

**D.E.P  
SOUTHWEST DISTRICT**

OCT 05 2005

**TAMPA**

**FERO FUNERAL HOME WITH CREMATORY  
DUNNELLON, FLORIDA  
FDEP AIR CONSTRUCTION PERMIT APPLICATION  
OCTOBER 7, 2005**

*0830080-004-AC*

Prepared For:

FERO FUNERAL HOME WITH CREMATORY  
7620 South U. S. Highway 41  
Dunnellon, Florida 34432

Prepared By:

SOUTHERN ENVIRONMENTAL SCIENCES, INC.  
1204 North Wheeler Street  
Plant City, Florida 33563  
Phone (813) 752-5014 Fax (813) 752-2475



**FERO MEMORIAL GARDENS**  
**FUNERAL HOME & MAUSOLEUM**

**William C. Ward, III, L.F.D.**  
AREA MANAGER  
OCALA SUB-CLUSTER

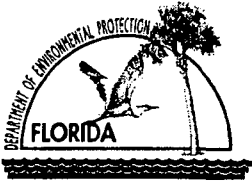
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**SOUTHERN**  
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**KENNETH M. ROBERTS, QEP**  
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# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR AIR PERMIT - NON-TITLE V SOURCE

See Instructions for Form No. 62-210.900(3)

#### I. APPLICATION INFORMATION

##### Identification of Facility

1. Facility Owner/Company Name: <b>FERO FUNERAL HOME WITH CREMATORY</b>	
2. Site Name: <b>DUNNELLON CREMATORY</b>	
3. Facility Identification Number: 0830080 [ ] Unknown	
4. Facility Location: Street Address or Other Locator: <b>7620 South U. S. Highway 41</b> City: <b>Dunnellon</b> County: <b>Citrus</b> Zip Code: <b>34432</b>	
5. Relocatable Facility? [ ] Yes [ <b>X</b> ] No	6. Existing Permitted Facility? [ <b>X</b> ] Yes [ ] No

##### Application Contact

1. Name and Title of Application Contact:  <b>William C. Ward III, General Manager</b>	
2. Application Contact Mailing Address: Organization/Firm: <b>FERO FUNERAL HOME WITH CREMATORY</b> Street Address: <b>7620 South U. S. Highway 41</b> City: <b>Dunnellon</b> State: <b>Florida</b> Zip Code: <b>34432</b>	
3. Application Contact Telephone Numbers: Telephone: <b>(352) 489 - 5363</b> Fax: <b>(352) 465 - 0072</b>	

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

1. Date of Receipt of Application:	
2. Permit Number:	

**Purpose of Application**

**Air Operation Permit Application**

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

- Initial non-Title V air operation permit for one or more existing, but previously unpermitted, emissions units.
- Initial non-Title V air operation permit for one or more newly constructed or modified emissions units.

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

- Non-Title V air operation permit revision to address one or more newly constructed or modified emissions units.

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

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

- Initial non-Title V air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s):  
\_\_\_\_\_

- Non-Title V air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g., to address one or more newly constructed or modified emissions units.

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


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

**Air Construction Permit Application**

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

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

**Owner/Authorized Representative**

1. Name and Title of Owner/Authorized Representative: <b>William C. Ward III, General Manager</b>
2. Owner/Authorized Representative Mailing Address: Organization/Firm: <b>FERO FUNERAL HOME WITH CREMATORY</b> Street Address: <b>7620 South U. S. Highway 41</b> City: <b>Dunnellon</b> State: <b>Florida</b> Zip Code: <b>34432</b>
3. Owner/Authorized Representative Telephone Numbers: Telephone: <b>(352) 489 - 5363</b> Fax: <b>(352) 465 - 0072</b>
4. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative* of the facility addressed in this application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>   Signature _____ Date <u>10-7-05</u>

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

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Rama Iyer</b> Registration Number: <b>56919</b>
2. Professional Engineer Mailing Address: Organization/Firm: <b>Southern Environmental Sciences, Inc.</b> Street Address: <b>1204 N. Wheeler Street</b> City: <b>Plant City</b> State: <b>Florida</b> Zip Code: <b>33563</b>
3. Professional Engineer Telephone Numbers: Telephone: <b>(813) 752-5014</b> Fax: <b>(813) 752-2475</b>

4. Professional Engineer Statement:

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

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

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

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

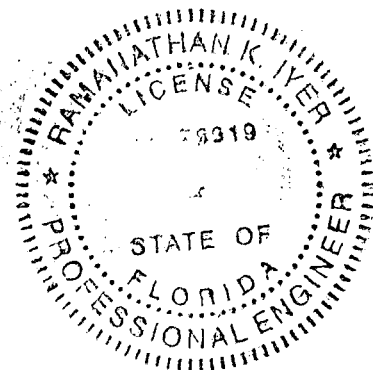
*If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [  ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such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

*Ramathyan*

*October 7, 2005*

Signature

Date



(seal)

FERO FUNERAL HOME WITH CREMATORY

\* Attach any exception to certification statement.

**Scope of Application**

<b>Emissions Unit ID</b>	<b>Description of Emissions Unit</b>	<b>Permit Type</b>	<b>Processing Fee</b>
001	Human Crematory Incinerator	ACM1	\$250

**Application Processing Fee**

Check one: [  ] Attached - Amount: \$ 250 [  ] Not Applicable

**Construction/Modification Information**

1. Description of Proposed Project or Alterations:

**Make enforceable the 1600 degree F afterburner temperature requirement on a unit initially constructed prior to August 30, 1989 but modified to fire at the higher rate. This will entitle the facility to the use of the General Permit.**

2. Projected or Actual Date of Commencement of Construction: **NA**

3. Projected Date of Completion of Construction: **NA**

**Application Comment**



**II. FACILITY INFORMATION**

**A. GENERAL FACILITY INFORMATION**

**Facility Location and Type**

1. Facility UTM Coordinates: Zone: 17                                  East (km): 358.99                                  North (km): 3220.8			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): <b>29/06/34</b> Longitude (DD/MM/SS): <b>82/26/57</b>			
3. Governmental Facility Code:  <p align="center"><b>0</b></p>	4. Facility Status Code:  <p align="center"><b>A</b></p>	5. Facility Major Group SIC Code:  <p align="center"><b>72</b></p>	6. Facility SIC(s):  <p align="center"><b>7261</b></p>
7. Facility Comment (limit to 500 characters):          			

**Facility Contact**

1. Name and Title of Facility Contact: <b>William C. Ward III, General Manager</b>			
2. Facility Contact Mailing Address: Organization/Firm: <b>FERO FUNERAL HOME WITH CREMATORY</b> Street Address: <b>7620 South U. S. Highway 41</b> City: <b>Dunnellon</b> State: <b>Florida</b> Zip Code: <b>34432</b>			
3. Facility Contact Telephone Numbers: Telephone: <b>(352) 489 - 5363</b> Fax: <b>(352) 465 - 0072</b>			

**Facility Regulatory Classifications**

**Check all that apply:**

1. <input type="checkbox"/> Small Business Stationary Source?	<input checked="" type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source?	
3. <input type="checkbox"/> Synthetic Minor Source of Pollutants Other than HAPs?	
4. <input type="checkbox"/> Synthetic Minor Source of HAPs?	
5. <input type="checkbox"/> One or More Emissions Units Subject to NSPS?	
6. <input type="checkbox"/> One or More Emission Units Subject to NESHAP Recordkeeping or Reporting?	
7. Facility Regulatory Classifications Comment (limit to 200 characters):	
<b>Modified Human Crematory Unit operating at 1600 F. Natural minor source under the PSD, HAP, and Title V programs.</b>	

**Rule Applicability Analysis**

**The project is subject to Rules 62-210.300 and 62-212.300, F.A.C. requiring air construction permits prior to construction.**

**The project is subject to the requirements of Rule 62-296.401, F.A.C. specifying specific emission limiting standards for the units.**

**The project is subject to the requirements of Rule 62-297, F.A.C. specifying specific test procedures, requirements, and methods for emission limited units.**

**The project is subject to the requirements of Rule 62-296.501(7), F.A.C. specifying specific continuous monitoring requirements (Temperature).**

**B. FACILITY POLLUTANTS**

**List of Pollutants Emitted**

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

### C. FACILITY SUPPLEMENTAL INFORMATION

#### Supplemental Requirements

1. Area Map Showing Facility Location: [ <b>X</b> ] Attached, Document ID: <u>FSI-001</u> [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [ <b>X</b> ] Attached, Document ID: <u>FSI-002</u> [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [ <b>X</b> ] Attached, Document ID: <u>FSI-003</u> [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: _____ [ <b>X</b> ] Not Applicable [ ] Waiver Requested
5. Supplemental Information for Construction Permit Application: [ <b>X</b> ] Attached, Document ID: <u>FSI-005</u> [ ] Not Applicable
6. Supplemental Requirements Comment:

**III. EMISSIONS UNIT INFORMATION**

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

**A. GENERAL EMISSIONS UNIT INFORMATION****Emissions Unit Description and Status**

1. Type of Emissions Unit Addressed in This Section: (Check one)		
[ <input checked="" type="checkbox"/> ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).		
[ <input type="checkbox"/> ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.		
[ <input type="checkbox"/> ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.		
2. Description of Emissions Unit Addressed in This Section (limit to 60 characters):		
<b>Human Crematory</b>		
3. Emissions Unit Identification Number: ID: <b>001</b>		[ <input type="checkbox"/> ] No ID [ <input type="checkbox"/> ] ID Unknown
4. Emissions Unit Status Code: <b>A</b>	5. Initial Startup Date: <b>prior to 8/30/1989</b>	6. Emissions Unit Major Group SIC Code: <b>72</b>
7. Emissions Unit Comment: (Limit to 500 Characters)		

**Emissions Unit Control Equipment**

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

**Afterburner  
(1,800°F & 1 Second RT)**

*Total Heat Input  
1.9 mm Btu/hr  
  
150 PPH*

2. Control Device or Method Code(s): **021**

**Emissions Unit Details**

1. Package Unit:	Manufacturer: <b>Mathews Cremation</b>	Model Number: <b>IE43-PPII</b>
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:	<b>1,800°F</b>	
Dwell Time:	<b>&gt;1 seconds</b>	
Incinerator Afterburner Temperature:	<b>1,600°F</b>	

**Emissions Unit Operating Capacity and Schedule**

1. Maximum Heat Input Rate:		<b>1.9 mmBtu/hr</b>
2. Maximum Incineration Rate:	<b>150 (Adult Body)</b> lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	<b>8,760</b> hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

**B. EMISSION POINT (STACK/VENT) INFORMATION**

**Emission Point Description and Type**

1. Identification of Point on Plot Plan or Flow Diagram? <b>EU001</b>		2. Emission Point Type Code: <b>1</b>	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):  <b>Stack</b>			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: <b>V</b>	6. Stack Height: <b>20 feet</b>	7. Exit Diameter: <b>1.6 feet</b>	
8. Exit Temperature: <b>600 °F</b>	9. Actual Volumetric Flow Rate: <b>~ 3650 acfm</b>	10. Water Vapor: <b>10.0 %</b>	
11. Maximum Dry Standard Flow Rate: <b>~1700 dscfm</b>		12. Nonstack Emission Point Height:  feet	
13. Emission Point UTM Coordinates: Zone: 17                      East (km): 358.99                      North (km): 3220.8			
14. Emission Point Comment (limit to 200 characters):			

**C. SEGMENT (PROCESS/FUEL) INFORMATION**

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

1. Segment Description (Process/Fuel Type) (limit to 500 characters):  <b>Human Bodies &amp; Remains</b>		
2. Source Classification Code (SCC): <b>5-02-005-05</b>		3. SCC Units: <b>Tons Burned</b>
4. Maximum Hourly Rate: <b>0.075</b>	5. Maximum Annual Rate: <b>657</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

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

1. Segment Description (Process/Fuel Type ) (limit to 500 characters):  <b>Natural Gas or LPG</b>		
2. Source Classification Code (SCC): <b>5-02-900-10</b>		3. SCC Units: <b>million cubic feet</b>
4. Maximum Hourly Rate: <b>0.0018</b>	5. Maximum Annual Rate: <b>15.85</b>	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		



**D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**

**Potential Emissions**

1. Pollutant Emitted: <b>PM</b>		2. Pollutant Regulatory Code: <b>EL</b>	
3. Primary Control Device Code: <b>021</b>	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:	
6. Potential Emissions: <b>0.42 lb/hour</b> <b>1.82 tons/year</b>		7. Synthetically Limited? [ <input type="checkbox"/> ]	
8. Emission Factor: <b>0.08 grains/dscf</b> Reference: <b>Rule</b>		9. Emissions Method Code: <b>0</b>	
10. Calculation of Emissions (limit to 600 characters):  <p style="text-align: center;"><b>See Document ID: FSI-005</b></p>			
11. Pollutant Potential Emissions Comment (limit to 200 characters):			

**Allowable Emissions** Allowable Emissions  1  of  1

1. Basis for Allowable Emissions Code: <b>Rule</b>	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: <b>0.08 grains/dscf@ 7% O<sub>2</sub></b>	4. Equivalent Allowable Emissions: <b>0.42 lb/hour</b> <b>1.82 tons/year</b>
5. Method of Compliance (limit to 60 characters):  <p style="text-align: center;"><b>EPA Methods 5 (PM) and 3 (O<sub>2</sub>)</b></p>	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  <p style="text-align: center;"><b>Equivalent allowable emissions are subject to actual flow rates. Compliance may be demonstrated on an identical unit within 5 years.</b></p>	

**D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION****Potential Emissions**

1. Pollutant Emitted: <b>CO</b>		2. Pollutant Regulatory Code: <b>EL</b>	
3. Primary Control Device Code: <b>021</b>	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:	
6. Potential Emissions: <b>0.0.26 lb/hour</b> <b>1.16 tons/year</b>		7. Synthetically Limited? [ ]	
8. Emission Factor: <b>100 ppmvd @ 7% O<sub>2</sub></b> Reference: <b>Rule</b>		9. Emissions Method Code: <b>0</b>	
10. Calculation of Emissions (limit to 600 characters):  <b>See Document ID: FSI-005</b>			
11. Pollutant Potential Emissions Comment (limit to 200 characters):			

**Allowable Emissions** Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: <b>Rule</b>	2. Future Effective Date of Allowable Emissions:		
3. Requested Allowable Emissions and Units: <b>100 ppmvd@ 7% O<sub>2</sub></b>	4. Equivalent Allowable Emissions: <b>0.26 lb/hour</b> <b>1.16 tons/year</b>		
5. Method of Compliance (limit to 60 characters):  <b>EPA Methods 10 (CO) and 3 (O<sub>2</sub>)</b>			
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):  <b>Equivalent allowable emissions are subject to actual flow rates. Compliance may be demonstrated on an identical unit within 5 years.</b>			

Emissions Unit Information Section 1 of 1

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

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

1. Visible Emissions Subtype: <b>VE05</b>	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Requested Allowable Opacity: Normal Conditions:                      %                      Exceptional Conditions: <b>20 %</b> Maximum Period of Excess Opacity Allowed: <b>3 min/hour</b>	
4. Method of Compliance: <b>EPA Method 9 (60-Minute Observation Period)</b>	
5. Visible Emissions Comment (limit to 200 characters):  <b>Rule 62-296.401(1)(a), F.A.C.</b> <b>Allowed unlimited opacity during startup, shutdown, and malfunction for up to 2 hours in any 24 hours period based on the Excess Emissions Rule (62-210.700), F.A.C.</b>	

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

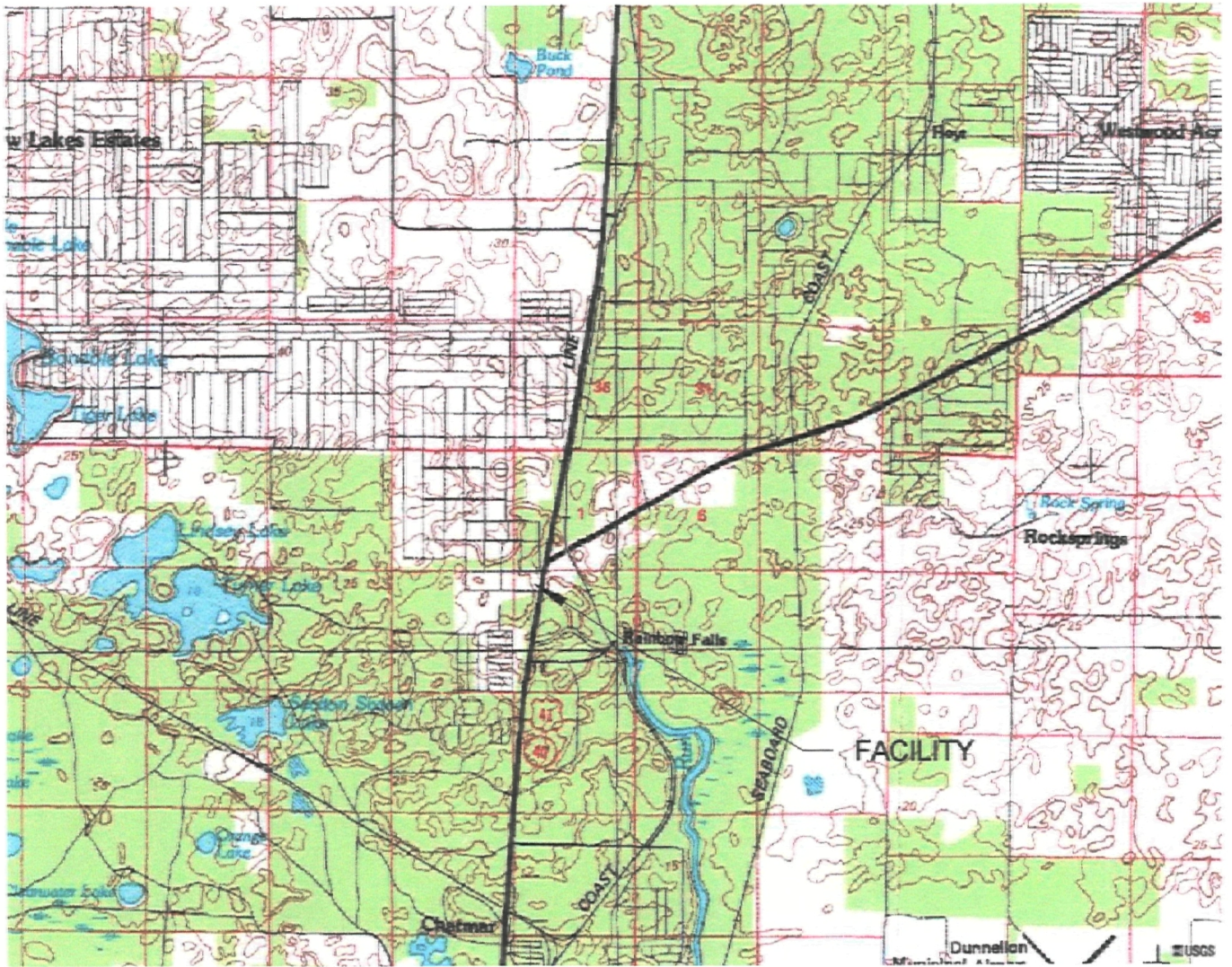
**Continuous Monitoring System:** Continuous Monitor 1 of 1

1. Parameter Code: <b>TEMP</b>	2. Pollutant(s): <b>TEMP</b>
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information: Manufacturer: Model Number:                      Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):  	

**G. EMISSIONS UNIT SUPPLEMENTAL INFORMATION****Supplemental Requirements**

1. Process Flow Diagram <input checked="" type="checkbox"/> Attached, Document ID: <u>FSI-003</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
2. Fuel Analysis or Specification <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
3. Detailed Description of Control Equipment <input checked="" type="checkbox"/> Attached, Document ID: <u>FSI-005</u> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
4. Description of Stack Sampling Facilities <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable <input checked="" type="checkbox"/> Waiver Requested
5. Compliance Test Report <input checked="" type="checkbox"/> Attached, Document ID: <u>EU001-05</u> <input type="checkbox"/> Previously submitted, Date: _____ <input type="checkbox"/> Not Applicable
6. Procedures for Startup and Shutdown <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
7. Operation and Maintenance Plan <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested
8. Supplemental Information for Construction Permit Application <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Other Information Required by Rule or Statute <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Supplemental Requirements Comment:

**Document ID: FSI-001**  
**Area Map**



**AREA MAP**

**FERO FUNERAL HOME W/ CREMATORY**  
 7620 SOUTH U. S. HIGHWAY 41  
 DUNNELLON, FLORIDA 34432

**SOUTHERN ENVIRONMENTAL SCIENCES, INC.**  
 1204 NORTH WHEELER STREET  
 PLANT CITY, FLORIDA 33563

PREPARED BY: RAMA IYER

SOURCE: USGS Quad Map  
 7/1/1984  
 TerraServer USA

Project No.  
 05P420

DWG NO.  
 05P420-1

REV

DATE: October 7, 2005

SCALE: 1" = 7,385'

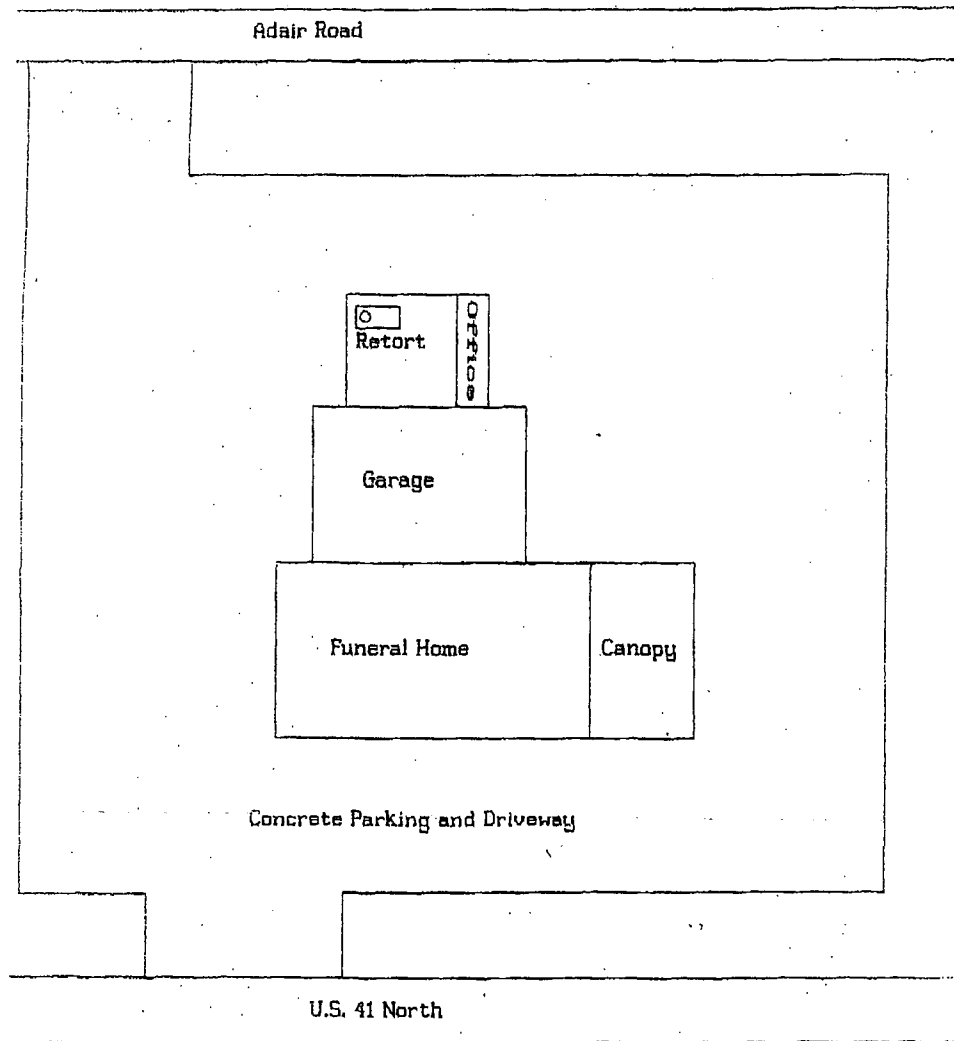
INITIALS:

*RI*

DOCUMENT ID: FSI-001



**Document ID: FSI-002**  
**Facility Plot Plan**



## PLOT PLAN

**FERO FUNERAL HOME W/ CREMATORY**  
 7620 SOUTH U. S. HIGHWAY 41  
 DUNNELLON, FLORIDA 34432

**SOUTHERN ENVIRONMENTAL SCIENCES, INC.**  
 1204 NORTH WHEELER STREET  
 PLANT CITY, FLORIDA 33563

PREPARED BY: RAMA IYER

SOURCE: Street Maps  
& Client Information

PROJECT NO.  
05P420

DWG NO.  
05P420-2

REV

DATE: October 7, 2005

SCALE: None

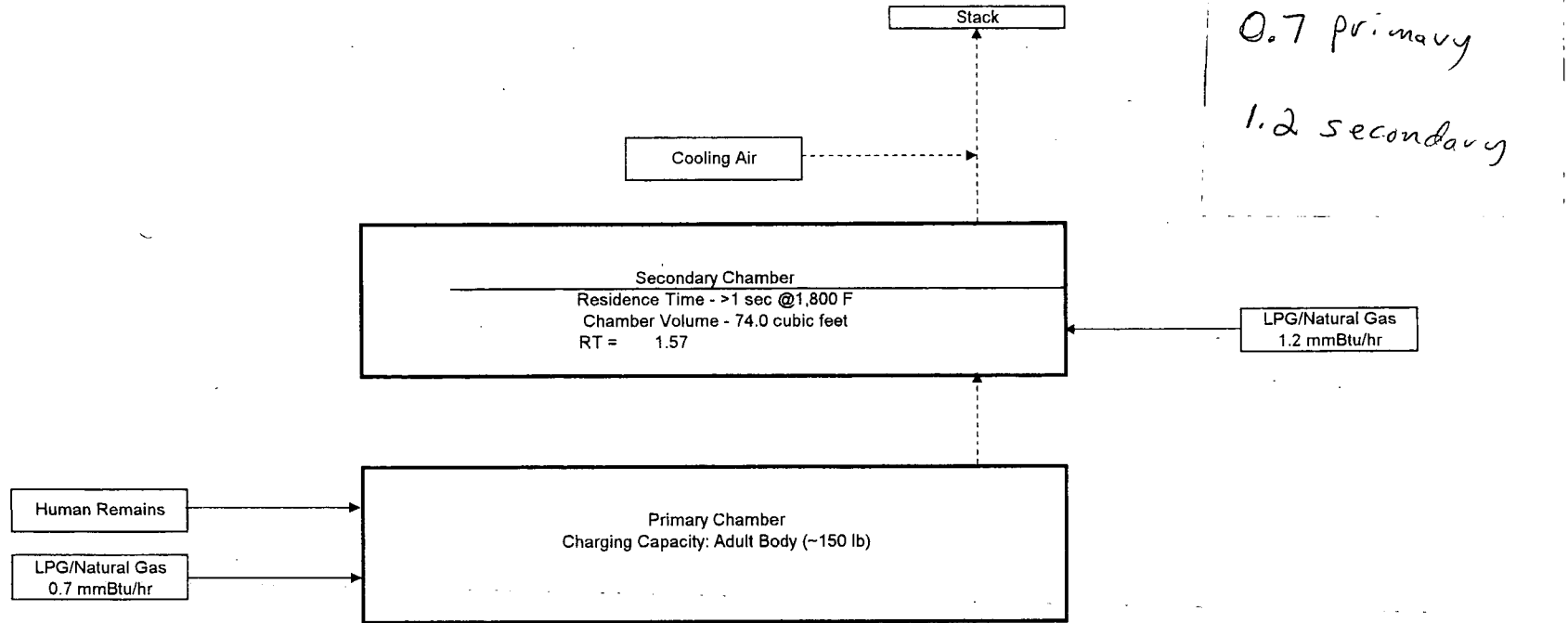
INITIALS: *RI*

DOCUMENT ID: FSI-002



**Document ID: FSI-003**  
**Process Flow Diagram**

Mathews, IE43-PPII



<b>PROCESS FLOW DIAGRAM</b>	<b>FERO FUNERAL HOME W/ CREMATORY</b> 7620 SOUTH U. S. HIGHWAY 41 DUNNELLON, FLORIDA 34432			
	<b>SOUTHERN ENVIRONMENTAL SCIENCES, INC.</b> 1204 NORTH WHEELER STREET PLANT CITY, FLORIDA 33563			
PREPARED BY: RAMA IYER	SOURCE: Client & EPA Information	PROJECT NO. 05P420	DWG NO. 05P420-3	REV
DATE: October 7, 2005	SCALE: None	INITIALS: <i>RE</i>	DOCUMENT ID: FSI-003	

**Document ID: FSI-005**  
**Supplemental Information for Construction Permit Application**

**SOUTHERN ENVIRONMENTAL SCIENCES, INC.**

**EXCEL CALCULATION SHEET**

<b>Prepared By:</b> Rama Iyer	<b>Checked By:</b> Ken Roberts
<b>Date:</b> 10/6/2005	<b>Date:</b> 10/6/2005
<b>Client:</b> Fero Funeral Home with Crematory, Dunnellon Florida	
<b>Project:</b> Human Crematory	<b>Project #:</b> 05P420
<b>Description:</b> Emission Estimates - Human Crematory	

**Process Data**

Burn Rate:	150	lbs/hr	Design Capacity (IE43-PP11)
	0.075	Tons/hr	Calculation (lb/hr) X (ton/2000 lb)
	1.9	mmBtu/hr	Design Capacity
Operating Data:	2,825	ACFM	@7%O2 - 2nd Chamber Exit Conditions
	1,292	dscfm	@7% O2 - Rule Adjustment Factor
	8760	hrs/yr	Assumed Worst-case Scenario, Unrestricted.

**Emission Limitations/Factors:**

Particulate Matter:	0.08	gr/dscf@7%O2, Rule
Carbon Monoxide	100	parts per million, Rule
Sulfur Dioxide	2.17	lb/ton
Nitrogen Oxides	3.56	lb/ton

*2nd Chamber  
150 PPM 74 cfm*

**Emission Estimates:**

Particulate Matter:	0.89	lb/hr	Calculation: (gr/dscf) X (dscf/min) X (lb/7000 gr) X (60 min/hr)
	3.88	TPY	Calculation: (lbs/hr) X (hrs/yr) X (ton/2000 lbs)
Carbon Monoxide	7.75	scfh	Calculation: (ppm/1e6) X (dscf/min) X (60 min/hr)
	0.56	lb/hr	n = PV/RT, R=0.7302, T=528R, P=1atm
	2.47	TPY	Calculation: (lbs/hr) X (hrs/yr) X (ton/2000 lbs)
Sulfur Dioxide:	0.16	lb/hr	Calculation: (lb/ton) X (tons/hr)
	0.71	TPY	Calculation: (lbs/hr) X (hrs/yr) X (ton/2000 lbs)
Nitrogen Oxides	0.27	lb/hr	Calculation: (lb/ton) X (tons/hr)
	1.17	TPY	Calculation: (lbs/hr) X (hrs/yr) X (ton/2000 lbs)

**Secondary Combustion Chamber Volume Calculation**

**Flow Rate Data & Calculations**

Charging Capacity:	82.5	lb/hr	Average of 3 Test Runs
Stack Temp (F)	591.5	F	Average of 3 Test Runs
Oxygen	15.3	% O2	Average of 3 Test Runs
Flow Rate Data	1,775	ACFM @ 15.3% O2 and 591.5 F	Average of 3 Test Runs
	722.8	ACFM @ 7% O2 and 1220.3 F	Calculation: (ACFM@12.0%) X (21-12.0)/(21-7)
	1553.6	ACFM @ 7% O2 and 1800 F	Calculation: (ACFM@7%) X (1800+460)/(833.5+460)
	18.83	ACFM @ 7% O2 and 1800 F per lb/hr	
	1746	dscfm, Test Data @ 15.3% O2	Average of 3 Test Runs
	711	dscfm, @ 7% O2 - Rule Adjustment Factor	
	8.62	dscfm per lb/hr	

**Operating Data - New Unit**

Unit Capacity	150.0	lb/hr	Design Capacity
Estimated Flow	2825	ACFM @ 7% O2 and 1800	Calculation (lb/hr X ACFM per lb/hr)
	1292	dscfm @ 7% O2	Calculation (lb/hr X dscfm per lb/hr)
2nd Chamber Volume	74	Cubic Feet	
Residence Time	1.57	Seconds	Calculation (CF) X (1/ACFM) X 60 sec/min)

**Document ID: EU001-05**  
**Compliance Test Report**

**EMISSIONS TESTING  
of the  
TURNER FUNERAL HOMES, INC.  
INDUSTRIAL EQUIPMENT AND ENGINEERING CO.  
MODEL IE43-POWER PAK II  
HUMAN CREMATORY  
Spring Hill, Florida  
July 26, 2005**

FDEP Permit No. 0530031-003-AC  
EU No. 001  
SES Reference No. 05S294

**Conducted by:**

**SOUTHERN ENVIRONMENTAL SCIENCES, INC.  
1204 North Wheeler Street  
Plant City, Florida 33563  
Phone (813) 752-5014, Fax (813) 752-2475**

**Project Participants**

**Kenneth M. Roberts  
Dale A. Wingler  
Terry L. Wilson**

**EMISSIONS TESTING**  
of the  
**TURNER FUNERAL HOMES, INC.**  
**INDUSTRIAL EQUIPMENT AND ENGINEERING CO.**  
**MODEL IE43 - POWER PAK II**  
**HUMAN CREMATORY**  
Spring Hill, Florida

July 26, 2005

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## 1.0 INTRODUCTION

Southern Environmental Sciences, Inc. conducted emissions testing of the Turner Funeral Homes, Inc., Industrial Equipment and Engineering Co., Model IE43-Power Pak II human crematory on July 26, 2005. This facility is located at 14360 Spring Hill Drive, Spring Hill, Florida. Testing was conducted for particulates, carbon monoxide and visible emissions. Oxygen (O<sub>2</sub>) concentrations were measured to correct emission rates to 7% O<sub>2</sub>. Testing was performed to determine if the unit was operating in compliance with requirements of the Florida Department of Environmental Protection (FDEP).

## 2.0 SUMMARY OF RESULTS

The facility was found to be in compliance with all applicable emission limiting standards. Results of the particulate and carbon monoxide testing are summarized in Table 1. Particulate emissions from this source are limited to a maximum allowable concentration of 0.08 grains per dry standard cubic foot (corrected to 7% O<sub>2</sub>). The average measured particulate concentration was 0.02 grains per dry standard cubic foot (corrected to 7% O<sub>2</sub>), well within the limit. The maximum allowable carbon monoxide emissions concentration from this source is 100 parts per million, dry basis (corrected to 7% O<sub>2</sub>). The average measured carbon monoxide emission concentration was 27 parts per million, dry basis (corrected to 7% O<sub>2</sub>), well within the allowable limit.

A visible emissions evaluation was performed over a one hour period. The average maximum six minute opacity was 0.8 percent.



TABLE 1. EMISSIONS TEST SUMMARY

Company: TURNER FUNERAL HOMES, INC.  
IE43-PPII HUMAN CREMATORY

	Run 1	Run 2	Run 3	
Date of Run	07/26/05	07/26/05	07/26/05	
Body Weight (lbs.)	165	185	145	
Start Time (24-hr. clock)	1117	1305	1441	
End Time (24-hr. clock)	1219	1409	1545	
Vol. Dry Gas Sampled Meter Cond. (DCF)	41.71	37.337	37.188	
Gas Meter Calibration Factor	0.994	0.994	0.994	
Barometric Pressure at Barom. (in. Hg.)	30.02	30.01	29.97	
Elev. Diff. Manom. to Barom. (ft.)	0	0	0	
Vol. Gas Sampled Std. Cond. (DSCF)	39.841	35.573	35.240	
Vol. Liquid Collected Std. Cond. (SCF)	1.141	1.419	1.891	
Moisture in Stack Gas (% Vol.)	2.8	3.8	5.1	
Molecular Weight Dry Stack Gas	29.232	29.336	29.216	
Molecular Weight Wet Stack Gas	28.92	28.90	28.64	
Stack Gas Static Press. (in. H <sub>2</sub> O gauge)	0.11	-0.12	-0.26	
Stack Gas Static Press. (in. Hg. abs.)	0.01	30.00	29.95	
Average Square Root Velocity Head	0.388	0.367	0.366	
Average Orifice Differential (in. H <sub>2</sub> O)	1.61	1.37	1.30	
Average Gas Meter Temperature (°F)	93.5	94.4	96.5	
Average Stack Gas Temperature (°F)	597.2	607.3	570.0	
Pitot Tube Coefficient	0.8	0.8	0.8	
Stack Gas Vel. Stack Cond. (ft./sec.)	29.32	27.87	27.46	
Effective Stack Area (sq. ft.)	2.18	2.18	2.18	
Stack Gas Flow Rate Std. Cond. (DSCFM)	1,869	1,740	1,750	
Stack Gas Flow Rate Stack Cond. (ACFM)	3,838	3,648	3,594	
Net Time of Run (min.)	60	60	60	
Nozzle Diameter (in.)	0.373	0.373	0.373	
Percent Isokinetic	102.2	98.0	96.5	
Oxygen (%)	15.6	15.4	14.8	
Particulate Collected (mg.)	22.7	18.5	27.4	
Particulate Emissions (lb./hr.)	0.14	0.12	0.18	
				<b>Average</b>
Particulate Emissions (gr./DSCF)	0.009	0.008	0.012	0.01
<b>Particulate Emissions (gr./DSCF @ 7% O<sub>2</sub>)</b>	<b>0.023</b>	<b>0.020</b>	<b>0.027</b>	<b>0.02</b>
<b>Allowable Emissions (gr./DSCF @ 7% O<sub>2</sub>)</b>				<b>0.08</b>
CO Emissions (ppm)	8.7	20.3	4.0	11
<b>CO Emissions (ppm @ 7% O<sub>2</sub>)</b>	<b>22.6</b>	<b>50.8</b>	<b>9.0</b>	<b>27</b>
<b>Allowable Emissions (ppm @ 7% O<sub>2</sub>)</b>				<b>100</b>

Note: Standard conditions 68°F, 29.92 in. Hg

### **3.0 PROCESS DESCRIPTION**

The IE43-PPII Power Pak crematory incinerator cremates human remains in an environmentally acceptable manner. The unit consists of a primary and secondary (afterburner) chamber each fired with natural gas or propane. The unit is designed to incinerate human remains at a rate of 150 pounds per hour. A typical cremation takes 60 to 90 minutes, but may vary depending on the body weight and various other factors.

Emissions are controlled by the afterburner that is preheated and maintained at a minimum operating temperature of 1600°F prior to and during ignition of the primary chamber.

Process operational data was provided by facility personnel and is included in the appendix.

### **4.0 SAMPLING PROCEDURES**

#### **4.1 Methods**

All sampling was performed using methods currently acceptable to the FDEP. Particulate sampling and analyses were conducted in accordance with EPA Method 5 - Determination of Particulate Emissions from Stationary Sources, 40 CFR 60, Appendix A-3. Carbon monoxide emissions were determined in accordance with EPA Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources, 40 CFR 60, Appendix A-4. The oxygen content of the stack gas was determined in accordance with EPA Method 3B - Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air,

40 CFR 60, Appendix A-2. The visible emissions evaluation was performed using procedures described in EPA Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources, 40 CFR 60, Appendix A-4.

#### **4.2 Sampling Locations**

Locations of the sample ports and stack dimensions are shown in Figure 1. Particulate sampling was accomplished by conducting horizontal traverses through each of two ports located on the stack at a ninety degree angle from one another. Twenty four sample points were chosen in accordance with EPA Method 1 - Sample and Velocity Traverses for Stationary Sources, 40 CFR 60, Appendix A-1. Carbon monoxide and oxygen sampling were performed from the same sampling ports as the particulate sampling.

#### **4.3 Sampling Trains**

The particulate sampling train consisted of a 3 foot Inconel probe utilizing a one piece quartz glass nozzle and liner, a heated glass fiber filter and four impingers arranged as shown in Figure 2. Flexible tubing was used between the heated filter and the impingers. The first two impingers were each charged with 100 milliliters of water, the third served as a dry trap and the fourth impinger was charged with indicating silica gel desiccant. The impingers were cooled in an ice and water bath during sampling. A Nutech Corporation control console was used to monitor the gas flow rates and stack conditions during

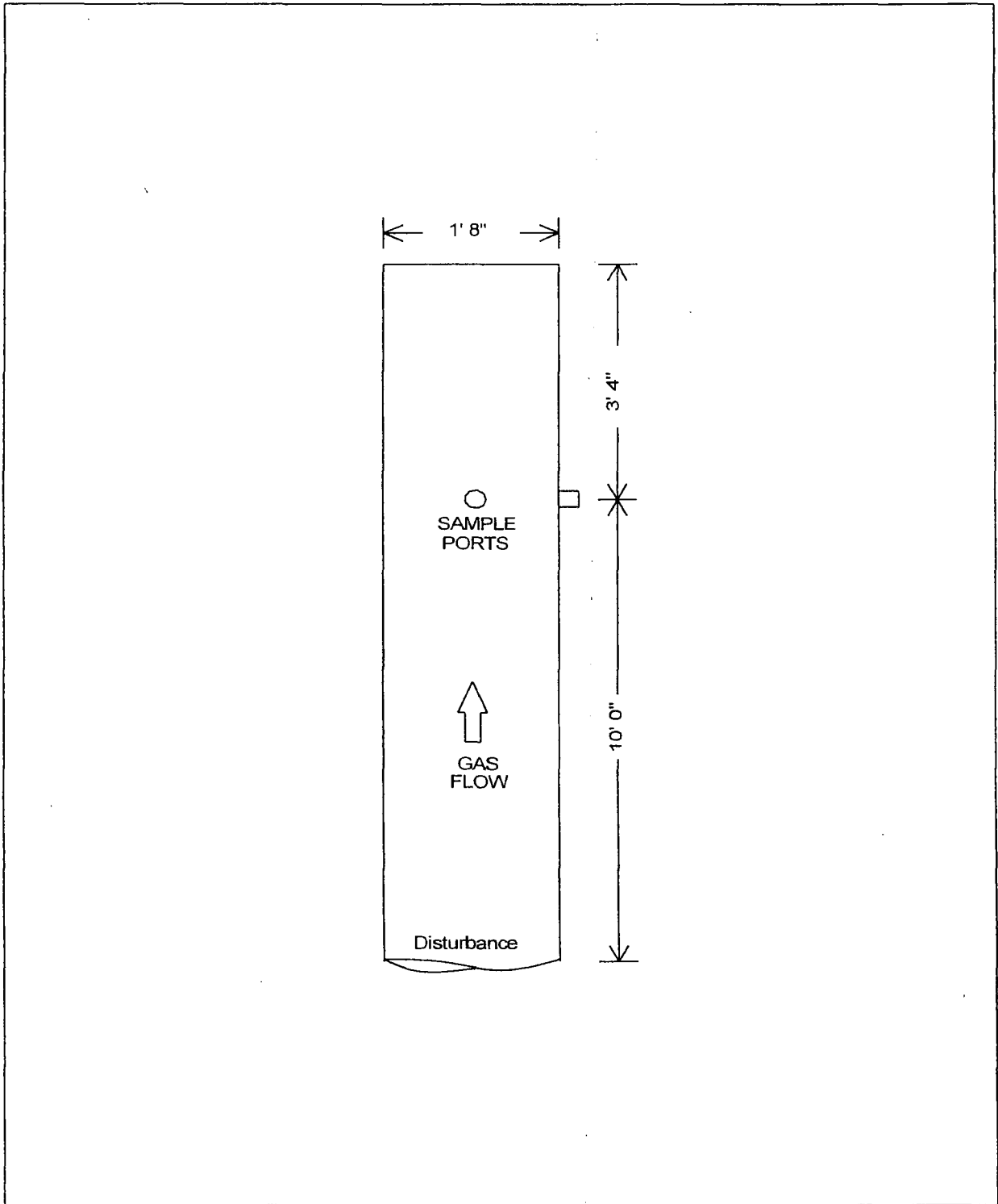


Figure 1. Stack Dimensions and Sample Port Locations, IE43-PPII Crematory, Turner Funeral Homes, Spring Hill, Florida.

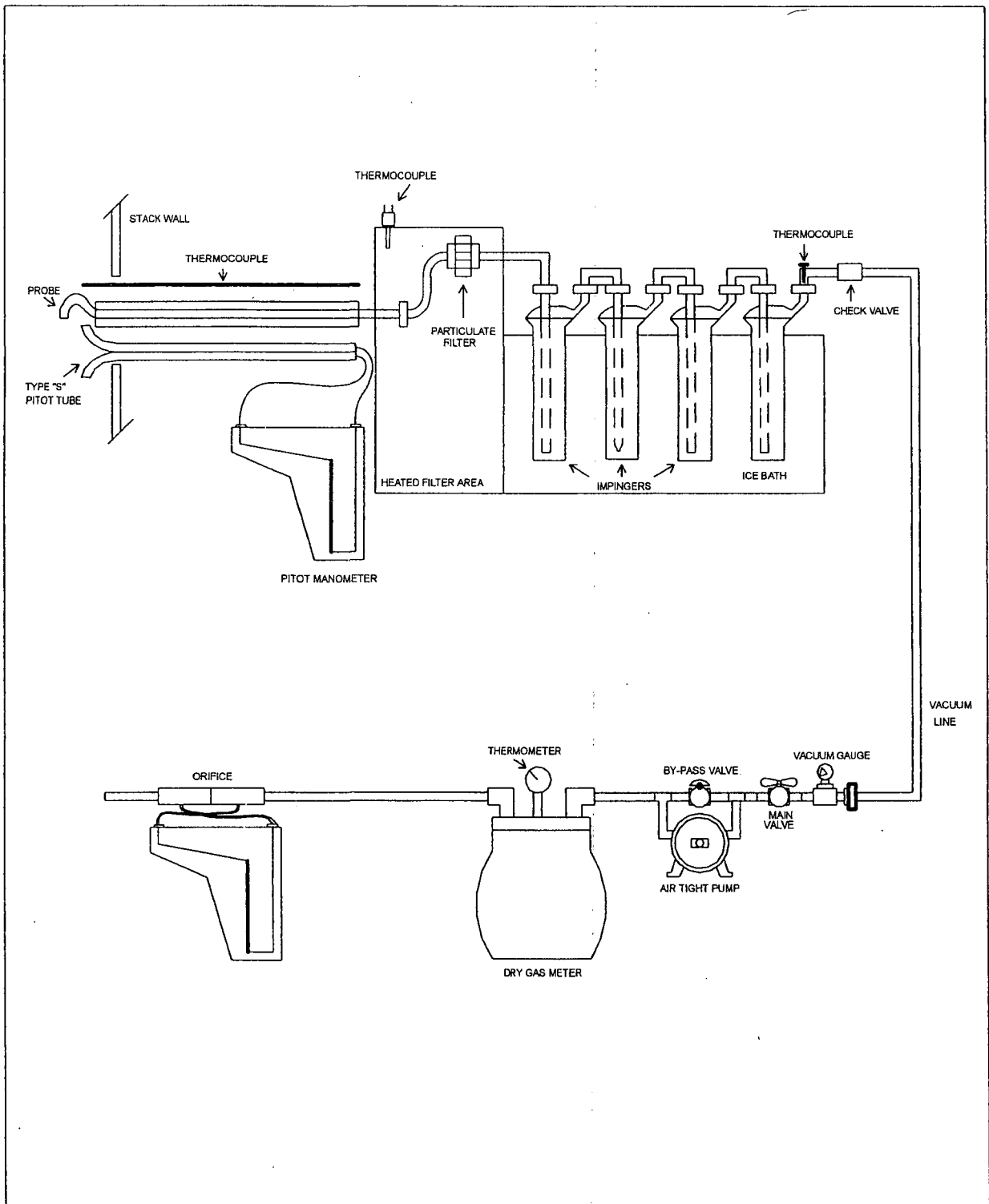


Figure 2. EPA Method 5 Sampling Train.

sampling.

The carbon monoxide sampling train consisted of a stainless steel probe, teflon sample line, condenser, silica gel and carbon dioxide adsorbent tubes and a Thermo Environmental Instruments, Inc. Model 48 Gas Filter Correlation CO analyzer arranged as shown in Figure 3. The oxygen sampling train consisted of a probe, sample line, Tedlar bag in a rigid container, valve, vacuum pump, and flow meter.

#### **4.4 Sample Collection**

Prior to particulate sampling, the pitot tubes were checked for leaks and the manometers were zeroed. A pretest leak check of the particulate sampling train was conducted by sealing the nozzle and applying a 15" Hg vacuum. A leak rate of less than 0.02 cubic feet per minute was considered acceptable. Particulate sample was collected isokinetically for two and one half minutes at each of the points sampled.

The carbon monoxide analyzer was calibrated immediately prior to the beginning of the test and checked after each run by introducing known gases into the instrument through the sampling train.

The Tedlar bag used for obtaining an integrated oxygen sample was leak checked prior to the test by pressurizing it to 2 to 4 in. H<sub>2</sub>O and allowing it to stand overnight. The bag was considered leak free if it remained inflated. A one hour integrated sample was obtained at a rate 0.5 liters per minute for each run.

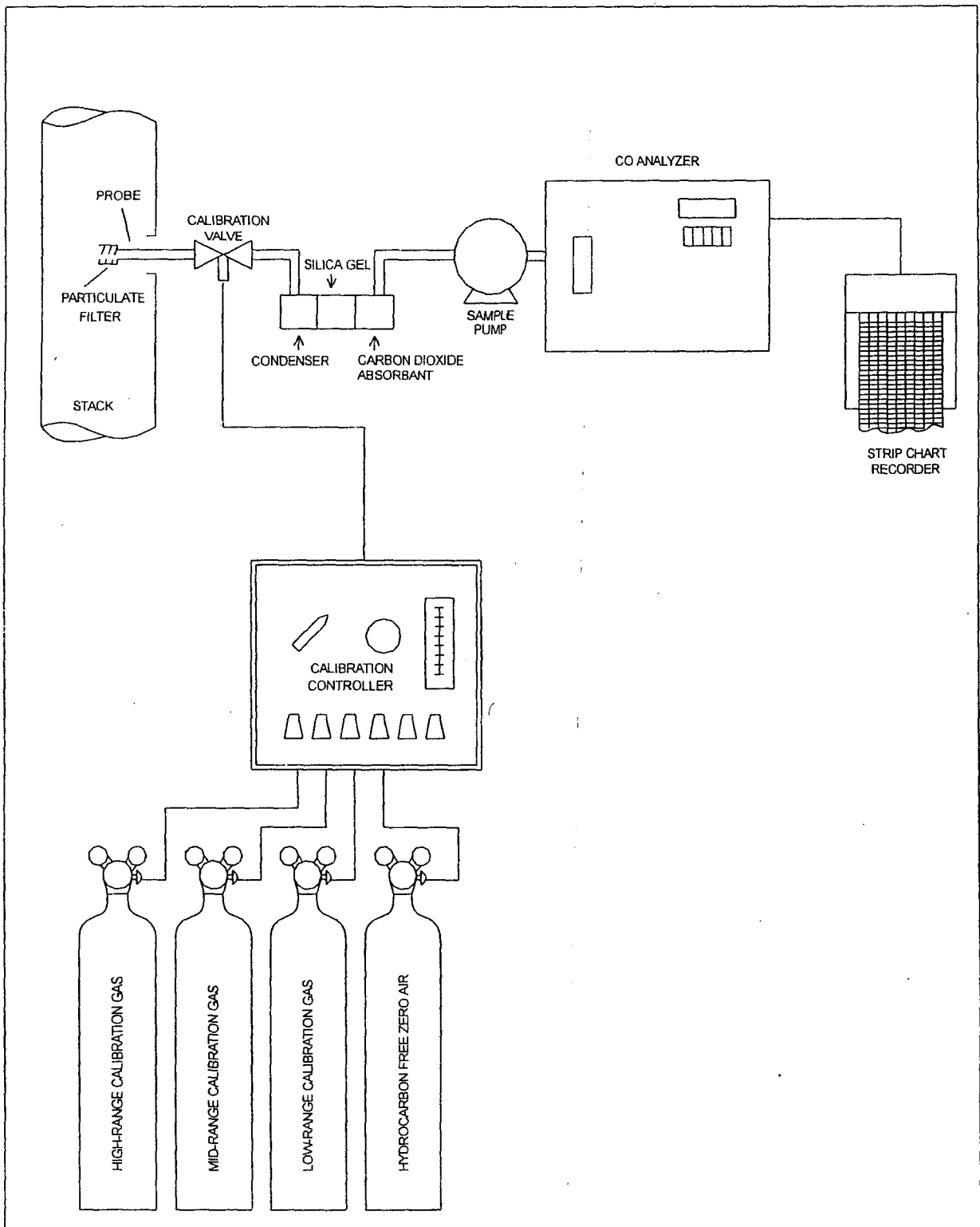


Figure 3. EPA Method 10 Sampling Train.

Carbon monoxide and oxygen sampling were conducted simultaneously with particulate sampling.

#### **4.5 Sample Recovery**

A post test leak check of the particulate sampling train was performed at the completion of each run by sealing the nozzle and applying a vacuum equal to or greater than the maximum value reached during the sample period. A leak rate of less than 0.02 CFM or 4 percent of the average sampling rate (whichever was less) was considered acceptable. The nozzle and probe were then brushed and rinsed with reagent grade acetone and the washings were placed in clean polyethylene containers and sealed. The glass fiber filter was removed from the holder with forceps and placed in a covered petri dish for return to the laboratory. The front half of the filter holder was rinsed with acetone and the washings were added to the nozzle and probe wash. The contents of the first three impingers were measured volumetrically and the silica gel in the fourth impinger was weighed to the nearest 0.1 gram for determination of moisture content.

Two calculations of the moisture content of the stack gas were made for each run, one from the impinger analysis and one from the assumption of saturated conditions based upon the average stack gas temperature and a psychrometric chart as described in EPA Method 4, Determination of Moisture Content in Stack Gases, 40 CFR 60, Appendix A-3. The lower of the two values of moisture content was considered to be correct and was used in the emissions computations.



## **5.0 ANALYTICAL PROCEDURE**

### **5.1 Pretest Preparation**

The glass fiber filters for the particulate train were numbered, oven dried at 105°C for two to three hours, desiccated and weighed to a constant weight in preparation for the test. Results were recorded to the nearest 0.1 milligram. Filters were loaded into holders and a filter was set aside as a control blank. The impingers were charged as described in section 4.3 and the contents of the fourth impinger were weighed to the nearest 0.1 gram.

### **5.2 Analysis**

Upon return to the laboratory, the particulate filters were removed from the containers with forceps, dried at 105°C for two to three hours, desiccated and weighed to a constant weight. Results were recorded to the nearest 0.1 milligram. The probe and nozzle washes and an acetone blank were measured volumetrically and transferred to clean, tared evaporating dishes and evaporated to dryness over low heat. The evaporating dishes were then oven dried at 105°C for two to three hours, desiccated and weighed to a constant weight. Results were recorded to the nearest 0.1 milligram. The total particulate reported is the sum of the filter weight gain and the weight gain of the evaporating dishes, corrected for the acetone blank.

**APPENDIX**

Project Participants

Certification

Visible Emissions Evaluation

Process Operational Data

Laboratory Data

Gas Analysis Forms

Field Data Sheets

Analyzer Strip Charts

Calibration Data

Calculations and Symbols

**PROJECT PARTICIPANTS AND CERTIFICATION**

**TURNER FUNERAL HOMES, INC.  
INDUSTRIAL EQUIPMENT AND ENGINEERING CO.  
MODEL IE43 - POWER PAK II  
HUMAN CREMATORY  
Spring Hill, Florida**

July 26, 2005

**Project Participants:**

Kenneth M. Roberts Dale A. Wingler Terry L. Wilson	Conducted the field testing.
Joseph Murrell (Turner Funeral Homes)	Provided process rates.
Kenneth M. Roberts	Performed visible emissions evaluation.
Kenneth M. Roberts	Performed laboratory analyses.
Kenneth M. Roberts	Prepared the final test report.

**Certification:**

I certify that to my knowledge all data submitted in this report is true and correct.



\_\_\_\_\_  
Kenneth M. Roberts, QEP

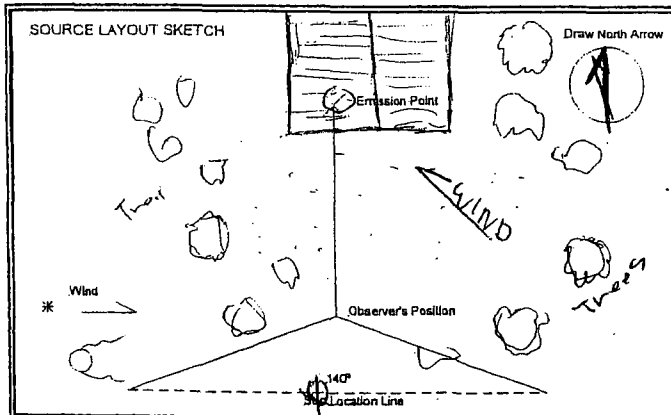
# Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33563 □ (813) 752-5014, Fax (813) 752-2475

## VISIBLE EMISSIONS EVALUATION

COMPANY <i>Turner Funeral Home</i>	
UNIT <i>LE43-PP11 Human Crematory</i>	
ADDRESS <i>14360 Spring Hill Dr</i> <i>Spring Hill, FL 34609</i>	
PERMIT NO. <i>0530031-003-AK</i>	COMPLIANCE? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
AIRS NO. <i>0530031</i>	EU NO. <i>001</i>
PROCESS RATE <i>~ 105 lbs</i>	PERMITTED RATE <i>Adult sized body</i>
PROCESS EQUIPMENT <i>LE43-M94 Incinerator</i>	
CONTROL EQUIPMENT <i>1600° Afterburner</i>	
OPERATING MODE <i>Natural Gas Fire</i>	AMBIENT TEMP. (°F) START      STOP
HEIGHT ABOVE GROUND LEVEL START <i>25'</i> STOP <input checked="" type="checkbox"/>	HEIGHT RELATIVE TO OBSERVER START <i>25'</i> STOP <input checked="" type="checkbox"/>
DISTANCE FROM OBSERVER START <i>75'</i> STOP <input checked="" type="checkbox"/>	DIRECTION FROM OBSERVER START <i>0°</i> STOP <input checked="" type="checkbox"/>
EMISSION COLOR <i>Black.</i>	PLUME TYPE CONTIN. <input type="checkbox"/> INTERMITTENT <input checked="" type="checkbox"/>
WATER DROPLETS PRESENT? NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>	IS WATER DROPLET PLUME ATTACHED <input type="checkbox"/> DETACHED <input checked="" type="checkbox"/>
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED START <i>Top of Stack</i> STOP <input checked="" type="checkbox"/>	
DESCRIBE BACKGROUND START <i>SKY</i> STOP <input checked="" type="checkbox"/>	
BACKGROUND COLOR START <i>Blue</i> STOP <input checked="" type="checkbox"/>	SKY CONDITIONS START <i>Clear</i> STOP <input checked="" type="checkbox"/>
WIND SPEED (MPH) START <i>2.5</i> STOP <input checked="" type="checkbox"/>	WIND DIRECTION START <i>SE</i> STOP <input checked="" type="checkbox"/>
AVERAGE OPACITY FOR <sup>6min</sup> HIGHEST PERIOD <i>0.8</i>	RANGE OF OPACITY READINGS MIN. <i>0%</i> MAX. <i>10%</i>

OBSERVATION DATE <i>7/26/05</i>		START TIME <i>1310</i>		STOP TIME <i>1410</i>					
SEC	0	15	30	45	SEC	0	15	30	45
MIN					MIN				
0	0	0	5	10	30	0	0	0	0
1	5	0	0	0	31	0	0	0	0
2	0	5	0	0	32	0	0	0	0
3	0	0	5	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0



Comments

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**EASTERN TECHNICAL ASSOCIATES**

**KENNETH M. ROBERTS**

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

2/16/2005      8/18/2005      TMPF04

DATE OF SCHOOL      EXPIRATION DATE      LAST LECTURE

326300      *Michael W. Sanford*      *Ken Roberts*

CERT NUMBER      TRAINING MANAGER      BEARER

I certify that all data provided to the person conducting the test was true and correct to the best of my knowledge:

*See Process Operational Data*

Signature: \_\_\_\_\_ Title \_\_\_\_\_

## PROCESS WEIGHT STATEMENT

DATE 7/26/05 SAMPLING TIME : FROM 11:00A.M. TO 4:00 P.M.

### STATEMENT OF PROCESS WEIGHT

COMPANY:	Turner Funeral Homes
MAILING ADDRESS	14360 Spring Hill Drive Spring Hill, Florida 34609
SOURCE IDENTIFICATION	Human Crematory - IE43-PP11
SOURCE LOCATION	Same as above

### DATA ON OPERATING CYCLE TIME

START OF OPERATION, TIME	
END OF OPERATION, TIME	
ELAPSED TIME	
IDLE TIME DURING CYCLE	
DESIGN PROCESS RATING	PROCESS WEIGHT RATE (INPUT) <u>150 lb/hr</u>
	PRODUCT (OUTPUT)

### DATA ON ACTUAL PROCESS RATE DURING OPERATION CYCLE

MATERIAL	Human Remains	RATE	~ 165 lbs
MATERIAL	Human Remains	RATE	~ 185 lbs
MATERIAL	Human Remains	RATE	~ 145 lbs
AVERAGE PROCESS WEIGHT		RATE	
PRODUCT		RATE	
PRODUCT		RATE	
PRODUCT		RATE	

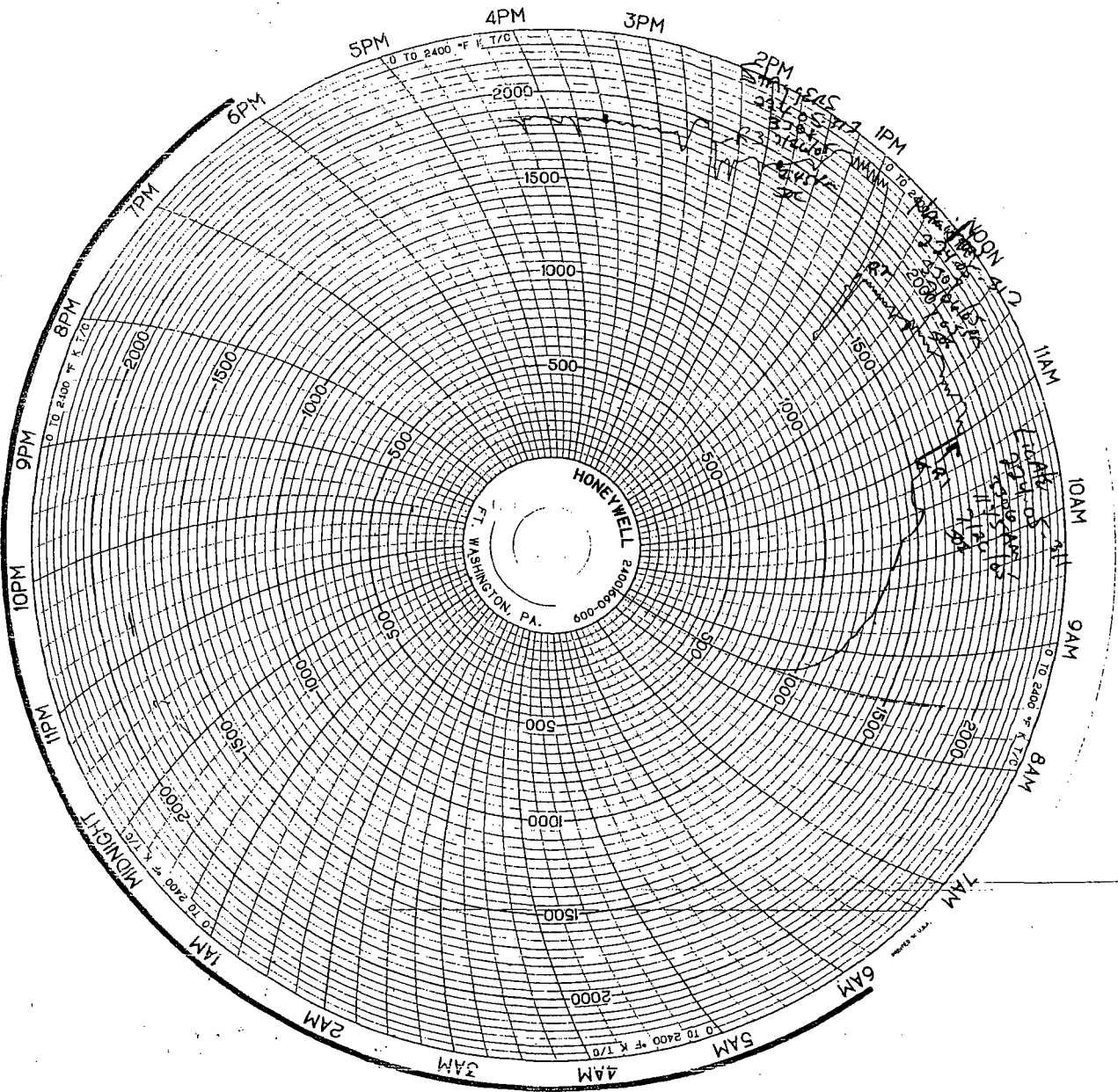
I certify that the above information is true and correct to the best of my knowledge.

Name (PLEASE PRINT) Joe Alvarado

Signature [Signature]

Title FUNERAL ASSISTANT

**TURNER FUNERAL HOMES, INC.**  
**IE43-PPII HUMAN CREMATORY**  
**AFTERBURNER TEMPERATURE CHART**  
**JULY 26, 2005**



# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## PARTICULATE MATTER COLLECTED

Plant: TURNER FUNERAL HOMES, INC.  
 Unit No. IE43-PPII HUMAN CREMATORY  
 Test Date: 07/26/05

Analyzed by: K. Roberts

Acetone blank container no.	100	Filter blank no.	7849
Acetone blank volume, ml., (Va)	200	Filter blank tare weight, g.	0.3329
Acetone blank final weight, g.	99.3411	Filter blank final weight, g.	0.3326
Acetone blank tare weight, g.	99.3411	Filter weight diff., g.	-0.0003
Acetone blank weight diff., g., (ma)	0.0000		

Run No. 1  
 Filter No. 7764  
 Liquid lost during transport, ml. 0  
 Acetone wash container no. DD  
 Acetone wash volume, ml. (Vaw) 100  
 Acetone wash residue, g. (Wa) 0

Container Number	WEIGHT OF PARTICULATE COLLECTED		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.3369	0.3203	0.0166
2 (Wash)	155.7934	155.7873	0.0061
TOTAL			0.0227
Less acetone blank, g. (Wa)			0
Weight of particulate matter, g.			0.0227

Run No. 2  
 Filter No. 7766  
 Liquid lost during transport, ml. 0  
 Acetone wash container no. M  
 Acetone wash volume, ml. (Vaw) 100  
 Acetone wash residue, g. (Wa) 0

Container Number	WEIGHT OF PARTICULATE COLLECTED		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.3372	0.3248	0.0124
2 (Wash)	155.4213	155.4152	0.0061
TOTAL			0.0185
Less acetone blank, g. (Wa)			0
Weight of particulate matter, g.			0.0185

Run No. 3  
 Filter No. 7773  
 Liquid lost during transport, ml. 0  
 Acetone wash container no. B02  
 Acetone wash volume, ml. (Vaw) 110  
 Acetone wash residue, g. (Wa) 0

Container Number	WEIGHT OF PARTICULATE COLLECTED		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.3447	0.3257	0.019
2 (Wash)	103.3822	103.3738	0.0084
TOTAL			0.0274
Less acetone blank, g. (Wa)			0
Weight of particulate matter, g.			0.0274

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

MOISTURE COLLECTED

Plant Turner Funeral Home

Unit Human Crematory Incinerator  
 Date 7/26/05  
 Run No. 1

Impinger Number	1	2	3	4	Weighed by:
Final Weight (grams):	<u>112.0</u>	<u>102</u>	<u>0.0</u>	<u>265.6</u>	<u>AW</u>
Initial Weight (grams):	<u>100.0</u>	<u>100.0</u>	<u>0.0</u>	<u>253.4</u>	<u>AW</u>
Difference (grams):	<u>12.0</u>	<u>2.0</u>	<u>0.0</u>	<u>12.2</u>	
Total Condensate (grams):				<u>24.2</u>	

Unit Human Crematory Incinerator  
 Date 7/26/05  
 Run No. 2

Impinger Number	1	2	3	4	Weighed by:
Final Weight (grams):	<u>104.0</u>	<u>104.0</u>	<u>0.0</u>	<u>269.8</u>	<u>AW</u>
Initial Weight (grams):	<u>100.0</u>	<u>100.0</u>	<u>0.0</u>	<u>257.7</u>	<u>AW</u>
Difference (grams):	<u>14.0</u>	<u>4.0</u>	<u>0.0</u>	<u>12.1</u>	
Total Condensate (grams):				<u>30.1</u>	

Unit Human Crematory Incinerator  
 Date 7/26/05  
 Run No. 3

Impinger Number	1	2	3	4	Weighed by:
Final Weight (grams):	<u>132.0</u>	<u>100.0</u>	<u>0.0</u>	<u>258.9</u>	<u>AW</u>
Initial Weight (grams):	<u>100.0</u>	<u>100.0</u>	<u>0.0</u>	<u>250.8</u>	<u>AW</u>
Difference (grams):	<u>32.0</u>	<u>0.0</u>	<u>0.0</u>	<u>8.1</u>	
Total Condensate (grams):				<u>40.1</u>	



# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## GAS ANALYSIS DATA FORM

Plant <u>Turner Funeral Home</u>	
Unit <u>IE43-PP11</u>	Test No. <u>1</u>
Date <u>7/26/05</u>	Sampling Location <u>Stack</u>
Sampling Time (24-hr Clock) <u>11:15 - 12:15</u>	
Sample Type: Continuous <input type="checkbox"/> Integrated Bag <input checked="" type="checkbox"/> Grab <input type="checkbox"/>	
Analytical Method <u>ORSAT</u>	Ambient Temperature <u>90°</u>
Operator <u>KR</u>	

RUN →	1		2		3		Average Net Volume	Multiplier	Molecular Weight of Stack Gas (Dry Basis) (Md)
GAS ↓	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO <sub>2</sub>	3.8	3.8	3.8	3.8	3.8	3.8	3.8	.44	
O <sub>2</sub> (NET IS ACTUAL O <sub>2</sub> READING MINUS ACTUAL CO <sub>2</sub> READING)	19.4 <del>15.6</del>	15.6 <del>11.8</del>	19.4 <del>15.6</del>	15.6 <del>11.8</del>	19.4 <del>15.6</del>	15.6 <del>11.8</del>	15.6	.32	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O <sub>2</sub> READING)								.28	
N <sub>2</sub> (NET IS 100 MINUS ACTUAL CO READING)								.28	
								TOTAL	

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## GAS ANALYSIS DATA FORM

Plant <u>Turner Funeral Home</u>	
Unit <u>IE43-PP11</u>	Test No. <u>2</u>
Date <u>7/26/05</u>	Sampling Location <u>Stack</u>
Sampling Time (24-hr Clock) <u>1310-1410</u>	
Sample Type: Continuous <input type="checkbox"/> Integrated Bag <input checked="" type="checkbox"/> Grab <input type="checkbox"/>	
Analytical Method <u>ORSAT</u>	Ambient Temperature <u>90°</u>
Operator <u>KR</u>	

RUN →	1		2		3		Average Net Volume	Multiplier	Molecular Weight of Stack Gas (Dry Basis) (Md)
GAS ↓	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO <sub>2</sub>	4.5	4.5	4.5	4.5	4.5	4.5	4.5	.44	
O <sub>2</sub> (NET IS ACTUAL O <sub>2</sub> READING MINUS ACTUAL CO <sub>2</sub> READING)	19.9	15.4	19.9	15.4	19.9	15.4	15.4	.32	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O <sub>2</sub> READING)								.28	
N <sub>2</sub> (NET IS 100 MINUS ACTUAL CO READING)								.28	
								TOTAL	

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## GAS ANALYSIS DATA FORM

Plant <u>Turner Funeral Home</u>	
Unit <u>IF43-PP11</u>	Test No. <u>3</u>
Date <u>7/26/05</u>	Sampling Location <u>Stack</u>
Sampling Time (24-hr Clock) <u>1445-1545</u>	
Sample Type: Continuous <input type="checkbox"/> Integrated Bag <input checked="" type="checkbox"/> Grab <input type="checkbox"/>	
Analytical Method <u>ORSAT</u>	Ambient Temperature <u>93</u>
Operator <u>KP</u>	

RUN →	1		2		3		Average Net Volume	Multiplier	Molecular Weight of Stack Gas (Dry Basis) (Md)
GAS ↓	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO <sub>2</sub>	3.9	3.9	3.9	3.9	3.9	3.9	3.9	.44	
O <sub>2</sub> (NET IS ACTUAL O <sub>2</sub> READING MINUS ACTUAL CO <sub>2</sub> READING)	18.7	14.8	18.7	14.8	18.7	14.8	14.8	.32	
CO (NET IS ACTUAL CO READING MINUS ACTUAL O <sub>2</sub> READING)								.28	
N <sub>2</sub> (NET IS 100 MINUS ACTUAL CO READING)								.28	
								TOTAL	







1545 End Run 3

TURNER FUNERAL HOMES, INC.  
 IE43 SPILL HUMAN CREMATORY  
 JULY 26, 2005  
 CARBON MONOXIDE  
 200 PPM SCALE  
 6 CM/HR CHART SPEED

1445 Begin Run 3

1410 End Run 2

1310 Begin Run 2

1155 End Run 1

1150

1140

1115 Begin Run 1

60.3 ppm

60.3

20.7

112.11

20.0

083 (1 cm)

084 (1 cm)

085 (1 cm)

086 (1 cm)

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

1204 North Wheeler Street St. Plant City, Florida 33566 (813) 752-5014

## INSTRUMENT CALIBRATION

TEST DATA	
DATE	07/26/2005
COMPANY	TURNER FUNERAL HOMES
SOURCE	IE43-PPII HUMAN CREMATORY
PARAMETER	CARBON MONOXIDE
TECHNICIAN	K. ROBERTS

INSTRUMENT DATA		
	MONITOR	RECORDER
MANUFACTURER	TECO	YOKAGOWA
MODEL NO	48	
SERIAL NO	48-27158-228	
RANGE (R/M)	200	6CM/HR

CALIBRATION CASES			
SUPPLIER	AIRGAS	AIRGAS	AIRGAS
CYLINDER #	CC178566	SX32489	SG9162702
CONC. (%)	60.34	120.7	142.4
EXPIRATION DATE	04/19/2007	01/06/2006	09/30/2006

POINT	OBSERVED CONC.	ACTUAL CONC.	PERCENT DIFF.
0	0	0	0.00
59	59	60.34	-0.67
120	120	120.7	-0.35
142	142	142.4	-0.20

### Regression Output:

Constant		-0.4461
Std Err of Y Est		0.6732
R Squared		0.9999
No. of Observations		4
Degrees of Freedom		2
X Coefficient(s)	0.9980	
Std Err of Coef	0.0061	





# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## DRY GAS METER CALIBRATION

Meter Box Number: 003      Barometric Pressure: 30  
 Date: 03/07/2005      Wet Test Meter No.: P-576

Office Manometer Setting (Delta H) in H2O	Gas Volume		Temperature		Time (THETA) Min	Yi	Delta H@ in H2O
	Wet Test Meter (Vw) ft. <sup>3</sup>	Dry Gas Meter (Vd) ft. <sup>3</sup>	Wet Test Meter (Tw) Deg F	Dry Gas Meter (Td) Deg F			
0.50	5.000	5.159	78.0	89.5	12.42	0.989	1.717
1.00	5.000	5.143	78.0	91.0	8.77	0.993	1.708
1.50	10.000	10.295	78.0	93.0	14.57	0.995	1.761
2.00	10.000	10.319	78.0	95.0	12.63	0.995	1.758
3.00	10.000	10.320	78.0	96.0	10.32	0.994	1.758
4.00	10.000	10.293	77.5	97.0	8.95	0.997	1.756
						0.994	1.743

Delta H@ Acceptable Range    1.943      to      1.543  
 Yi Acceptable Range            1.014      to      0.974

$$Y_i = \frac{V_w P_b (T_d + 460)}{V_d (P_b + \Delta H / 13.6) (T_w + 460)}$$

$$\Delta H @ = \frac{.0317 (\Delta H)}{P_b (T_d + 460)} \left[ \frac{(T_w + 460) (\Theta) / V_w}{2} \right]$$

- Where:
- Vw = Gas Volume passing through the wet test meter, ft.<sup>3</sup>.
  - Vd = Gas Volume passing through the dry gas meter, ft.<sup>3</sup>.
  - Tw = Temperature of the gas in the wet test meter, deg F.
  - Td = Average temperature of the gas in the dry gas meter, deg F.
  - Delta H = Pressure differential across orifice. in. H2O.
  - Yi = Ratio of accuracy of wet test meter to dry gas meter for each run.
  - Y = Average ratio of accuracy of wet test meter to dry gas meter for all three runs; tolerance = pretest Y +/- 0.05Y.
  - Pb = Barometric pressure, in. Hg
  - Theta = Time of calibration run, min.

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## POSTTEST DRY GAS METER CALIBRATION FORM

Meter Box Number: 003      Wet Test Meter No.: P-576  
 Date: 07/29/05      Pretest Y: 0.994  
 Barometric Pressure: 30.05      Calibrated by: KR

Orifice Manometer Setting (Delta H) in H2O	Gas Volume		Temperature		Time (Theta) Min	Vacuum Setting in Hg	Yi
	Wet Test Meter (Vw) ft. <sup>3</sup>	Dry Gas Meter (Vd) ft. <sup>3</sup>	Wet Test Meter (Tw) Deg F	Dry Gas Meter (Td) Deg F			
2.00	10.000	10.047	82.0	84.0	12.61	10.00	0.994
2.00	10.000	10.111	82.0	87.0	12.76	10.00	0.993
2.00	10.000	10.175	82.0	89.0	12.81	10.00	0.991
<b>Average</b>							<b>0.993</b>

**Acceptable Limits      0.944      to      1.044**

$$Y_i = \frac{V_w P_b (T_d + 460)}{V_d (P_b + \Delta H / 13.6) (T_w + 460)}$$

Where:

- Vw = Gas volume passing through the wet test meter, ft.<sup>3</sup>.
- Vd = Gas volume passing through the dry gas meter, ft.<sup>3</sup>.
- Tw = Temperature of the gas in the wet test meter, deg F.
- Tdi = Temperature of the inlet gas of the dry gas meter, deg F.
- Tdo = Temperature of the outlet gas of the dry gas meter, deg F.
- Delta H = Pressure differential across orifice. in. H2O.
- Yi = Ratio of accuracy of wet test meter to dry gas meter for each run.
- Y = Average ratio of accuracy of wet test meter to dry gas meter for all three runs; tolerance = pretest Y +/- 0.05Y.
- Pb = Barometric pressure, in. Hg
- Theta = Time of calibration run, min.

### THERMOMETER CALIBRATIONS

Ref	Wet Test Meter		Dry Gas Meter	
	Inlet Deg F	Outlet Deg F	Inlet Deg F	Outlet Deg F
81.0	n/a	82.0	n/a	80.0
Difference	n/a	-1.0	n/a	1.0

Quality Control Limits = +/- 5 Deg F

**SOUTHERN ENVIRONMENTAL SCIENCES, INC.**  
**PITOT TUBE CALIBRATION**

Pitot Tube ID: 3' INCONEL  
 Date: 12/20/2004  
 Calibrated By: TJ  
 Cp of Standard Pitot: 0.99

<b>"A" SIDE CALIBRATION</b>				
Run No.	Delta P std (in. H2O)	Delta P(s) (in. H2O)	Cp(s)	Deviation Cp(s) - Cp(A)
1	0.55	0.86	0.79	0.01
2	0.57	0.87	0.80	0.00
3	0.57	0.87	0.80	0.00
Average →			<b>Cp (SIDE A)</b>	0.80
				0.00

<b>"B" SIDE CALIBRATION</b>				
Run No.	Delta P std (in. H2O)	Delta P(s) (in. H2O)	Cp(s)	Deviation Cp(s) - Cp(B)
1	0.56	0.83	0.81	0.01
2	0.57	0.86	0.81	0.00
3	0.56	0.87	0.79	0.01
Average →			<b>Cp (SIDE B)</b>	0.80
				0.01

$$Cp(s) = Cp(std) \times (\Delta P_{std} / \Delta P_s)^{1/2}$$

$$\text{Average Deviation} = \frac{\sum |Cp(s) - Cp(A \text{ or } B)|}{3} \quad \text{Must be } \leq 0.01$$

$$| \overline{Cp(SIDEA)} - \overline{Cp(SIDE B)} | \quad \text{Must be } \leq 0.01$$

2  
**SOUTHERN ENVIRONMENTAL SCIENCES, INC.**  
**THERMOMETER CALIBRATIONS**  
 ALL TEMPERATURES ARE DEGREES RANKIN

Calibrated By/Date: Terry L. Wilson 3/16/05

ID No.	Type	Range	ICE BATH			TEPID WATER			BOILING WATER			HOT OIL		
			STD Therm	Temp	Deg or Diff	STD Therm	Temp	Deg or Diff	STD Therm	Temp	Deg or Diff	STD Therm	Temp	Deg or Diff
T1	PT	2000° F	500	505	1.00%	538	536	0.37%	622	623	0.16%	828	830	0.24%
T2	PT	2000° F	500	504	0.80%	538	536	0.37%	627	628	0.16%	816	818	0.25%
T3	PT	2000° F	500	501	0.20 %	538	535	0.56%	630	633	0.48%	818	822	0.50%
T4	PT	2000° F	500	502	0.40 %	538	535	0.37%	634	636	0.32%	820	824	0.49%
T5	PT	2000° F	500	503	0.60%	538	535	0.56%	640	639	0.16%	820	818	0.24%
T6	PT	2000° F	500	504	0.80%	538	535	0.56%	644	644	0.00%	824	820	0.49%
T7	PT	2000° F	500	503	0.60%	538	535	0.56%	646	645	0.15%	824	820	0.49%
T8	PT	2000° F	500	501	0.20%	538	536	0.37%	648	648	0.00%	816	820	0.49%
T9	PT	2000° F	500	502	0.40%	538	535	0.56%	650	651	0.15%	818	821	0.37%
SS110	BM	220° F	498	500	2°	538	535	3°	672	674	2°	-	-	-
SS300	PT	2000 °F	498	498	0.00%	538	535	0.56%	672	674	0.30%	830	832	0.24%
SS301	PT	2000° F	498	499	0.20%	538	535	0.56%	672	672	0.00%	830	834	0.48%
SS306	PT	2000° F	498	500	0.40%	538	535	0.56%	672	674	0.30%	830	830	0.00%
2.5'PA	PT	2000° F	494	494	0.00%	524	523	0.19%	650	649	0.15%	754	754	0.00%
2.5'PB	PT	2000° F	498	500	0.40%	538	538	0.00%	661	662	0.15%	828	832	0.48%
3'P	PT	2000° F	498	497	0.20%	538	537	0.19%	662	664	0.30%	828	830	0.24%
3'INC	PT	2000° F	497	497	0.00%	538	538	0.00%	660	659	0.15%	835	836	0.12%
5'PA	PT	2000° F	497	496	0.20%	538	539	0.19%	662	660	0.30%	832	831	0.12%
5'PB	PT	2000° F	497	497	0.00%	538	540	0.37%	662	662	0.00%	832	834	0.24%
5'PC	PT	2000° F	497	497	0.00%	538	539	0.19%	664	664	0.00%	832	834	0.24%
5'PD	PT	2000° F	497	498	0.20%	538	539	0.19%	664	664	0.00%	830	831	0.12%
5'PE	PT	2000° F	497	499	0.40%	538	538	0.00%	666	664	0.00%	830	832	0.24%
5'VP	PT	2000° F	497	495	0.40%	538	538	0.00%	662	664	0.30%	832	831	0.12%
5'INC	PT	2000° F	497	497	0.00%	538	537	0.19%	660	662	0.30%	836	835	0.12%
8'PA	PT	2000° F	496	498	0.40%	538	538	0.00%	668	668	0.00%	834	833	0.12%
8'PB	PT	2000° F	496	498	0.40%	538	539	0.19%	669	670	0.15%	834	834	0.00%
8'PC	PT	2000° F	496	497	0.20%	538	539	0.19%	670	671	0.15%	834	833	0.12%
8'PD	PT	2000° F	496	496	0.00%	538	539	0.19%	670	672	0.30%	834	832	0.24%
10'PA	PT	2000° F	498	501	0.60%	538	540	0.37%	656	658	0.30%	840	842	0.24%
10'PB	PT	2000° F	498	500	0.40%	538	540	0.37%	656	657	0.15%	840	838	0.24%
10'PB														

Quality Control Limits: Impinger Thermometers ± 2°F, Bimetalic Thermometers(Bm) ± 5°F, Pyrometers/Thermocouples(PT) ± 1.5%



# Certificate of Analysis: EPA Protocol Gas Mixture

Airgas Specialty Gases  
5480 Hamilton Blvd.  
Theodore, AL 36582  
(251) 653-2500 Fax: (251) 653-2530  
www.airgas.com

Cylinder Number: CC178566 Reference Number: 47-124018997-13  
Cylinder Pressure: 2013.3 PSIG Expiration Date: 4/19/2007  
Certification Date: 4/19/2004 Laboratory: W04 - 124

## Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
CARBON MONOXIDE	60.34 PPM	+/- 1%	NDIR	G1
NITROGEN	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes: Airgas PO 110679659  
Airgas Lot # 47-040406/2131

Do not use cylinder below 150 psig.

Approval Signature Sarah S. [Signature]

## Reference Standard Information

Type	Component	Cyl. Number	Concentration
NTRM 81679	CARBON MONOXIDE	SG9161501	99.90 PPM

## Analytical Results

### 1st Component CARBON MONOXIDE

1st Analysis Date: 04/12/2004

R 99.90	S 60.30	Z 0.0000	Conc 60.30 PPM
S 60.30	Z 0.0000	R 99.90	Conc 60.30 PPM
Z 0.0000	R 99.90	S 60.30	Conc 60.30 PPM
AVG: 60.30 PPM			

2nd Analysis Date: 04/19/2004

R 99.90	S 60.38	Z 0.0000	Conc 60.38 PPM
S 60.38	Z 0.0000	R 99.90	Conc 60.38 PPM
Z 0.0000	R 99.90	S 60.38	Conc 60.38 PPM
AVG: 60.38 PPM			

## Certificate of Analysis: E.P.A. Protocol Gas Mixture

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)"  
 using assay procedures listed.

Cylinder No:	SX32489	Order No:	157779-00
Certification Date:	01/6/2003	Expiration Date:	01/6/2006
Cylinder Pressure:	2000	Part No:	E02NI99E15A0700

\*Do not use cylinder below 150 psig.

Component	Certified Concentration	Unit of Measure	Accuracy	Procedure	Analytical Principle
Carbon Monoxide	120.7	PPM	1%	G-1	NDIR
Nitrogen	Balance				

Nox  
 (Reference Value Only)

### Reference Standard Information

Type	Component	Concentration	Unit	Cylinder Number
NTRM	Carbon Monoxide	244.7	PPM	SG9159519BAL

### Analytical Data

Component 1 Carbon Monoxide:

1st Analysis Date: 12/30/2002

Zero	0.000	Cand	120.700	Ref	244.800
Zero	0.000	Cand	120.700	Ref	244.800
Zero	0.000	Cand	120.700	Ref	244.800

2nd Analysis Date: 01/06/03

Zero	0.000	Cand	120.800	Ref	244.800
Zero	0.000	Cand	120.800	Ref	244.800
Zero	0.000	Cand	120.900	Ref	244.700

Analyzed by: *Abasi Hossain*

Approved by: *S. G. Baker*

## Certificate of Analysis EPA Protocol Gas Mixture

Cylinder No:	SG9162702BAL	Reference Number:	54-ST9736-000
Cylinder Pressure:	2,013 psig	Expiration Date:	09/30/2006
Certification Date:	09/30/2003	Laboratory:	ASG - Chicago - IL


### Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
Carbon Monoxide	142.4 PPM	+/- 1%	NDIR	G1
Nitrogen	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

### Notes:

Do not use cylinder below 150 psig.

  
 Approved for Release

### Reference Standard Information

Type	Component	Cyl. Number	Concentration
NTRM	Carbon Monoxide	SG9159474BAL	244.7 PPM

### Analytical Results

1st Component	Carbon Monoxide
1st Analysis Date: 09/22/2003	
R 244.7 S 142.3 Z 0.0000	Conc 142.4 PPM
S 142.4 Z 0.0000 R 244.7	Conc 142.3 PPM
Z 0.0000 R 244.7 S 142.4	Conc 142.4 PPM
	AVG: 142.4 PPM
2nd Analysis Date: 09/30/2003	
R 244.7 S 142.5 Z 0.0000	Conc 142.4 PPM
S 142.4 Z 0.0000 R 244.7	Conc 142.5 PPM
Z 0.0000 R 244.7 S 142.5	Conc 142.5 PPM
	AVG: 142.5 PPM



Airgas South, Inc.  
211 Caroline Street  
Suite A-3  
Cape Canaveral, FL 32920  
Phone: 321-508-0746  
Fax: 321-858-2087  
<http://www.airgas.com>

## Certificate Of Conformance

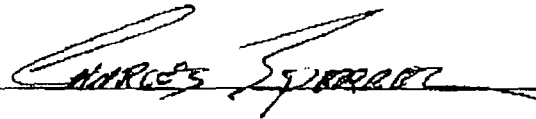
Customer: **Southern Environmental Sciences**  
Product: **Air, Zero Grade**

This letter is to provide you with the Certification you have requested for **Air, Zero Grade**. Gas products you purchase from this establishment are filled in accordance with the Standard Operating Procedures utilized by Airgas in the manufacture of Specialty Gases. By following these procedures, our location assures that the products purchased from this establishment will meet or exceed the specifications listed below:

**Airgas Part Number: AI Z300**

Test	Specifications
Oxygen	20-22%
Moisture	< 3 PPM
THC	< 1 PPM

Supplier Signature



Date: 1/11/05

## CO EMISSION TEST CALCULATIONS

COMPANY: **TURNER FUNERAL HOMES, INC.**  
 SOURCE: **IE43-PPII**  
 TEST DATE: **07/26/2005**  
 Data analyst: **K. ROBERTS**

Run No.	Average			Stack Flowrate (dscfm)	Emissions		
	CO (ppm)	O2 (%)	CO @ 7% O2 (ppm)		mg/m3	lbs/ft3	lbs/hr
1	8.7	15.6	22.6	1869	10.1	6.32E-07	0.071
2	20.3	15.4	50.8	1740	23.6	1.48E-06	0.154
3	4.0	14.8	9.0	1750	4.7	2.91E-07	0.031
Averages	10.97	15.3	27.5	1786	12.8	7.99E-07	0.085

FORMULAS:  $CO @ 7\% O_2 = Actual\ CO \times (14/(21-\%O_2))$

$mg/m^3 = ppm \times .041573 \times molecular\ wt.$

$$lb/ft^3 = \frac{mg/m^3}{35.31\ ft^3/m^3 \times 1000mg/g \times 453.59\ g/lb}$$

$lb/hr = lb/ft^3 \times flowrate \times 60\ min/hr$

where: Pstd = 29.92 "Hg  
 Tstd = 528 deg R  
 Molecular Weight of CO = 28

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## EMISSIONS TEST CALCULATIONS

Plant: TURNER FUNERAL HOMES, INC.  
 Unit: IE43-PPII HUMAN CREMATORY  
 Run No: 2

Test Date: 07/26/05  
 Data Input By: K. Palat

$$Pbar = (Pbar \text{ at barom.}) - (\text{Elev. diff. barom. to manom., ft.}) \times (.1/100)$$

$$= 30.01 - 0 \times (0.1/100) = \underline{30.01}$$

$$Pm = \frac{Pbar + \Delta H}{13.6} = \frac{30.01 + 1.3716667}{13.6} = \underline{30.11}$$

$$Vm(std) = (Vm) \times (Y) \times \frac{(Tstd, \text{deg R}) \times (Pm)}{(Tm, \text{deg R}) \times (Pstd)}$$

$$= 37.337 \times 0.994 \times \frac{528 \times 30.1109}{554.375 \times 29.92} = \underline{35.5728}$$

$$Vw(std) = Vlc \times (.04715) = 30.1 \times 0.04715 = \underline{1.419}$$

$$Bws = \frac{Vw(std)}{Vw(std) + Vm(std)} = \frac{1.419215}{1.419215 + 35.5728} = \underline{0.038}$$

Bws @ saturation = 0.99  
 1 - Bws = 0.962 USE LOWER BWS

$$Md = 0.44(\%CO_2) + .32(\%O_2) + .28(\%N_2 + \%CO)$$

$$= .44 \times 4.5 + .32 \times 15.4 + 0.28 \times 78$$

$$= \underline{29.336}$$

$$Ms = Md(1-Bws) + 18(Bws) = 29.336 \times 0.9616345 + 18 \times 0.03837$$

$$= \underline{28.90}$$

$$Ps = \frac{Pbar + (Pg, \text{ in. H}_2\text{O})}{13.6} = \frac{30.01 + (-0.12)}{13.6} = \underline{30.00}$$

$$Vs = 85.49 \times (Cp) \times (\text{avg sqrt delta P}) \times \text{sqrt}[(Ts, \sim R)/(Ps)(Ms)]$$

$$= \frac{85.49 \times 0.8 \times \text{sqrt}(1067.29 / (30.0012 \times 28.9011))}{27.87}$$

$$An = \frac{[(\text{Nozzle diam, in.}/12)^2 \times 3.14159]}{4} = \frac{(0.373/12)^2 \times 3.14159}{4} = \underline{0.00076}$$

$$\%I = \frac{(.09450) \times (Ts, \text{deg R}) \times (Vm(std))}{(Ps) \times (Vs) \times (An) \times (\text{Sample Time}) \times (1-Bws)}$$

$$= \frac{0.0945 \times 1067.2917 \times 35.572765}{30.001176 \times 27.868969 \times 0.0007588 \times 60 \times 0.96163}$$

$$= \underline{98.0}$$

# SOUTHERN ENVIRONMENTAL SCIENCES, INC.

## EMISSIONS TEST CALCULATIONS

Plant: TURNER FUNERAL HOMES, INC.  
Unit: IE43-PPII HUMAN CREMATORY  
Run No: 2

Test Date: 07/26/05  
Data Input By: R. Polert

$$As = \frac{(\text{Stack Diam., ft.})^2 \times 3.14}{4} = \frac{1.666667^2 \times 3.14}{4} = \underline{2.18}$$

$$As.\text{eff} = \frac{As \times (\text{total No. pts.} - \text{No. neg. pts.})}{(\text{Total No. pts.})} = \frac{2.181662 \times (24 - 0)}{(24)} = \underline{2.18}$$

$$Q = 60(As.\text{eff})(Vs) = 60 \times 2.181662 \times 27.869 = \underline{3,648}$$

$$Qstd = \frac{(Q) \times (Tstd) \times (Ps) \times (1 - Bv)}{(Ts, \text{degR}) \times (Pstd)} = \frac{3648.039 \times 528 \times 30.00118 \times 0.96163}{1067.2917 \times 29.92}$$

$$= \underline{1,740}$$

$$Cs = \frac{(.01543) \times (\text{mn, mg})}{Vm(\text{std})} = \frac{0.01543 \times 18.5}{35.57277} = \underline{0.00802}$$

$$PMR = \frac{(Cs)(Qstd)(60)}{7000} = \frac{0.0080245 \times 1740.1916 \times 60}{7000} = \underline{0.12}$$

Emissions calculations in emissions test summary may differ slightly from example calculations due to rounding of some numbers in example.

# Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33566-2354 □ (813) 752-5014

## NOMENCLATURE USED IN STACK SAMPLING CALCULATIONS

- $A_n$  = Cross-sectional area of nozzle, ft<sup>2</sup>
- $A_s$  = Cross-sectional area of stack, ft<sup>2</sup>
- $B_{ws}$  = Water vapor in gas stream, proportion by volume
- $C_p$  = Pitot coefficient
- $C_s$  = Pollutant concentration, gr/DSCF
- $F_d$  = Ratio of gas generated to heat value of fuel, DSCF/mm BTU
- $\Delta H$  = Average pressure differential across orifice, in. H<sub>2</sub>O
- %I = Isokinetic variation, %
- $M_d$  = Molecular weight of dry gas
- $M_n$  = Total amount of pollutant collected, mg
- $M_s$  = Molecular weight of stack gas
- N = Normality of barium perchlorate titrant
- $\sqrt{\Delta P_{avg}}$  = Average of the square roots of the velocity heads
- $P_{bar}$  = Barometric pressure at the sampling site, in. Hg
- $P_g$  = Stack gas static pressure, in. H<sub>2</sub>O
- $P_m$  = Absolute pressure at the dry gas meter, in. Hg
- $P_s$  = Absolute stack pressure, in. Hg
- PMR = Pollutant mass rate, lb/hr
- $P_{std}$  = Standard absolute pressure, 29.92 in. Hg
- $\theta$  = Total sampling time, minutes

# Southern Environmental Sciences, Inc.

1204 North Wheeler Street ☐ Plant City, Florida 33566-2354 ☐ (813) 752-5014

## NOMENCLATURE USED IN STACK SAMPLING CALCULATIONS

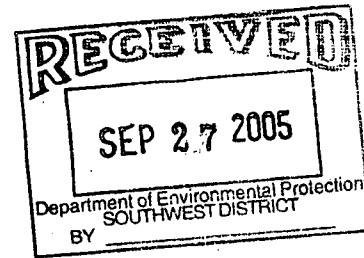
(Continued)

- $Q$  = Stack gas flowrate, ACFM
- $Q_{std}$  = Stack gas flowrate, DSCFM
- $T_m$  = Absolute average meter temperature, °R
- $T_s$  = Absolute average stack gas temperature, °R
- $T_{std}$  = Standard absolute temperature, 528 °R
- $V_a$  = Volume of sample aliquot titrated, ml
- $V_{lc}$  = Liquid collected in impingers and silica gel, grams
- $V_m$  = Sample volume at meter conditions, DCF
- $V_{m(std)}$  = Sample volume at standard conditions, DSCF
- $V_s$  = Stack gas velocity, ft/sec
- $V_{soln}$  = Total volume of solution, ml
- $V_t$  = Volume of barium perchlorate titrant used for the sample, ml
- $V_{tb}$  = Volume of barium perchlorate titrant used for the blank, ml
- $V_{w(std)}$  = Volume of water vapor in sample corrected to standard conditions, SCF
- $Y$  = Dry gas meter calibration factor
- 13.6 = Specific gravity of mercury

# FERO

**FUNERAL HOME WITH CREMATORY  
MEMORIAL GARDENS CEMETERY**

*"When Compassion Matters Most"*



South West District Air Program  
3804 Coconut Palm Drive  
Tampa, FL 33619-8218

*— has GP which will expire  
see 10/7/05 AC Application*

To Whom It May Concern:

Please find included with this letter a renewal permit application for one human crematory. Listed as Dunnellon Crematory located at 7620 South U.S. Highway 41, Dunnellon, Florida 34432. Included with this application is one check in the amount of \$250.00 to cover the permit fees.

Thanking you in advance for your attention to this matter.

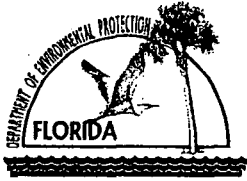
Respectfully,

William C. Ward, III, LFD  
Manager

Beverly Hills Chapel  
5955 North Lecanto Hwy.  
Beverly Hills, FL 34465  
(352) 746-4551  
Fax: (352) 746-5004

Fero Memorial Gardens Crematory  
5891 North Lecanto Hwy.  
Beverly Hills, FL 34465  
(352) 746-4646 • (352) 489-9613  
Fax: (352) 746-2875

Dunnellon Chapel  
7620 S. U.S. Hwy 41  
Dunnellon, FL 34432  
(352) 489-5363  
Fax: (352) 465-0072



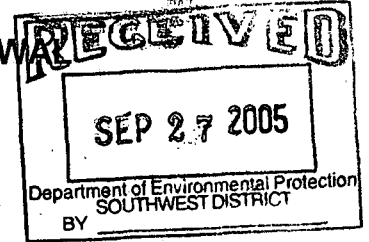
# Department of Environmental Protection

## Division of Air Resources Management

### APPLICATION FOR NON-TITLE V AIR PERMIT RENEWAL

See Instructions for Form No. 62-210.900(4)

#### I. APPLICATION INFORMATION



#### Identification of Facility

1. Facility Owner/Company Name: <b>Fero Funeral Home with Crematory</b>	
2. Site Name: <b>Dunnellon Crematory</b>	
3. Facility Identification Number: <b>0830080-002-AG</b>	4. Facility Status Code: <b>A</b>

#### Application Contact


1. Name and Title of Application Contact:  <b>Marco A. Salgado</b>  <b>Engineer</b>		
2. Application Contact Mailing Address: Organization/Firm: <b>Matthews Cremation Division (formerly IEE Co.)</b> Street Address: <b>2045 Sprint Blvd.</b> City: <b>Apopka</b> State: <b>FL</b> Zip Code: <b>32703</b>		
3. Application Contact Telephone Numbers: Telephone: <b>(407)886-5533</b> Fax: <b>(407)886-5990</b>		

#### Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	



**Owner/Authorized Representative**

1. Name and Title of Owner/Authorized Representative: <b>SCI Funeral Services of Florida / William C. Ward, III General Manager</b>
2. Owner/Authorized Representative Mailing Address:  Organization/Firm: <b>Fero Funeral Home with Crematory</b> Street Address: <b>7620 South U.S. Highway 41</b> City: <b>Dunnellon</b> State: <b>Florida</b> Zip Code: <b>34432</b>
3. Owner/Authorized Representative Telephone Numbers: Telephone: <b>( 352 ) 489 - 5363</b> Fax: <b>( 352 ) 465 - 0072</b>
4. Owner/Authorized Representative Statement:  <i>I, the undersigned, am the owner or authorized representative* of the facility addressed in this Application for Air Permit. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i>   _____ Signature  _____ Date <b>9/14/2005</b>

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

**Scope of Application**

<b>Emissions Unit ID</b>	<b>Description of Emissions Unit</b>	<b>Permit Type</b>	<b>Processing Fee</b>
001	Dual chamber gas-fired cremation unit for human remains.	AC1F	\$250

**Application Processing Fee**

Check one: [  ] Attached - Amount: \$ 250 [  ] Not Applicable

**Application Comment**

**Emissions Unit ID** \_\_\_\_\_

**Emissions Unit Supplemental Requirements**

1. Fuel Analysis or Specification [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
2. Compliance Test Report [X] Attached, Document ID: <u>IV</u> [ ] Not A [ ] Previously submitted, Date: _____
3. Procedures for Startup and Shutdown [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
4. Operation and Maintenance Plan [ ] Attached, Document ID: _____ [X] Not Applicable [ ] Waiver Requested
5. Other Information Required by Rule or Statute [ ] Attached, Document ID: _____ [X] Not Applicable

**Emissions Unit Comment**

## II. FACILITY INFORMATION

### Facility Contact

1. Name and Title of Facility Contact:	<b>William C. Ward, III</b>
2. Facility Contact Mailing Address: Organization/Firm: <b>Fero Funeral Home with Crematory</b> Street Address: <b>7620 South U.S. Highway 41</b> City: <b>Dunnellon</b> State: <b>Florida</b> Zip Code: <b>34432</b>	
3. Facility Contact Telephone Numbers: Telephone: ( <b>352</b> ) <b>489-- 5363</b> Fax: ( <b>352</b> ) <b>465 - 0072</b>	

### Facility Supplemental Requirements

1. Area Map Showing Facility Location: <input checked="" type="checkbox"/> Attached, Document ID: <b>I</b> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested	
2. Facility Plot Plan: <input checked="" type="checkbox"/> Attached, Document ID: <b>II</b> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested	
3. Process Flow Diagram(s): <input checked="" type="checkbox"/> Attached, Document ID: <b>III</b> <input type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested	
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Waiver Requested	

### Facility Comment

--

Emissions Unit ID \_\_\_\_\_

### III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section must be completed for each emissions unit addressed in this Application for Non-Title V Air Permit Renewal. If submitting the form in hard copy, indicate, in the space provided at the top of each page, the Emissions Unit ID of the emissions unit addressed on the page, as given in the unit's most current air operation permit.

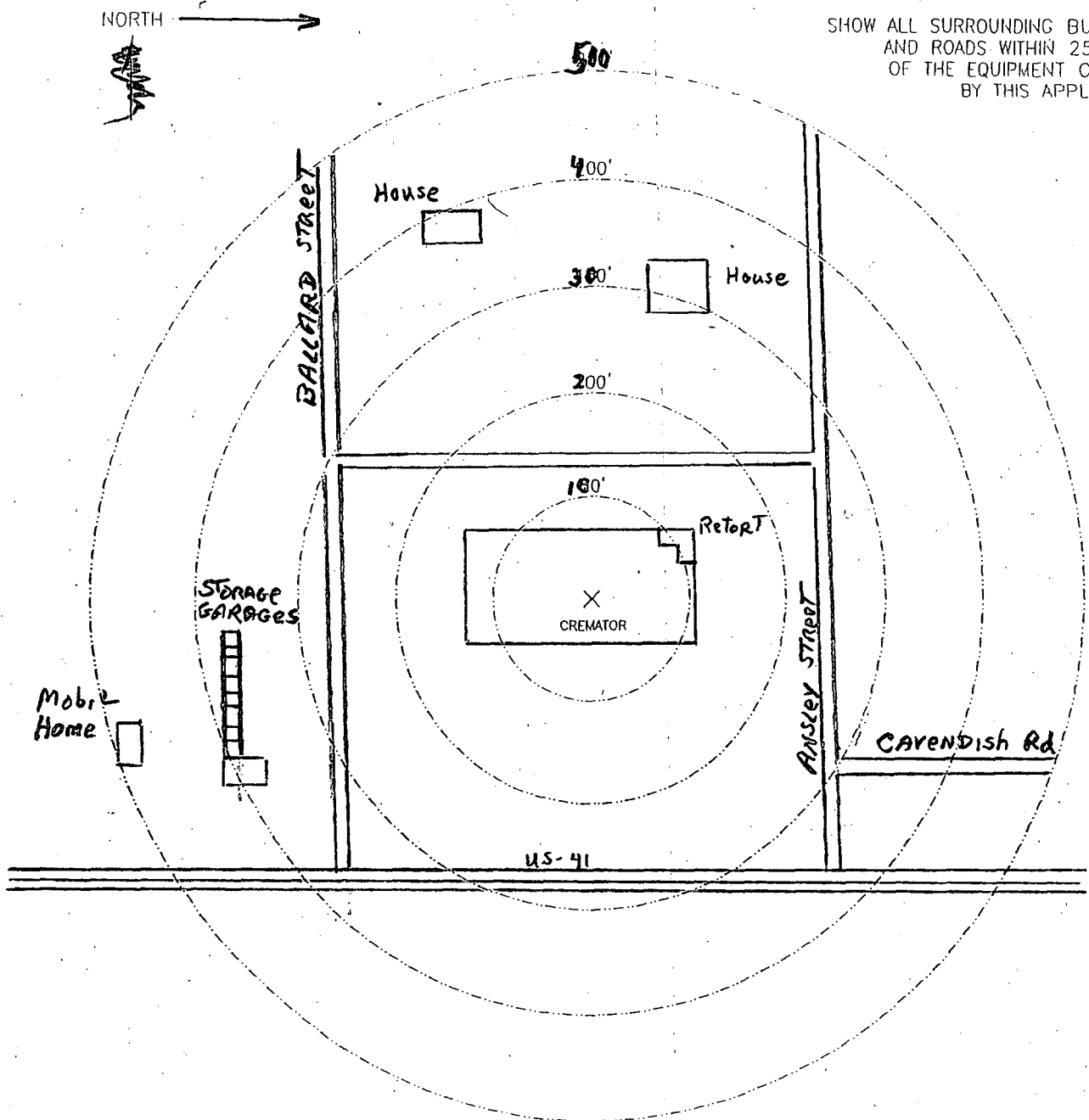
#### Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters):  <b>Dual chamber gas-fired cremation unit for human remains.</b>	
2. Emissions Unit Status Code: <b>C</b>	3. Long-Term Reserve Shutdown Date: <b>N/A</b>
4. Control Equipment Method/Description (limit to 200 characters per device or method):  <b>The cremation unit is a multiple chamber design with a minimum secondary chamber operating temperature of 1600 °F.</b>	

#### Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	<b>1.8</b>	mmBtu/hr
2. Maximum Incineration Rate:	<b>100 (approx.)</b>	lb/hr <b>0.8</b> tons/day
3. Maximum Process or Throughput Rate:	<b>one body per cycle</b>	
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	<b>24 hours/day</b>	<b>7 days/week</b>
	<b>52 weeks/year</b>	<b>8760 hours/year</b>

# PLOT PLAN



SHOW ALL SURROUNDING BUILDINGS AND ROADS WITHIN 250 FEET OF THE EQUIPMENT COVERED BY THIS APPLICATION.

Catholic Church

STRUCTURE DESCRIPTION

INSTRUCTIONS

1. INDICATE LOCATION AND TYPE OF BUILDING BY THE USE OF SMALL NUMBERED CIRCLES WITH THE DESCRIPTION BELOW:
2. SHOW ROADS AS LINES REPRESENTING THE ROAD EDGES. INDICATE STREET NAMES AND HIGHWAY NUMBERS.
3. SHOW WOODED OR CLEARED AREA BY APPROXIMATE BOUNDARY LINES AND THE WORDS "WOODS," "CLEARED," "CORNFIELD," ETC.

- (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- (7)
- (8)
- (9)
- (10)

I




7620 S Us Highway 41  
Dunnellon FL  
34432-2467 US

Notes:

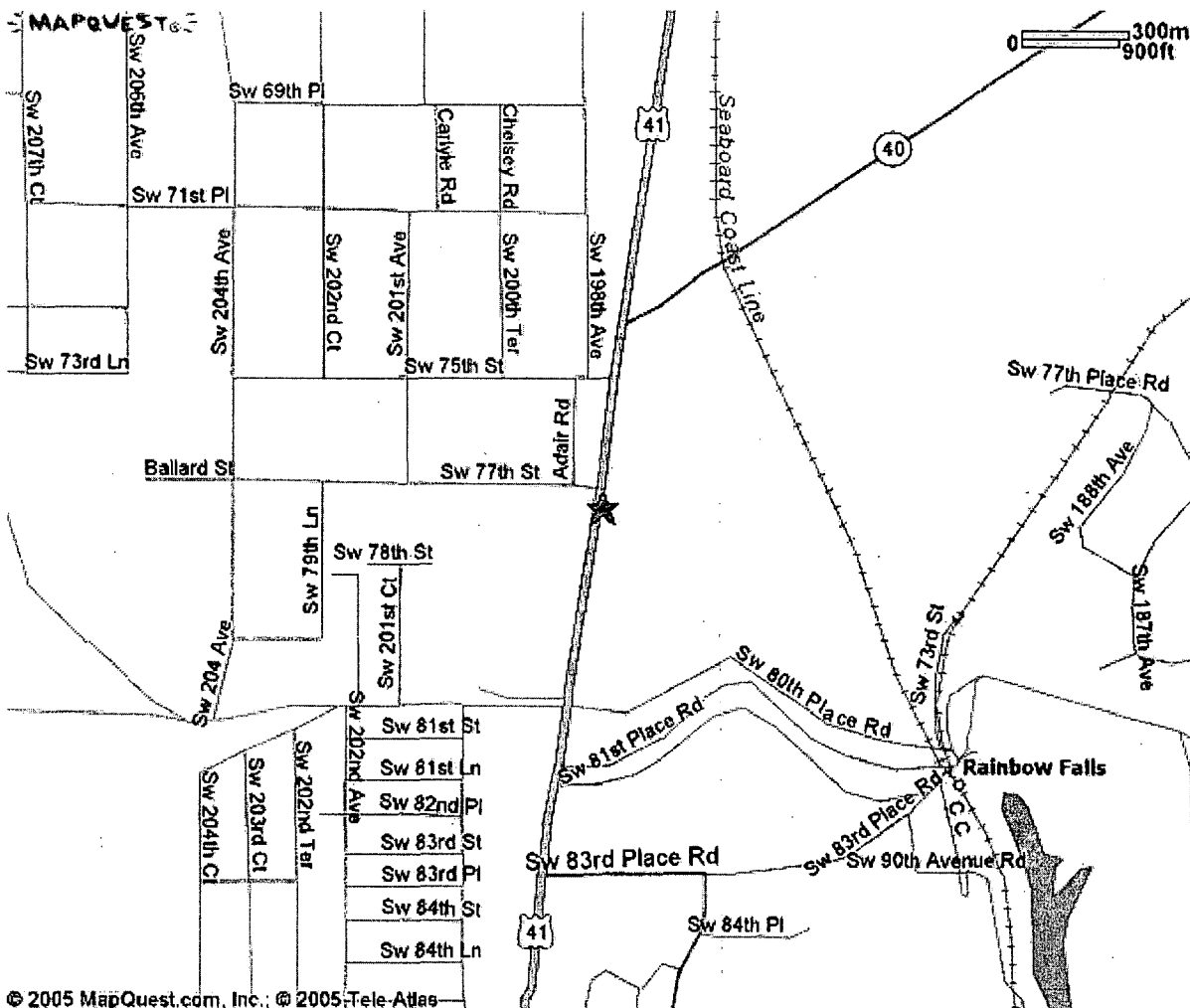
**Travelodge**

**Book at  
Travelodge.com  
and Get Our Best  
Rate or It's FREE!**

BOOK NOW



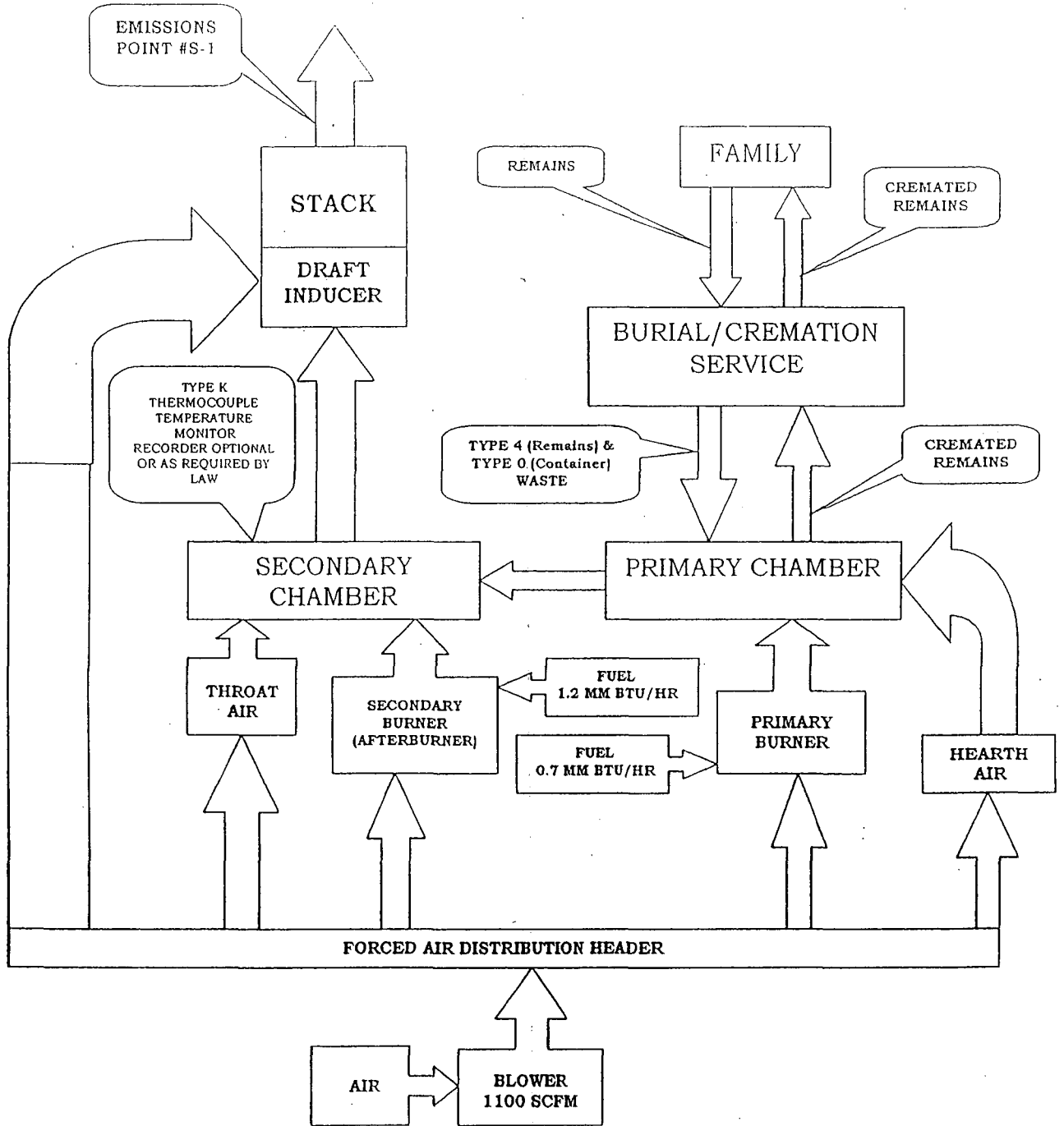
**Recreate.  
Hibernate.<sup>SM</sup>**



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ON BOARD

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# CREMATOR PROCESS FLOW DIAGRAM





III

### 3.0 SUMMARY OF TEST DATA

PLANT : BALDWIN

UNIT : POWER-PACK II

RUN NUMBERS : 1, 2, 3

TEST DATE : 5/5/05	#1	#2	#3	AVERAGES
DATE	5/5/05	5/5/05	5/5/05	
START TIME	10:32	13:05	15:27	
END TIME	11:50	14:09	16:29	
STACK DIAMETER (INCHES)	19.5	19.5	19.5	
NOZZLE DIAMETER (INCHES)	0.550	0.550	0.550	
TEST TIME (MINUTES)	60	60	60	
NUMBER OF TEST POINTS PER RUN	24	24	24	
STACK GAS TEMPERATURE (°F)	850.0	991.8	1128	989.9
STACK GAS MOISTURE (%)	12.51	9.76	6.56	
STACK GAS MOLECULAR WEIGHT	28.50	28.83	29.21	
STACK GAS VOLUME SAMPLED (CUBIC FEET)	34.375	36.840	40.110	37.108
VOLUME SAMPLED (SCF @ 68°F)	34.585	37.020	40.270	37.292
STACK GAS VELOCITY (FEET PER SECOND)	18.14	17.30	19.75	18.39
STACK GAS FLOW RATE (ACFM)	2257.0	2152.2	2457.7	2288.9
STACK GAS FLOW RATE (DSCFM @ 68°F)	801.7	711.5	769.2	760.8
OXYGEN, %	16.0	14.0	14.5	
PARTICULATE CONC (GR/DSCF) @7% O <sub>2</sub>	0.0359	0.1122	0.0165	0.0549
PARTICULATE MASS RATE (LBS/HOUR)	0.0871	0.3396	0.0500	0.1589
CO CONC @ 7% O <sub>2</sub> , ppmv	1.42	2.01	3.26	2.23
CO MASS RATE (LBS/HOUR)	0.00175	0.00310	0.00503	0.0033
ISOKINETIC SAMPLING RATE, %I	90.4	109.0	109.7	

FIELD DATA AND SAMPLES UNDER THE CONTROL OF:

TIM CAPELLE

LABORATORY ANALYSIS UNDER THE CONTROL OF:

ATC