Hg	EPA 101A	1, 2, 3	90
3	2	PM	EPA 5	1, 2, 3	120
	2	Hg	EPA 101A	1, 2, 3	90
	2	VE	EPA 9	1, 2, 3	60
	2	NO_x	EPA 7E	1, 2, 3	60
	2	O_2, CO_2 SO_2, CO (RATA)	EPA 3A, 6C, 10	1-9	30
4	3	PM	EPA 5	1, 2, 3	120
	3	VE	EPA 9	1, 2, 3	60
	3	NO_x	EPA 7E	1, 2, 3	60
	3	O_2, CO_2 SO_2, CO (RATA)	EPA 3A, 6C, 10	1-9	30
	3	Hg	EPA 101A	1, 2, 3	90

[1] Schedule may change during testing to accommodate site conditions.

3.0 QUALITY ASSURANCE / QUALITY CONTROL

3.0 QUALITY ASSURANCE / QUALITY CONTROL

OPI has instituted a rigorous Quality Assurance/Quality Control (QA/QC) program for all of its air pollution testing. This program ensures that the emission data reported for OPI facilities are as accurate and meaningful as possible.

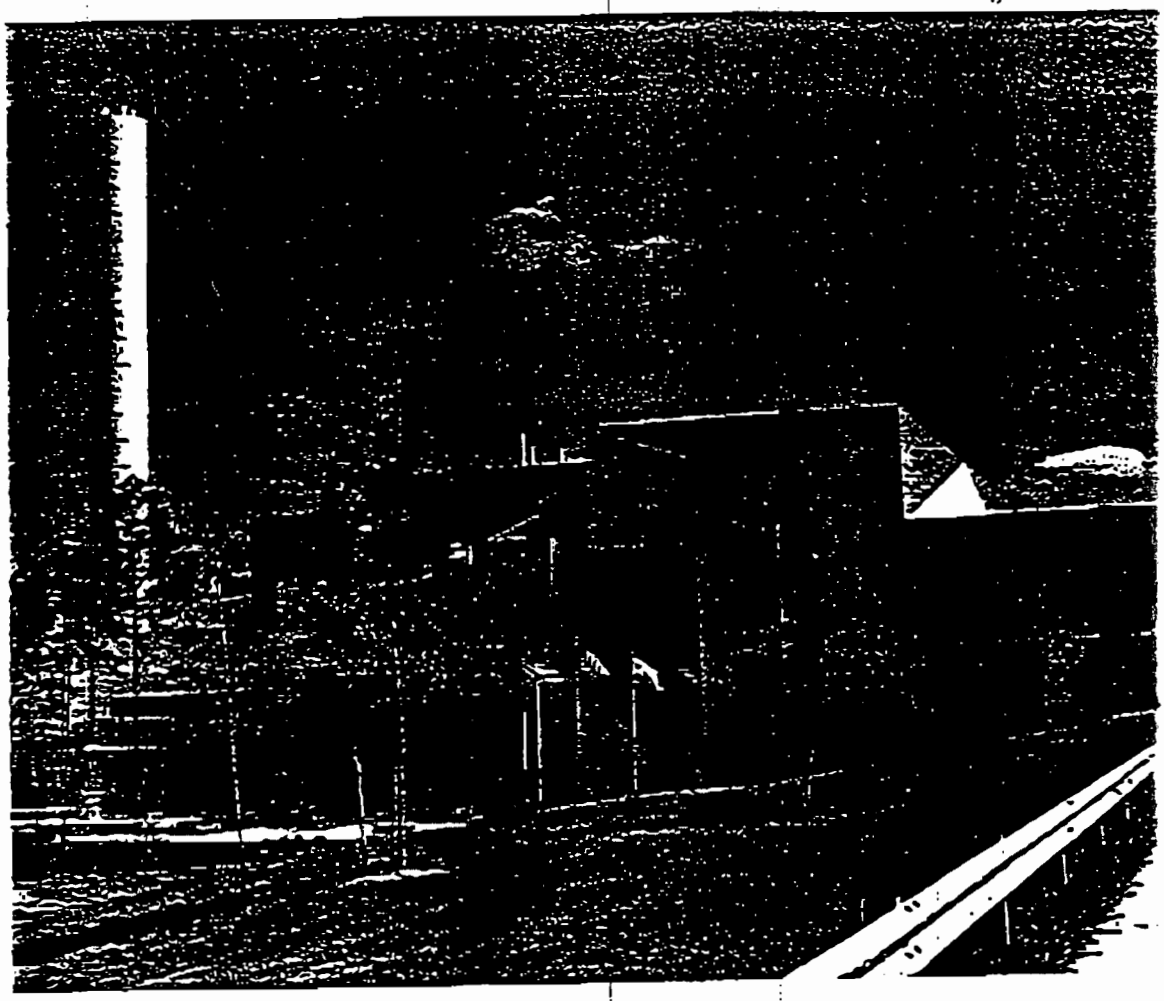
Glass or Teflon is employed in all of the sampling equipment in contact with the sample gas. This includes the nozzle, probe liner, filter housing, sample line and impingers. Calibration of all gas meters, thermocouples, and pitot tubes used in the test program will be performed using reference methods with calibration sheets included in the final report.

Transportation blanks, method blanks, inert sample containers, field data and chain of custody forms from the U.S. EPA QA Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, EPA-600/4-77-027b, are used during all phases of the test program.

All test programs include a supervising engineer from OPI's Fairfield, New Jersey, office to ensure the integrity of the test program according to the Source Test Plan.

4.0 SOURCE TEST INFORMATION

OGDEN MARTIN SYSTEMS OF PASCO, INC.



The Pasco County Solid Waste Resource Recovery Facility

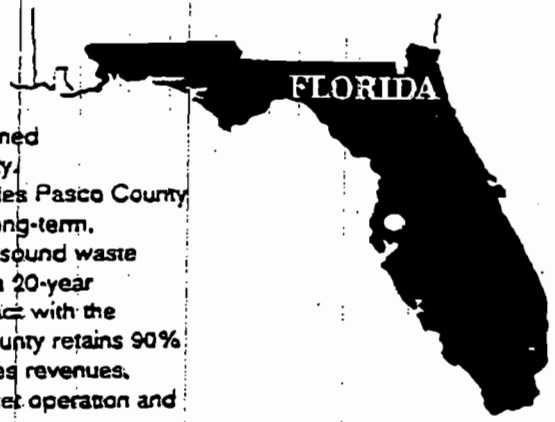
OGDEN MARTIN SYSTEMS
OF PASCO, INC.

RESOURCE RECOVERY FACILITY

THE PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY

The Pasco County Solid Waste Resource Recovery Facility, which began commercial operation in May, 1991, converts up to 1,050 tons per day of non-recycled solid waste into saleable energy. Producing up to 31.2 megawatts of electricity daily, the facility consumes less than four megawatts of the power it generates and sells the remainder to the local utility. Designed, built and operated by Ogden Martin Systems of Pasco, Inc. (OMSP), the facility is owned by Pasco County.

OMSP provides Pasco County residents with long-term, environmentally sound waste disposal under a 20-year operating contract with the County. The County retains 90% of electricity sales revenues, which helps offset operation and construction costs.



RECYCLING WASTE INTO ENERGY

The facility's mass burn combustion system incorporates the technology of German-based Martin GmbH. Waste is combusted at furnace temperatures exceeding 1,800 degrees Fahrenheit and reduced to an inert ash residue that is approximately 10% of the original volume; the ash is disposed at an adjacent County landfill. Before leaving the facility, combustion air is directed through technologically advanced air pollution control equipment, including dr flue gas scrubbers and fabric filter baghouses. Facility emissions are strictly regulated by both state and federal agencies, as are handling and disposal of combustion ash.

AN INTEGRATED SYSTEM

Anchored by the resource recovery facility, Pasco County's integrated solid waste management plan is part of a statewide initiative to reduce reliance on landfilling by implementing integrated solutions on the county level. Plant operations not only conserve landfill space, but offset fossil fuel consumption, as well.

Other elements of the County's integrated system include recycling of paper goods, aluminum cans, glass and plastic containers and white goods and other metals. The County also runs special disposal programs for household hazardous waste, used motor oil, tires and construction and demolition debris. In an effort to reduce the amount of mercury in the waste stream, the County places battery collection buckets in public buildings and retail stores to provide citizens with a safe means of disposing of household batteries. In addition, ferrous metal recovered from combustion ash is a major contribu to the County's recycling effor

The Pasco County Solid Waste Resource Recovery Facility is located in Spring Hill For more information or to arrange a tour, please call 813-856-2917.

FACILITY SPECIFICATIONS

Rated Refuse Burning Capacity
1,050 tons per day

Unit Design
Three 350 ton per day waterwall furnaces

Guaranteed Throughput
328,000 tons per year

Guaranteed Waste Delivery
316,500 tons per year

Energy Generation at Rated Capacity
up to 31.2 MW, sold to Florida Power Company

OGDEN MARTIN SYSTEMS OF PASCO, INC.
14220 Hays Road
Spring Hill, Florida 34610

5.0 OPERATIONAL PARAMETERS

5.0 OPERATIONAL PARAMETERS

During the air pollutant emissions testing, plant process data will be monitored and collected by OMS personnel to ensure representative operation of the facility. Steam flow rate will be documented to ensure representative heat input at design conditions.

APPENDIX A: PERMIT CONDITIONS

Florida Department of Environmental Regulatio

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Sec

PERMITTEE:
Pasco County
7536 State Street
New Port Richey, FL 33553

Permit Number: PSD-FL-127
County: Pasco
Latitude/Longitude: 28° 22' 05"N
82° 33' 30"W
Project: Pasco County Resource Recovery Facility Units 1, 2, and 3

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a municipal solid waste (MSW) resource recovery facility with an ultimate capacity of 1200 TPD (tons per day), generating 29 MW of electricity. Initially, three combustors will be installed each with a design capacity of 350 TPD (total of 1050 TPD for the facility). The design rated heat input capacity of each unit will be 140 MMBTU/hr. The normal operating range of each unit will be between 30% and a maximum of 114% of the design rated capacity. Acid gases and particulates will be controlled by dry scrubber and baghouse technology. DER will be notified of the final choice of control/combustor equipment. The power plant site certification number for this project is PA 87-23.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted in the Specific Conditions.

Attachments are as follows:

1. Power Plant Site Certification package PA 87-23 and its associated attachments, dated April 4, 1988.
2. Letter from David Dee, for Pasco County, of August 10, 1988.
3. Letter from EPA dated September 8, 1988.
4. DER's Final Determination dated September 14, 1988.

PERMITTEE: Pasco County Permit Number: PSD-FL-127

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

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

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

PERMITTEE: Pasco County **Permit Number: PSD-FL-127**

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(x) Determination of Best Available Control Technology (BACT)
(x) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

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b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Municipal Solid Waste Combustor

a. Each of the three municipal waste combustors (MWC) shall have a design rated capacity of 350 tons municipal solid waste (MSW) per day, 140 million Btu heat input per hour, assuming a heating value of 4,800 Btu per pound.

b. The maximum individual MWC's throughput shall not exceed 114% of either the design MSW charging rate of 350 TPD or the heat input rate of 140 MMBTU/hr.

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c. The furnace mean temperature at the fully mixed zone of the combustor shall not be less than 1,800°F.

d. The normal operating range of the MWC shall be 80% to a maximum of 114% of design rated capacity.

e. The MWC shall be fueled with municipal solid waste only. Other wastes shall not be burned without specific prior written approval of Florida DER.

f. Auxiliary fuel burner(s) shall be fueled only with natural gas. If the annual capacity factor for gas is greater than 10%, as determined by 40 CFR 60.43b(d), the facility shall be subject to 40 CFR 60.44b, standards for nitrogen oxides.

g. Auxiliary fuel burner(s) shall be used at start up during the introduction of MSW fuel until design furnace gas temperature is achieved.

h. The facility may operate continuously (8760 hrs/yr).

2. Air Pollution Control Equipment Design

a. Each MWC shall be equipped with a baghouse for particulate emission control.

b. Each MWC shall be equipped with a dry scrubber for acid gas control, to remove at least 70% of SO_2 and 90% of other acid gases (namely HCL, H_2SO_4 mist, and fluorides.

c. The acid gas emission control system shall be capable of cooling flue gases to an average temperature not exceeding 300°F (3-hour rolling average).

d. DER shall be notified of the control devices chosen.

3. Flue gas emissions from each unit shall not exceed the following:

a. Particulate: 0.0150 grains/dscf corrected to 12% CO_2

b. Sulfur Dioxide: 104 ppmdv corrected to 7% O_2 3-hour (rolling) average, and 60 ppmdv corrected to 7% O_2 6-hour rolling average;

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SPECIFIC CONDITIONS:

	or 70% reduction of uncontrolled SO_2 emissions, 6-hour rolling average. Not to exceed 100 ppmdv corrected to 7% O_2, 6-hr rolling average.
c. Nitrogen Oxides:	0.643 lb/MMBtu heat input.
d. Carbon Monoxide:	400 ppmdv corrected to 7% O_2, 1-hr average, and 100 ppmdv corrected to 7% O_2, 8-hr rolling average.
e. Volatile Organic Compounds:	0.021 lb/MMBtu heat input
f. Lead:	0.0007 lb/MMBtu heat input
g. Fluoride:	0.008 lb/MMBtu heat input
h. Beryllium:	1.35×10^{-7} lb/MMBtu heat input
i. Mercury:	0.0008 lb/MMBtu heat input
j. Visible Emissions:	Opacity of MWC emissions shall not exceed 15% opacity (6-min. average), except for one 6-min. period per hour of not more than 20% opacity. Excess emissions resulting from startup, shut down, or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions are minimized.

For each pollutant for which a continuous emissions monitoring system is required in Condition No. 5, the emission averaging time specified above shall be used to establish operating limits and reportable excess emissions.

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SPECIFIC CONDITIONS:

Compliance with the permit emission limits shall be determined by EPA reference test methods included in 40 CFR Parts 60 and 61, 1987 version, and listed in Condition No. 4 of this permit. Other DER approved methods may be used only after prior Departmental approval.

For the purpose of establishing specific increment consumption for TSP and SO_2 at the facility, an hourly emission rate shall be established for each pollutant at the time of performance testing using flue gas flow rates (corrected to 12% CO_2 or 7% O_2 at furnace capacity as appropriate) and the applicable concentration limits established above for TSP and SO_2. Projected emissions are listed below, based on 4800 Btu/lb heat content and 350 TPD MSW charging rate for each combustor (140 MMBTU/hr). Maximum emissions will be 14% above the tabulated values below and will occur at 114% of the design heat input rate.

Pollutant	lb/MMBtu Heat Input	Projected Emissions lb/hr 100%
Particulate	0.0322	4.5
Sulfur Dioxide	0.224	31.4
Nitrogen Oxides	0.643	90.0
Carbon Monoxide	0.098 [1], 0.391 [2]	13.7 [1], 54.7 [2]
Volatile Organics	0.021	2.9
Fluoride	0.008	1.1
Hydrogen Chloride	0.127	17.8
Sulfuric Acid Mist	0.035	5.0
Lead	7×10^{-4}	0.098
Mercury	8×10^{-4}	0.112
Beryllium	1.35×10^{-7}	1.9×10^{-5}
Arsenic	9.1×10^{-6}	1.3×10^{-3}

[1] 8-hr average
[2] 1-hr average

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SPECIFIC CONDITIONS:

The combustors are subject to 40 CFR Part 60, Subpart E, and Subpart Db, New Source Performance Standards (NSPS), except that where requirements within the permit are more restrictive, the requirements of the permit shall apply.

4. Compliance Tests

a. Initial compliance tests for particulate matter, SO_2, nitrogen oxides, CO, VOC, lead, fluorides, mercury and beryllium shall be conducted in accordance with 40 CFR 60.8 (a), (b), (d), (e), and (f).

b. Annual compliance test(s) for particulate matter and nitrogen oxides shall be performed.

c. Compliance with the opacity standard shall be determined in accordance with 40 CFR 60.11(b) and (e).

d. Compliance with the requirement for 70% control of sulfur dioxide emissions will be determined by using the test methods in Condition 4.f. below or a continuous emission monitoring system for SO_2 emissions, before and after the air pollution control equipment, which meets the requirements of Performance Specification 2 of 40 CFR 60, Appendix B.

e. The compliance tests shall be conducted within ±10% of the design rated capacity for each permitted fuel.

f. Prior DER approval shall be obtained for the location of the source sampling platform(s). The following test methods and procedures of 40 CFR Parts 60 and 61 (1987 version) or other DER approved methods with prior DER approval shall be used for compliance testing:

(1) Method 1 for selection of sample site and sample traverses.
(2) Method 2 for determining stack gas flow rate.
(3) Method 3 or 3A for gas analysis for calculation of percent O_2 and CO_2.
(4) Method 4 for determining stack gas moisture content to convert the flow rate from actual standard cubic feet to dry standard cubic feet.
5) Method 5 or Method 17 for concentration of particulate matter.

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(6) Method 9 for visible determination of the opacity of emissions as required in this permit in accordance with 40 CFR 60.11.

(7) Method 6, 6C, or 8 for concentration of SO_2.

(8) Method 7, 7A, 7B, 7C, 7D, or 7E for concentration of nitrogen oxides.

(9) Method 10 for determination of CO concentration.

(10) Method 12 for determination of lead concentration.

(11) Method 13B for determination of fluoride concentrations.

(12) Method 25 for determination of VOC concentration.

(13) Method 101A for determination of mercury emission rate.

(14) Method 104 for determination of beryllium emission rate.

g. The permittee shall submit to DER a list of the pertinent operating parameters which indicate proper operation of the control equipment.

5. Continuous Emission Monitoring

Continuous emission monitors for opacity, oxygen, carbon monoxide, carbon dioxide, and sulfur dioxide shall be installed, calibrated, maintained and operated for each unit.

a. Each continuous emission monitoring system (CEMS) shall meet performance specifications of 40 CFR 60, Appendix B. The SO_2 CEMS sample point shall be located downstream of control devices for each unit.

b. CEMS data shall be recorded during periods of startup, shutdown and malfunction but shall be excluded from emission averaging calculations for CO, SO_2, and opacity.

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c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation and operation of all CEMS.

e. Opacity monitoring system data shall be reduced to 6-minute averages, based on 36 or more data points, and gaseous CEMS data shall be reduced to 1-hour averages, based on 4 or more data points, in accordance with 40 CFR 60.13(h).

f. Average CO and SO_2 emission concentrations, corrected for O_2, shall be computed in accordance with the appropriate averaging time periods included in Condition No. 3.

g. For purposes of reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. 5 herein, which exceeds the applicable emission limit in Condition No. 3.

6. Operations Monitoring

a. Devices shall be installed to continuously monitor and record steam production, furnace exit gas temperature (FEGT) and flue gas temperature at the exit of the acid gas control equipment. A FEGT to combustion zone correlation shall be established to relate furnace temperature at the temperature monitor location (as close to fully mixed zone as possible) to furnace temperature in the overfire air fully mixed zone.

b. The furnace heat load shall be maintained between 80% and 114% of the design rated capacity during normal operations. The lower limit may be extended provided compliance with the carbon monoxide emissions limit and the FEGT within this permit at the extended turndown rate are achieved.

7. Reporting

a. A minimum of fifteen (15) days prior notification of compliance testing shall be given to the DER Southwest District Office.

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b. The results of compliance test shall be submitted to the DER district office within 45 days after completion of the test.

c. The owner or operator shall submit excess emission reports for any calendar quarter during which there are excess emissions from the facility. If there are no excess emissions during the calendar quarter, the owner or operator shall submit a report semiannually stating that no excess emissions occurred during the semiannual reporting period. The report shall include the following:

(1) The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each period of excess emissions (60.7(c)(1)).

(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the furnace boiler system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measured adopted (60.7(c)(2)).

(3) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks, and the nature of the system repairs of adjustments (60.7(c)(3)).

(4) When no excess emissions have occured or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report (60.7(c)(4)).

(5) The owner or operator shall maintain a file of all measurements, including continuous monitoring systems performance evaluations; monitoring systems or monitoring device calibration; checks; adjustments and maintenance performed on these systems or devices; and, all other information required by this permit recorded in a permanent form suitable for inspection (60.7(d)).

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SPECIFIC CONDITIONS:

8. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing (Rule 17-2, F.A.C.).

9. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's district office.

10. This facility shall be operated in such a manner so as to preclude objectionable odors pursuant to F.A.C. Rule 17-2.600(1).

11. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with F.A.C. Rule 17-2.610(3).

12. The permittee shall comply with all the applicable provisions of F.A.C. Chapter 17-2, 17-4, and 40 CFR 60 and 61.

Issued this 22 day of Sep, 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

Procedure for Start up and Shut down

PS6T1.2

4. MWC UNIT STARTUP, SHUTDOWN, AND MALFUNCTION PROCEDURES

4.1 MWC UNIT STARTUP PROCEDURES

4.1.1 COMBUSTION UNIT STARTUP

This procedure covers the startup of one unit consisting of the boiler and its auxiliaries as well as all associated air pollution control equipment. The procedure assumes that other units are already in normal operation and all plant systems that are common to all units are also operating in a normal manner.

VERIFY THAT ALL SAFETY CLEARANCES HAVE BEEN PROPERLY RELEASED BEFORE PREPARING THE UNIT FOR SERVICE.

1. Verify Scrubber and Baghouse flyash hopper heaters have been energized and operating properly for approximately 24 hours.

2. Check that feed chute, feed rams and table, grate surface, clinker rollers, ash discharger, and boiler fans are clear of personnel, tools and debris and are ready for service.

3. Verify that overfire air nozzles in front and rear walls of furnace are clear of slag and ready for service.

4. Verify feed chute cooling water system is full, vented, and ready for service.

5. Check that all access plates in feeder area are closed and locked.

6. Check that all access doors in feeder riddling hoppers and ducts are closed.

7. Verify power to the MARTIN control panel.

8. Verify that grate and auxiliaries' lubrication system is now placed into service.

9. Verify residue and fly ash handling equipment are ready for service.

10. Verify power to unit instrumentation in control room.

11. Verify correct operation of orifice damper position indicators in the control room. Leave dampers in closed position.

12. Verify water level in ash discharger and check setting of float valve. Normal water level 18 inches below the upper edge of the ash discharger.

13. Inspect grate hydraulic system and verify availability for service.

14. Start one hydraulic pump, check the system and verify:

    - System pressure is 1500 psig.
    - Feed chute dampers open and reclose.
    - Feed ram operation from the local pushbuttons.
    - Grate operation from the local pushbuttons.
    - Clinker roller operation.
    - Ash discharger operation.

15. Allow pump to run for approximately 3 minutes after completing Item 14. Start standby pump. Check for proper operation of the stand-by pump and that system pressure is 1500 psig. Secure Stand-by pump.

16. Verify operability of riddlings flap, pneumatic cylinders.

17. Ensure seal air filter dampers are open and filter is clean.

18. Record Stoker Operating Hours in the control room.

19. Close boiler and economizer drains.

20. Open boiler vents.

21. Verify the main stop/check, angle valve as well as main steam supply valves are closed and associated drains are open.

22. Open superheater vents and drains.

23. Open economizer inlet stop valve.

24. Set Feedwater Regulator to "Manual" and close the valve.

25. Open Feedwater Regulating stop valves and ensure the by-pass valve is closed.

26. Commence filling the boiler by manually opening the Feedwater Regulator to achieve a flow rate of approximately 20,000 lbs/hr. Stop filling when approximately -5 inches is indicated in the drum.

27. Inspect Baghouse and Scrubber systems. Verify personnel, tools, and debris have been removed. Close all access doors and ports.

28. Open Baghouse compartment outlet dampers and verify that the bypass damper is closed.

29. Open the inlet dampers on baghouse compartments #1 & #2.

30. The Induced Draft Fan will be in the fail "Open" position, start the Induced Draft Fan and ensure the damper closes and the fan starts: inspect and verify satisfactory operation.

31. Set Induced Draft Fan damper controller to "Automatic" to hold -0.2 inches of H_2O.

32. Start the Seal Air Fan, inspect and verify satisfactory operation.

33. Close Underfire Air Dampers in accordance with the Startup Curve "Step 1" and set the Overfire Air Dampers to 0% opening.

34. Set Forced Draft Fan damper controller to "Manual" and close them.

35. Attempt to start both the Overfire and Forced Draft Fans. They should <u>not</u> start due to Low Drum Level Interlock.

36. Continue filling the boiler to a level of -2 inches as indicated by the eye-hye or drum level controller.

37. The Forced Draft Fan damper will be in the fail "Open" position, start the Forced Draft Fan and ensure the damper closes and the fan starts: inspect and verify satisfactory operation.

38. The Overfire Fan damper will be in the fail "Open" position, start the Overfire Fan and ensure the damper closes and the fan starts: inspect and verify satisfactory operation.

39. Shutdown the Induced Draft Fan and verify that the Overfire and Forced Draft Fans trip.

40. Verify stoker controls are as follows:
    - Feeders (all) - "ON"
        - Interlock "OFF"
        - Speed 15%
        - Stroke 8.2 inches

- Grates (all) - "ON"
  - Interlock "OFF"
  - Speed 15%
- Optimizing Controller - "OFF"
  - Running Time 75%
- Fuel Combustion Controller - Setpoint 0%
  - Furnace Temperature Mode
- UFA Dampers (all) - "MANUAL"
  - Closed
- OFA Dampers (all) - Closed
- Riddling Flaps - Cycle 1 (off)

41. Verify the following conditions on the air pollution control equipment

    - Lime Slurry system in operation and ready for service.
    - Flyash Handling Equipment - inspected and ready for service.

42. Start the Induced Draft Fan. Verify satisfactory operation.

43. Place ID Fan damper control in "AUTO" and the furnace pressure setpoint for -0.2 inches WG.

44. Start the Seal Air Fan, place in auto. Verify satisfactory operation.

45. Start the Forced Draft Fan. Verify satisfactory operation.

46. Place FD Fan inlet damper control in AUTO and set fan discharge pressure for 16 inches WG.

47. In accordance with burner management requirements, purge and light off the propane gas burners.

48. Shutdown the Forced Draft Fan.

49. In accordance with the boiler startup curve slowly increase the gas burner firing rates to achieve gas temperature of at least 300°F at the Baghouse inlet.

50. Upon reaching 300°F at the Baghouse inlet, start the Forced Draft Fan. Verify satisfactory operation.

51. Place FD Fan inlet damper control in AUTO and set fan discharge pressure for 16 inches WG.

52. Cut in the steam supply to the combustion air preheater.

53. Start the boiler, scrubber and baghouse residue/flyash handling equipment.

54. Maintain 300°F at the Baghouse inlet and allow the Baghouse to warmup while the boiler is brought online.

55. Upon completion of the baghouse warmup, start the scrubber air compressors. Verify satisfactory operation.

56. Start the Slurry Feed Pump. Verify satisfactory operation.

57. Align the lime feed system to the reactor feed tank.

58. Monitor furnace roof temperature. If temperature is less than 1200°F, adjust the gas burners to achieve a stable gas temperature of at least 1200°F. (Permit requires that roof temperature be equal to or greater than 1166°F when MSW is being combusted.)

59. Set ID and FD Fan dampers' controls to "MANUAL" and reduce Furnace pressure to 0 inches WG.

60. Prepare to fill the feedchute with the gas burners in service:

- The initial several charges of refuse should be selected for apparent dryness and burning qualities.
- Open the feedchute damper long enough to distribute a grapple full of refuse, keeping the furnace pressure slightly negative; then close the feedchute damper.
- Repeat the above step until the feedchute is full and the boiler is sealed.

61. After charging the hopper, stroke the feeder with several 20 inch strokes.

62. Light off the refuse at the feeder table.

63. Set ID Fan damper control to "AUTO". Adjust Furnace Pressure for -0.2 inches WG.

64. Increase gas burner firing rates to hold 1200°F gas temperature at furnace roof. Continue to monitor roof temperatures and verify gas temperature is maintained at least 1200°F.

65. Set FD Fan damper control to "AUTO". Adjust discharge pressure for 16 inches WG.

66. Start the following equipment:

- Stoker Grease Pump
- Ash Discharger - 40% speed (interlocked)
- Clinker Rollers - 10% speed (interlocked)
- Riddling Flaps - Cycle 1

67. Start the Overfire Air Fan, ensure a minimum of 4 inches WG for the front and rear headers. Verify satisfactory operation.

68. Set Underfire Air dampers to "AUTO".

69. Set the Grate to "On" and interlocked.

70. Adjust the Fuel Combustion Controller set point approximately 2.5% above the actual gas temperature. Verify the grates start.

71. Set the Feeders to "ON" and interlocked. Verify satisfactory burning across the feeder table.

72. Check burning conditions on the grate and if satisfactory, open the front and rear Overfire Air dampers to 6 inches WG.

73. Slowly decrease the gas burners firing rates. Verify that the furnace gas temperature is continuously at least 1200°F and that the Fuel Combustion Controller adjusts the grates and feeder to hold gas temperature set point. Make small, step decreases to the gas burner firing rates and allow the refuse fire to stabilize at setpoint each time.

74. Observe the fire development on the grate. In the event of a poor fire, periodically stop the feeders and grates. This will allow a smooth fire to develop on the grates before being covered by new, wet refuse. During this phase, it is absolutely necessary to observe the refuse feed and fire development continuously. On the basis of these observations manually adjust, as necessary, the feeder and grate speeds as well as the Underfire Air damper openings.

75. When the gas burner firing has been reduced to 50% and the refuse fire is stable, open the front and rear Overfire Air dampers to 10 inches WG.

76. Continue reducing the gas burner firing until minimum load is reached on each. If refuse fire is stable and at least 1200°F gas temperature is maintained at the furnace roof thermocouple, shutdown the gas burners.

77. Partly close the superheater drains and manual vents when a steady flow of dry steam occurs at each. Leave sufficiently cracked to ensure some flow through the superheater.

78. As necessary, adjust Fuel Combustion Controller set point to achieve 830°F superheat outlet temperature and 865 psig. Be sure to continuously maintain furnace gas temperature above 1166°F.

79. Upon achieving 865 psig boiler pressure, allow boiler conditions to stabilize.

80. Slowly release the stop handle on the boiler stop/check valve and verify the check remains closed.

81. Slowly open the bypass around the main steam supply valve and allow the main steam header to warm up.

82. When the line is thoroughly warmed, close the drains and slowly open the main steam supply valve.

83. Verify main steam pressure exceeds the boiler pressure by approximately 15 psig and superheater outlet temperature is approximately 830°F.

84. Gradually increase the Fuel Combustion Controller set point until the boiler pressure equals and then slightly exceeds the main steam pressure.

85. Verify flow through the boiler stop/check valve and indication of flow on the main steam flow meter.

86. Close the superheater vents and drains.

87. Continue to slowly increase the Fuel Combustion Controller set point and verify increasing main steam flow. Monitor boiler pressure, main steam temperature and furnace gas temperature.

88. When all conditions are stable, switch the Fuel Combustion Controller to "STEAM FLOW" mode and adjust the set point to 67% This corresponds to a steam flow of 60,546 lbs/hr.

89. Open superheater Attemperator stop valves and adjust the Attemperator set point to 830°F final steam temperature.

90. Gradually increase the boiler output to the desired level by increasing the Fuel Combustion Controller Setpoint in steps, approximately 3% every 5 minutes. Stoker setting table should be referred to for the different steam output.

91. The following conditions should be monitored and maintained:

- Economizer outlet O_2 - 8.5% to 9.5%.
- Furnace gas temperature at roof thermocouple - 1750°F maximum.
- Front and rear overfire air dampers must be set such that flames never reach above the furnace refractory.
- Underfire air pressure in plenum must be 16 inches WG at all times.

92. Increase boiler load utilizing settings in accordance with the Stoker Table.

93. Turn on the Optimizing Controller.

- Set the Fuel Combustion Controller to O_2 mode and the setpoint to 7.5%.
- Adjust Air Combustion Controller by steps to the desired boiler load.

-ALWAYS EXERCISE SAFETY-

4.1.2 COMBUSTION UNIT HOT RESTART

This procedure covers the hot restart of one unit consisting of the boiler and its auxiliaries as well as all associated air pollution control equipment. The procedure assumes that plant systems which are common to all units are already operating in a normal manner.

VERIFY THAT ALL SAFETY CLEARANCES HAVE BEEN PROPERLY RELEASED BEFORE PREPARING THE UNIT FOR SERVICE.

1. Verify power to the MARTIN control panel.

2. Verify power to unit instrumentation in control room.

3. Verify water level in ash discharger and check setting of float valve.

4. Record Stoker Operating Hours in the control room.

5. Check reactor lime system and prepare slurry.

6. Ensure the baghouse inlet and outlet dampers are open and the by-pass dampers are closed.

7. Close the Superheater Attemperator stop valves.

8. Open main steam lead drains.

9. Verify stoker controls are as follows:
   - Feeders (all)- "ON"
     - Interlock "OFF"
     - Speed 15%
     - Stroke 8.2 inches
   - Grates (all)- "ON"
     - Interlock "OFF"
     - Speed 15%
   - Optimizing Controller - "OFF"
     - Running Time 67%
   - Fuel Combustion Controller - Setpoint 0%
     - Furnace Temperature Mode
   - UFA Damper Controllers - "MANUAL"
     - Opening Step 1
   - UFA Dampers (all) - "AUTO"
   - OFA Dampers (all) - "AUTO"
   - Riddling Flaps - Cycle 1 (off)

10. Start one stoker hydraulic pump. Verify satisfactory operation.

11. Start the Induced Draft Fan. Verify satisfactory operation.

12. Place ID Fan damper control in "AUTO" and set furnace pressure for -0.2 inches WG.

13. Start the Seal Air Fan. Verify satisfactory operation.

14. Set the Forced Draft Fan damper control to "Manual" and close them.

15. Start the Forced Draft Fan. Verify satisfactory operation.

16. Verify the Lime Slurry System is aligned properly. Verify satisfactory operation.

17. Verify furnace roof temperature is greater than 1265°F. If not, purge and light off the natural gas burners in accordance with burner management requirements. Set the burner controls for 1365°F gas temperature and allow furnace roof temperature to reach setpoint.

18. Place FD Fan damper control in AUTO and set fan discharge pressure for 16 inches WG.

19. Start the Overfire Air Fan. Verify satisfactory operation.

20. Start the following equipment:

    - Stoker Grease Pump
    - Ash Discharger - 40% speed (interlocked)
    - Clinker Rollers - 50% speed (interlocked)
    - Riddling Flaps - Cycle 1

21. Set Underfire Air dampers to "AUTO".

22. Set the Grate to "ON" and interlocked.

23. Adjust the Fuel Combustion Controller set point approximately 2.5% above the actual gas temperature. Verify the grates start.

24. Set the Feeders to "ON" and interlocked. Verify satisfactory burning across the feeder.

25. Check burning conditions on the grate and if satisfactory, open the front and rear Overfire Air dampers to maintain 4 inches WG.

26. Slowly decrease the gas burners firing rates. Verify that the furnace gas temperature is continuously at least 1325°F and that the Fuel Combustion Controller adjusts the grates and feeder to hold gas temperature set point. Make small, step decreases to the gas burner firing rates and allow the refuse fire to stabilize at setpoint each time.

27. Observe the fire development on the grate. In the event of a poor fire, periodically stop the feeders and grates. This will allow a smooth fire to develop on the grates before being covered by new, wet refuse. During this phase, it is absolutely necessary to observe the refuse feed and fire development continuously. On the basis of these observations manually adjust, as necessary, the feed and grate speeds as well as the Underfire Air damper openings.

28. Open superheater attemperator stop valves and adjust the Final Attemperator set point to 700°F.

29. When the gas burner firing has been reduced to 50% and the refuse fire is stable, open the front and lower rear Overfire Air dampers to 10 inches WG.

30. Continue reducing the gas burner firing until minimum load is reached on each. If refuse fire is stable and at least 1325°F gas temperature is maintained at the furnace roof thermocouple, shutdown the gas burners.

31. Partly close the main steam drains when a steady flow of dry steam occurs at each. Leave sufficiently cracked to ensure some flow through the superheater.

32. As necessary, adjust Fuel Combustion Controller set point to achieve 830° superheat outlet temperature and 865 psig. Be sure to continuously maintain greater than 1200°F furnace roof temperature.

33. Slowly increase the Fuel Combustion Controller set point and verify increasing main steam flow and generator load. Monitor boiler pressure, main steam temperature and furnace gas temperatures.

34. When all conditions are stable switch the Fuel Combustion Controller to "STEAM FLOW" mode and adjust the set point to 62%. This corresponds to a steam flow of 56,027 lbs/hr.

35. Gradually increase the boiler output to the desired level by increasing the Fuel Combustion Controller setpoint in steps, approximately 3% every 5 minutes. Stoker setting table should be referred to for the different steam output.

36. The following conditions should be monitored and maintained:

- Economizer outlet 0_2 - 7% to 8%.
- Furnace roof temperature - 1600°F maximum.
- Underfire air pressure in plenum must be 16 inches WG at all times.

37. Increase boiler load utilizing settings in accordance with the Stoker Settings Table.

38. Turn on the Optimizing Controller.

39. Select the appropriate underfire air flow for the actual steam flow.

40. Front and rear overfire air dampers must be set such that flames never reach above the furnace refractory.

41. Set the Fuel Combustion Controller to 0_2 mode and the setpoint to 7.5% (30% on the Controller).

4.2 MWC UNIT SHUTDOWN PROCEDURES

4.2.1 COMBUSTION UNIT SHUTDOWN

This procedure covers the shutdown of one unit consisting of the boiler and its auxiliaries as well as all associated air pollution control equipment. The procedure assumes the second unit will remain in normal operation and all plant systems that are common to both units will continue operating in a normal manner.

1. Discontinue feeding refuse to the feedchute hopper.

2. Turn off the Air Combustion Controller by setting the Underfire Air dampers to "Manual".

3. Switch the Fuel Combustion Controller to "STEAMFLOW" mode and reduce set point to 60%.

4. Monitor furnace roof temperature and verify in excess of 1265°F is maintained.

5. Monitor refuse level in the feedchute and close the feedchute damper when refuse has dropped below that level.

6. Light off the gas burners and adjust firing rate to hold in excess of 1265°F gas temperature.

7. When steam flow has dropped below 54220 lbs/hr:

   - Turn off the Optimizing Controller.
   - Set Feeder speed to 45%.
   - Set Feeder stroke to 10.2 inches.

8. Adjust gas burners firing rate set to hold in excess of 1200°F actual furnace gas temperature.

9. When refuse stops falling from the feedtable increase the feeder stroke 10 inches every 5 minutes.

10. Adjust the Front Overfire Air Header to 8 inches WG and close the Rear Overfire Air damper.

11. Approximately 10 minutes after the feeder stroke reaches 50 inches, verify the Feeder table is empty. If so:

    - Close the Front Overfire Air damper.
    - Turn Feeders off.
    - Shutdown Overfire Air Fan.

12. When refuse on the Grate is burned out:

    - Turn the Grate off.
    - Start a Riddlings Flap sequence.

13. When the Riddlings Flap sequence is completed, turn the Riddlings Flaps off.

14. Shutdown, Secure and flush the Air Pollution Control system equipment.

15. If the unit shutdown is scheduled for more than 4 hours, manually cycle the Baghouse system through two complete cleanings. If the shutdown is to be less than 4 hours, a single, light manual cleaning is to be done.

16. Gradually reduce the steam flow to 10,000 lbs/hr. by decreasing the Gas Burner firing rate.

17. Slowly open the superheater outlet drains and vents until fully open and close the superheater outlet valve.

18. When the superheater outlet valve is fully closed:

    - Manually close the Underfire Air Dampers.
    - Reduce Forced Draft Fan discharge pressure to 0 inches WG.

19. Shutdown the Forced Draft Fan.

20. Shutdown the Seal Air Fan.

21. Shutdown and secure the gas burners.

22. Isolate the steamside of the combustion air preheater.

23. Close the stop valves to the superheater attemperators.

24. Initiate a final cleaning cycle for the Baghouse system.

25. After approximately 1 hour, shutdown:

- Clinker rollers
- Ash Dischargers
- Grease Pump
- Hydraulic Pumps

26. Close boiler blowdowns.

27. Monitor and maintain a drum level of + 1.0" as indicated on the level controller.

28. After approximately 15 hours, shut down:

- Flyash handling system
- Superheater ash hopper flap gates
- Baghouse ash hopper heaters

29. When boiler pressure is below 40 psig open drum vents and Primary and Secondary Superheater drains.

Operation and Maintenance Plan

PS6T1.2

1. Volume 1 is a generic Ogden Martin Manual for all Ogden Martin facilities and is not specific to this facility.

2. The operation and maintenance plan manual is comprised of a large 3 ring binder. The cover pages and table of contents are copied and attached herein. A complete copy of the manual is at the site and available for review.

PASCO

RESOURCE RECOVERY FACILITY

ENVIRONMENTAL COMPLIANCE

OPERATING MANUAL

VOLUME I

"QUALITY ASSURANCE"

OGDEN MARTIN SYSTEMS OF PASCO, INC.
SPRING HILL, FLORIDA

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PASCO

RESOURCE RECOVERY FACILITY

ENVIRONMENTAL COMPLIANCE

OPERATING MANUAL

VOLUME II

"OPERATIONS TRAINING"

OGDEN MARTIN SYSTEMS OF PASCO, INC.
SPRING HILL, FLORIDA

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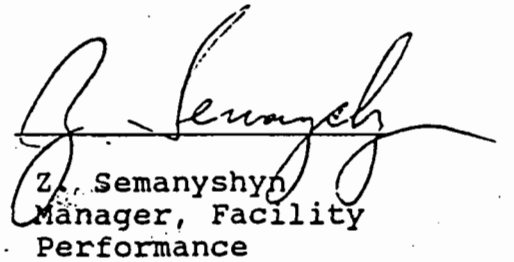
Identification of Additional Applicable Requirements

Additional Applicable Requirement:

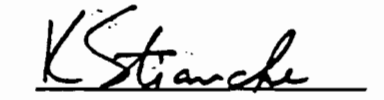
1. Demonstrate that the furnace mean temperature at the fully mixed zone of the combuster not to be less than 1800° F. (A copy of the demonstration performed by Ogden Martin on May 24, 1991 is attached)

2. Temperature Standard. Except during a malfunction, the max flow gas temperature at the final particle matter control device inlet, during the combustion of waste shall not exceed 30° F above the max temperature measured at the PM control devices inlet during the most recent mercury test. (62-296.416(3)(a)).

PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY
DEMONSTRATION OF 1800 DEGREE COMBUSTION TEMPERATURE
and
DEVELOPMENT OF FURNACE ROOF THERMOCOUPLE CORRELATION

SUBMITTED BY: 

Z. Semanyshyn
Manager, Facility
Performance

APPROVED BY: 

K.F. Stianche
Vice-President,
Technical Operations

OGDEN MARTIN SYSTEM OF PASCO
1387 HAYS ROAD
SPRING HILL, FL 34610

MAY 24, 1991

PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY
DEMONSTRATION OF 1800 DEGREE COMBUSTION TEMPERATURE
and
DEVELOPMENT OF FURNACE ROOF THERMOCOUPLE CORRELATION

1.0 OBJECTIVE

The objective of the furnace temperature traverse was to obtain furnace gas temperature data to demonstrate the Florida Department of Environmental Regulation (DER) condition which requires the furnace mean temperature at the fully mixed zone of the combustor not to be less than 1800°F. The fully mixed zone of the combustor is viewed as the distance the combustion gas travels in one second above the grate (i.e. a one second residence time).

In addition the temperature traverse was performed to establish a monitoring method for insuring that the minimum 1800 degree temperature requirement is met on a continuous basis during long term facility operation by correlating the thermocouple readings at the top of the radiant pass ("rooftop") to the combustion zone temperature.

The three combustion units at the facility are of identical design and construction, therefore, per agreement with The Florida DER the traverse was performed in one of the three boilers (boiler 3) to demonstrate the permit condition.

2.0 BACKGROUND

The development of a correlation between the rooftop thermocouples and the actual combustion zone temperature is required since reliable and accurate combustion zone temperature measurement is not achievable on a long term basis using conventional "bare" type thermocouples. This is due to:

a) the high temperatures and harsh environment in and directly above the combustion zone, and

b) the radiation effect of the cooler furnace waterwalls on the thermocouple measurement.

The radiation effect stems from the exchange of radiant heat between the thermocouple and the cooler tempertures of the surrounding furnace waterwall surfaces . Due to this radiation effect the temperature indicated by a "bare" type thermocouple at the combustion zone and at the furnace roof will yield correspondingly lower temperatures than the true temperature of the gas. The general magnitude of temperature error observed in watercooled furnaces at 1800 degrees is 100 - 200 degrees (Refer to Tab 2 - Attachment 1).

To measure the true combustion gas temperature in the furnace a water cooled high velocity temperature thermocouple (HVT) is required. A HVT probe is the only reliable method of obtaining the true gas temperature since it eliminates the radiation effect on the measurement by shielding the thermocouple with a ceramic shield. For a detailed description of flue gas temperature measurement in boiler furnaces using HVT probes, refer to Tab 2 - Attachment 2).

3.0 DEMONSTRATION OF 1800 DEGREE F, 1 SECOND RESIDENCE TIME

A furnace temperature traverse, at full load operation, was performed on April 22, 1991. The traverse was performed at a boiler steam flow of 98,208 lbs/hr by Total Source Analysis Inc. using a 16 foot HVT, type K thermocouple, probe.

Due to the location of available boiler penetrations and constraints of HVT probe insertion into the furnace, the temperature traverse was performed at the 57.2 foot elevation or approximately 15 feet above the elevation where the minimum 1800 degree, one second residence time is required.

The traverse was performed by inserting the probe through a furnace sidewall observation port. The port was located at the approximate quarter point of the right sidewall. The average flue gas temperature at El. 57.2' was measured by traversing the furnace at one foot intervals for a total of 9 individual measurement points.

The average temperature measured was 1861 degrees. The raw data sheets and the averaged results of the traverse are included in Tab 1.

The furnace elevation where the minimum 1800 degree, 1 second residence point is required is determined as follows:

Flue gas flow rate (ACFM) measured at economizer outlet = 93,050 (Refer to Tab 1, pgs. 9 & 10)

Flue gas temperature = 450 F

$$VOLUMETRIC\ FLOWRATE(ACFM) = 93,050 \times \frac{460+1861}{460+450} = 237,329$$

Furnace cross-sectional area = 13'6" X 17'10"
= 240.7 sq.ft.

Flue gas Velocity (V) in the Furnace

$$V = \frac{237329}{240.7 \times 60} = 16.4 \frac{ft}{sec}$$

Therefore, the minimum 1800 degrees for 1 second requirement exists 16.4 feet above the center of the combustion grate.

Grate elevation	=	28.4' EL.
Gas travel distance in 1 second	=	+16.4'
Elevation of 1800 degree, 1 second requirement	=	44.8' EL.

Since the furnace traverse was performed at the 57.2' elevation or 14.8 feet above the furnace elevation where a minimum 1800 degree flue gas temp must be demonstrated, the measured traverse temperature of 1861 must be adjusted to the 44.8' elevation. The temperature at the 44.8' elevation is approximated as follows:

Combustion temp on grate (Design-Theoretical) (EL. 28.4')	=	2012 F
HVT traverse temp. (EL. 57.2')	=	1861 F

The temperature drop of 151 degrees F (2012 minus 1861) between the combustion grate elevation and the traverse elevation (28.8 feet) yields a furnace absorption of 5.24 degrees per vertical foot.

The furnace temperature at the elevation where the 1800 degree, 1 second residence time is required:

$$TEMP._{1\ second} = 1861 + 12.4\ ft \times 5.24 \frac{degrees}{ft}$$

$$= 1925 \text{ F}$$

The furnace traverse yields a gas temperature of 1925 degrees F and therefore demonstrates the requirement of having a minimum combustion gas temperature of 1800 degrees at a residence time of 1 second.

4.0 DEVELOPMENT OF TEMPERATURE CORRELATION

In accordance with the permit requirement and recognizing the difficulty of accurately measuring combustion zone temperatures continuously, a correlation has been developed utilizing the furnace rooftop thermocouples as a surrogate temperature measurement for monitoring the 1800 degree minimum combustion zone temperature requirement.

Using the permanently installed thermocouples at the top of the first pass, temperature data was collected by the facility's Distributed Control System (DCS) and compared to data obtained simultaneously at the 57.2' furnace elevation using a HVT probe.

The temperature corresponding to the 1 second residence time point was demonstrated to average 1925 degrees F (refer to Section 3). During this period the rooftop thermocouple temperature averaged 1308 degrees F.

The individual rooftop temperature readings were grouped into a nominal temperature band of 24 degrees F about the average temperature, when firing refuse. This slight temperature variation is reflective of the process associated with the actual charging of waste fuel, i.e., there is a slight rise and fall in the furnace temperature as the feed ram pushes the fuel into the furnace and then retreats. One therefore needs to account for the inherent process variations characteristic of this cyclic feeding. Since the purpose of the correlation is to determine the <u>minimum</u> rooftop temperature corresponding to the 1800 degree requirement, the low end of the temperature bandwith has been applied to the average measured rooftop temperature measurement. An average bandwith of 24 degrees would thus yield a processing variation of ± 12° from the average temperature of 1308 degrees.

As previously noted in Section 3.0, during the test the unit exceeded the 1800°F by 125°F therefore, the minimum rooftop thermocouple temperature which will ensure a minimum 1800 degrees combustion zone temperature is (1308 - 125 -12) = 1167 degrees F.

5.0 ACKNOWLEDGEMENTS

The furnace traverses were conducted by Ogden Martin Systems of Pasco in conjunction with Total Source Analysis, Inc. The Ogden Martin test participants were:

S. Deduck
D. Porter

FIELD DATA SHEET

CLIENT Ogden Martin Systems - Pasco OPERATOR H. Stiles

PROJECT NO. 91-070-FL DATE April 22, 1991

PLANT SITE Pasco Co. Fla. - Unit 3 boiler

Time	samp. pt.		°F Hi	Lo
1502	10'		1846	1684
1506			1882.4	1680
1510	9'		1903.4	1742.8
1513			1865.2	1769
1517	8'		1930.4	1730.2
1519			1908.6	1741.6
~~1529~~ 1523	7'		2077.6	1718.8
~~1532~~ 1525			1924.6	1866.4
1529	6'		1993	1805
1532			1902	1812
1534	5'		1960	1846.4
1536			1894.4	1866
1540	4'		1978.4	1762.0
1544			2029.4	1749.4
1548	3'		1951	1754
1550			1959.6	1809.4
1554	2'		1998.2	1747
1556			2025	1787

TOTAL SOURCE ANALYSIS, INC.

TSA

Date 22-Apr-91

Furnace Gas Traverse
UNIT 3

Performed at burner elevation through rear-right side observatio

Time	MAX	MIN	
1502	1846.0	1684.0	
1506	1882.4	1680.0	
1510	1903.4	1742.8	
1513	1865.2	1769.0	
1517	1930.4	1730.2	
1519	1908.6	1741.6	
1523	2077.6	1718.8	
1525	1924.6	1866.4	
1529	1993.0	1805.0	
1532	1902.0	1812.0	
1534	1960.0	1846.4	
1536	1984.4	1866.0	
1540	1978.4	1762.0	
1544	2029.4	1749.4	
1548	1951.0	1754.0	
1550	1959.6	1809.4	
1554	1998.2	1747.0	
1556	2025.0	1787.0	
Averages	1951.1	1770.6	1860.8

BOILER 3 1-HR PERFORMANCE TEST LOG - PAGE 1 LOG 31 16:20:23 22-APR-91 MONDAY

1	3-FR-13	MAIN STEAM FLOW BLR C
2	3-FR-610	BFW TO BLR C FLOW
3	FR-606	BFW HEADER FLOW
4	3-FR-1460	OVERFIRE AIR FLOW-BLR C
5	3-FR-1426	UNDERGRATE AIR FLOW-BLR C
6	3-FR-2007	PROPANE TO BLR C FLOW
7	TR-609	BFW HEADER TEMP
8	3-TR-55	PRIMARY SUPERHTR INLET TEMP-BLR
9	3-TR-56	PRIMARY SUPERHTR EXIT TEMP-BLR C
10	3-TR-9	INT SUPERHTR INLET TEMP-BLR C
11	3-TR-8	FINAL SUPERHTR INLET TEMP-BLR C
12	3-TR-11	FINAL SUPERHTR INLET TEMP-BLR C
13	3-TR-13	MAIN STEAM TEMP BLR C

TIME	1 KLB/HR	2 KLB/HR	3 KLB/HR	4 ACFM	5 ACFM	6 LB/HR	7 DEG F	8 DEG F	9 DEG F	10 DEG F	11 DEG F	12 DEG F	13 DEG F
15:01	90.250	89.000	284.000	17216	31200	0	293	542	675	605	758	763	815
15:02	92.000	92.250	289.500	17504	31456	0	293	542	675	607	759	763	815
15:03	91.500	91.125	290.000	17536	31424	0	293	542	675	605	758	763	815
15:04	90.750	90.375	284.500	17088	30976	0	293	542	675	605	757	762	814
15:05	93.125	90.750	286.500	17216	31264	0	293	543	676	608	759	764	814
15:06	94.875	93.000	292.000	17664	31168	0	293	543	677	611	761	766	816
15:07	92.750	93.500	291.500	17472	30528	0	293	542	676	608	760	765	816
15:08	91.125	91.875	285.500	17248	32736	0	293	542	674	605	758	763	814
15:09	91.500	91.125	287.000	16896	30528	0	294	542	674	604	757	763	813
15:10	95.250	93.875	288.500	17344	30784	0	294	543	675	608	759	764	813
15:11	95.500	93.375	284.000	17760	30624	0	294	543	675	608	760	765	814
15:12	92.375	94.000	282.500	17632	30080	0	295	542	674	605	759	764	815
15:13	94.250	93.875	285.500	17568	30016	0	295	543	674	605	758	763	814
15:14	93.375	93.750	283.500	17440	29216	0	295	542	673	603	756	762	813
15:15	94.000	93.875	279.000	17344	28416	0	295	542	672	602	755	761	811
15:16	93.625	94.375	277.000	17824	28512	0	296	543	671	602	755	760	811
15:17	90.000	91.125	278.500	17952	28448	0	296	542	671	599	754	760	811
15:18	92.000	91.625	284.000	17600	28480	0	296	542	670	599	753	758	809
15:19	94.250	94.250	285.000	17856	28512	0	296	543	671	601	753	758	808
15:20	92.500	93.500	282.000	17824	28128	0	297	542	670	601	753	758	809
15:21	92.375	93.375	282.000	17568	27872	0	297	542	670	600	752	757	807
15:22	98.250	97.250	284.000	18240	28128	0	297	543	671	604	754	759	808
15:23	97.125	95.375	280.000	19008	28064	0	297	543	671	604	755	760	810
15:24	95.500	95.875	280.500	18656	27104	0	297	543	670	601	753	759	810
15:25	95.500	95.625	281.000	18752	26496	0	297	543	669	600	752	758	809
15:26	94.625	94.250	281.500	18304	25344	0	297	543	668	598	751	757	809
15:27	95.375	95.625	282.000	18464	24640	0	298	543	667	598	750	756	807
15:28	93.625	95.375	280.000	18528	23808	0	298	542	666	595	748	754	806
15:29	92.375	93.750	276.500	18560	23520	0	298	542	665	593	746	752	804
15:30	92.625	93.125	279.000	18624	23872	0	298	542	666	595	747	753	803
15:31	93.000	94.250	281.500	18368	23616	0	298	542	665	593	746	752	803
15:32	91.625	93.000	277.500	18336	24000	0	298	541	663	591	743	750	801
15:33	89.500	91.250	272.500	17696	24448	0	298	541	663	589	742	748	799
15:34	90.125	93.375	275.000	17888	25536	0	298	542	664	590	743	748	798
15:35	90.625	93.000	276.000	17856	26080	0	298	541	665	591	744	749	798
15:36	91.000	91.875	271.500	17760	26560	0	297	542	665	592	744	750	798
15:37	90.250	91.500	273.500	17856	27520	0	297	542	667	594	746	751	799
15:38	90.750	91.625	274.500	17632	27872	0	297	542	667	594	746	751	800
15:39	91.000	92.875	273.500	17312	28032	0	297	542	668	595	746	752	800

15:40	92.250	92.375	274.500	17408	30112	0	297	542	670	597	749	754	801
15:41	93.000	93.250	277.000	17568	29632	0	297	542	670	598	750	755	803
15:42	92.000	93.500	275.500	17344	29664	0	297	542	670	598	750	756	803
15:43	91.750	92.625	277.000	17344	29984	0	297	542	671	599	752	757	804
15:44	90.750	91.875	280.500	16992	30048	0	297	542	670	597	751	756	805
15:45	90.875	92.125	280.000	16928	29856	0	297	542	669	596	749	755	804
15:46	92.000	92.000	276.000	17344	30432	0	297	542	669	598	750	756	803
15:47	90.875	91.875	281.500	17408	30528	0	297	542	670	597	751	757	805
15:48	91.125	91.875	280.500	17152	30432	0	297	542	670	598	751	756	804
15:49	95.125	95.125	284.000	17216	30112	0	297	543	671	602	753	758	805
15:50	94.375	95.625	283.000	17568	29888	0	297	543	671	602	754	759	807
15:51	92.875	93.000	279.500	17248	29536	0	298	542	670	599	752	757	807
15:52	93.625	94.375	280.000	17504	29600	0	298	542	669	599	752	757	806
15:53	93.375	92.500	283.500	17568	29248	0	298	542	669	599	752	757	807
15:54	93.625	93.625	285.000	17504	28512	0	298	542	669	600	752	757	807
15:55	95.875	96.375	288.500	17888	27968	0	298	543	670	602	753	758	807
15:56	94.250	93.750	285.500	17824	27232	0	298	542	669	600	752	757	808
15:57	94.125	94.500	283.500	17664	26400	0	298	542	668	598	750	756	807
15:58	96.000	96.000	282.500	18208	26272	0	298	543	668	600	750	756	806
15:59	94.625	95.375	285.500	18144	25152	0	298	543	667	599	750	755	807
16:00	95.375	94.875	285.000	18304	24480	0	298	543	666	598	749	754	806
AVERAGE	92.969	93.327	281.53317725.33228361.600			0.000	296.19	542.27	669.98	599.73	752.02	757.40	807.35
MINIMUM	89.500	89.000	271.50016896.00023520.000			0.000	292.50	541.00	663.00	589.00	742.00	748.00	798.00
MAXIMUM	98.250	97.250	292.00019008.00032736.000			0.000	298.00	543.00	677.00	611.00	761.00	766.00	816.00

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14	3-TR-1425	AIR PREHTR EXIT AIR TEMP-BLR C
15	3-TR-1401A	COMBUSTION ZONE TEMP-BLR C
16	3-TR-1401B	COMBUSTION ZONE TEMP-BLR C
17	3-TR-1404A	FURNACE ROOF TEMP-BLR C
18	3-TR-1404B	FURNACE ROOF TEMP-BLR C
19	3-TR-1404C	FURNACE ROOF TEMP-BLR C
20	3-TR-1407A	FURNACE SUPERHTR TEMP-BLR C
21	3-TR-1407B	FURNACE SUPERHTR TEMP-BLR C
22	3-TR-1407C	FURNACE SUPERHTR TEMP-BLR C
23	3-TR-1407D	FURNACE SUPERHTR TEMP-BLR C
24	3-TR-1407E	FURNACE SUPERHTR TEMP-BLR C
AA	3-TR-1411	FURN ECONOMIZER EXIT TEMP-BLR C
BB	3-TI-3867	SCRUBBER OUTLET TEMP
CC	3-TI-1437	BAGHS EXIT-BLR C FLUE GAS TEMP

TIME	14 DEG F	15 DEG F	16 DEG F	17 DEG F	18 DEG F	19 DEG F	20 DEG F	21 DEG F	22 DEG F	23 DEG F	24 DEG F	AA DEG F	BB DEG F	CC DEG F
15:01	229	1428	1420	1238	1340	1314	1036	925	789	729	729	461	303	298
15:02	229	1434	1422	1238	1340	1316	1038	927	790	730	729	461	302	298
15:03	229	1428	1418	1238	1340	1316	1036	926	790	730	729	461	302	299
15:04	229	1432	1420	1238	1340	1316	1036	925	789	730	729	461	303	298
15:05	229	1454	1424	1236	1340	1318	1044	931	793	732	730	462	305	299
15:06	229	1458	1420	1236	1340	1318	1050	935	796	734	731	462	304	299
15:07	229	1442	1412	1236	1340	1320	1046	933	793	733	731	462	302	299
15:08	229	1438	1412	1236	1340	1320	1042	930	791	731	731	462	302	299
15:09	229	1442	1430	1236	1340	1320	1042	929	791	731	731	461	303	299
15:10	229	1456	1470	1236	1340	1322	1046	932	793	732	731	461	304	299
15:11	229	1458	1486	1236	1340	1322	1048	935	796	734	731	462	304	299
15:12	229	1448	1486	1236	1340	1322	1046	933	794	733	731	462	304	299
15:13	229	1448	1482	1236	1340	1324	1044	931	792	732	731	462	303	299
15:14	228	1440	1472	1236	1340	1326	1042	927	789	730	731	461	301	299
15:15	228	1442	1476	1236	1340	1326	1040	925	788	729	731	461	301	299
15:16	228	1444	1478	1236	1342	1328	1040	925	788	729	732	460	301	298
15:17	227	1428	1466	1236	1342	1328	1036	922	786	727	731	460	301	299
15:18	227	1422	1462	1236	1342	1330	1032	921	786	727	730	460	302	298
15:19	227	1436	1462	1236	1342	1330	1036	924	788	728	730	460	301	299
15:20	227	1432	1454	1236	1342	1330	1036	923	786	727	731	460	300	298
15:21	227	1442	1462	1234	1342	1332	1036	922	785	727	731	460	301	298
15:22	227	1476	1484	1234	1344	1332	1046	928	789	729	732	460	301	298
15:23	227	1480	1478	1234	1344	1334	1050	930	789	730	733	460	301	298
15:24	227	1468	1474	1236	1344	1336	1048	929	788	729	733	460	301	298
15:25	227	1462	1484	1236	1344	1336	1046	928	787	729	733	460	300	297
15:26	227	1454	1492	1236	1346	1338	1044	926	785	727	733	459	299	297
15:27	228	1452	1492	1238	1346	1340	1040	921	783	726	733	459	298	297
15:28	228	1438	1482	1238	1348	1342	1034	916	779	723	732	458	298	296
15:29	229	1440	1494	1238	1348	1342	1032	913	776	722	731	458	298	296
15:30	229	1442	1502	1238	1348	1344	1034	913	778	722	731	457	297	296
15:31	230	1430	1496	1238	1350	1346	1028	909	775	720	730	457	295	296
15:32	230	1416	1492	1238	1350	1346	1022	903	771	718	729	456	294	295
15:33	230	1418	1492	1238	1350	1346	1018	900	770	716	728	455	295	294
15:34	231	1424	1490	1238	1350	1348	1020	901	771	717	728	455	296	294
15:35	231	1418	1484	1238	1350	1348	1020	901	771	717	727	455	296	294
15:36	231	1420	1492	1238	1352	1348	1022	904	773	718	727	456	296	293
15:37	231	1420	1496	1238	1352	1350	1024	906	774	719	727	456	296	293
15:38	231	1412	1500	1236	1352	1350	1022	904	773	718	727	456	296	293
15:39	231	1422	1506	1236	1352	1352	1023	904	775	720	727	456	297	293

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15:40	231	1444	1508	1236	1352	1352	1030	912	779	722	727	457	298	293
15:41	231	1446	1496	1236	1352	1354	1034	914	780	723	728	458	297	293
15:42	230	1444	1494	1234	1352	1354	1034	916	782	724	728	458	298	293
15:43	229	1442	1494	1234	1354	1354	1036	918	783	725	729	458	296	293
15:44	229	1426	1482	1234	1354	1356	1032	914	780	723	729	458	295	293
15:45	229	1424	1482	1234	1354	1356	1026	912	779	722	728	456	296	293
15:46	229	1442	1494	1234	1354	1356	1030	914	781	724	728	458	297	293
15:47	229	1436	1488	1234	1354	1356	1030	914	781	724	728	458	297	293
15:48	229	1432	1492	1234	1356	1356	1030	916	782	724	728	459	298	293
15:49	229	1450	1500	1234	1356	1356	1036	922	786	727	729	459	298	293
15:50	229	1448	1494	1234	1356	1358	1040	923	786	727	729	459	295	293
15:51	229	1442	1498	1234	1356	1356	1036	919	783	726	729	459	295	293
15:52	229	1446	1508	1234	1356	1358	1036	921	785	726	729	458	297	293
15:53	229	1442	1512	1234	1356	1360	1038	921	785	727	730	459	297	293
15:54	229	1442	1508	1234	1358	1360	1038	923	786	727	730	459	298	293
15:55	228	1450	1500	1234	1358	1360	1042	925	787	728	731	460	297	294
15:56	228	1440	1482	1234	1358	1362	1040	922	784	727	731	460	295	294
15:57	228	1444	1478	1236	1358	1362	1038	920	783	726	731	459	295	294
15:58	229	1460	1482	1236	1360	1362	1042	921	783	726	731	459	296	294
15:59	229	1454	1470	1236	1360	1364	1040	919	782	725	731	459	296	293
16:00	229	1452	1466	1238	1360	1364	1038	918	780	724	732	458	295	293
AVERAGE	228.833	1440.833	1476.533	1235.933	1348.267	1341.233	1036.183	920.000	783.983	726.033	729.967	458.86	298.55	295.57
MINIMUM	227.000	1412.000	1412.000	1234.000	1340.000	1314.000	1018.000	900.000	770.000	716.000	727.000	455.00	294.00	292.50
MAXIMUM	231.000	1480.000	1512.000	1238.000	1360.000	1364.000	1050.000	935.000	796.000	734.000	733.000	462.00	304.50	299.00

AVG. = 1308
MIN = 1296
MAX = 1320

BOILER 3 1-HR PERFORMANCE TEST LOG - PAGE 3 LOG 33 16:20:26 22-APR-91 MONDAY

25	3-PI-4	DRUM PRESSURE BLR C
2	3-PR-13	MAIN STEAM PRESS BLR C
27	3-PI-611	FEEDWATER PRESS BLR C
28	3-PI-1413	FURNACE-BLR C AVG PRESSURE
29	3-PI-1416	FURN ECON EXIT PRESSURE-BLR C
30	3-PI-1432	SCRBR EXIT-BLR C FLUE GAS PRESS
31	3-PI-1436	BAGHS EXIT-BLR C FLUE GAS PRESS
32	3-II-1445	ID FAN-BLR C MOTOR AMPS
33	3-II-1421	FD FAN-BLR C MOTOR AMPS
34	3-II-1450	OFA FAN-BLR C MOTOR AMPS
35	3-AI-1427	FLUE GAS-INSITU OXYGEN-BLR C
36	3-LR-41	DRUM LEVEL BLR C
37	3-AI-1446	FLUE GAS - BLR C OPACITY

TIME	25 PSIG	26 PSIG	27 PSIG	28 IN WC	29 IN WC	30 IN WC	31 IN WC	32 AMPS	33 AMPS	34 AMPS	35 PERCENT	36 INCHES	37 PERCENT
15:01	950.0	871.0	1040.0	-0.4	-1.9	-7.7	-16.4	50.2	145.0	88.9	8.3	5.1	1.0
15:02	950.0	871.0	1042.0	-0.5	-2.1	-7.9	-16.5	50.2	145.8	89.5	7.1	4.2	1.0
15:03	948.0	868.0	1038.0	-0.4	-1.8	-7.8	-16.4	50.2	146.0	89.3	6.6	5.0	1.0
15:04	951.0	871.0	1042.0	-0.2	-1.4	-7.5	-16.5	50.2	145.0	88.4	7.9	4.3	1.0
15:05	956.0	873.0	1046.0	-0.4	-1.9	-7.7	-16.7	50.1	145.0	88.9	5.9	5.4	1.0
15:06	954.0	871.0	1044.0	-0.4	-1.9	-7.6	-17.2	50.2	144.3	89.6	7.0	5.3	1.0
15:07	950.0	868.0	1040.0	-0.2	-1.4	-7.0	-17.5	50.2	145.0	89.1	6.6	5.5	1.0
15:08	950.0	871.0	1040.0	-0.0	-1.1	-6.7	-17.4	50.2	147.5	88.5	8.0	4.4	1.0
15:09	953.0	871.0	1044.0	-0.1	-1.2	-6.9	-17.3	50.2	144.0	88.1	7.5	4.7	1.0
15:10	956.0	870.0	1048.0	-0.4	-1.8	-7.8	-16.5	50.2	143.8	89.4	5.6	5.3	1.0
15:11	954.0	869.0	1044.0	-0.4	-1.9	-7.9	-16.7	50.2	142.8	90.0	7.0	5.9	1.0
15:12	954.0	872.0	1044.0	-0.4	-1.8	-7.7	-16.9	50.1	141.8	89.6	8.5	4.8	1.0
15:13	953.0	871.0	1044.0	-0.4	-1.8	-7.3	-17.6	50.0	140.8	89.6	7.5	4.5	1.0
15:14	951.0	868.0	1042.0	-0.2	-1.5	-7.1	-17.6	50.1	138.8	89.3	8.5	4.6	0.9
15:15	954.0	869.0	1044.0	-0.4	-1.9	-7.4	-17.5	50.1	138.8	89.4	7.4	4.6	1.0
15:16	953.0	871.0	1044.0	-0.9	-2.8	-8.6	-17.1	50.1	136.5	90.4	6.9	4.4	1.0
15:17	949.0	874.0	1040.0	-0.6	-2.3	-8.3	-17.0	50.1	136.3	89.8	8.9	4.7	1.0
15:18	952.0	870.0	1042.0	-0.7	-2.5	-8.3	-17.3	50.1	136.8	89.9	8.3	4.1	1.0
15:19	952.0	870.0	1042.0	-0.8	-2.5	-8.1	-18.0	50.1	136.5	90.1	6.8	3.8	0.9
15:20	950.0	870.0	1040.0	-0.6	-2.2	-7.8	-17.9	50.1	135.8	90.0	8.4	3.7	0.9
15:21	956.0	872.0	1046.0	-0.5	-2.0	-7.6	-17.9	50.1	135.0	89.6	8.1	3.4	0.9
15:22	961.0	870.0	1052.0	-1.0	-3.1	-8.9	-17.5	50.1	135.5	91.9	5.5	4.3	0.9
15:23	957.0	870.0	1048.0	-1.0	-3.0	-8.8	-17.4	50.1	134.0	92.5	7.4	5.2	0.9
15:24	957.0	871.0	1048.0	-1.1	-3.1	-8.9	-17.5	50.1	132.5	92.4	8.4	4.6	0.9
15:25	956.0	871.0	1046.0	-0.9	-2.8	-8.2	-18.0	50.1	130.0	92.3	7.6	4.6	0.9
15:26	955.0	871.0	1046.0	-0.9	-2.8	-8.1	-18.0	50.0	127.3	91.6	8.0	4.8	0.9
15:27	953.0	869.0	1044.0	-1.3	-3.6	-9.0	-17.4	49.1	125.9	92.4	7.2	4.6	0.9
15:28	950.0	867.0	1040.0	-1.1	-3.3	-8.8	-17.0	49.8	123.3	92.0	8.7	3.4	0.9
15:29	952.0	871.0	1044.0	-1.3	-3.5	-8.9	-17.0	48.6	123.0	92.1	7.2	3.6	0.9
15:30	952.0	873.0	1042.0	-1.3	-3.4	-8.5	-17.4	48.3	123.4	92.0	7.0	3.8	0.9
15:31	947.0	868.0	1038.0	-1.1	-3.1	-8.1	-17.5	48.1	123.1	91.6	8.3	3.3	0.9
15:32	944.0	866.0	1034.0	-0.9	-2.7	-7.9	-17.4	48.1	124.1	90.9	8.5	3.3	0.9
15:33	946.0	870.0	1036.0	-1.0	-3.0	-8.3	-16.9	48.5	126.3	90.4	7.8	3.0	0.8
15:34	947.0	871.0	1038.0	-1.1	-3.1	-8.5	-16.3	48.1	128.8	90.3	6.8	3.0	0.8
15:35	945.0	868.0	1036.0	-0.8	-2.7	-8.2	-16.3	49.0	129.8	90.0	8.0	3.0	0.8
15:36	946.0	870.0	1040.0	-0.9	-2.7	-8.1	-16.1	48.1	131.6	90.1	7.1	3.4	0.8
15:37	947.0	871.0	1040.0	-0.8	-2.5	-8.0	-16.2	48.1	133.8	89.9	7.5	3.8	0.8
15:38	947.0	869.0	1040.0	-0.6	-2.1	-7.8	-16.1	49.1	135.8	89.6	8.4	3.7	0.8
15:39	950.0	870.0	1044.0	-0.3	-1.6	-7.4	-15.9	48.8	141.3	89.0	7.7	3.7	0.8

15:40	952.0	872.0	1046.0	-0.5	-2.0	-7.6	-16.1	48.9	140.0	89.4	6.6	3.4	0.8
15:41	948.0	868.0	1044.0	-0.4	-1.7	-7.4	-15.9	49.3	140.0	89.3	7.8	3.5	0.8
15:42	951.0	870.0	1048.0	-0.3	-1.6	-7.0	-16.5	48.8	140.3	88.9	8.1	4.0	0.8
15:43	950.0	873.0	1048.0	-0.3	-1.6	-6.8	-16.7	48.1	141.3	88.9	7.1	4.1	0.8
15:44	946.0	870.0	1044.0	-0.2	-1.4	-6.8	-16.9	49.0	141.3	88.3	9.0	3.3	0.8
15:45	948.0	868.0	1046.0	-0.2	-1.4	-6.9	-16.8	49.6	141.3	88.1	8.7	3.9	0.8
15:46	951.0	872.0	1050.0	-0.5	-2.1	-7.8	-16.1	49.4	142.5	89.3	6.4	4.3	0.8
15:47	948.0	871.0	1048.0	-0.3	-1.7	-7.5	-16.1	49.9	142.8	88.6	8.5	4.3	0.8
15:48	952.0	871.0	1052.0	-0.2	-1.4	-7.2	-16.5	49.9	142.3	88.5	8.3	3.7	0.8
15:49	955.0	871.0	1056.0	-0.3	-1.5	-6.8	-16.7	48.3	141.5	89.0	6.3	4.2	0.8
15:50	951.0	869.0	1052.0	-0.2	-1.4	-6.6	-16.7	48.7	140.0	88.9	7.6	3.8	0.8
15:51	953.0	870.0	1054.0	-0.5	-1.7	-7.0	-16.5	49.3	139.5	88.8	8.2	4.0	0.7
15:52	954.0	872.0	1056.0	-0.7	-2.3	-8.0	-16.3	49.8	139.8	89.4	7.1	3.9	0.8
15:53	952.0	871.0	1054.0	-0.6	-2.2	-7.8	-16.3	50.1	138.5	89.4	8.2	4.6	0.8
15:54	956.0	872.0	1053.0	-0.6	-2.2	-7.7	-16.7	49.6	136.8	89.5	8.1	4.1	0.8
15:55	955.0	872.0	1058.0	-0.7	-2.3	-7.5	-17.2	48.6	135.0	90.1	6.8	4.3	0.8
15:56	952.0	869.0	1054.0	-0.6	-2.2	-7.4	-17.3	49.2	133.0	90.0	8.9	4.7	0.8
15:57	955.0	870.0	1058.0	-0.7	-2.3	-7.5	-17.2	48.9	130.8	90.0	7.9	4.0	0.8
15:58	957.0	872.0	1060.0	-1.1	-3.1	-8.5	-16.6	48.1	130.0	91.1	6.5	4.4	0.8
15:59	954.0	871.0	1056.0	-1.0	-2.9	-8.4	-16.5	48.9	127.0	90.9	8.3	4.2	0.8
16:00	954.0	869.0	1053.0	-0.9	-2.8	-8.2	-16.5	48.4	124.8	91.1	7.8	4.5	0.8
AVERAGE	951.733	870.333	1045.900	-0.608	-2.233	-7.792	-16.886	49.443	136.433	89.925	7.666	4.200	0.871
MINIMUM	944.000	866.000	1034.000	-1.309	-3.578	-8.953	-18.031	45.063	123.000	88.125	5.477	2.984	0.747
MAXIMUM	961.000	874.000	1060.000	-0.037	-1.125	-6.625	-15.906	50.188	147.500	92.500	9.016	5.898	1.016

P.8

OGDEN MARTIN SYSTEMS, INC.
CAE Project No. 5661

Pasco County Resource Recovery Facility
Energy Tests

	4/22/91 1500-1530		
Run 15	Unit 1	Unit 2	Unit 3
Pbar	29.94	29.94	29.94
SRDp	0.775	0.813	0.815
Ts	436	456	450
St	-1.5	-2.0	-1.2
% CO2	10.1	9.9	9.7
% O2	10.0	10.2	10.3
% N2	79.9	79.9	80.0
Bwo	0.150	0.149	0.146
Md	30.02	29.99	29.96
Ms	28.22	28.21	28.22
Ps	29.83	29.79	29.85
Vs	57.4	61.0	60.8
acfm	89,000	94,500	94,300
dscfm	44,500	46,200	46,600
lb/hr	229,900	238,400	239,700

OGDEN MARTIN SYSTEMS, INC.
CAE Project No. 5661

Pasco County Resource Recovery Facility
Energy Tests

4/22/91
1530-1600

Run 16	Unit 1	Unit 2	Unit 3
Pbar	29.94	29.94	29.94
SRDp	0.796	0.803	0.794
Ts	434	457	449
St	-1.5	-2.0	-1.2
% CO2	10.1	9.9	9.7
% O2	10.0	10.2	10.3
% N2	79.9	79.9	80.0
Bwo	0.150	0.149	0.146
Md	30.02	29.99	29.96
Ms	28.22	28.21	28.22
Ps	29.83	29.79	29.85
Vs	58.9	60.2	59.2
acfm	91,300	93,400	91,800
dscfm	45,700	45,600	45,400
lb/hr	236,100	235,300	233,500

SECTION 2
ATTACHMENT 1

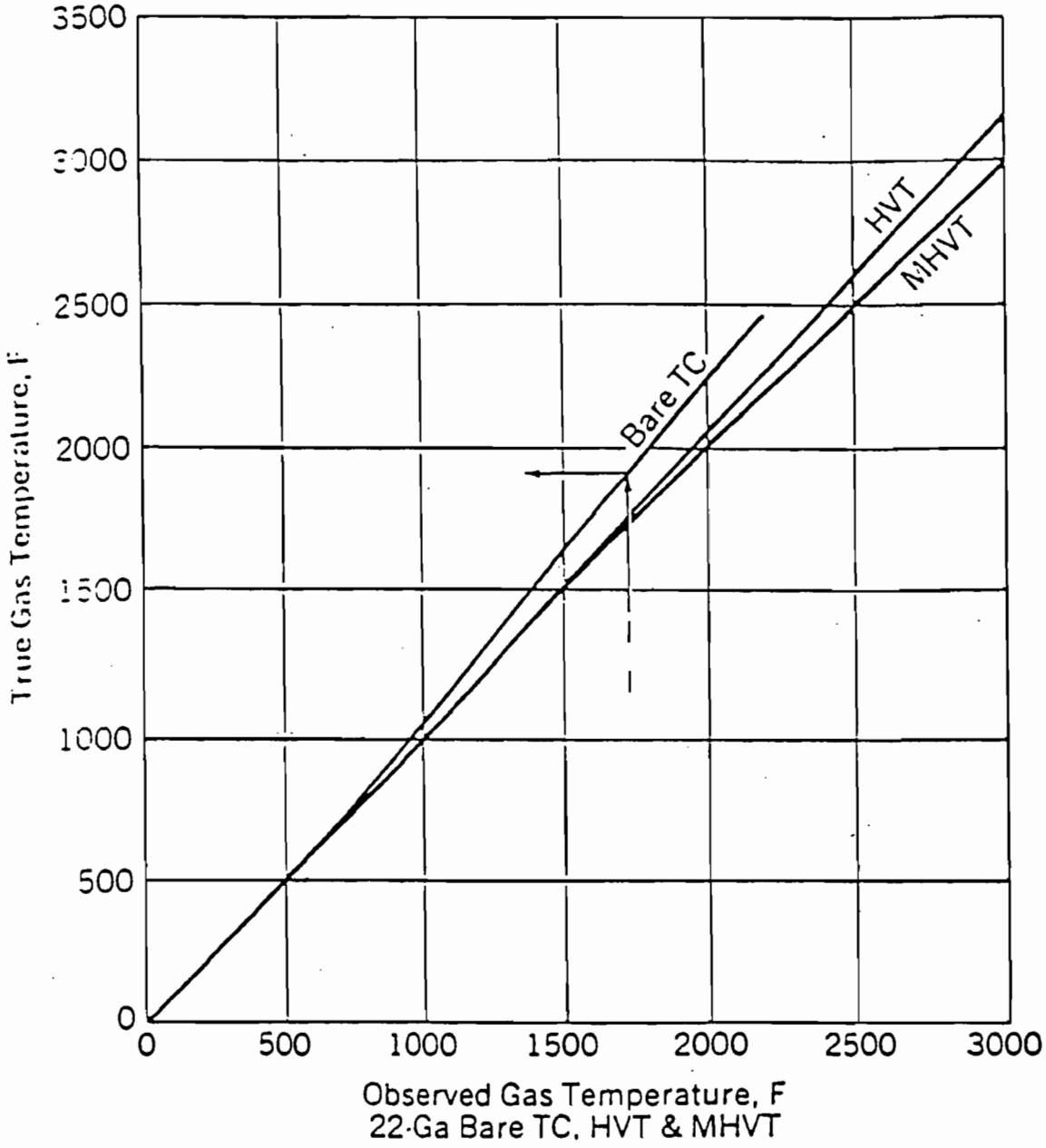

Fig. 28 General magnitude of error in observed readings when measuring gas temperature in boiler cavities with thermocouples.

REF. B & W STEAM BOOK

SECTION , 2
ATTACHMENT 2

December 1963

MEASUREMENT OF GAS TEMPERATURE IN BOILER FURNACES

High Velocity Thermocouples

Babcock & Wilcox
a McDermott company

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INTRODUCTION

Progressive design and operation of modern steam generating units depends, to an increasing extent, upon the critical evaluation of gas temperature conditions in the furnace and superheater sections of the equipment. Successful performance must take into account the limitations imposed by metal temperatures of superheater tubes, and by the fusing characteristics of ash and slag from the fuel in current or expected use.

While the over-all complexity of combustion and heat-transfer relationships prevents exact calculation, much valuable information can be obtained by taking direct and accurate measurement of the gas temperatures occurring in operating units, and making comparative studies of related factors.

Methods and equipment have been developed for this purpose and are described in this bulletin. They employ the portable, water-cooled high-velocity-thermocouple (HVT) for traversing various sections of the gas stream. Practical details for the construction and use of the equipment are included.

GENERAL PRINCIPLES

A simple exposed thermocouple, immersed in a hot gas stream, is affected not only by convection heat transfer from the gas to the thermocouple junction, but also by radiant heat exchange with surrounding surfaces which it can "see". If these surfaces are at the same temperature as the gas, the thermocouple junction will attain that temperature, and its reading will be the true gas temperature.

If the surrounding surfaces are at a temperature higher than that of the gas, heat exchange by radiation to the thermocouple junction will take place, resulting in a reading that is higher than the true gas temperature by an amount representing the equilibrium condition of the thermocouple in relation to its environment. On the other hand, if the surrounding surfaces are cooler than the gas, a net loss of heat from the thermocouple junction will result in readings that are lower than the true gas temperature.

The latter situation is more commonly encountered in boiler practice, because of the presence of water-cooled boiler and furnace wall tubes or steam-cooled superheater surfaces. Under some conditions the reading obtained from a bare exposed thermocouple in boiler passes may be several hundred degrees below the true temperature of the gas stream. For the sake of simplicity, in the descriptions which follow, it will be generally considered that the surrounding surfaces are cooler than the gas.

HIGH VELOCITY THERMOCOUPLE TYPES

HVT — (Single Shield)

Radiation error may be largely overcome by use of the high-velocity-thermocouple (HVT), which interposes a procelain radiation shield around the thermocouple junction, as shown in Figure 1. In this device, hot gas is aspirated over the thermocouple junction at a high velocity,

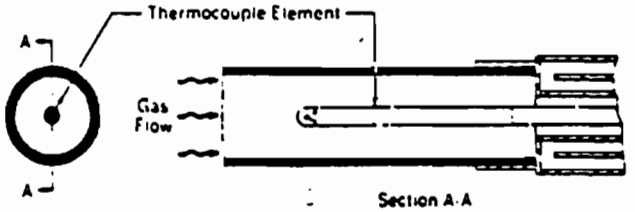


Fig. 1 High Velocity Thermocouple Shield Assembly

to increase the rate of heat transfer by convection from the gas to the thermocouple, and simultaneously impart heat to the radiation shield. The shield greatly reduces the amount of colder boiler surface which the thermocouple can "see", and substitutes surface at a temperature much closer to that of the gas, thereby reducing radiation loss from the thermocouple.

MHVT — (Multiple Shield)

By the use of multiple shields, all of which are heated by the aspirated gas stream, the radiation error may be further decreased, and the reading of the thermocouple caused to approach, very nearly, the true gas temperature. In such an arrangement the shielding surface nearest the thermocouple reaches higher temperatures, because its own heat losses are diminished by the outer shields.

One form of multiple shielding, (designated MHVT), which is widely adopted as a standard of reference in boiler testing, is shown in Figure 2. This assembly consists of an outer porcelain tube, connected to the aspirating source, and packed with smaller thin-wall porcelain tubes that surround the thermocouple element.

The MHVT can be used for traverse purposes in gas-fired or oil-fired units, where the products of combustion are relatively clean. Its small openings tend to clog rapidly if used in dust-laden gases from coal firing, and consequently require frequent cleaning or replacement. It can be operated for short periods, however, to serve as a standard of comparision in calibrating the more practical, though less effective, types of shielding.

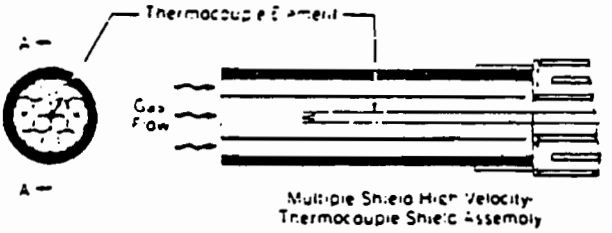


Fig. 2 Shield assemblies for high-velocity thermocouple (HVT) and multiple-shield high velocity thermocouple (MHVT).

TEMPERATURE CORRECTION

The amount of thermocouple radiation error will vary with many factors. These include the size of the thermocouple junction, its relation to the gas flow and surrounding boiler surfaces, the distribution and thickness of ash or slag as they affect the resultant surface temperature, the composition of the gases as well as the radiation characteristics of the active combustion zone, including its size and position. These factors vary with the design of the unit, rate of firing, and nature of the fuel.

Considering that the MHVT gives substantially accurate reading of true gas temperature, the general magnitude of error shown by a bare thermocouple and the single-shielded HVT, are indicated in Figure 3. It will be noted that the amount of error is greater in the high range of temperatures, and becomes negligible in the cooler range corresponding to economizer or air-heater gas passages.

The curves may be used for approximate correction of HVT readings taken in water-cooled furnaces and in cavity spaces of superheater and boiler convection banks. Inasmuch as they represent generalized data, obtained from a great many units, involving different fuels and

operating rates, they should not be regarded as precise values. Where more exact corrections are desired, it may be necessary to run specific calibration by direct comparison of HVT and MHVT readings, taken under the particular conditions of the test.

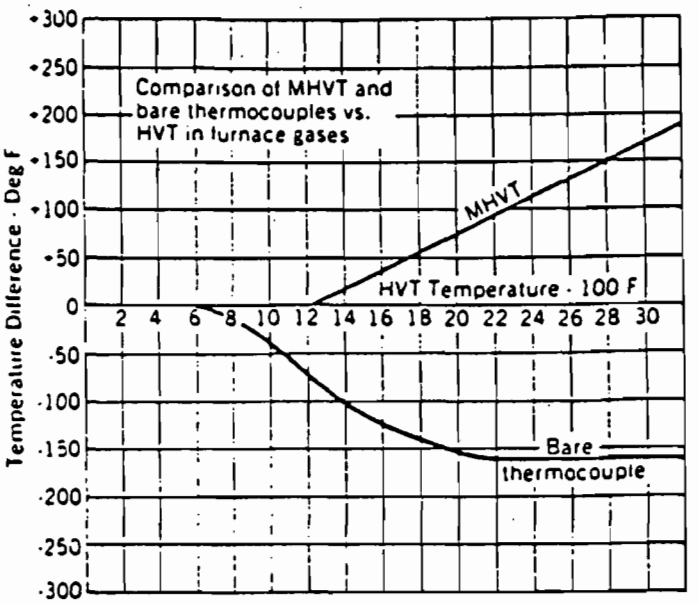


Fig. 3

CONSTRUCTION

General arrangement of the HVT test probe is shown in Figure 4. The assembly consists of a thermocouple element, supported by a water-cooled holder of sufficient length to span the traverse distance required for the boiler setting. Details of construction are such that it can be readily fabricated from stainless steel tubing and fittings. Certain features are provided to facilitate repair when it becomes necessary through normal use of the equipment.

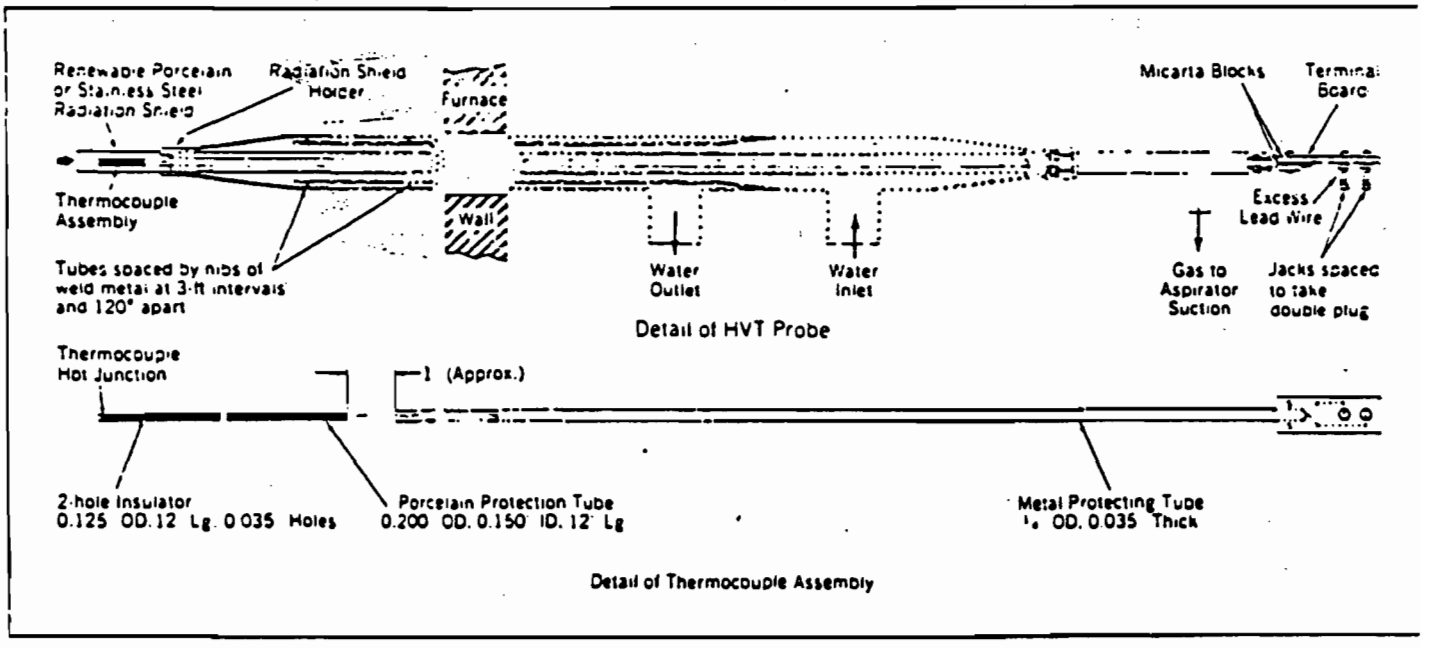


Fig. 4 Rugged water-cooled high-velocity thermocouple (HVT) for determination of high gas temperatures.

Water-Cooled Holder

The water-cooled holder consists of three concentric tubes. Cooling water flows through the two outer annuli and gases are drawn through the inner annulus by means of an aspirator operated by compressed air. At the furnace end, the thermocouple hot-junction projects beyond the water-cooled holder, and is surrounded by a porcelain radiation shield through which the gas is drawn at high velocity, simultaneously heating the thermocouple junction and the refractory shield.

Several factors must be considered in selecting the proper diameter and length of probe. Among these are the location and size of available doors, the traverse area to be covered, external clearances for access and manipulation as well as the probable range of the temperature of the gases and the available pressure of cooling water. Probes can be made in various lengths up to twenty feet. In the longer probes a larger diameter tubing is required to assure adequate water circulation for a given water supply pressure.

Two sizes are presently being fabricated with stainless steel tubing and fittings and should be considered standard. 1½" O.D. up to and including 15'-0 and 2" O.D. over 15'-0 up to and including 20'-0 in length.

The probes are normally made of straight tubing. For some special cases they may be made with a moderate degree of curvature in order to reach otherwise inaccessible areas. Brass, mild steel, or stainless steel tubes may be used in the construction . Stainless steel tubing is preferred because of its strength and corrosion resistance. It is desirable to have the outer tube of sufficient thickness to withstand physical damage in handling. The tubes are held in concentric position by the use of small spacing nibs of brazed metal shown in the detail.

Thermocouple Assembly

The thermocouple assembly is shown in Figure 4. The basic circuit consists of a paired length of 24 AWG platinum, and 90% platinum, 10% rhodium wire, joined to a suitable length of 22 AWG extension lead wire. The hot junction between the platinum and the platinum-rhodium wires can be made by twisting the ends together and fusing the twist into a small bead, by means of a portable electric welder, or acetylene torch. Welding flux should not be used. The copper and copper alloy lead wires should be given a polarity check, as outlined in Figure 5, before being permanently joined to the thermocouple wires by silver solder. For stainless steel tubing, welding or silver soldering should be used instead of brazing. Figure 6 shows the temperature and error limits for thermocouple wire.

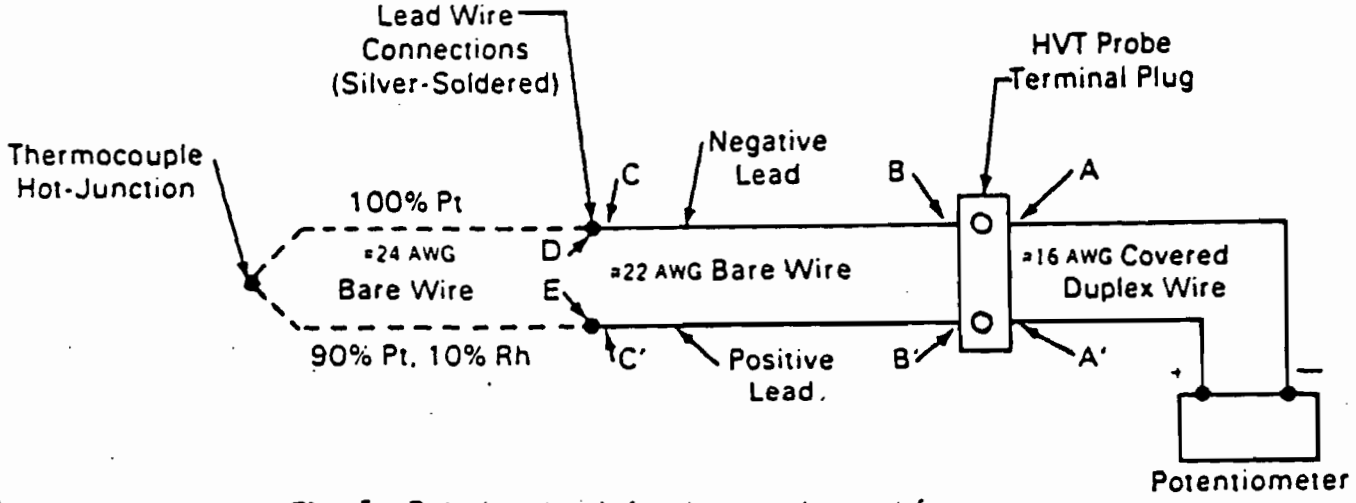


Fig. 5 Polarity check for thermoelement for high velocity thermocouple.

Temperature limits for standard thermocouples that are protected with a closed end protecting tube are shown. These limits are suggested for continuous temperature sensing where insulation is not a factor. For unprotected thermocouples where fast response is required these limits should be reduced for equivalent service life.

TEMPERATURE LIMITS FOR THERMOCOUPLE WIRE

Thermocouple	ISA Type	WIRE GAUGE (AWG) 8	14	20	24	28
Copper-Constantan	T	–	700°F	500°F	400°F	400°F
Iron-Constantan	J	1400°F	1100°F	900°F	700°F	700°F
Chromel-Constantan	E	1600°F	1200°F	1000°F	800°F	800°F
Chromel-Alumel*	K	2200°F	2000°F	1800°F	1600°F	1600°F
Platinum-Platinum Rhodium	R & S	–	–	–	2700°F	–
Platinum-Rhodium Platinum 10% Rhodium	B	–	–	–	3100°F	–
Tungsten / Tungsten Rhenium	WA W5 W3	–		–	4200°F	–

THERMOCOUPLE WIRE LIMITS OF ERROR

WIRE ALLOYS	ANSI TYPE	TEMPERATURE RANGE (°F)	LIMITS OF ERROR STANDARD GRADE	SPECIAL GRADE
Copper(+) vs Constantan(–)	T	-300 to -75	–	± 1%
		-150 to -75	± 2%	± 1%
		-75 to +200	± 1 °F	± ½°F
		+200 to +700	± ¾%	± ¾%
*Iron(+) vs Constantan(–)	J	32 to 530	± 4°F	± 2°F
		530 to 1400	± ¾%	± ¾%
Chromel(+) vs Constantan(–)	E	32 to 600	± 3°F	± 1½°F
		600 to 1600	± ½%	± ¾%
Chromel(+) vs *Alumel(–)	K	32 to 530	± 4°F	± 2°F
		530 to 2300	± ¾%	± ¾%
Platinum(–) vs Platinum Rhodium(+)	R & S	32 to 1000	± 2½°F	–
		1000 to 2700	± ½%	± ⅛%
Platinum 6% Rhodium(–) Platinum 30% Rhodium(+)	B	1600 to 3100	± ½%	–
Tungsten(+) vs Tungsten 26% Rhenium	WA*	to 800	± 8°F	–
Tungsten 3% Rhenium(+) Tungsten 25% Rhenium(-)	W3*	800 to 4200	± 1%	
Tungsten 5% Rhenium(+) Tungsten 26% Rhenium	W5*			

*Magnetic Conductor

Fig. 6 Temperature and error limits for thermocouple

Correction values thus obtained for the service thermocouple should be applied to the readings taken in the test traverses of the operating boiler unit. With repeated use, the service thermocouple may show progressively increasing deviation from the calibrating thermocouple, due to accumulating contamination effects. This tendency is more pronounced when the service thermocouple is used at temperatures above 2600F. A couple is considered usable if correction values at its highest operating temperature do not exceed approximately 40 to 50 degrees. If a greater deviation is shown, the contaminated portion should be cut off and a new hot junction made. A record should be kept of the amount cut off the service thermocouple to insure that it is not used after its length is reduced below 50 inches.

APPLICATION TO BOILER TESTING

The high velocity thermocouple described is primarily a tool for accurate measurement of high gas temperature under the difficult conditions encountered in steam boiler practice. Its application to boiler testing is, of course, quite varied, depending on the purpose of the test. In common practice it is used to explore the range and distribution of temperature in sections of the unit where information is needed relative to heat transfer rates, duty on pressure parts of superheater or other components of the equipment, and for investigating the behavior of ash and slag.

Graphical correlation is usually the most satisfactory method for appraising the data, and may be developed in the form of temperature-profile plots for individual traverse sections, or as area plots of isotherms, drawn in conformity with the readings obtained at local traverse points.

In any consideration of average temperature values, attention should be given to the nature and distribution of gas mass flow in the traverse area, which may require separate investigation by velocity traverse, using other test equipment.

Where the study requires a determination of gas composition, in conjunction with temperature data, the gases may be sampled from the line ahead of the aspirator, simultaneously with the progress of the temperature traverse. For separate traverse to determine gas composition, the water-cooled holder may be used conveniently as a sampling tube, after withdrawing the thermocouple element.

Progress and improvement in boiler design and operation depend very largely upon procuring more complete and accurate knowledge of the relationship of factors involved in the problem. Intelligent use of the HVT probe can yield data of primary significance to the resolution of this problem, and its extended application is encouraged.

OGDEN MARTIN SYSTEMS, INC.

40 LANE ROAD
CN 2615
FAIRFIELD, NEW JERSEY 07007-2615
(201) 882-9000

AN OGDEN COMPANY

RECEIVED
SEP 27 1989
OMSP

September 20, 1989

Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attention: Mr. C.H. Fancy, Deputy Bureau Chief

SUBJECT: PASCO COUNTY SOLID WASTE RESOURCE RECOVERY FACILITY
PSD - FL - 127

Dear Mr. Fancy:

Specific condition 1.F. of the above referenced PSD Permit for the Pasco County Solid Waste Resource Recovery Facility states that only natural gas be utilized to fuel the auxiliary burners. Subsequent to the PSD application and the power plant site certification applications, natural gas has been determined to be unavailable to this facility. As a result, Ogden Martin has been directed by the county to substitute natural gas with propane for the auxiliary burners. Ogden Martin understands with discussions to Barry Andrews that these two fuels can be used interchangeably without permit modification according to current FDER Policy.

Please verify in writing that the above change in auxiliary fuel is acceptable and that no permit modification is required.

If you have any questions regarding this matter, please do not hesitate to contact the undersigned or our resident construction manager, Mr. Paul Hauck at (813) 856-7697.

Sincerely,

OGDEN MARTIN SYSTEMS OF PASCO, INC.

Joseph N. Conover
Project Manager

LB:rj/2-96

cc: J. Gallagher - Pasco County
D. Bramlett - Pasco County
D. Strobridge - CDM
~~P. Hauck - OMSP~~ → plf 5.1 PPSC

Emission Stack Geometry

PS6T1.2

PASCO FACILITY CARBON STORAGE SILO

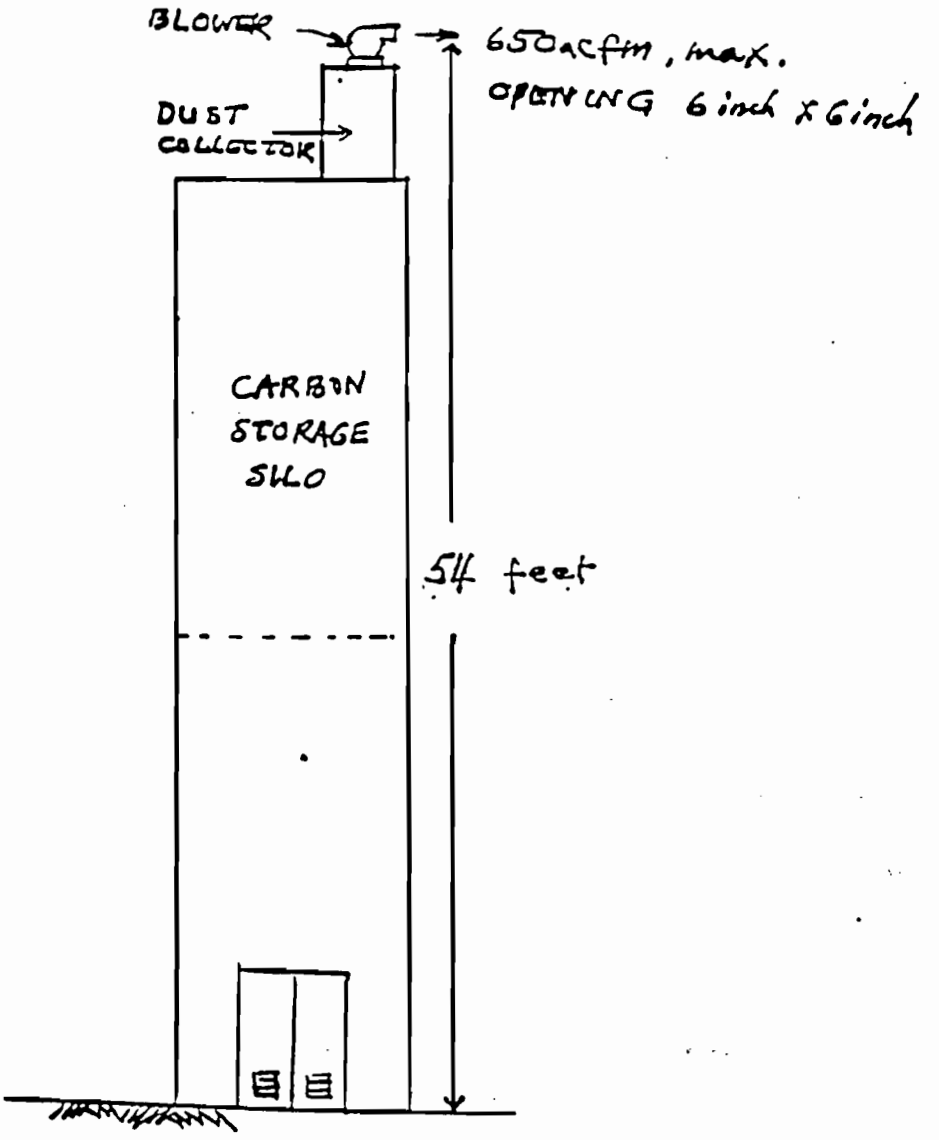
DOCUMENT III.C.14
Emission Stack Geometry and Flow Characteristics

The emission point is the blower outlet, which is a 6 inch by 6 inch opening.

The blower outlet is approximately 54 feet from the ground.

Air flow rate is 650 acfm, maximum, at ambient temperature, with ambient air moisture content.

Air flow exit velocity is 43 fps, maximum.



Carbon Silo Simplified Process Flow Diagram

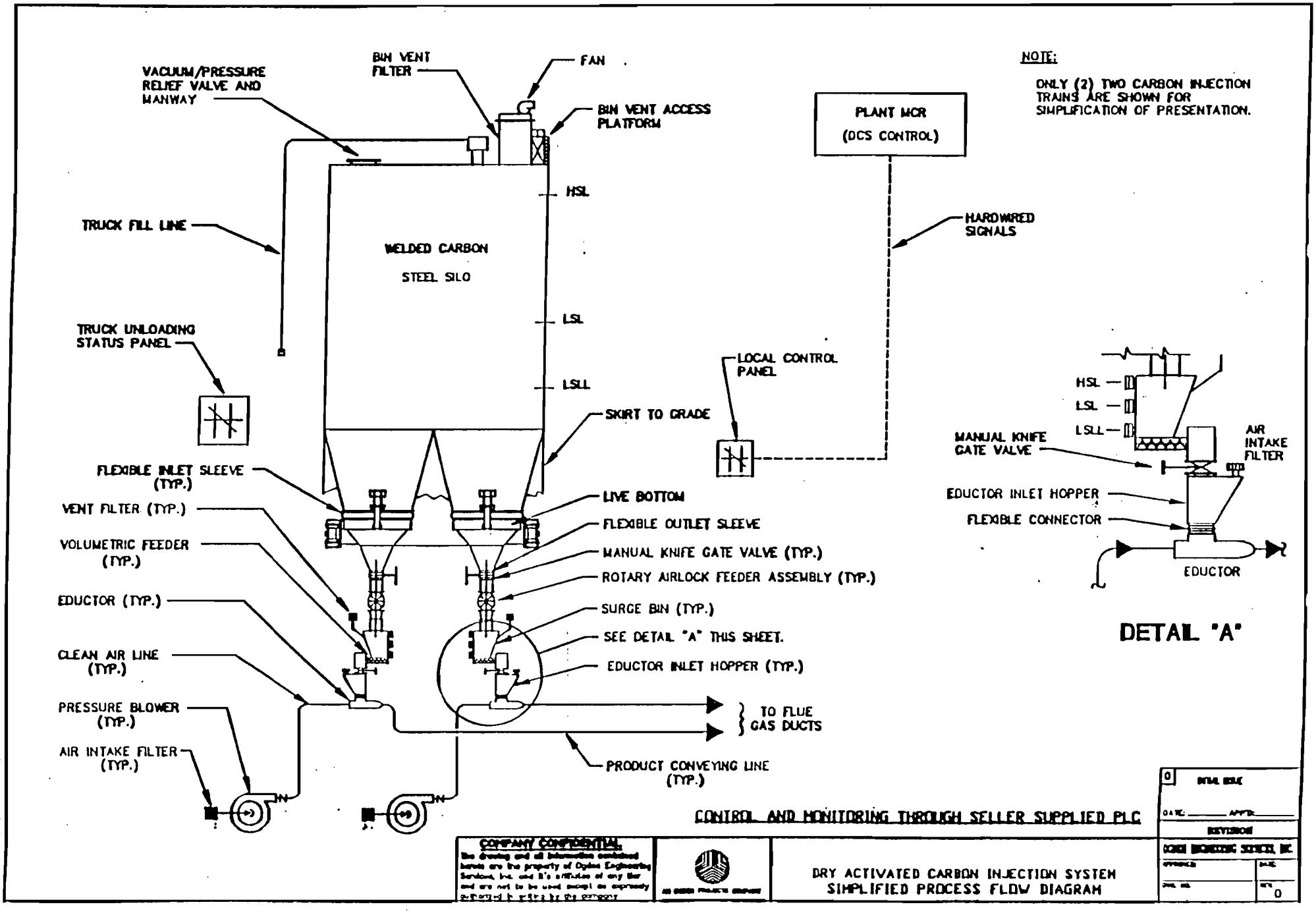
PS6T1.2

DOCUMENT III.I.3

Detailed Description of Control Equipment

The dust collector system will be provided on the silo vent to clean the air exhausted during the pneumatic transfer of carbon into the silo from delivery trucks. Vent filter bags will be pulse jet cleaned, sized for a maximum air to cloth ratio of 3 to 1, and made of Mikropul or equal. The baghouse is designed for 99.9% particulate removal efficiency. Exhaust air will have less than 0.015 gr/DSCF of particulate.

Bag material will be 16 oz. polyester and treated to be fire resistant. Bag cage material will be, as a minimum, 16 gauge, galvanized carbon steel wire. The vent filter housings will be constructed of minimum 12 gauge carbon steel and adequately reinforced to withstand pressures of 15 inches H_2O above and below atmospheric pressure without pulsation or drumming on flat surfaces. All vent filter housings will be dust tight at the maximum design pressure and air flow.



DRY ACTIVATED CARBON INJECTION SYSTEM
SIMPLIFIED PROCESS FLOW DIAGRAM

0

Carbon Silo Permit
AC51-266667

PS6T1.2

SPECIFIC CONDITIONS:

REPORTING REQUIREMENTS

12. All test reports shall be submitted to the Air Compliance Section of the Southwest District Office of the Department of Environmental Protection within 45 days of testing. [Rule 62-296.570(2), F.A.C.]

13. Submit to the Air Compliance Section of the Southwest District Office of the Department of Environmental Protection each calendar year, on or before March 1, completed DEP Form 62-210.900(5), *"Annual Operating Report for Air Pollutant Emitting Facility"*, including the *Emissions Report*, for the preceding calendar year. [Rule 62-210.370(3), F.A.C.]

14. The minimum requirements for stack sampling facilities, source sampling and reporting, shall be in accordance with Chapter 62-297, F.A.C., *Stationary Sources - Emission Monitoring* and 40 CFR 60, Appendix A. [Rule 62-297.420, F.A.C.]

OPERATION PERMIT REQUIREMENTS

15. The permittee is subject to the permitting requirements of Rule 62-213.400 and shall apply for a Title V operation permit by submitting a completed application, DEP Form 62-210.900(1), to the Air Permitting Section of the Southwest District Office of the Department of Environmental Protection by the appropriate date referenced in Rule 62-213.420(1)(a), F.A.C.

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

For Richard D. Garrity, Ph.D.
Director of District Management
Southwest District

5pc_667c.pmt

ATTACHMENT - GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

GENERAL CONDITIONS:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

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

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

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

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

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

GENERAL CONDITIONS:

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

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

In the matter of an
Application for Permit by:

DEP File: AC51-266667
Pasco County

Mr. John L. Gallagher, County Administrator
Pasco County
7530 Little Road
New Port Richey, Florida 34654

NOTICE OF PERMIT

Enclosed is air pollution permit AC51-266667 for the construction of a new storage silo for activated carbon to be used at the Pasco Resource Recovery Facility located at 14230 Hays Road, Spring Hill, Florida, issued pursuant to Section 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tampa, Florida.

Sincerely,

John J. Taylor, P.E.
Air Permit Engineer

Enclosure

Mr. John L. Gallagher
Pasco County

DEP File: AC51-266667

copies: (1) Ms. Caroline G. Nagge
Environmental Planner
Ogden Martin Systems, Inc.
40 Lane Road
Fairfield, New Jersey 07007-2615

(2) Mr. Jason Gorrie
Environmental Engineer
Ogden Martin Systems of Pasco, Inc.
14230 Hays Road
Spring Hill, Florida 34610

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on APR 20 1993 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to Section 120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

APR

(Clerk) (Date)

BEST AVAILABLE COPY

cc: D. Lehman, G. Crane, G. Klott, G. Nelson, R. Tulli, W. Goldate, Tom Hall, C. Boatwright, J. Gross, R. Ordunby, C. Hayes, L. Brasosnoli 4/25/95

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

<u>PERMITTEE</u>:
Pasco County
7530 Little Road
New Port Richey, Florida 34654

<u>PERMIT/PROJECT</u>:
Permit: AC51-266667
County: Pasco
Expiration Date: 03/15/98
Project: Carbon Storage Silo and Injection Equipment

This permit is issued under the provisions of Chapter 403, Florida Statutes, Chapter 62-4, *Permits*, and Chapters 62-200 through 62-297, Florida Administrative Code. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a storage silo and associated transport and injection equipment which will be used to store and inject dry activated carbon into the flue gas at the Pasco Resource Recovery Facility. The carbon injection will be used to control mercury emissions at the facility. Particulate matter emissions from the silo during pneumatic loading will be controlled by a Mikopul, or equivalent, baghouse dust collector.

This source is located in a particulate matter (PM) "area of influence" and is subject to the requirements of Rule 62-296.700, F.A.C., *Reasonably Available Control Technology* (PM-RACT), but qualifies for a PM-RACT exemption per Rule 62-296.700(2)(b), F.A.C.

Location:	Pasco Resource Recovery Facility 14230 Hays Road, Spring Hill, Florida
UTM:	17-328.9 km E 2686.0 km N
NEDS No:	0056
Point ID:	004
Facility ID:	40TPA510056

SPECIFIC CONDITIONS:

1. A part of this permit is the attached *GENERAL CONDITIONS.* [Rule 62-4.160, F.A.C.]

2. Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other requirements of Chapters 62-200 through 62-299, Florida Administrative Code, or any other requirements under federal, state or local law. [Rule 62-210.300, F.A.C.]

OPERATIONAL LIMITATIONS

3. The hours of operation of the storage silo and the associated handling and injection system are not restricted. [Rule 62-4.070(3), F.A.C.]

4. The permittee shall not allow any person to circumvent the operation of the baghouse collector. The baghouse must be operational during pneumatic loading of the storage silo. [Rule 62-210.650, F.A.C.]

5. All reasonable precautions shall be taken to prevent and control the generation of unconfined emissions of particulate matter. These provisions are applicable to any source, including but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling. These precautions shall include the use of water when necessary to control fugitive emissions, such as the use of water to keep roadways and work areas damp to control dust and windborne emissions. [Rule 62-296.310(3), F.A.C.]

EMISSION LIMITATIONS

6. Visible emissions from the baghouse exhaust and the support equipment (the dry carbon transport piping and metering system) shall not exceed 5% opacity. Pursuant to Rule 62-297.620(4), F.A.C. for a source equipped with a baghouse, this visible emission limitation is being established in lieu of a particulate matter emissions stack test. [Rule 62-297.620(4), F.A.C.]

7. The maximum allowable particulate matter emission rate from storage silo exhaust shall not exceed 0.084 pounds per hour and 0.37 tons per year. This particulate matter emission rate limitation qualifies the source for the PM-RACT exemption per Rule 62-296.700(2)(b), F.A.C. [Requested in construction permit application, 03/03/95]

SPECIFIC CONDITIONS:

TESTING AND COMPLIANCE REQUIREMENTS

8. Test for visible emissions per Specific condition No. 6 within 60 days after initial start up. "Initial start up" is defined as the first introduction of activated carbon into the storage silo. Testing for visible emissions shall be conducted annually, thereafter, within the 60 day period prior to the anniversary date established by the initial compliance testing. A copy of the test data shall be submitted to the Air Compliance Section, Southwest District Office of the Department of Environmental Protection within 45 days of testing. [Rule 62-297.340(1)(a) and 62-297.570(2), F.A.C.]

9. Compliance with the visible emission limitation of Specific Condition No. 6, shall be determined using EPA Method 9 and shall be conducted by a certified observer and be a minimum of 30 minutes in duration. The test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur. This period is expected to be the last minutes of silo loading. For a silo loading operation that is normally completed in less than 30 minutes, the visible emissions test shall be conducted for the normal duration of the silo loading operation. [Rules 62-297.330(1)(b), and 62-4.070(3) F.A.C.]

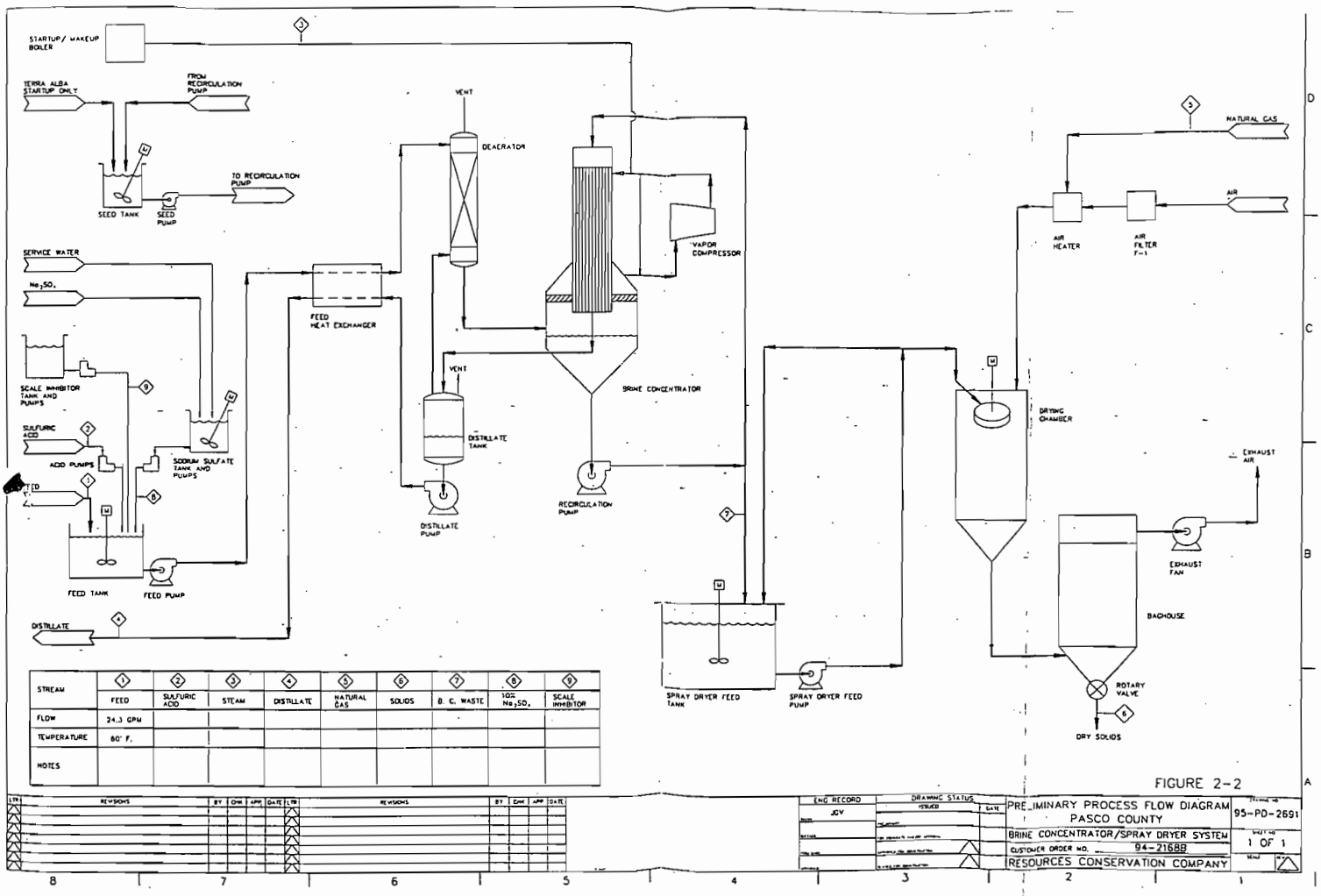
10. The visible emissions test shall be conducted while pneumatically loading the silo at a rate that is representative of the normal silo loading rate. The silo loading rate shall be at least 25 tons per hour and shall occur in less than one hour. Each test report shall include a calculation indicating the actual silo loading rate during the visible emission test. The dry carbon injection system is assumed to be in continuous operation and should be operating normally during all visible emission testing. If these operations are not in simultaneous operation during a scheduled visible emissions test, it shall be so noted on the test report. [Rule 62-4.070(3), F.A.C.]

NOTIFICATION REQUIREMENTS

11. The permittee shall notify the Air Compliance Section of the Department of Environmental Protection at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each test, and the contact person who will be responsible for coordinating the test. [Rule 62-297.340(1)(i), F.A.C.]

Leachate Treatment Facility Process Flow Diagram

PS6T1.2



STREAM	1 FEED	2 SULFURIC ACID	3 STEAM	4 DISTILLATE	5 NATURAL GAS	6 SOLIDS	7 B. C. WASTE	8 10% Na_2SO_4	9 SCALE INHIBITOR
FLOW	24.3 GPM								
TEMPERATURE	80° F.								
NOTES									

FIGURE 2-2

REVISIONS	BY	CHK	APP	DATE

ENG RECORD	DRAWING STATUS
JCV	ISSUED / DATE

PRELIMINARY PROCESS FLOW DIAGRAM
PASCO COUNTY
BRINE CONCENTRATOR/SPRAY DRYER SYSTEM
CUSTOMER ORDER NO. 94-2168B
RESOURCES CONSERVATION COMPANY

DRAWING NO. 95-PD-2691
SHEET NO. 1 OF 1

Leachate Treatment Facility Permit

PS6T1.2

File
Pasco - Leachate
Permits

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT ISSUANCE

In the matter of an
Application for Permit by:

Mr. Doug Bramlett
Assistant County Administrator
Pasco County
7530 Little Road
New Port Richey, FL 33553 /

DEP File No.: 1010056-001-AC
County: Pasco

Enclosed is Permit Number 1010056-001-AC for the construction of a Leachate Treatment Facility at the Pasco County Solid Waste Resource Recovery Facility located at 14230 Hays Road, Spring Hill, Pasco County, issued pursuant to Section 403.087, Florida Statutes and Florida Administrative Code (F.A.C.), Rules 62-210 through 62-297 and 62-4.

Any party to this Order (permit) has the right to seek judicial review of the Order (permit) pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tampa, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

George W. Richardson
Air Permitting Engineer
Southwest District

3804 Coconut Palm Drive
Tampa, FL 33619-8318
(813)744-6100, Ext. 105

cc: Darwish Elhajji, P.E., Camp Dresser & McKee, Inc.
1 Tampa City Center, Suite 1750
Tampa, FL 33602

CERTIFICATE OF SERVICE

The undersigned duly designated Deputy Department Clerk hereby certifies that this NOTICE OF PERMIT ISSUANCE and all copies were mailed before the close of business on MAR 20 1996 to the listed persons.

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to Section 120.52(11), Florida Statutes, with the designated Deputy Department Clerk, receipt of which is hereby acknowledged.

Marilyn Quispe (Clerk) MAR 20 1996 (Date)

Attachment:

Department of Environmental Protection

Lawton Chiles
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Virginia B. Wetherell
Secretary

PERMITTEE:

Pasco County
7530 Little Road
New Port Richey, FL 33553 /

PERMIT/PROJECT:

Permit No: 1010056-001-AC
County: Pasco
Expiration Date: 02/20/1997
Project: Leachate Treatment Facility

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 62-210 through 297 & 62-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of a Leachate Treatment Facility at the Pasco County Solid Waste Resource Recovery Facility. The emissions unit is a Bowen Model No. AA-6 natural gas fired spray drying system for the ashfill leachate. The maximum heat input rate to the dryer is 3.0 MMBTU/hour. The design leachate feed rate is 1724 pounds/hour with an evaporation rate of 1207 pounds/hour and a powder rate of 517 pounds/hour. Also, for the construction of a natural gas fired Parker Boiler Company 1.0 MMBTU/hour startup boiler to be used for the first 24 hours during startup of the spray drying system. Emissions from the spray drying system will be controlled with a Niro, Inc. baghouse having an air to cloth ration of 3.9:1.

Location: 14230 Hays Road, Spring Hill, Pasco County

UTM: 17-347.1 E 3139.2 N

Facility ID No: 0056 Emission Unit ID: 005-Leachate Treatment Baghouse

Note: Please reference Permit No., Facility No., and Emission Unit ID in all correspondence, test report submittals, applications, etc.

Replaces Permit No.: N/A New Source

PERMITTEE:
Pasco County

Permit No.: 1010056-001-AC
Project: Leachate Treatment Facility

SPECIFIC CONDITIONS:

1. A part of this permit is the attached 15 General Conditions (Rule 62-4.160, F.A.C.).

2. The maximum permitted allowable emission rate of particulate matter from the dryer baghouse shall not exceed 0.52 pounds/hour and 2.26 tons/year (construction permit application received 11/17/95). These emission limitations will exempt the facility from the requirements of Rule 62-296.700, F.A.C., Particulate RACT, (Rule 62-296.700(2), F.A.C.).

3. Visible emissions from the dryer baghouse shall not be equal to or exceed 20% opacity (Rule 62-296.310(2), F.A.C.).

4. The facility is allowed to operate continuously, 8,760 hours/year (construction permit application received 11/17/95).

5. All reasonable precautions shall be taken to prevent and control the generation of unconfined emissions of particulate matter in accordance with Rule 62-296.310(3), F.A.C. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition of wrecking, or industrial related activities such as loading, unloading, storing and handling.

6. Test the emissions from the dryer baghouse for the following pollutants within 60 days of startup. A report of the test data shall be submitted to the Air Compliance Section of the Department's Southwest District Office within 45 days of the testing (Rules 62-297.340 and 62-297.570, F.A.C.).

(X) Particulate matter (waived per Specific Condition No. 10)
(X) Visible emissions

7. Compliance with the emission limitations of Specific Conditions No. 2 and 3 shall be determined using EPA Methods 1, 2,3,4,5 and 9 contained in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C. The minimum requirements for stationary point source sampling and reporting shall be in accordance with Rule 62-297, F.A.C. and 40 CFR 60, Appendix A. The visible emissions compliance tests shall be conducted by a certified observer and be a minimum of 30 minutes in duration.

8. The permittee shall notify the Air Compliance Section of the Department's Southwest District Office in writing at least 15 days prior to the date on which the compliance test is to begin. The notice shall include, the date, time, and place of each test (Rule 62-297.340(1)(i), F.A.C.).

9. Testing of emissions to show compliance shall be conducted within 90-100% of the maximum permitted dryer feed rate of 1724 pounds/hour. A compliance test submitted at an operating rate less than 90% of the permitted rate will automatically constitute an amended permit at the lesser rate plus 10%, until another test, showing compliance at a higher rate is submitted. Any time the permitted rate of the source is exceeded by more than 10% a compliance test shall be performed within 30 days of initiation of the higher rate and the test results shall be submitted to the Department within 45 days of testing. Acceptance of the test by the Department will constitute an amended permit at the higher rate plus 10%, but in no case shall the maximum permitted dryer feed rate of 1724 pounds/hour be exceeded. Failure to submit the dryer feed rate and actual operating conditions in the test report may invalidate the test data (Rule 62-4.070(3), F.A.C.).

10. Due to the expense and complexity of conducting a stack test on a minor source of particulate matter, and because the dryer is equipped with a baghouse emission control device, the Department, pursuant to the authority granted under Rule 62-297.620(4), F.A.C., hereby establishes a visible emission limitation not to exceed an opacity of 5% from these sources baghouse exhaust in lieu of a particulate stack test and 20% opacity.

11. Should the Department have reason to believe the particulate emission standard as specified in Specific Condition No. 2 is not being met, the Department may require that compliance with the particulate emission standard be demonstrated by testing in accordance with Rule 62-297, F.A.C. (Rule 62-297.620(4), F.A.C.).

12. The permittee shall submit a minimum of two short form applications (DEP Form No. 62-210.900(2)) for an operating permit to the Air Permitting Section of the Department's Southwest District Office at least 60 days prior to the expiration date of this permit (Rule 62-4.090, F.A.C.).

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

W.C. Thomas, P.E.
District Air Program Administrator
Southwest District

ATTACHMENT - GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

GENERAL CONDITIONS:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

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

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

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

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

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

GENERAL CONDITIONS:

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

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

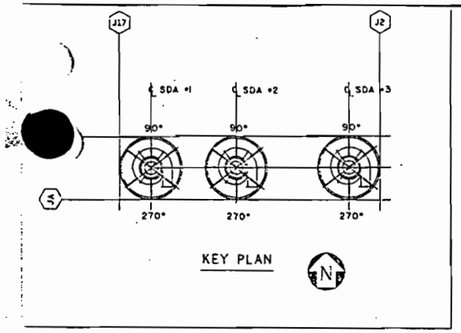
b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

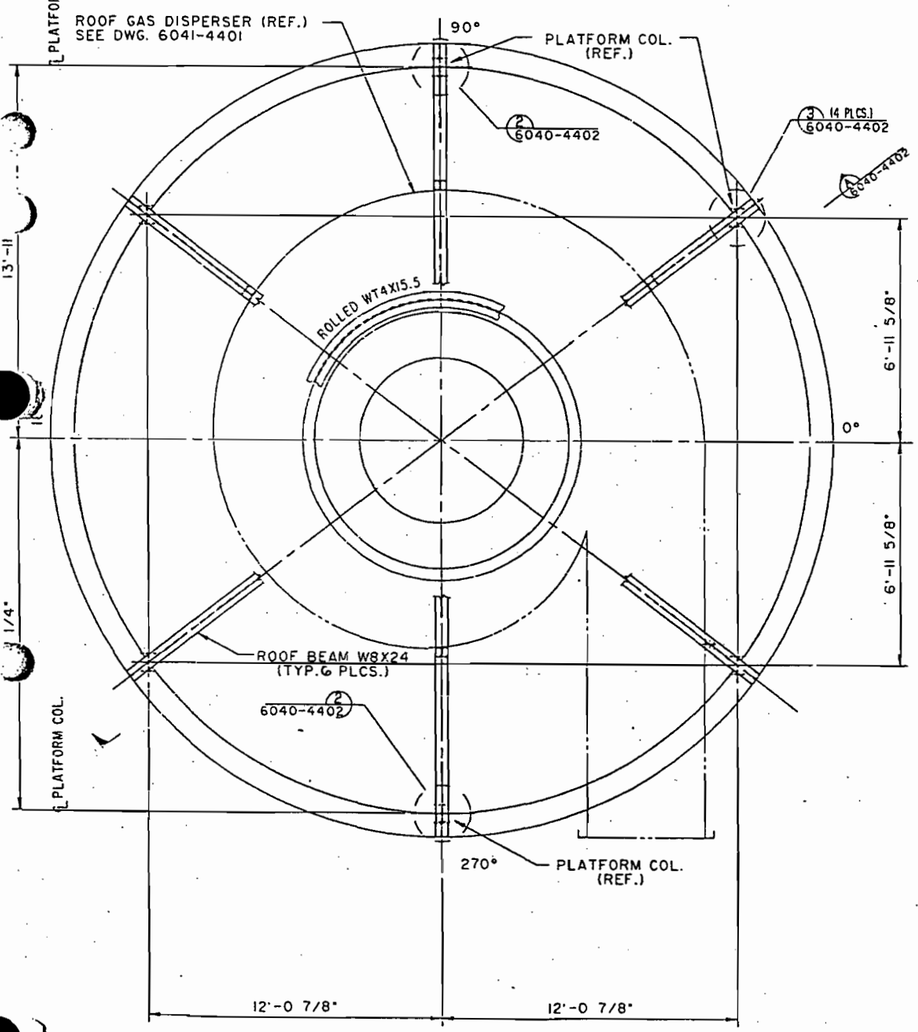
c. Records of monitoring information shall include:

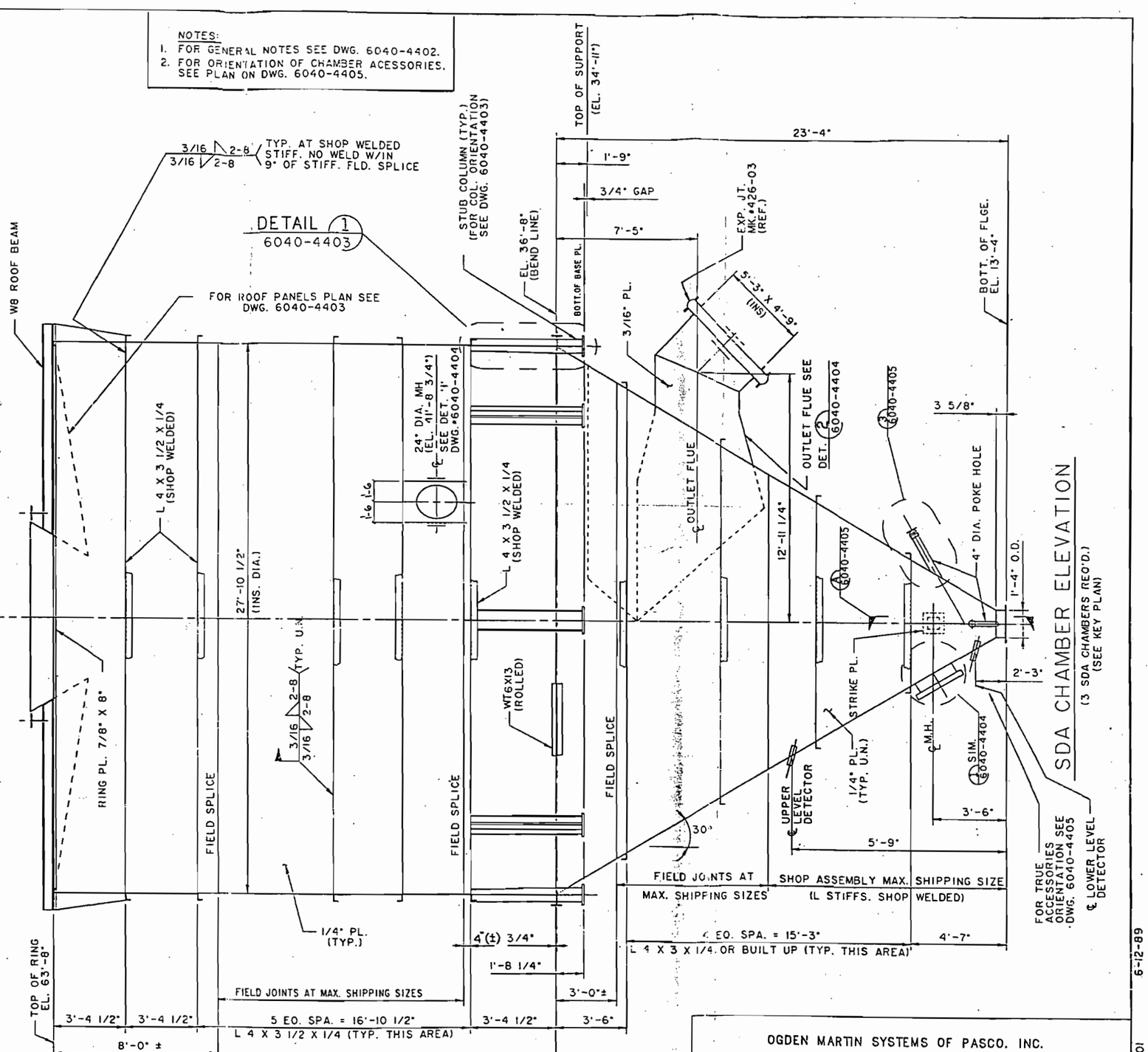
- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

NOTES:
1. FOR GENERAL NOTES SEE DWG. 6040-4402.
2. FOR ORIENTATION OF CHAMBER ACESSORIES, SEE PLAN ON DWG. 6040-4405.







SDA CHAMBER ELEVATION

(13 SDA CHAMBERS REQ'D.)
(SEE KEY PLAN)

DWG. NO.	TITLE	REV. NO.	DATE	REV. BY	CKD. BY	ENG. APP.	ENG. APP.	REVISION RECORD

DRAWN BY DDK	6-12-89	
CHECKED BY L.K	9-11-89	
ENGINEER G.B.	9-12-89	
ENG SUPERV [illegible]	9-12-89	
PROJ ENG		

UNLESS SHOWN OTHERWISE, DIMENSIONS ARE IN INCHES AND THE FOLLOWING TOLERANCES SHALL APPLY.

TOLERANCES		
FRACTIONS	DECIMAL	ANGULAR
LINEAR ±	.XX ± ±	± °
DIAMETRAL ±	.XXX ± ±	

JOY TECHNOLOGIES INC.
WESTERN PRECIPITATION DIVISION
MONROVIA, CALIFORNIA, U.S.A.

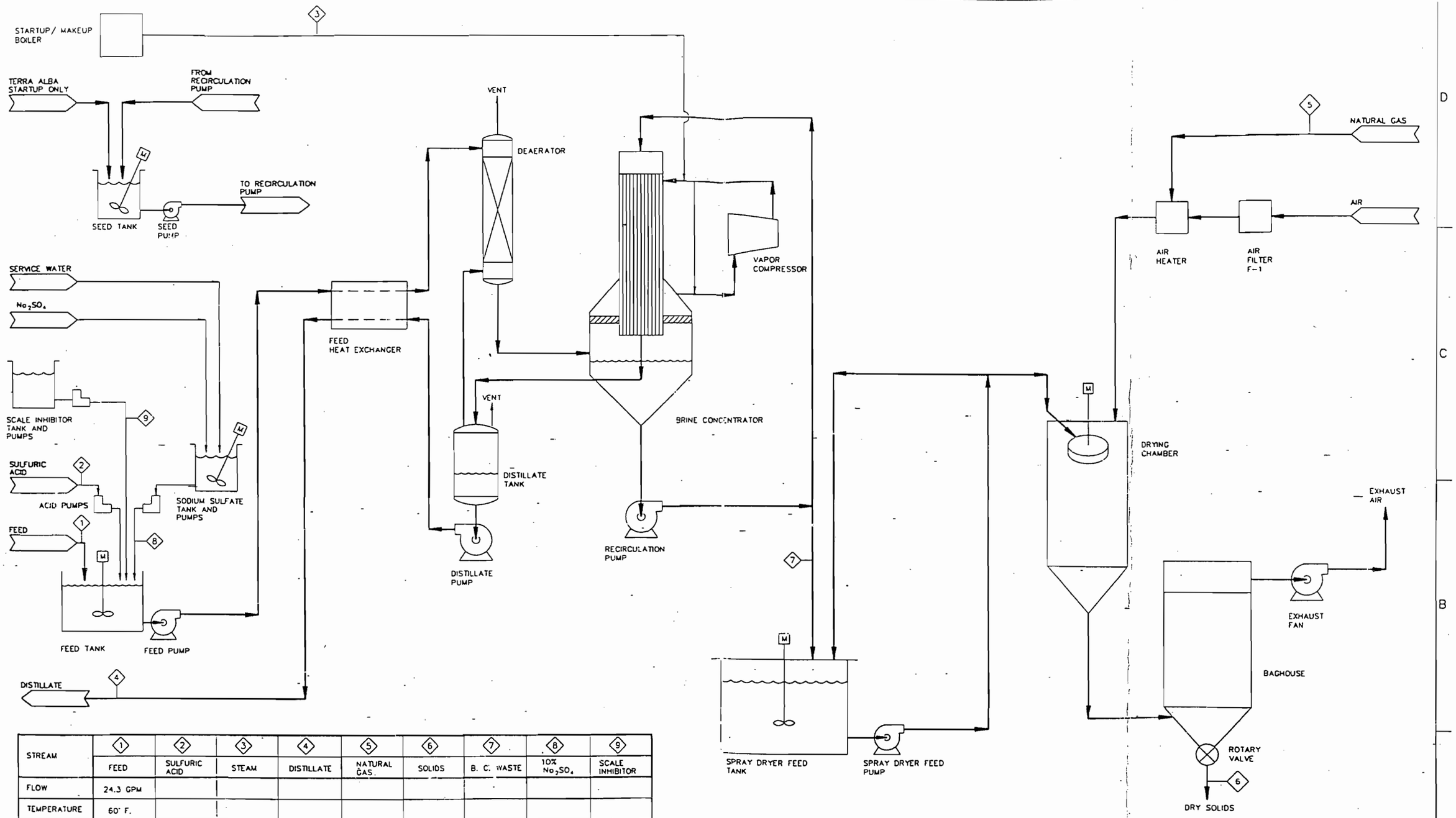
OGDEN MARTIN SYSTEMS OF PASCO, INC.
SOLID WASTE RESOURCE RECOVERY FACILITY
PASCO COUNTY, FLORIDA

SDA CHAMBER
KEY PLAN AND ELEVATION

SCALE: NONE
DRAWING NO.
JOB 0-89-078
DWG 6040-4401 REV 0

6-12-89

WP.ST.89078.6040.4401



STREAM	1	2	3	4	5	6	7	8	9
	FEED	SULFURIC ACID	STEAM	DISTILLATE	NATURAL GAS	SOLIDS	B. C. WASTE	10% No_2SO_4	SCALE INHIBITOR
FLOW	24.3 GPM								
TEMPERATURE	60° F.								
NOTES									

FIGURE 2-2

LTR	REVISIONS	BY	CHK	APP	DATE

ENG RECORD	DRAWING STATUS	
JCV	ISSUED	DATE

PRELIMINARY PROCESS FLOW DIAGRAM
PASCO COUNTY
BRINE CONCENTRATOR/SPRAY DRYER SYSTEM
CUSTOMER ORDER NO. 94-2168B
RESOURCES CONSERVATION COMPANY

DRAWING NO 95-PD-2691
SHEET NO 1 OF 1
SCALE
REV