Holtom, Jonathan

From: Kahn, Joseph
Sent: Monday, April 29, 2002 8:20 AM
To: Sheplak, Scott; Holtom, Jonathan
Cc: Pell, Leigh
Subject: Spiralkote CAM Response

I reviewed the response to our questions related to operation of the incinerators, and the response seems to adequately address our questions. I noted that the test report referenced in the response to question 3 was not included with the copies Leigh-Ann and I received, but I presume that the district had previously reviewed the report and can confirm the temperatures at which testing was conducted. Since you have more information on the formats that are currently acceptable to EPA, we were not planning to review or comment on the format of the plan. Please let me know if you need anything further on this.

Sheplak, Scott

From: Sheplak, Scott
Sent: Monday, April 15, 2002 2:54 PM
To: Laisure, Debra; Holtom, Jonathan; Pell, Leigh
Subject: RE: fp Spiralkote T-V Renewal Response (w/CAM)

You can send it to me & I'll distribute it to them.

-----Original Message-----
From: Laisure, Debra
Sent: Monday, April 15, 2002 2:10 PM
To: Sheplak, Scott; Holtom, Jonathan; Pell, Leigh
Subject: fp Spiralkote T-V Renewal Response (w/CAM)

I have rec'd a response to our completeness review letter for this project and would like to send up a copy for your review with regard to the CAM issues you brought up.

Scott, would you like me to send this info to your attention, or to Jonathan's or Leigh's?

Thanks,
Deb

1 copy tabled material to me, Leigh Pell & Jon Kahn.
entire package to Jonathan.

Environmental Radiation Studies
Environmental Impact Studies
Radiation Dose Modeling
Risk Assessment

Perigee

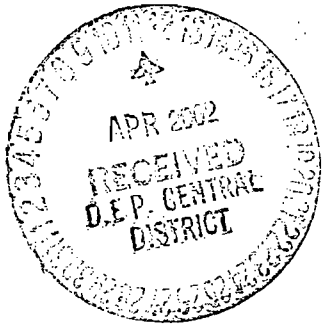
Technical Services, Inc.

Atmospheric Dispersion Modeling
Air Pollution Permitting
Landscape Design
Graphic Arts

CONTAINS INFO REGARDING CAM

ARMS is Updated

April 10, 2002



Mr. Alan D. Zahm, P. E.
Florida Department of Environmental Protection
Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Re: fp Spiralkote, Inc.
Permit Number: 0950125-003-AV

Dear Mr. Zahm:

This letter is submitted in response to your Air Resources Completeness Review dated November 13, 2001.

1. The permitting attorney for the Air Program has determined that a complete application, DEP form 62—210.900(1), F.A.C., including all applicable emissions unit information must be submitted for the renewal of a Title V Air Operation Permit. Please provide those additional pages covering the emissions units as necessary to complete the application.

Four copies of the complete permit application are enclosed.

2. Provide copies of the monthly logs maintained over the past 12 months to demonstrate compliance with the permitted operating and emissions limits, as required in specific conditions A5 and B18 of the Revised Title V Air Operation Permit 0950125-003-AV.

The monthly logs are included on the enclosed diskette labeled "Recordkeeping." The file PLATEMAKING.123 contains the data for the plate making system (emissions unit 006) and the file PRESSES.123, tab "Emission2001" contains the data for the presses (emissions units 010, 011, and 012).

3. In order to determine if the temperature method is a reliable way to monitor Volatile Organic Compound (VOC) destruction, the temperature versus emissions data from the latest compliance test must be evaluated. Provide a copy of the results for the latest compliance tests conducted in August 2001.

A copy of the results for the tests conducted in August 2001 is enclosed.

3214 Deer Chase Run, Longwood, Florida 32779-3173
Telephone (407) 333-7374 FAX (407) 333-9396

4. Identify the proper temperature ranges for the control devices according to the CAM model in 40 CFR 64.3.

Incinerator A which serves the WH-III press typically operates in the 500-900 degrees Fahrenheit range. Incinerator B which serves both the WH-I press and the Tachys press typically operates in the 475-800 degree Fahrenheit range. The revised CAM Plan is attached to the permit application.

5. Research by Title V personnel in Tallahassee indicates that temperatures above 500 degrees Fahrenheit must be maintained in order to get 95 percent destruction efficiency. Provide information supporting the operation of the incinerator at 475 degrees Fahrenheit.

Incinerator B is designed to operate at this lower temperature because of the catalyst used. I have attached data supplied by the manufacturer which demonstrates destruction efficiency above 95 percent at temperatures as low as 400 degrees Fahrenheit.

6. How will exceedances be defined according to a minimum temperature?

For the WH-III press, exceedances will be defined as those times when VOC-based materials are applied to the press and the incinerator is operated at temperatures below 500 degrees Fahrenheit. For the WH-I and the Tachys presses, exceedances will be defined as those times when VOC-based materials are applied to the press and the incinerator is operated at temperatures below 475 degrees Fahrenheit.

7. How and where will VOC destruction efficiency be obtained from the temperature data (establish a curve of temperature vs. percent destruction efficiencies)?

Figure 1 depicts the relationship between temperature and destruction efficiency for the catalysts used in both incinerators. The Code 936 catalyst is used in incinerator A serving the WH-III press; the LTC Gen II catalyst is used in incinerator B serving the WH-I and the Tachys press. As shown, destruction efficiencies above 95 percent are achieved with both these catalysts at temperatures as low as 400 degrees Fahrenheit.

8. What is the exhaust stream flow rate? Is this parameter regularly monitored either directly (flow) or indirectly (fan operation, amps, etc.)?

The maximum design flow rate for incinerator A is 18,000 cfm; for incinerator B, it is 10,500 cfm. These are maximum flows programmed into the fan operation for each unit and are designed to handle the maximum exhaust volume for the process. Typical flow rates are about 15,000 cfm and 8,000 cfm. Flow rates are not monitored except during compliance tests.

9. The plan states that temperature monitoring will confirm proper operation when VOCs are in the air stream. How will it be determined that VOCs are in the air stream?

Both incinerators run constantly, even when the presses are not running, and the presses will not run unless incinerators are on and the temperature in the incinerators is within specifications. The temperature differential between the inlet and outlet monitors indicates when VOCs are in the air stream.

10. What will the averaging time for the temperature monitors be (minutes, hours, monthly)?

For both incinerators, the average time for the monitors will be five minutes.

11. How will the capture efficiency be determined and what parameters are monitored to confirm proper capture?

Capture efficiency is not monitored except during compliance tests.

12. Provide a diagram of the location(s) of the temperature sensor(s) in relation to the control devices.

I have attached schematics for both incinerators: the drawing labeled 104889-0502 is for incinerator A serving the WH-III press; the drawing labeled 112076-0502 is for incinerator B serving the WH-I and Tachys presses. The attached Figures 2 and 3 depict the portions of the schematics which show the locations of temperature sensors te530 (incinerator inlet) and te531 (incinerator outlet) for incinerators A and B.

13. What will be the corrective action if the temperature falls outside of the proper indicator range?

For both incinerators, if the temperature falls below the prescribed minimum temperature, the presses automatically shut down.

Please call me at (407) 333-7374 if you have any questions regarding this submittal.

Very truly yours,

PERIGEE TECHNICAL SERVICES, INC.

Jerome J. Guidry, P.E., Q.E.P.
President

JJG:emc

cc: Carey Mann
J. R. Wilson
Robert Van Pamelen

Enclosures

Department of
Environmental Protection

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Jeb Bush
Governor

David B. Struhs
Secretary

AIR RESOURCES COMPLETENESS REVIEW

SOURCE NAME: fp Spiralkote, Incorporated

DATE RECEIVED: 09/28/01
DATE REVIEWED: 11/07/01

APPLICANT: Carey Mann, Treasurer

ADDRESS: fp Spiralkote, Incorporated
1200 Central Florida Parkway
Orlando, Florida 32837-9295

FILE: 0950125-007

Your application for this project has been received and reviewed for completeness. The following is needed to complete your application:

1. The permitting attorney for the Air Program has determined that a complete application, DEP form 62-210.900(1), F.A.C., including all applicable emissions unit information must be submitted for the renewal of a Title V Air Operation Permit. Please provide those additional pages covering the emissions units as necessary to complete the application.

2. Provide copies of the monthly logs maintained over the past 12 months to demonstrate compliance with the permitted operating and emissions limits, as required in specific conditions A5 and B18 of the Revised Title V Air Operation Permit 0950125-003-AV.

A copy of the application and attached Compliance Assurance Monitoring (CAM) plan was provided, to Title V personnel in Tallahassee for their review. Comments received from Tallahassee indicate that the submitted plan, as presented, does not meet the criteria of 40 CFR 64.3 and that it may be helpful for the facility to review the requirements of this section and prepare a revised plan that addresses these criteria point by point. Additionally, the following questions were provided by Title V personnel in Tallahassee following their review:

3. In order to determine if the temperature method is a reliable way to monitor Volatile Organic Compound (VOC) destruction, the temperature versus emissions data from the latest compliance test must be evaluated. Provide a copy of the results for the latest compliance tests conducted in August 2001.

4. Identify the proper temperature ranges for the control devices according to the CAM model in 40 CFR 64.3.

5. Research by Title V personnel in Tallahassee indicates that temperatures above 500 degrees Fahrenheit must be maintained in order to get 95 percent destruction efficiency. Provide information supporting the operation of the incinerator at 475 degrees Fahrenheit.

6. How will exceedances be defined according to a minimum temperature?

7. How and where will VOC destruction efficiency be obtained from the temperature data (establish a curve of temperature vs. percent destruction efficiencies)?

8. What is the exhaust stream flow rate? Is this parameter regularly monitored either directly (flow) or indirectly (fan operation, amps, etc.)?

9. The plan states that temperature monitoring will confirm proper operation when VOCs are in the air stream. How will it be determined that VOCs are in the air stream?

10. What will the averaging time for the temperature monitors be (minutes, hours, monthly)?

11. How will the capture efficiency be determined and what parameters are monitored to confirm proper capture?

12. Provide a diagram of the location(s) of the temperature sensor(s) in relation to the control devices.

13. What will be the corrective action if the temperature falls outside of the proper indicator range?

Pursuant to Rule 62-4.055, F.A.C., the applicant shall have 90 days after the Department mails a timely request for additional information to submit that information to the Department. If an applicant requires more than ninety days in which to respond to a request for additional information, the applicant may notify the Department in writing of the circumstances, at which time the application shall be held in active status for one additional period of up to 90 days. Additional extensions shall be granted for good cause shown by the applicant. A showing that the applicant is making a diligent effort to obtain the requested additional information shall constitute good cause. Failure of an applicant to provide the timely requested information by the applicable deadline shall result in denial of the application.

If you have any questions, please fax Debra Laisure, P.E. at 407/897-5963 or write to her at the above address.

Sincerely,

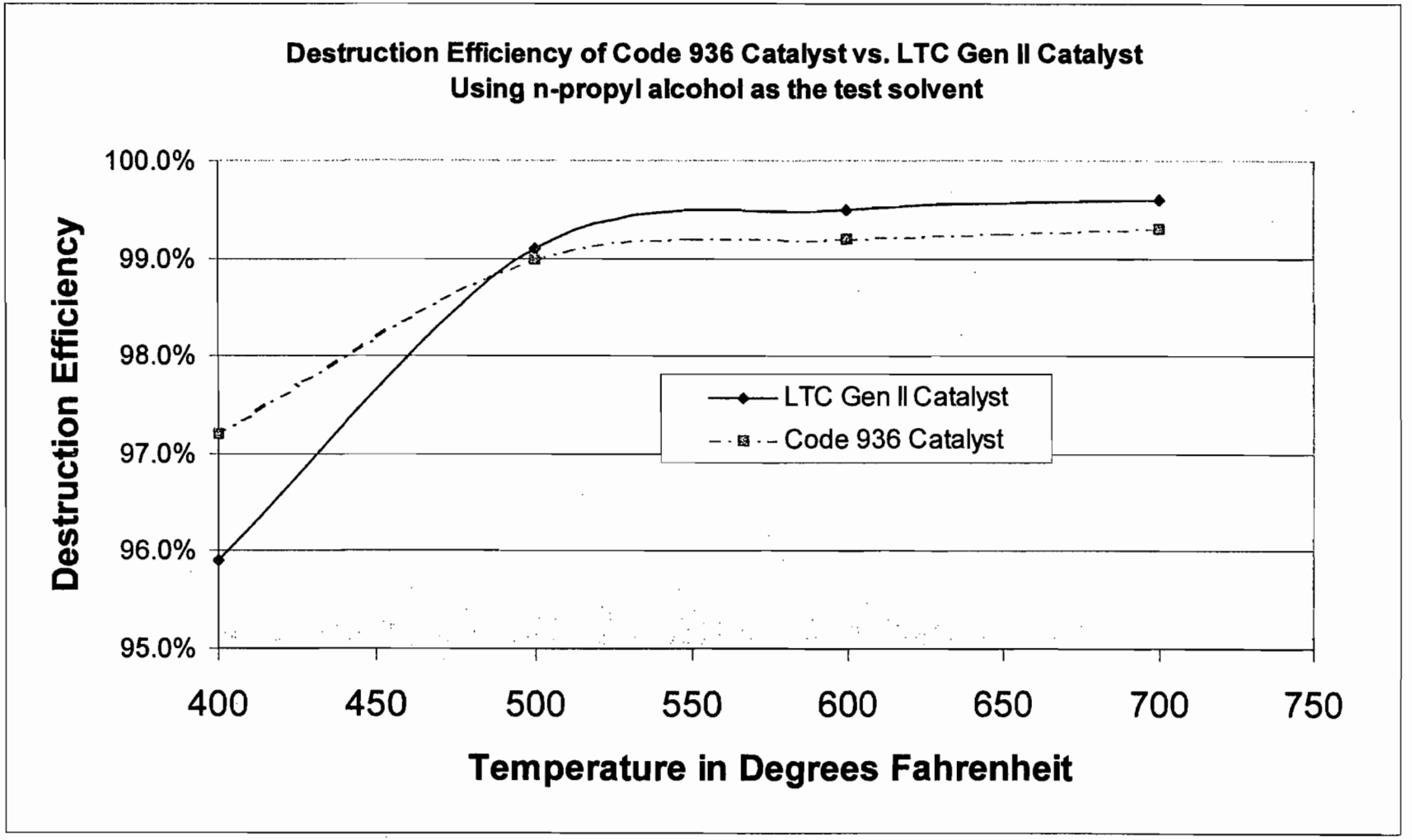
Alan Zahm

Alan D. Zahm, P.E.
Permitting Supervisor

13 Nov '01
Date

AZ/dl
cc: Jerome J. Guidry, P.E., Q.E.P., Perigee Technical Services, Inc.
Bruce Eastman, Orange County Environmental Protection Division
Scott Sheplak, DARM Tallahassee

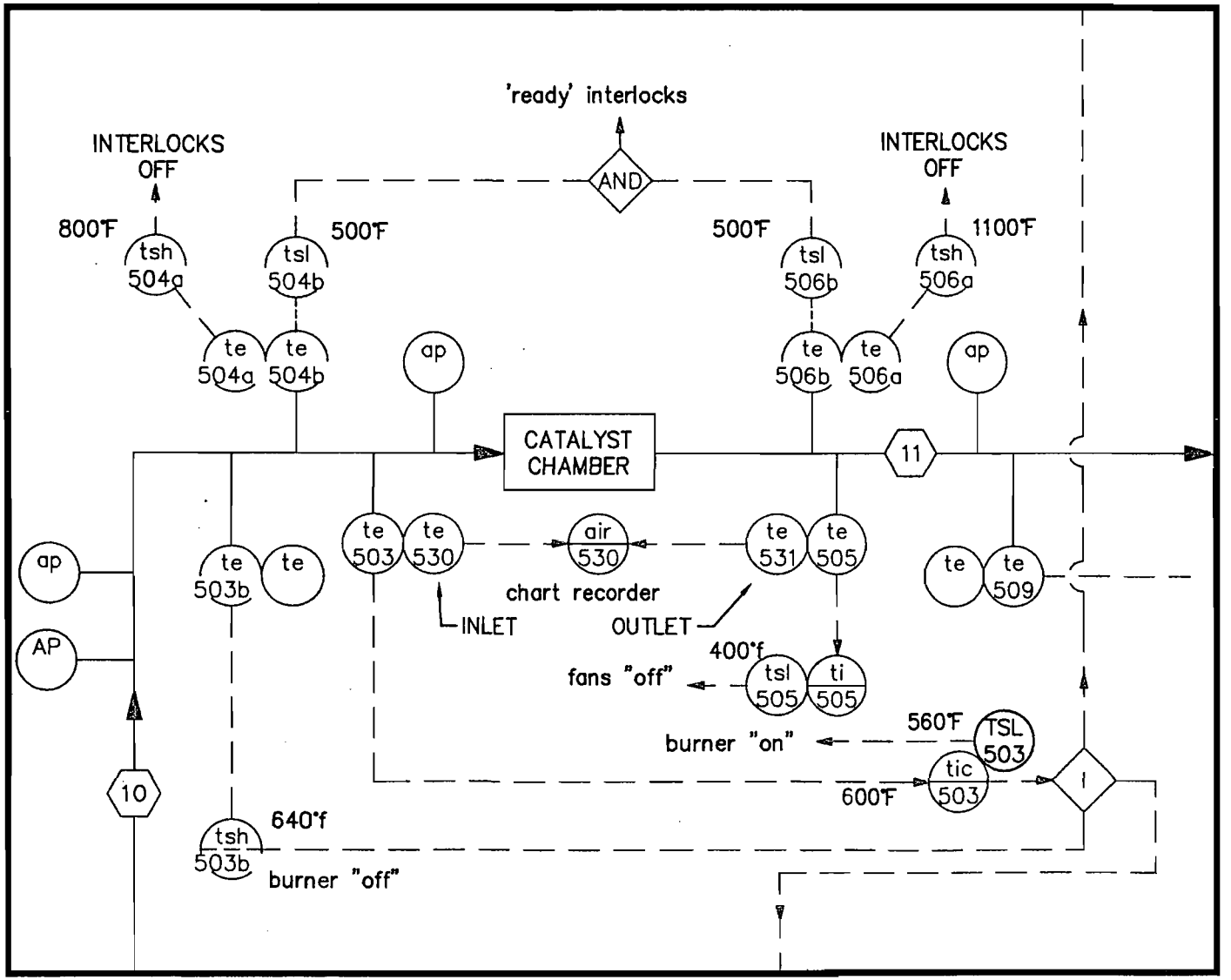
Figure 1. Catalyst Destruction Efficiencies as a Function of Temperature.



Note: LTC Gen II Catalyst used in incinerator B serving the WH-1 and Tachys presses; Code 936 Catalyst used in incinerator A serving the WH-III press.

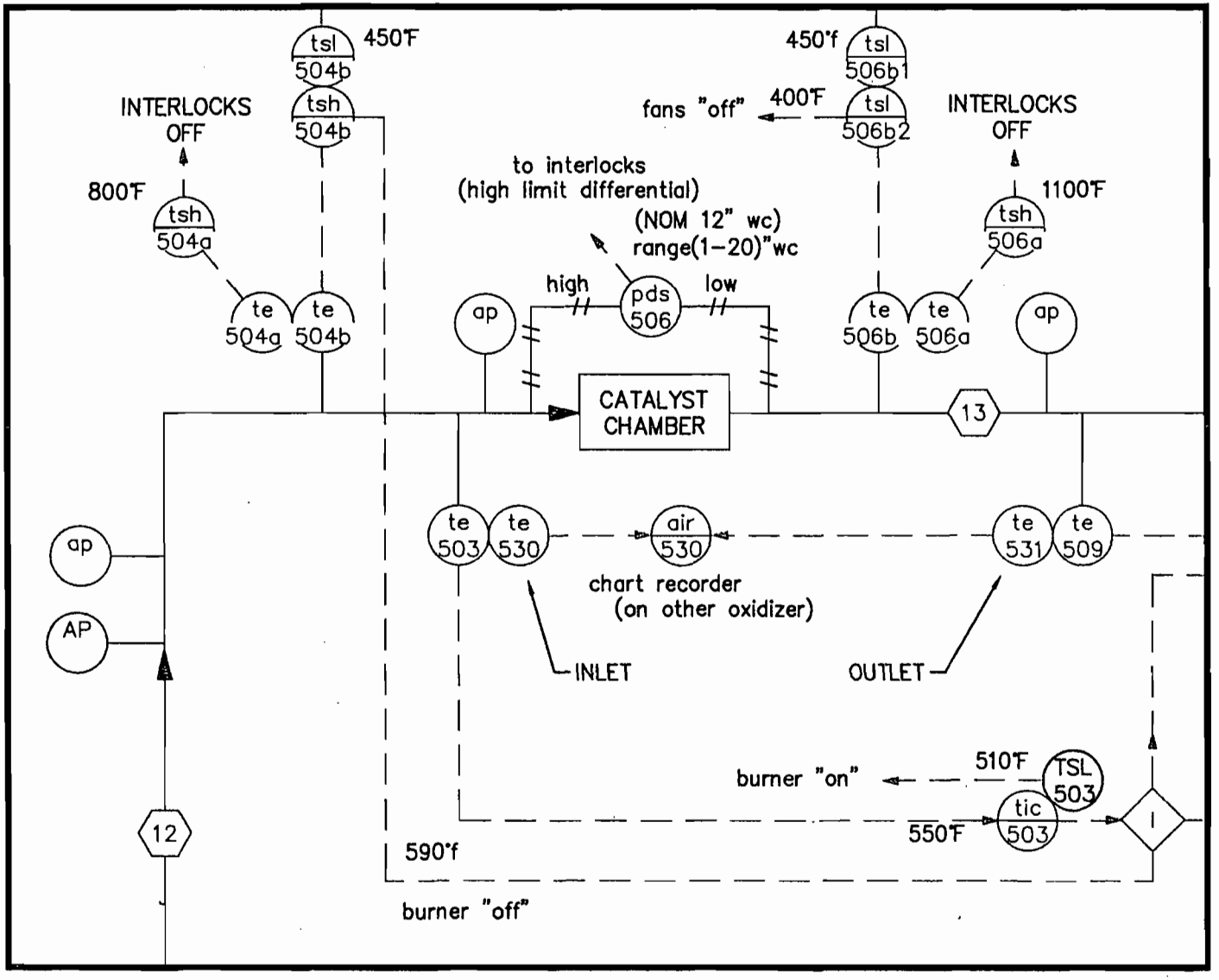
Source: Megtec Systems

Figure 2. Location of Temperature Sensors for Incinerator A



Source: Megtec Systems

Figure 3. Location of Temperature Sensors for Incinerator B



Source: Megtec Systems

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **fp Spiralkote, Inc.**	
2. Site Name: **fp Spiralkote, Inc.**	
3. Facility Identification Number: **0950125**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **1200 Central Florida Parkway** City: **Orlando** County: **Orange** Zip Code: **32837-9295**	
5. Relocatable Facility? [ ] Yes [**X**] No	6. Existing Permitted Facility? [**X**] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Carey Mann, Treasurer**
2. Application Contact Mailing Address: Organization/Firm: **fp Spiralkote, Inc.** Street Address: **1200 Central Florida Parkway** City: **Orlando** State: **Florida** Zip Code: **32837-9295**
3. Application Contact Telephone Numbers: Telephone: (**407**) **859 - 7780** Fax: (**407**) **857 - 0430**

Application Processing Information (DEP Use)

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

Purpose of Application

Air Operation Permit Application

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

[**X**] Renewal of Title V Permit Number **0950125-003-AV**

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

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

Current construction permit number:_____

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

Current construction permit number:_____

Operation permit number to be revised:_____

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

Operation permit number to be revised/corrected:_____

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

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

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

[ ] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Carey Mann, Treasurer

2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **fp Spiralkote, Inc.**
   Street Address: **1200 Central Florida Parkway**
   City: **Orlando** State: **Florida** Zip Code: **32837-9295**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(407) 859 - 7780** Fax: **(407) 857 - 0430**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [X], if so) or the responsible official (check here [ ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Signature Date: April 10, 2002

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Jerome J. Guidry, P.E., Q.E.P.**
   Registration Number: **32589**

2. Professional Engineer Mailing Address:
   Organization/Firm: **Perigee Technical Services, Inc.**
   Street Address: **3214 Deer Chase Run**
   City: **Longwood** State: **Florida** Zip Code: **32779-3173**

3. Professional Engineer Telephone Numbers:
   Telephone: **(407) 333 - 7374** Fax: **(407) 333 - 9396**

4. Professional Engineer Statement:

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

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

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

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

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

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

Signature

4-10-02
Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
006	Optisol In-Line Plate Making System		N/A
010	W&H Olympia 746 Flexographic Press (W&H I)		N/A
011	W&H Olympia Stellaflex 8L Press (W&H III)		N/A
012	Tachys FNC-3000, 8 color Central Impression Printing Press		N/A

Application Processing Fee

Check one: [ ] Attached - Amount: $ _____ [**X**] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

The purpose of this application is to renew the existing Title V permit 0950125-003-AV for this facility. The Compliance Assurance Monitoring Plan for the incinerators is included as Attachment B. A copy of the results of the compliance tests conducted on August 21 and 22, 2001 are included with this submittal. Specific condition B22 of the existing permit requires that compliance with 40 CFR 63.825 be demonstrated by procedure (b)(4). It is our understanding that 40 CFR 63.825(b) allows demonstration of compliance with any one of the procedures (b)(1) – (b)(10). Although Spiralkote currently uses procedure (b)(4), a change from this procedure should not require a permit modification and we request removal of that requirement.

2. Projected or Actual Date of Commencement of Construction: **N/A**

3. Projected Date of Completion of Construction: **N/A**

Application Comment

N/A

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

No changes

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **461.4** North (km): **3142.0**			
2. Facility Latitude/Longitude: **N/A** Latitude (DD/MM/SS): Longitude (DD/MM/SS):			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **27**	6. Facility SIC(s): **2759**
7. Facility Comment (limit to 500 characters): **N/A**			

Facility Contact

1. Name and Title of Facility Contact: **Same as Owner/Authorized Representative**
2. Facility Contact Mailing Address: Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Contact Telephone Numbers: Telephone: ( ) - Fax: ( ) -

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?
5. [ ] Synthetic Minor Source of HAPs?
6. [ ] One or More Emissions Units Subject to NSPS?
7. [X] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters): **N/A**

List of Applicable Regulations

62-296.320(2)	**62-210.700(4)**
62-296.320(4)(b)	**62-210.700(6)**
62-296.320(1)(a)	
62-213.440	
62-210.370(3)	
62-204.800	
62-213.205	
62-213.900	
62-4.090(1)	
62-210.700(1)	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
VOC	A				
H096	A				
HAPS	A				

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [**X**] Attached, Document ID: **C** [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

5. Fugitive Emissions Identification:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

6. Supplemental Information for Construction Permit Application:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable

7. Supplemental Requirements Comment:

   N/A

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [**X**] Not Applicable

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Identification of Additional Applicable Requirements:
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Risk Management Plan Verification:
    [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [**X**] Not Applicable

14. Compliance Report and Plan:
    [**X**] Attached, Document ID:_____ [ ] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [**X**] Attached, Document ID: **A** [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
OptiSol In-Line Plate Making System

4. Emissions Unit Identification Number:
ID: **006**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **N/A**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:			mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate: **218 tons solvent per consecutive 12 months**			
4. Maximum Production Rate:			
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2.b	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **6**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **31** feet	7. Exit Diameter: **0.8** feet
8. Exit Temperature: **77** °F	9. Actual Volumetric Flow Rate: **1600** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.42** North (km): **3142.03**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Solvent usage**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **218**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	**N/A**	**N/A**	**EL**

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **N/A**
3. Potential Emissions: lb/hour **9** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **N/A**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **9 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **9** tons/year
5. Method of Compliance (limit to 60 characters): **Recordkeeping**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____ **N/A**

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [**X**] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [**X**] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
W&H Olympia 746 Flexographic Press (W&H I)

4. Emissions Unit Identification Number:
ID: **010**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:			mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate: **213 tons VOC per consecutive 12 months**			
4. Maximum Production Rate:			
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **10**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **012 – Tachys press**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **4.2** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **31,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.43** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **213**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.005**	5. Maximum Annual Rate: **46.7**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	019	N/A	EL
H096	N/A	019	NS
HAPS	N/A	019	NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**

3. Potential Emissions: lb/hour **71** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):
N/A

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):
66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **71 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **71** tons/year

5. Method of Compliance (limit to 60 characters):
Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):
Allowable emissions set to limit specified in current operating permit.

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [**X**] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
W&H Olympia Stellaflex 8L Press (W&H III)

4. Emissions Unit Identification Number:
ID: **011**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate: **232 tons VOC per consecutive 12 months**				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **11**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **3** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **18,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.42** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **232**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.006**	5. Maximum Annual Rate: **51.1**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	019	N/A	EL
H096	N/A	019	NS
HAPS	N/A	019	NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**
3. Potential Emissions: lb/hour **83** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **83 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **83** tons/year
5. Method of Compliance (limit to 60 characters): **Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [**X**] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Tachys FNC 3000 Press

4. Emissions Unit Identification Number:
ID: **012**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:			mmBtu/hr
2. Maximum Incineration Rate:	lb/hr		tons/day
3. Maximum Process or Throughput Rate: **232 tons VOC per consecutive 12 months**			
4. Maximum Production Rate:			
5. Requested Maximum Operating Schedule:			
	24 hours/day	**7**	days/week
	52 weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**			

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **10**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **010 – W&H I**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **4.2** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **31,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.43** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **232**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.008**	5. Maximum Annual Rate: **69.6**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	019	N/A	EL
H096	N/A	019	NS
HAPS	N/A	019	NS

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**
3. Potential Emissions: lb/hour **83** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **83 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **83** tons/year
5. Method of Compliance (limit to 60 characters): **Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [**X**] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

Attachment A

Compliance Certification

I, the undersigned, am the responsible official as defined in Chapter 62-210.200, F.A.C., of the Title V source for which this 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.

Carey Mann, Treasurer

April 10, 2002
Date

Attachment B

Compliance Assurance Monitoring Plan

1. Background

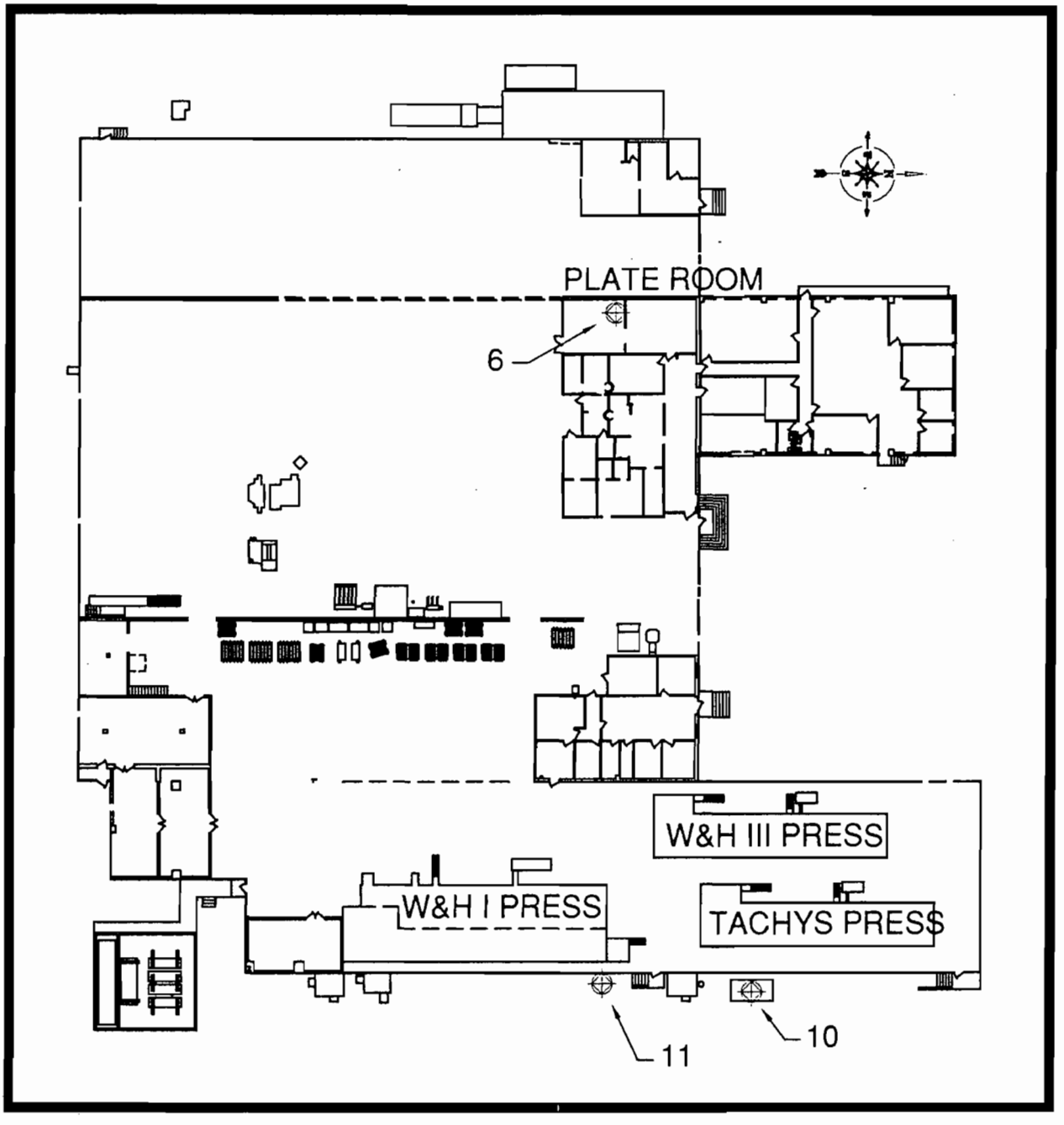
   A. Emissions Units – printing presses
      a. W&H Olympia 746 Flexographic Press (W&H I) – EU010
      b. W&H Olympia Stellaflex 8L Press (W&H III) – EU011
      c. Tachys FNC 300 Press – EU 012
   B. Pollutant - VOC
   C. Applicable regulations
      a. Title V Permit 0950125-003-AV specific condition B7 requires 70 percent capture of VOCs and 95 percent destruction
      b. 40 CFR 63, Subpart A
   D. Control equipment – captured VOCs from emissions units 010 and 012 are controlled by a Megtec Magnum Model MAG-180-70-6-C catalytic recuperative oxidizer with a VOC destruction efficiency guaranteed by the manufacturer to be at least 95 percent (incinerator B); captured VOCs from emissions unit 011 are controlled by a WR Grace & Company/Grace TEC Systems Magnum oxidizer with a VOC destruction efficiency guaranteed by the manufacturer to be at least 95 percent (incinerator A); both incinerators operate at idling levels, even when presses are not operating; presses will not operate if the incinerator inlet temperature is below the prescribed minimum temperature limits.

2. Monitoring approach
   A. Indicator – incinerator inlet and outlet gas temperatures to monitored; inlet temperature is monitored to assure minimum temperature for 95 percent destruction exists prior to operation of the press; outlet temperature is monitored to assure that combustion is occurring.
   B. Monitor locations – inlet and outlet temperature for both incinerators are measured in the gas stream immediately before and after the incinerators.
   C. Indicator range
      a. Incinerator A – although inlet temperatures as low as 400 deg F will accomplish 95 percent VOC destruction, the minimum inlet temperature is preset to 500 degrees F; emissions units 010 and 012 will not operate if the incinerator A inlet temperature is below 500 degrees F.
      b. Incinerator B – although inlet temperatures as low as 400 deg F will accomplish 95 percent VOC destruction, minimum inlet temperature is preset to 475 degrees F; emissions unit 011 will not operate if the incinerator B inlet temperature is below 475 degrees F.
   D. Monitoring equipment - A Yokogawa strip chart recorder, model number 4156 using a 30-day strip chart with a temperature range of 0-2000 degrees Fahrenheit, records incinerator inlet and outlet temperature for both incinerators; in addition, these temperatures are electronically recorded by computer every 5 minutes; the strip chart recorder is calibrated annually according to manufacturer's specifications by Benchmark Calibration Laboratory in Orlando, Florida.

E. Rationale for selection of indicator and preset levels – data supplied by the manufacturer for the catalyst used in incinerator A indicate a destruction efficiency of 99 percent at 500 degrees F, increasing to 99.3 percent at 700 degrees F; for the catalyst used in incinerator B, data supplied by the manufacturer indicate that 98.4 percent destruction is achieved at 475 degrees F, increasing to 99 percent at 500 degrees F, and to 99.6 percent at 700 degrees F.

Attachment C

Facility Plot Plan



Sheplak, Scott

From: Sheplak, Scott
Sent: Monday, April 15, 2002 2:54 PM
To: Laisure, Debra; Holtom, Jonathan; Pell, Leigh
Subject: RE: fp Spiralkote T-V Renewal Response (w/CAM)

You can send it to me & I'll distribute it to them.

-----Original Message-----
From: Laisure, Debra
Sent: Monday, April 15, 2002 2:10 PM
To: Sheplak, Scott; Holtom, Jonathan; Pell, Leigh
Subject: fp Spiralkote T-V Renewal Response (w/CAM)

I have rec'd a response to our completeness review letter for this project and would like to send up a copy for your review with regard to the CAM issues you brought up.

Scott, would you like me to send this info to your attention, or to Jonathan's or Leigh's?

Thanks,
Deb

1 copy tabbed material to me, Leigh Pell & Jae Kahn.
entire package to Jonathan.

Department of Environmental Protection

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Scott Sheplak
2. DARM/BAR
3. MS#5505
4.

Remarks:

RECEIVED

APR 17 2002

BUREAU OF AIR REGULATION

Central District

From: Deb Laisure

Date 4/16/02

Phone

Environmental Radiation Studies
Environmental Impact Studies
Radiation Dose Modeling
Risk Assessment

Perigee
Technical Services, Inc.

Atmospheric Dispersion Modeling
Air Pollution Permitting
Landscape Design
Graphic Arts

CONTAINS INFO REGARDING CAM

ARMS is Updated

April 10, 2002

Mr. Alan D. Zahm, P. E.
Florida Department of Environmental Protection
Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

Re: fp Spiralkote, Inc.
Permit Number: 0950125-003-AV

Dear Mr. Zahm:

This letter is submitted in response to your Air Resources Completeness Review dated November 13, 2001.

1. The permitting attorney for the Air Program has determined that a complete application, DEP form 62—210.900(1), F.A.C., including all applicable emissions unit information must be submitted for the renewal of a Title V Air Operation Permit. Please provide those additional pages covering the emissions units as necessary to complete the application.

Four copies of the complete permit application are enclosed.

2. Provide copies of the monthly logs maintained over the past 12 months to demonstrate compliance with the permitted operating and emissions limits, as required in specific conditions A5 and B18 of the Revised Title V Air Operation Permit 0950125-003-AV.

The monthly logs are included on the enclosed diskette labeled "Recordkeeping." The file PLATEMAKING.123 contains the data for the plate making system (emissions unit 006) and the file PRESSES.123, tab "Emission2001" contains the data for the presses (emissions units 010, 011, and 012).

3. In order to determine if the temperature method is a reliable way to monitor Volatile Organic Compound (VOC) destruction, the temperature versus emissions data from the latest compliance test must be evaluated. Provide a copy of the results for the latest compliance tests conducted in August 2001.

A copy of the results for the tests conducted in August 2001 is enclosed.

4. Identify the proper temperature ranges for the control devices according to the CAM model in 40 CFR 64.3.

Incinerator A which serves the WH-III press typically operates in the 500-900 degrees Fahrenheit range. Incinerator B which serves both the WH-I press and the Tachys press typically operates in the 475-800 degree Fahrenheit range. The revised CAM Plan is attached to the permit application.

5. Research by Title V personnel in Tallahassee indicates that temperatures above 500 degrees Fahrenheit must be maintained in order to get 95 percent destruction efficiency. Provide information supporting the operation of the incinerator at 475 degrees Fahrenheit.

Incinerator B is designed to operate at this lower temperature because of the catalyst used. I have attached data supplied by the manufacturer which demonstrates destruction efficiency above 95 percent at temperatures as low as 400 degrees Fahrenheit.

6. How will exceedances be defined according to a minimum temperature?

For the WH-III press, exceedances will be defined as those times when VOC-based materials are applied to the press and the incinerator is operated at temperatures below 500 degrees Fahrenheit. For the WH-I and the Tachys presses, exceedances will be defined as those times when VOC-based materials are applied to the press and the incinerator is operated at temperatures below 475 degrees Fahrenheit.

7. How and where will VOC destruction efficiency be obtained from the temperature data (establish a curve of temperature vs. percent destruction efficiencies)?

Figure 1 depicts the relationship between temperature and destruction efficiency for the catalysts used in both incinerators. The Code 936 catalyst is used in incinerator A serving the WH-III press; the LTC Gen II catalyst is used in incinerator B serving the WH-I and the Tachys press. As shown, destruction efficiencies above 95 percent are achieved with both these catalysts at temperatures as low as 400 degrees Fahrenheit.

8. What is the exhaust stream flow rate? Is this parameter regularly monitored either directly (flow) or indirectly (fan operation, amps, etc.)?

The maximum design flow rate for incinerator A is 18,000 cfm; for incinerator B, it is 10,500 cfm. These are maximum flows programmed into the fan operation for each unit and are designed to handle the maximum exhaust volume for the process. Typical flow rates are about 15,000 cfm and 8,000 cfm. Flow rates are not monitored except during compliance tests.

9. The plan states that temperature monitoring will confirm proper operation when VOCs are in the air stream. How will it be determined that VOCs are in the air stream?

Both incinerators run constantly, even when the presses are not running, and the presses will not run unless incinerators are on and the temperature in the incinerators is within specifications. The temperature differential between the inlet and outlet monitors indicates when VOCs are in the air stream.

10. What will the averaging time for the temperature monitors be (minutes, hours, monthly)?

For both incinerators, the average time for the monitors will be five minutes.

11. How will the capture efficiency be determined and what parameters are monitored to confirm proper capture?

Capture efficiency is not monitored except during compliance tests.

12. Provide a diagram of the location(s) of the temperature sensor(s) in relation to the control devices.

I have attached schematics for both incinerators: the drawing labeled 104889-0502 is for incinerator A serving the WH-III press; the drawing labeled 112076-0502 is for incinerator B serving the WH-I and Tachys presses. The attached Figures 2 and 3 depict the portions of the schematics which show the locations of temperature sensors te530 (incinerator inlet) and te531 (incinerator outlet) for incinerators A and B.

13. What will be the corrective action if the temperature falls outside of the proper indicator range?

For both incinerators, if the temperature falls below the prescribed minimum temperature, the presses automatically shut down.

Please call me at (407) 333-7374 if you have any questions regarding this submittal.

Very truly yours,

PERIGEE TECHNICAL SERVICES, INC.

Jerome J. Guidry, P.E., Q.E.P.
President

JJG:emc

cc: Carey Mann
J. R. Wilson
Robert Van Pamelen

Enclosures

Department of
Environmental Protection

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Jeb Bush
Governor

David B. Struhs
Secretary

AIR RESOURCES COMPLETENESS REVIEW

SOURCE NAME: fp Spiralkote, Incorporated

DATE RECEIVED: 09/28/01
DATE REVIEWED: 11/07/01

APPLICANT: Carey Mann, Treasurer

ADDRESS: fp Spiralkote, Incorporated
1200 Central Florida Parkway
Orlando, Florida 32837-9295

FILE: 0950125-007

Your application for this project has been received and reviewed for completeness. The following is needed to complete your application:

1. The permitting attorney for the Air Program has determined that a complete application, DEP form 62-210.900(1), F.A.C., including all applicable emissions unit information must be submitted for the renewal of a Title V Air Operation Permit. Please provide those additional pages covering the emissions units as necessary to complete the application.

2. Provide copies of the monthly logs maintained over the past 12 months to demonstrate compliance with the permitted operating and emissions limits, as required in specific conditions A5 and B18 of the Revised Title V Air Operation Permit 0950125-003-AV.

A copy of the application and attached Compliance Assurance Monitoring (CAM) plan was provided, to Title V personnel in Tallahassee for their review. Comments received from Tallahassee indicate that the submitted plan, as presented, does not meet the criteria of 40 CFR 64.3 and that it may be helpful for the facility to review the requirements of this section and prepare a revised plan that addresses these criteria point by point. Additionally, the following questions were provided by Title V personnel in Tallahassee following their review:

3. In order to determine if the temperature method is a reliable way to monitor Volatile Organic Compound (VOC) destruction, the temperature versus emissions data from the latest compliance test must be evaluated. Provide a copy of the results for the latest compliance tests conducted in August 2001.

4. Identify the proper temperature ranges for the control devices according to the CAM model in 40 CFR 64.3.

5. Research by Title V personnel in Tallahassee indicates that temperatures above 500 degrees Fahrenheit must be maintained in order to get 95 percent destruction efficiency. Provide information supporting the operation of the incinerator at 475 degrees Fahrenheit.

6. How will exceedances be defined according to a minimum temperature?

7. How and where will VOC destruction efficiency be obtained from the temperature data (establish a curve of temperature vs. percent destruction efficiencies)?

8. What is the exhaust stream flow rate? Is this parameter regularly monitored either directly (flow) or indirectly (fan operation, amps, etc.)?

9. The plan states that temperature monitoring will confirm proper operation when VOCs are in the air stream. How will it be determined that VOCs are in the air stream?

10. What will the averaging time for the temperature monitors be (minutes, hours, monthly)?

11. How will the capture efficiency be determined and what parameters are monitored to confirm proper capture?

12. Provide a diagram of the location(s) of the temperature sensor(s) in relation to the control devices.

13. What will be the corrective action if the temperature falls outside of the proper indicator range?

Pursuant to Rule 62-4.055, F.A.C., the applicant shall have 90 days after the Department mails a timely request for additional information to submit that information to the Department. If an applicant requires more than ninety days in which to respond to a request for additional information, the applicant may notify the Department in writing of the circumstances, at which time the application shall be held in active status for one additional period of up to 90 days. Additional extensions shall be granted for good cause shown by the applicant. A showing that the applicant is making a diligent effort to obtain the requested additional information shall constitute good cause. Failure of an applicant to provide the timely requested information by the applicable deadline shall result in denial of the application.

If you have any questions, please fax Debra Laisure, P.E. at 407/897-5963 or write to her at the above address.

Sincerely,

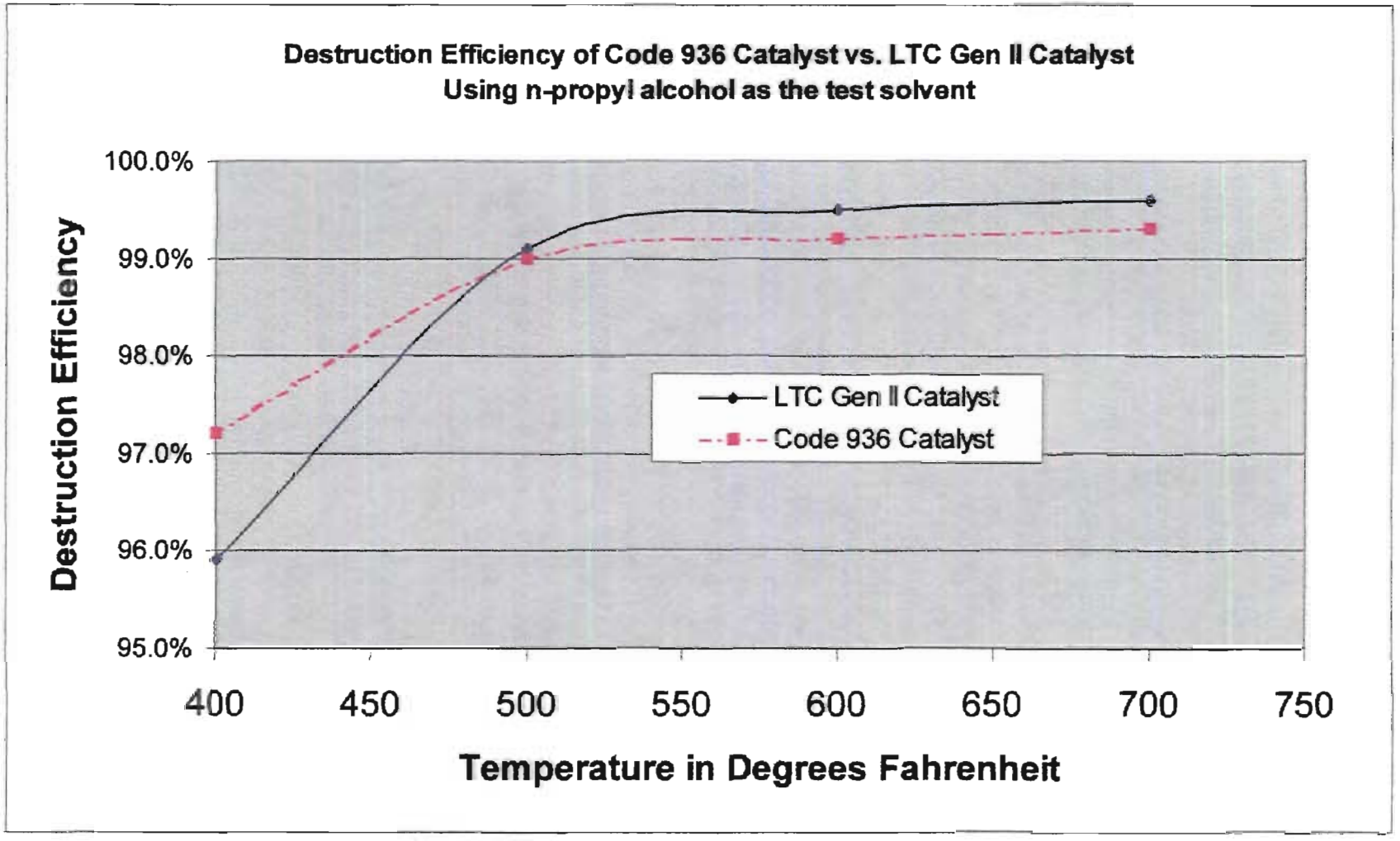
Alan Zahm

Alan D. Zahm, P.E.
Permitting Supervisor

13 Nov '01
Date

AZ/dl
cc: Jerome J. Guidry, P.E., Q.E.P., Perigee Technical Services, Inc.
Bruce Eastman, Orange County Environmental Protection Division
Scott Sheplak, DARM Tallahassee

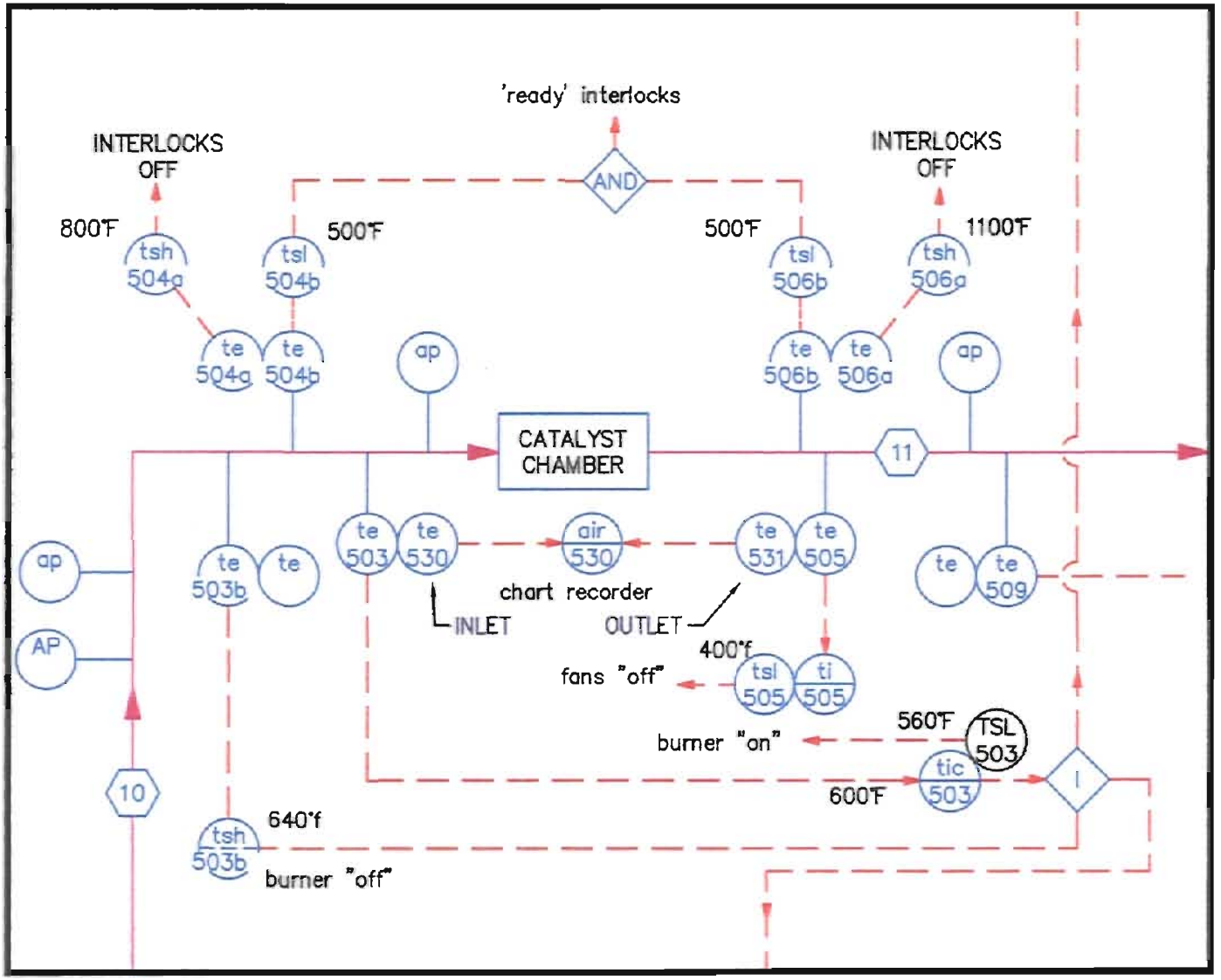
Figure 1. Catalyst Destruction Efficiencies as a Function of Temperature.



Note: LTC Gen II Catalyst used in incinerator B serving the WH-1 and Tachys presses; Code 936 Catalyst used in incinerator A serving the WH-III press.

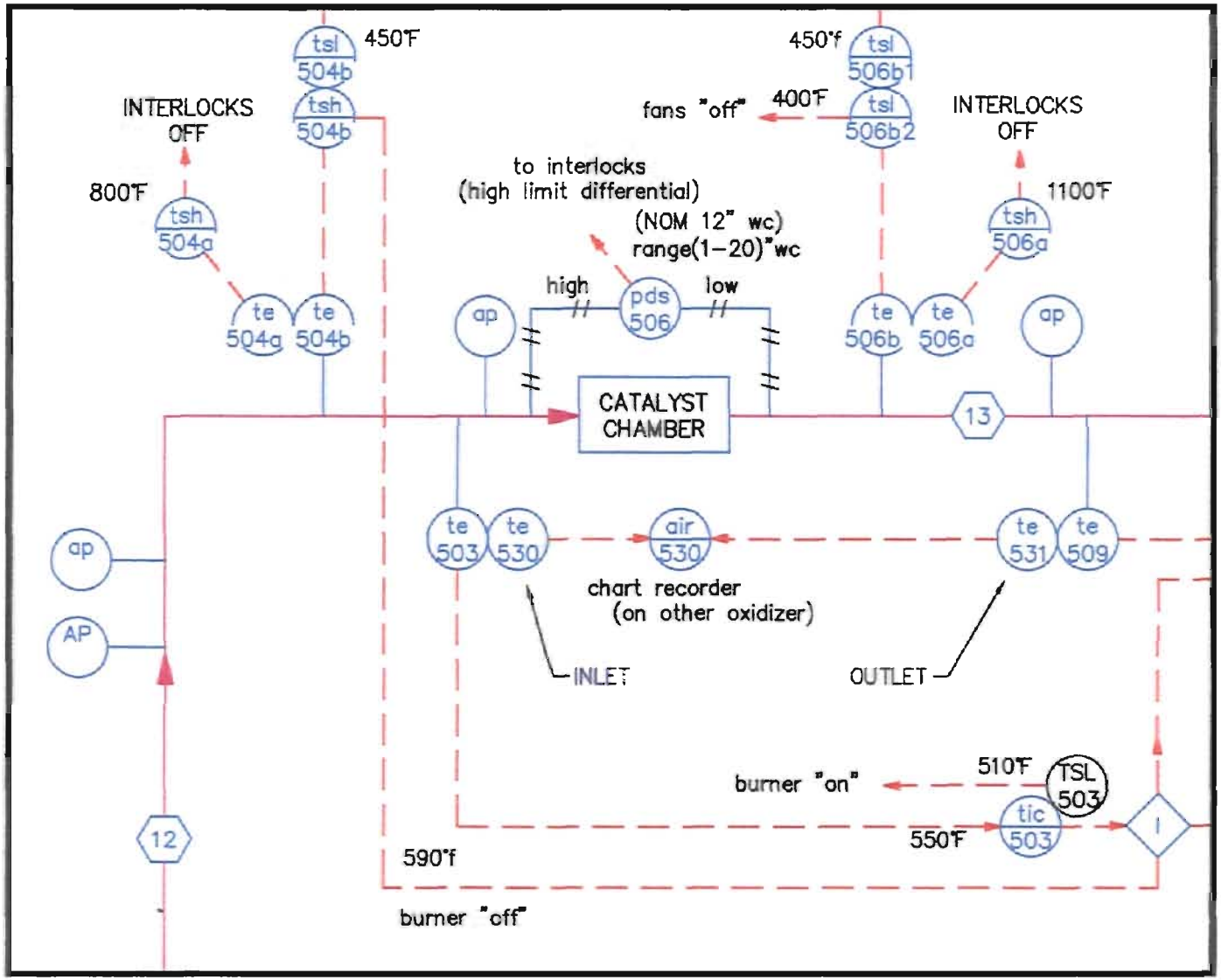
Source: Megtec Systems

Figure 2. Location of Temperature Sensors for Incinerator A



Source: Megtec Systems

Figure 3. Location of Temperature Sensors for Incinerator B



Source: Megtec Systems

Attachment B

Compliance Assurance Monitoring Plan

1. Background

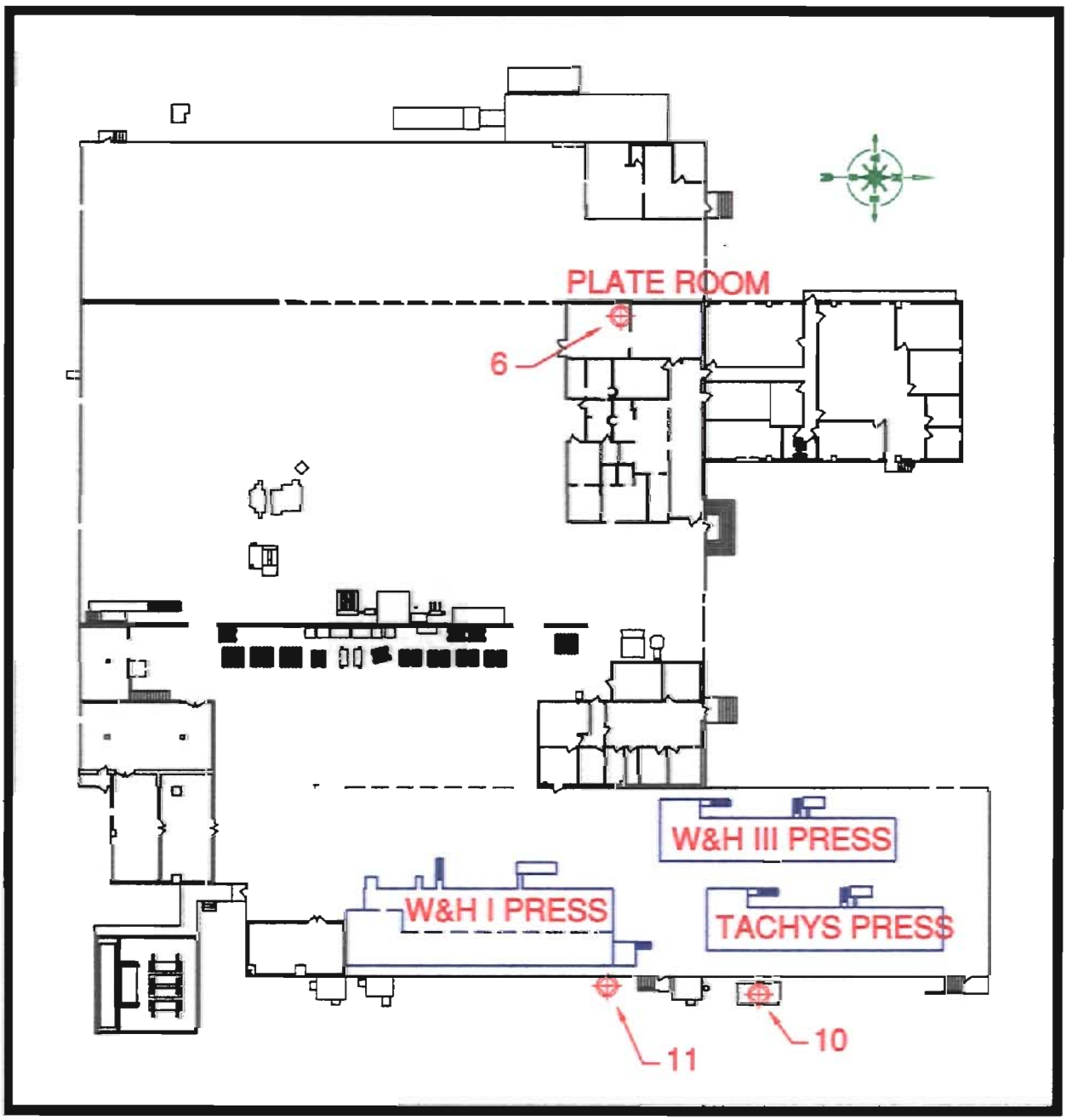
   A. Emissions Units – printing presses
      a. W&H Olympia 746 Flexographic Press (W&H I) – EU010
      b. W&H Olympia Stellaflex 8L Press (W&H III) – EU011
      c. Tachys FNC 300 Press – EU 012
   B. Pollutant - VOC
   C. Applicable regulations
      a. Title V Permit 0950125-003-AV specific condition B7 requires 70 percent capture of VOCs and 95 percent destruction
      b. 40 CFR 63, Subpart A
   D. Control equipment – captured VOCs from emissions units 010 and 012 are controlled by a Megtec Magnum Model MAG-180-70-6-C catalytic recuperative oxidizer with a VOC destruction efficiency guaranteed by the manufacturer to be at least 95 percent (incinerator B); captured VOCs from emissions unit 011 are controlled by a WR Grace & Company/Grace TEC Systems Magnum oxidizer with a VOC destruction efficiency guaranteed by the manufacturer to be at least 95 percent (incinerator A); both incinerators operate at idling levels, even when presses are not operating; presses will not operate if the incinerator inlet temperature is below the prescribed minimum temperature limits.

2. Monitoring approach
   A. Indicator – incinerator inlet and outlet gas temperatures to monitored; inlet temperature is monitored to assure minimum temperature for 95 percent destruction exists prior to operation of the press; outlet temperature is monitored to assure that combustion is occurring.
   B. Monitor locations – inlet and outlet temperature for both incinerators are measured in the gas stream immediately before and after the incinerators.
   C. Indicator range
      a. Incinerator A – although inlet temperatures as low as 400 deg F will accomplish 95 percent VOC destruction, the minimum inlet temperature is preset to 500 degrees F; emissions units 010 and 012 will not operate if the incinerator A inlet temperature is below 500 degrees F.
      b. Incinerator B – although inlet temperatures as low as 400 deg F will accomplish 95 percent VOC destruction, minimum inlet temperature is preset to 475 degrees F; emissions unit 011 will not operate if the incinerator B inlet temperature is below 475 degrees F.
   D. Monitoring equipment - A Yokogawa strip chart recorder, model number 4156 using a 30-day strip chart with a temperature range of 0-2000 degrees Fahrenheit, records incinerator inlet and outlet temperature for both incinerators; in addition, these temperatures are electronically recorded by computer every 5 minutes; the strip chart recorder is calibrated annually according to manufacturer's specifications by Benchmark Calibration Laboratory in Orlando, Florida.

E. Rationale for selection of indicator and preset levels – data supplied by the manufacturer for the catalyst used in incinerator A indicate a destruction efficiency of 99 percent at 500 degrees F, increasing to 99.3 percent at 700 degrees F; for the catalyst used in incinerator B, data supplied by the manufacturer indicate that 98.4 percent destruction is achieved at 475 degrees F, increasing to 99 percent at 500 degrees F, and to 99.6 percent at 700 degrees F.

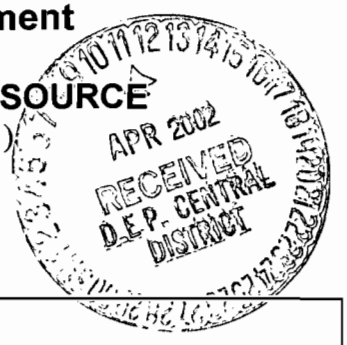
Attachment C

Facility Plot Plan



Department of Environmental Protection

Division of Air Resources Management



APPLICATION FOR AIR PERMIT - TITLE V SOURCE

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **fp Spiralkote, Inc.**	
2. Site Name: **fp Spiralkote, Inc.**	
3. Facility Identification Number: **0950125**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **1200 Central Florida Parkway** City: **Orlando** County: **Orange** Zip Code: **32837-9295**	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Carey Mann, Treasurer**		
2. Application Contact Mailing Address: Organization/Firm: **fp Spiralkote, Inc.** Street Address: **1200 Central Florida Parkway** City: **Orlando**	State: **Florida**	Zip Code: **32837-9295**
3. Application Contact Telephone Numbers: Telephone: (**407**) **859 - 7780**	Fax: (**407**) **857 - 0430**	

Application Processing Information (DEP Use)

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

Purpose of Application

Air Operation Permit Application

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

[**X**] Renewal of Title V Permit Number **0950125-003-AV**

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

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

Current construction permit number:_____

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

Current construction permit number:_____

Operation permit number to be revised:_____

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

Operation permit number to be revised/corrected:_____

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

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

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

[ ] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Carey Mann, Treasurer

2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **fp Spiralkote, Inc.**
   Street Address: **1200 Central Florida Parkway**
   City: **Orlando** State: **Florida** Zip Code: **32837-9295**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: (**407**) **859 - 7780** Fax: (**407**) **857 - 0430**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [X], if so) or the responsible official (check here [ ], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Signature Date: April 10, 2002

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Jerome J. Guidry, P.E., Q.E.P.**
   Registration Number: **32589**

2. Professional Engineer Mailing Address:
   Organization/Firm: **Perigee Technical Services, Inc.**
   Street Address: **3214 Deer Chase Run**
   City: **Longwood** State: **Florida** Zip Code: **32779-3173**

3. Professional Engineer Telephone Numbers:
   Telephone: (**407**) **333 - 7374** Fax: (**407**) **333 - 9396**

4. Professional Engineer Statement:

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

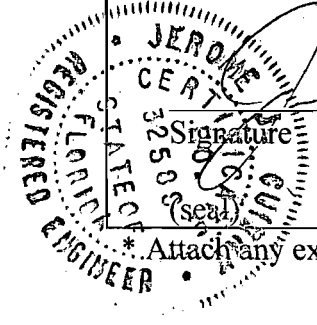
(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions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

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

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

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

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



Signature (seal)

4-10-02
Date

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
006	Optisol In-Line Plate Making System		N/A
010	W&H Olympia 746 Flexographic Press (W&H I)		N/A
011	W&H Olympia Stellaflex 8L Press (W&H III)		N/A
012	Tachys FNC-3000, 8 color Central Impression Printing Press		N/A

Application Processing Fee

Check one: [ ] Attached - Amount: $ _____ [X] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

The purpose of this application is to renew the existing Title V permit 0950125-003-AV for this facility. The Compliance Assurance Monitoring Plan for the incinerators is included as Attachment B. A copy of the results of the compliance tests conducted on August 21 and 22, 2001 are included with this submittal. Specific condition B22 of the existing permit requires that compliance with 40 CFR 63.825 be demonstrated by procedure (b)(4). It is our understanding that 40 CFR 63.825(b) allows demonstration of compliance with any one of the procedures (b)(1) – (b)(10). Although Spiralkote currently uses procedure (b)(4), a change from this procedure should not require a permit modification and we request removal of that requirement.

2. Projected or Actual Date of Commencement of Construction: **N/A**

3. Projected Date of Completion of Construction: **N/A**

Application Comment

N/A

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

No changes

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **461.4** North (km): **3142.0**			
2. Facility Latitude/Longitude: **N/A** Latitude (DD/MM/SS): Longitude (DD/MM/SS):			
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **27**	6. Facility SIC(s): **2759**
7. Facility Comment (limit to 500 characters): **N/A**			

Facility Contact

1. Name and Title of Facility Contact: **Same as Owner/Authorized Representative**
2. Facility Contact Mailing Address: Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Contact Telephone Numbers: Telephone: ( ) - Fax: ( ) -

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[ ] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?	
5. [ ] Synthetic Minor Source of HAPs?	
6. [ ] One or More Emissions Units Subject to NSPS?	
7. [X] One or More Emission Units Subject to NESHAP?	
8. [ ] Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters): **N/A**	

List of Applicable Regulations

62-296.320(2)	**62-210.700(4)**
62-296.320(4)(b)	**62-210.700(6)**
62-296.320(1)(a)	
62-213.440	
62-210.370(3)	
62-204.800	
62-213.205	
62-213.900	
62-4.090(1)	
62-210.700(1)	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
VOC	A				
H096	A				
HAPS	A				

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [**X**] Attached, Document ID: **C** [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Fugitive Emissions Identification: [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
6. Supplemental Information for Construction Permit Application: [ ] Attached, Document ID:_____ [**X**] Not Applicable
7. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [ ] Attached, Document ID:_____ [**X**] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [**X**] Not Applicable

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Identification of Additional Applicable Requirements:
    [ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Risk Management Plan Verification:
    [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [**X**] Not Applicable

14. Compliance Report and Plan:
    [**X**] Attached, Document ID:_____ [ ] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [**X**] Attached, Document ID: **A** [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
OptiSol In-Line Plate Making System

4. Emissions Unit Identification Number:
ID: **006**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **N/A**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:	**218 tons solvent per consecutive 12 months**			
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2.b	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **6**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **31** feet	7. Exit Diameter: **0.8** feet
8. Exit Temperature: **77** °F	9. Actual Volumetric Flow Rate: **1600** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.42** North (km): **3142.03**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Solvent usage**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **218**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	**N/A**	**N/A**	**EL**

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **N/A**	
3. Potential Emissions: lb/hour **9** tons/year		4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **N/A** Reference:		7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**		
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **N/A**		

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **9 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **9** tons/year
5. Method of Compliance (limit to 60 characters): **Recordkeeping**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____ **N/A**

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [**X**] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [**X**] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
W&H Olympia 746 Flexographic Press (W&H I)

4. Emissions Unit Identification Number:
ID: **010**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate: **213 tons VOC per consecutive 12 months**				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **10**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **012 – Tachys press**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **4.2** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **31,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.43** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **213**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.005**	5. Maximum Annual Rate: **46.7**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	**019**	**N/A**	**EL**
H096	**N/A**	**019**	**NS**
HAPS	**N/A**	**019**	**NS**

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**

3. Potential Emissions: lb/hour **71** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):
N/A

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):
66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **71 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **71** tons/year

5. Method of Compliance (limit to 60 characters):
Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):
Allowable emissions set to limit specified in current operating permit.

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [**X**] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
W&H Olympia Stellaflex 8L Press (W&H III)

4. Emissions Unit Identification Number:
ID: **011**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:	**232 tons VOC per consecutive 12 months**			
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **11**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **3** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **18,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.42** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **232**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.006**	5. Maximum Annual Rate: **51.1**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	**019**	**N/A**	**EL**
H096	**N/A**	**019**	**NS**
HAPS	**N/A**	**019**	**NS**

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**	
3. Potential Emissions: lb/hour **83** tons/year		4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **N/A** Reference:		7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**		
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.**		

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **83 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **83** tons/year
5. Method of Compliance (limit to 60 characters): **Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [**X**] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:_____ [**X**] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [**X**] Not Applicable
10. Supplemental Requirements Comment: **N/A**

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

III. EMISSIONS UNIT INFORMATION

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

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

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

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

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

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

2. Regulated or Unregulated Emissions Unit? (Check one)

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

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

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Tachys FNC 3000 Press

4. Emissions Unit Identification Number:
ID: **012**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A	**N/A**	**27**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)
N/A

Emissions Unit Control Equipment

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

2. Control Device or Method Code(s): **019**

Emissions Unit Details

1. Package Unit: **N/A**
   Manufacturer: Model Number:

2. Generator Nameplate Rating: **N/A** MW

3. Incinerator Information: **N/A**
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

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

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:				mmBtu/hr
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:	**232 tons VOC per consecutive 12 months**			
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **N/A**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

62-210.200	
62-4.070(3)	
62-213.440(1)(b)2	
62-297.310(2)	
62-296.320(4)(b)1	
62-297.401	
62-297.310(7)(a)4.a	
62-297.310(4)(a)2	
62-297.450	
62-297.310(7)(a)9	
62-297.310(5)	
62-297.310(8)	
40 CFR 63	

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

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **10**	2. Emission Point Type Code: **2**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **010 – W&H I**		
5. Discharge Type Code: **W**	6. Stack Height: **36** feet	7. Exit Diameter: **4.2** feet
8. Exit Temperature: **420** °F	9. Actual Volumetric Flow Rate: **31,000** acfm	10. Water Vapor: **N/A** %
11. Maximum Dry Standard Flow Rate: **N/A** dscfm	12. Nonstack Emission Point Height: **N/A** feet	
13. Emission Point UTM Coordinates: Zone: **17** East (km): **461.43** North (km): **3141.96**		
14. Emission Point Comment (limit to 200 characters): **N/A**		

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

Segment Description and Rate: Segment 1 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **VOC input rate**		
2. Source Classification Code (SCC): **Unknown**	3. SCC Units: **tons per year**	
4. Maximum Hourly Rate: **N/A**	5. Maximum Annual Rate: **232**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **N/A**
10. Segment Comment (limit to 200 characters): **N/A**		

Segment Description and Rate: Segment 2 of 2

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Natural gas usage**		
2. Source Classification Code (SCC): **39000699**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **0.008**	5. Maximum Annual Rate: **69.6**	6. Estimated Annual Activity Factor: **N/A**
7. Maximum % Sulfur: **N/A**	8. Maximum % Ash: **N/A**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment (limit to 200 characters): **N/A**		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
VOC	**019**	**N/A**	**EL**
H096	**N/A**	**019**	**NS**
HAPS	**N/A**	**019**	**NS**

Emissions Unit Information Section 4 of 4

Pollutant Detail Information Page _____ of _____

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

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control: **66.5**
3. Potential Emissions: lb/hour **83** tons/year	4. Synthetically Limited? [**X**]
5. Range of Estimated Fugitive Emissions: **N/A** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **N/A** Reference:	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **N/A**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **66.5 % control based on 70 % capture and 95 % destruction. Potential emissions set equal to emission limit specified in current operation permit.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions: **N/A**
3. Requested Allowable Emissions and Units: **83 tons per consecutive 12 months**	4. Equivalent Allowable Emissions: lb/hour **83** tons/year
5. Method of Compliance (limit to 60 characters): **Method 25 to determine destruction efficiency; capture efficiency per rule 297.450.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Allowable emissions set to limit specified in current operating permit.**	

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

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [**X**] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **N/A**	

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

Continuous Monitoring System: Continuous Monitor _____ of _____ **N/A**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

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

Supplemental Requirements

1. Process Flow Diagram
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

2. Fuel Analysis or Specification
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

3. Detailed Description of Control Equipment
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

4. Description of Stack Sampling Facilities
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

5. Compliance Test Report
   [ ] Attached, Document ID:_____
   [ ] Previously submitted, Date:_____
   [**X**] Not Applicable

6. Procedures for Startup and Shutdown
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

7. Operation and Maintenance Plan
   [ ] Attached, Document ID:_____ [**X**] Not Applicable [ ] Waiver Requested

8. Supplemental Information for Construction Permit Application
   [ ] Attached, Document ID:_____ [**X**] Not Applicable

9. Other Information Required by Rule or Statute
   [ ] Attached, Document ID:_____ [**X**] Not Applicable

10. Supplemental Requirements Comment:
    N/A

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [**X**] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [**X**] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [**X**] Not Applicable

14. Compliance Assurance Monitoring Plan
[**X**] Attached, Document ID: **B** [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[**X**] Not Applicable

Attachment A

Compliance Certification

I, the undersigned, am the responsible official as defined in Chapter 62-210.200, F.A.C., of the Title V source for which this 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.

Carey Mann, Treasurer

April 10, 2002
Date

SOURCE TEST REPORT
FOR
CAPTURE EFFICIENCY OF VOLATILE ORGANIC COMPOUNDS
WH-1 PRESS AND MAGNUM CATALYTIC OXIDIZER

AND

DESTRUCTION AND CAPTURE EFFICIENCIES OF
VOLATILE ORGANIC COMPOUNDS AND VISIBLE EMISSIONS
WH-3 PRESS AND TEC CATALYTIC OXIDIZER

FDEP PERMIT NUMBER 0950125-003-AV

SPIRALKOTE, INC.
ORLANDO, FLORIDA

AUGUST 21 AND 22, 2001

PREPARED FOR:

SPIRALKOTE, INC.
1200 CENTRAL FLORIDA PARKWAY
ORLANDO, FLORIDA 32837-9295

PREPARED BY:

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

200-01-01

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APPENDICES

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LIST OF FIGURES

ACE
AIR CONSULTING
& ENGINEERING, INC.

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

REPORT CERTIFICATION

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

Dagmar Fick

Dagmar Fick, Mechanical Engineer

9/26/2001

Date

1.0 INTRODUCTION

On August 21 and 22, 2001, Air Consulting and Engineering, Inc. (ACE) performed volatile organic compound testing on the roof exhaust and the inlet of the Magnum Catalytic Oxidizer serving the WH-1 Press and the roof exhaust and inlet and outlet locations of the TEC Catalytic Oxidizer serving WH-3 press at Spiralkote, Inc. in Orlando, Florida. An opacity test was also performed on the outlet of the TEC Oxidizer.

Testing was performed according to Permit Number 0950125-003-AV (see Appendix A) specifications, using United States Environmental Protection Agency (EPA) Methods 1-4 (sample point location and volumetric flow rate determination), EPA Methods 25 and 25A (determination of Volatile Organic Compounds (VOC)) and EPA Method 9 (VE). VOC data were used to calculate the Destruction and Capture Efficiency of each system. EPA Methods 204 (Procedure T), 204B (Procedure G.1) and 204E (Procedure F.2) were used to conduct 3 three-hour test runs to establish the capture efficiency of the systems.

Mr. Dale McLarity of the Orange County Environmental Protection Department observed the testing. Mr. J. R. Wilson of Spiralkote coordinated testing and provided plant production records.

2.0 SUMMARY AND DISCUSSION OF RESULTS

2.1 WH-1 Press and Magnum Catalytic Oxidizer

2.1.1 Capture Efficiency Results

The WH-1 Printing Press System demonstrated an average VOC capture efficiency of 75.5%, which is within the permitted standard of 70% capture. Test results are summarized in Table 1. The building has one fugitive exhaust source consisting of a large roof ventilator over the press. VOC streams from the roof exhaust and the WH-1 Press leading to the incinerator were each measured for three three-hour test runs using EPA Method 25A. Velocity measurements were taken hourly for each source. EPA Method 25A emission summaries and strip chart with data logger copies are presented Appendix C.

2.1.2 EPA Method 204 (Procedure T) Results

During the capture efficiency test, the same procedures were used as in the capture efficiency test performed in December of 2000. Streamers were attached to the doors, to demonstrate airflow direction. The total area of these doors is 155.09 square feet. The average roof exhaust actual flow was 60684 ACFM. The average face velocity across these areas then averaged feet per minute (FPM). This is well in excess of the minimum allowable NDO face velocity of 391 FPM.

2.2 WH-3 Press and TEC Catalytic Oxidizer

2.2.1 Destruction Efficiency and Opacity Results

The WH-3 Press and TEC Catalytic Oxidizer demonstrated an average VOC destruction efficiency of 98.6%, which is within the permitted minimum requirement of 95%. Incinerator inlet and outlet test results are summarized in Table 2. VOC outlet emissions averaged 1.22 pounds per hour (lbs/hr) as Carbon. Solvent usage rates averaged 163.4 lbs/hr during this test period (Appendix F). Volumetric flow data and EPA Method 25 laboratory results are presented in Appendices B and D.

Visible emissions (VE) on the oxidizer outlet averaged 0.0 percent opacity for the highest six-minute period of the one-hour test (see Appendix E for VE data). EPA Method 24 test results are presented in Appendix F.

Table 1. VOC Capture Efficiency Summary -EPA 25A
WH-1 Press and Magnum Catalytic Incinerator
Spiralkote, Inc.
Orlando, Florida
August 21, 2001

Run Number	Time	VOC Inlet Emissons			Fugitive Roof Exhaust Emissons			Efficiency
		Flow Rate dscfm	ppm as Propane	lbs/hr as Carbon	Flow Rate dscfm	ppm as Propane	lbs/hr as Carbon	%
1	0957-1257	8737	1416	84.80	61287	65.34	27.45	75.54
2	1310-1610	8616	1351	79.83	58837	61.80	24.93	76.20
3	1620-1920	8953	1317	80.85	61928	64.07	27.20	74.82
Average		8769	1361	81.82	60684	63.74	26.53	75.52

Capture Efficiency = (Inlet Emissions) / (Inlet + Fugitive Emissions) x 100%

Table 2. VOC Emission Summary - EPA 25
WH-3 Press and TEC Catalytic Incinerator
Spiralkote, Inc.
Orlando, Florida
August 22, 2001

Run Number	Time	VOC Inlet Emissons			VOC Outlet Emissions			Usage Rate
		Flow Rate* dscfm	ppm as Carbon	lbs/hr as Carbon	Flow Rate dscfm	ppm as Carbon	lbs/hr as Carbon	lbs/hr VOC
1	0936-1036	7003	5797	75.92	7688	51.0	0.73	--
2	1059-1159	7079	6757	89.45	7245	110.0	1.49	--
3	1214-1320	6753	7241	91.45	7464	103.0	1.44	--
Average		6945	6598	85.61	7465	88.0	1.22	163.4

* inlet flows are from runs 1B, 1C and 2A in Appendix B

Destruction Efficiency = $\frac{\text{Inlet Emissions - Outlet Emissions}}{\text{Inlet Emissions}} \times 100\% =$ 98.6 %

Table 3. VOC Capture Efficiency Summary -EPA 25A
WH-3 Press and TEC Catalytic Incinerator
Spiralkote, Inc.
Orlando, Florida
August 22, 2001

Run Number	Time	VOC Inlet Emissons			Fugitive Roof Exhaust Emissons			Efficiency
		Flow Rate dscfm	ppm as Propane	lbs/hr as Carbon	Flow Rate dscfm	ppm as Propane	lbs/hr as Carbon	%
1	0851-1151	7168	1537	75.56	61234	41.58	17.46	81.23
2	1204-1504	7029	1630	78.55	58837	46.88	18.91	80.60
3	1518-1818	7187	1563	77.01	60307	50.42	20.85	78.70
Average		7128	1577	77.04	60126	46.29	19.07	80.18

Capture Efficiency = (Inlet Emissions) / (Inlet + Fugitive Emissions) x 100%

2.2.2 Capture Efficiency Results

The WH-3 Printing Press System demonstrated an average VOC capture efficiency of 80.2%, which is within the permitted standard of 70% capture. Test results are summarized in Table 3. The building has one fugitive exhaust source consisting of a large roof ventilator over the press. VOC streams from the roof exhaust and the WH-3 Press leading to the incinerator were each measured for three three-hour test runs using EPA Method 25A. Velocity measurements were taken hourly for each source. EPA Method 25A emission summaries and strip chart with data logger copies are presented Appendix C.

2.3 EPA Method 204 (Procedure T) Results

During the capture efficiency test, the same procedures were used as in the capture efficiency test performed in December of 2000. Streamers were attached to the doors, to demonstrate airflow direction. The total area of these doors is 155.09 square feet. The average roof exhaust actual flow was 60080 ACFM. The average face velocity across these areas then averaged 387 feet per minute (FPM). This is well in excess of the minimum allowable NDO face velocity of 200 FPM.

3.0 PROCESS DESCRIPTION AND OPERATION

The WH-1 Olympia 746 Flexographic printing press is equipped with a Megtec Magnum Model MAG-180-70-6-C catalytic recuperative oxidizer, which is guaranteed to achieve a minimum reduction efficiency of 95% and a minimum capture efficiency of 70%. This incinerator also services the Tachys Press.

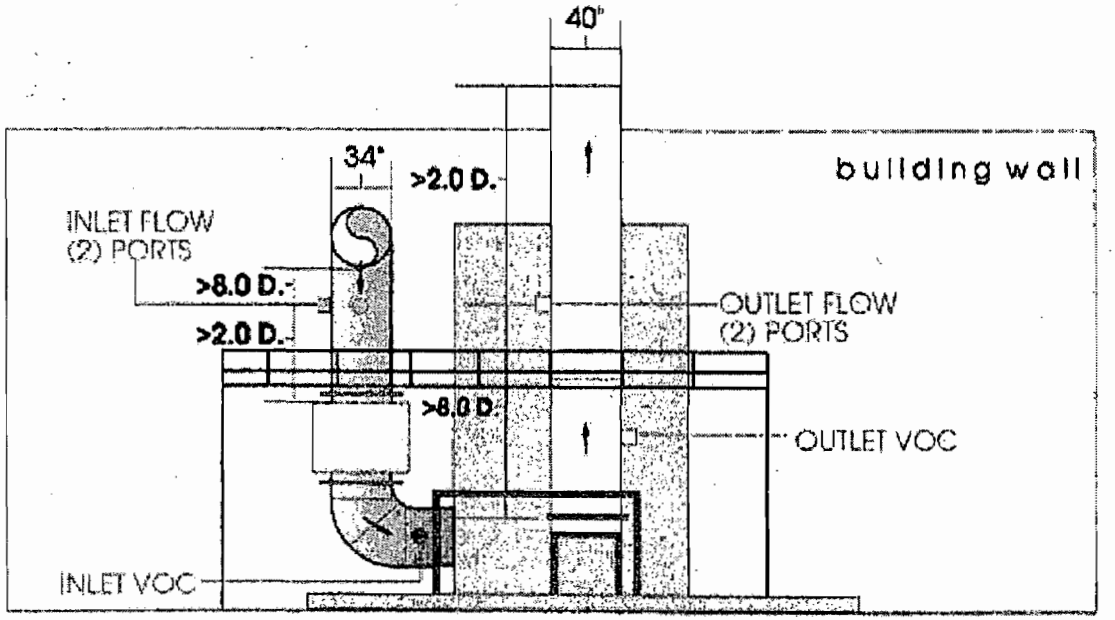
VOC emissions from the WH-3 Olympia Stellaflex 8L printing press are controlled by a TEC Catalytic Oxidizer which provides a minimum of 95 % reduction efficiency and 70% capture efficiency.

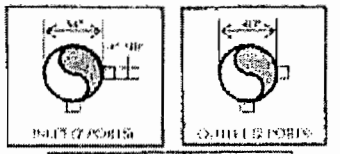
Production records and EPA 24 analysis are presented in Appendix F.

4.0 SAMPLING POINT LOCATION

The sampling point locations for each incinerator and the roof exhaust are provided in Figures 1, 2 and 3.

WH-1 PRINTING PRESS AND MAGNUM CATALYTIC OXIDIZER





TRAVERSE POINT NUMBER	PORT DISTANCE FROM INSIDE WALL	
	INLET	OUTLET
1	1.1	3.3
2	3.4	4.3
3	4.5	7.8
4	11.0	12.9
5	23.8	27.1
6	27.4	32.2
7	30.4	35.8
8	32.9	38.7

SOURCE: AIR CONSULTING & ENGINEERING, INC. (200WH1) 9/26/01

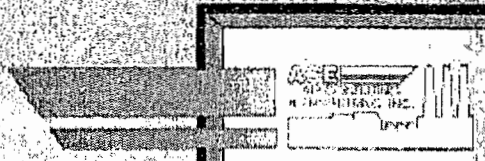
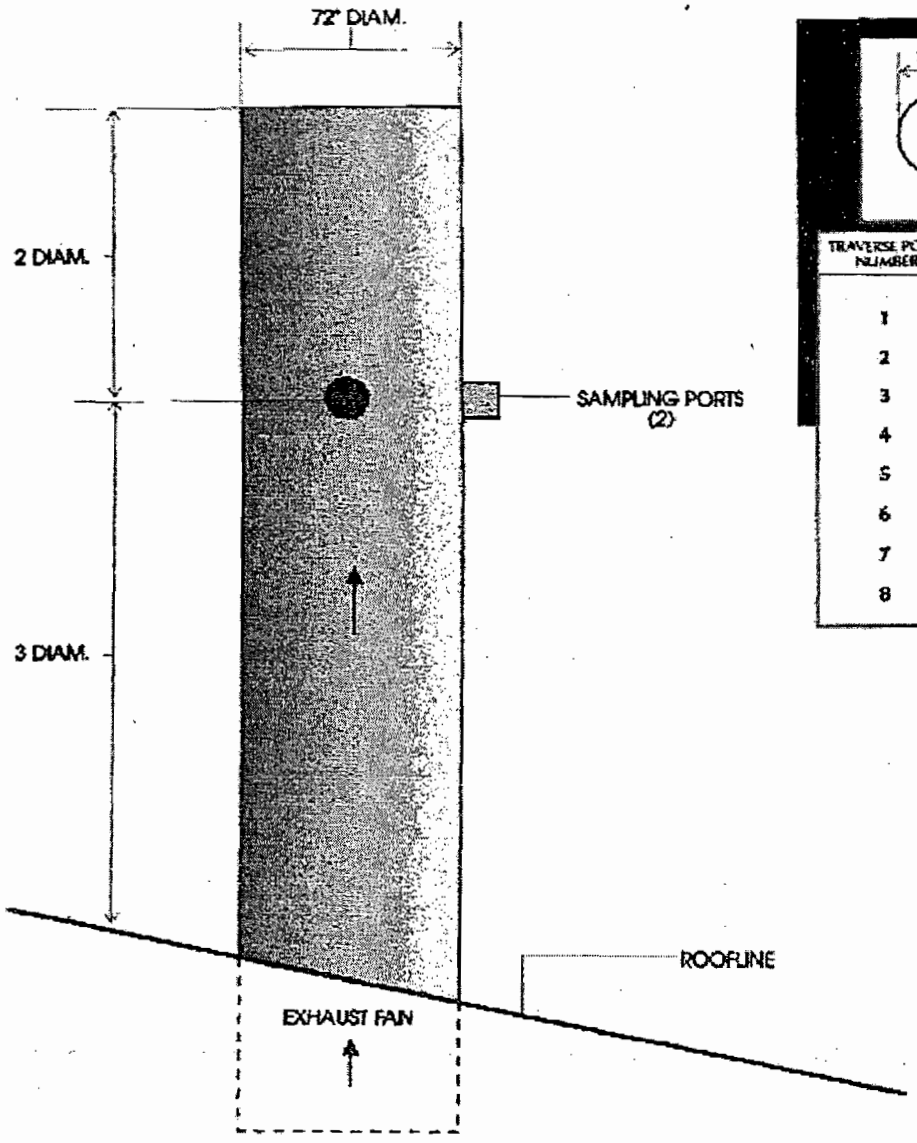


FIGURE 1.
SAMPLING POINT SCHEMATIC
WH-1 PRESS & MAGNUM CATALYTIC OXIDIZER
SPIRALKOTE, INC.
ORLANDO, FLORIDA



TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	2.3
2	7.6
3	14.0
4	23.3
5	78.7
6	58.0
7	64.4
8	70.7

NOTE: NOT TO SCALE

SOURCE: AIR CONSULTING & ENGINEERING, INC. (SKOTE13) 2/13/98

FIGURE 2.
SAMPLING POINT LOCATION - FUGITIVE EMISSION
ROOF EXHAUSTER WH-1 AND WH-3 PRESS BUILDING
SPIRALKOTE, INC.
ORLANDO, FLORIDA

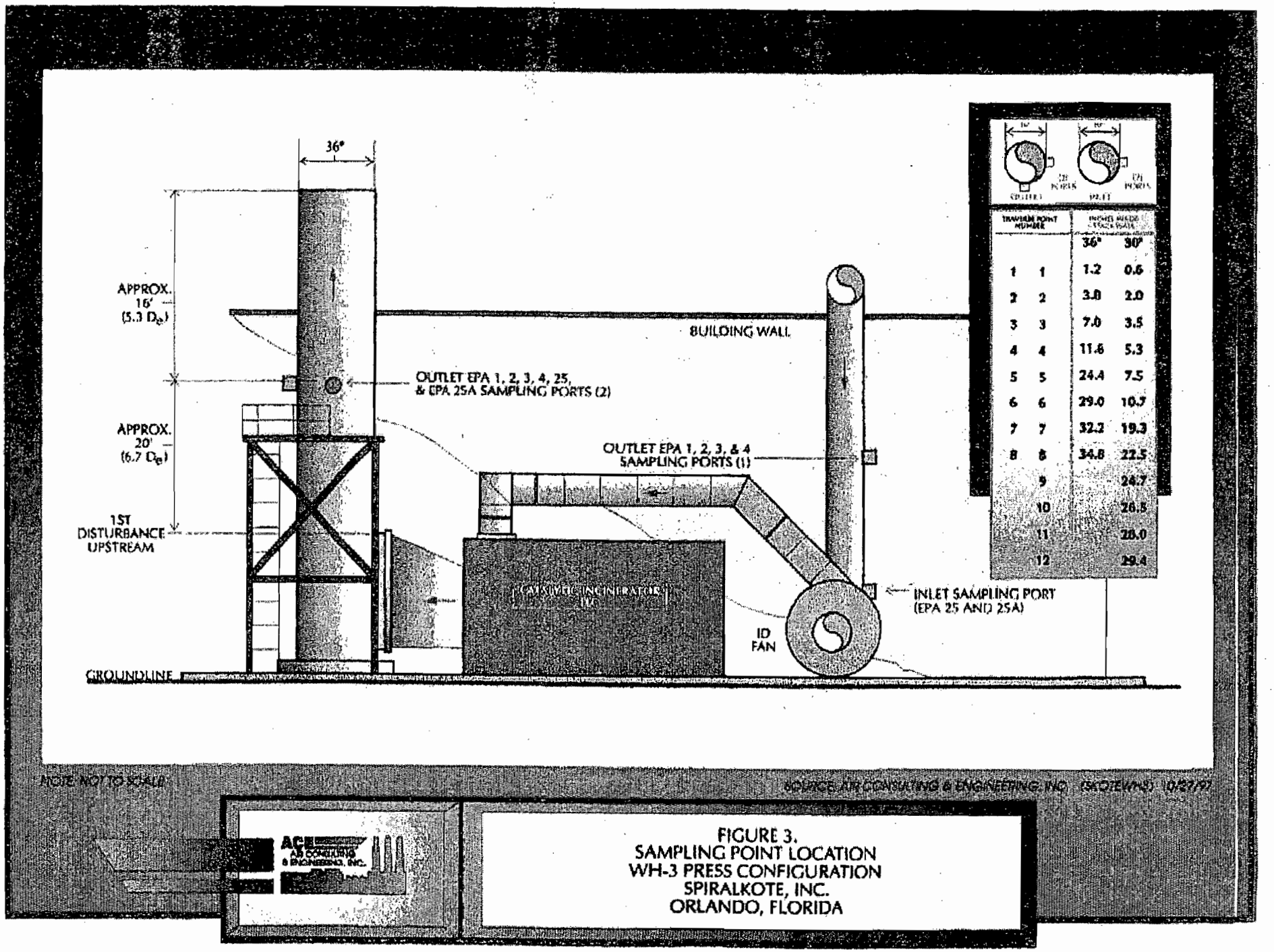


FIGURE 3.
SAMPLING POINT LOCATION
WH-3 PRESS CONFIGURATION
SPIRALKOTE, INC.
ORLANDO, FLORIDA

5.0 FIELD AND ANALYTICAL PROCEDURES

5.1 Determination of Total Gaseous Non-Methane Organic Emissions as Carbon--EPA Method 25

5.11 Sampling

Non-methane Volatile Organic Compounds (VOC) are determined through use of gas chromatography with Flame Ionization Detection (FID) after sample collection in which heavy and light volatile compounds are separated. Samples are heated and filtered prior to collection. Probe exhaust is maintained at >265°F while the filter temperature is maintained at 250 ±5°F.

Samples are taken by withdrawing a constant rate of stack gases (50-75 milliliters per minute) over a nominal one-hour test period for each of three replicates. Heavy volatiles are removed in a stainless steel u-tube trap (Figure 4) which has been submerged in dry ice (carbon dioxide) while lighter volatiles and other dry stack gases are allowed to pass through a rotameter into a four liter evacuated sample tank.

5.12 Analysis

The u-tube condensables are first purged of CO_2 with zero air at dry ice temperature. This is collected in the original sample tank. The u-tube trap is then heated to 200°C and forced through an oxidation catalyst. The catalyst effluent is monitored by a NDIR as it is directed to an Intermediate Collection Vessel (ICV). When the CO_2 level drops below 10 ppm, collection is complete. The ICV is then pressurized to 1060 mm Hg as is the original sample tank containing light organics, CO and CO_2.

A schematic of the analytical system is provided in Figure 4.

5.2 Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer--EPA Method 25A

The Procedure G.1 and F.2 EPA Method 25A testing was conducted using two separate Flame Ionization Analyzers (FIAs). The oxidizer inlets (G.1) and fugitive sources were measured using heat traced line throughout.

The VOC emissions from incinerator inlets were measured with a Thermoenvironmental Model 51 FIA. The fugitive sources were monitored with a Ratfisch CA55 FIA. the fugitive and background sources were sampled using a Byron 215 Dual Source FIA. Source 1 measured the fugitive emissions while source 2 measured the background concentration.

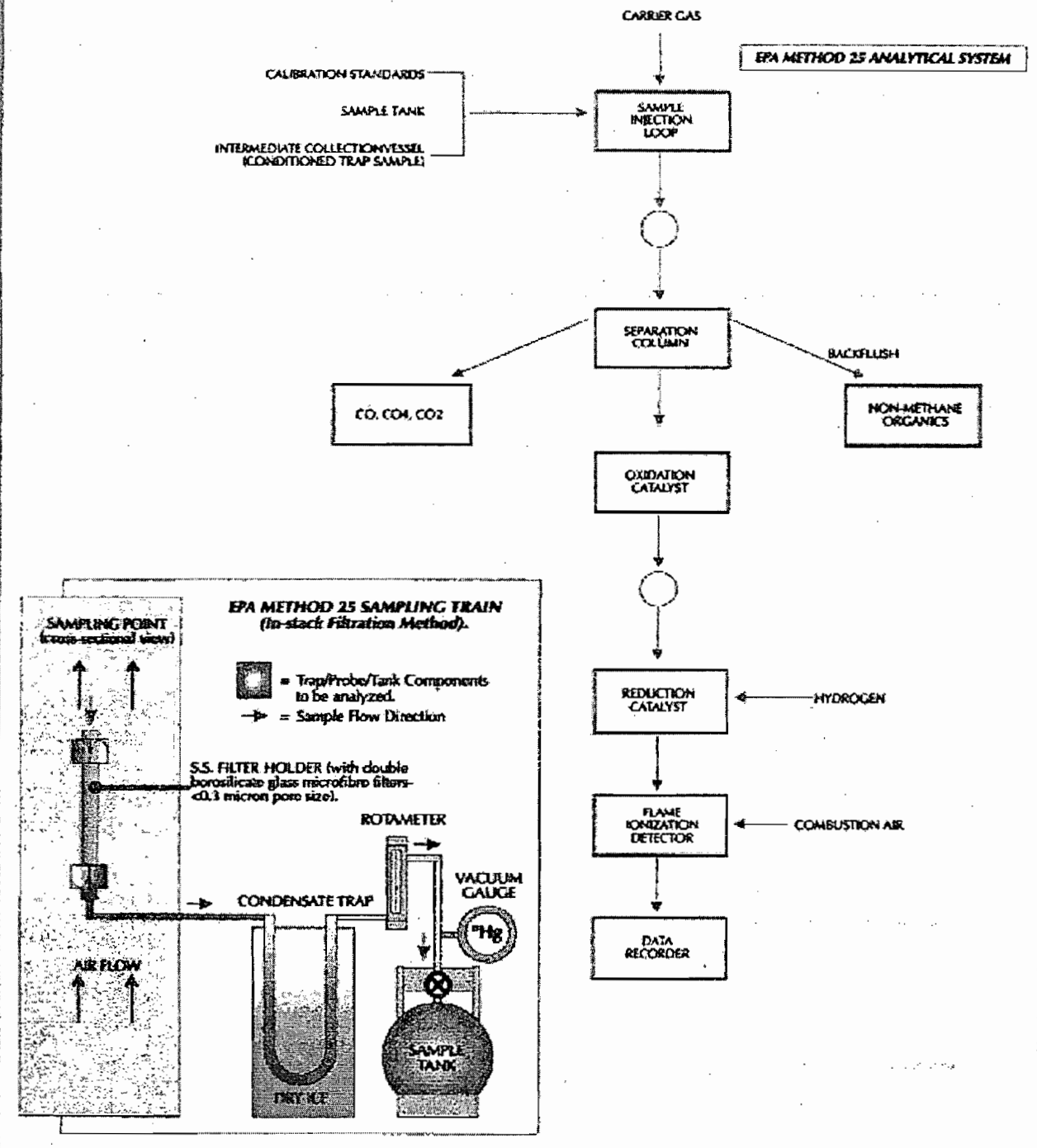


FIGURE 4.
EPA METHOD 25 SAMPLING SCHEMATIC
AND ANALYTICAL SYSTEM
(DETERMINATION OF TOTAL GASEOUS NONMETHANE
ORGANIC EMISSIONS AS CARBON)

For each source, the instruments were calibrated on NBS traceable EPA Protocol 1 propane in air cylinder gases injected at the sampling interface via a three-way valve (Figure 5). A record of accuracy demonstration as well as drift checks is provided in Appendix G. Analyzer results are reported as ppm carbon by multiplying the response as propane by a factor of 3.0.

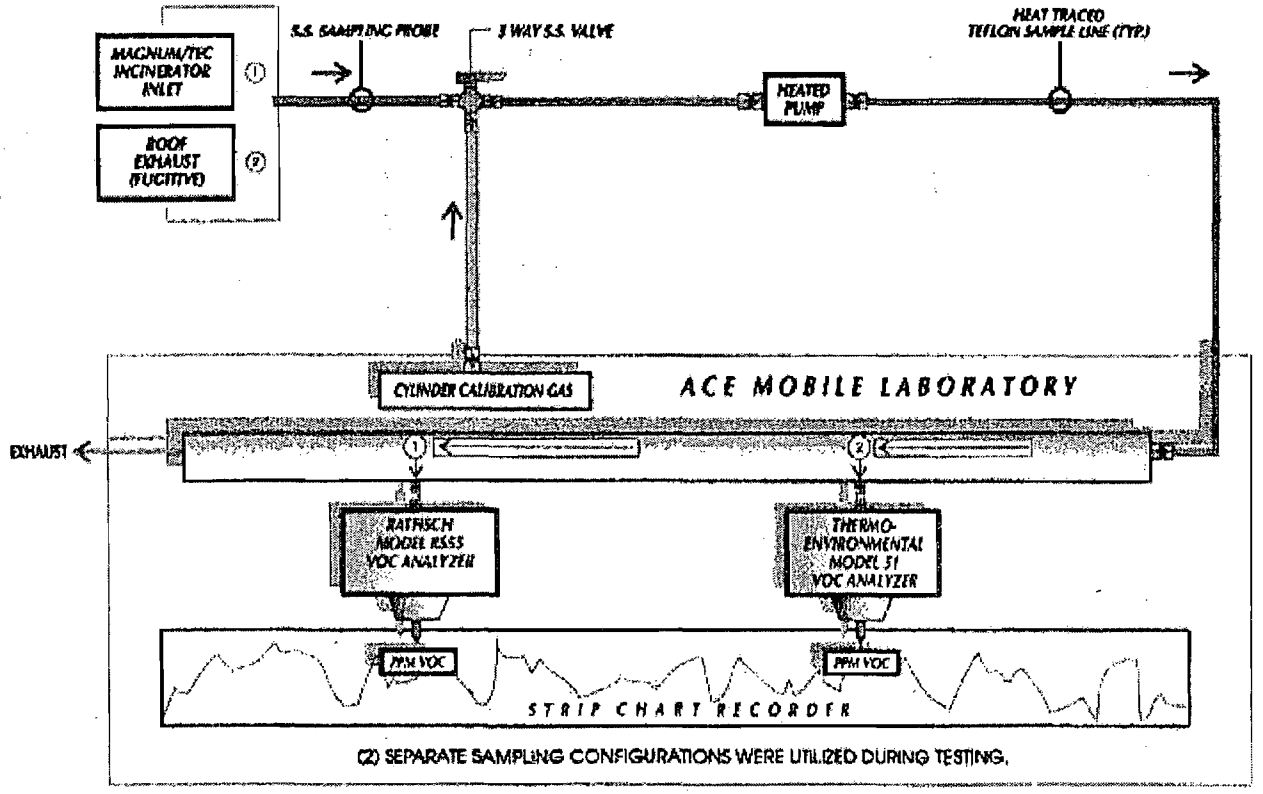
5.3 Sample Point Location and Volumetric Flow Rate Determination--EPA Methods 1-4

Moisture and flow data for the test locations is necessary to report EPA Method 25 emission results on a mass basis. This data was compiled using EPA Methods 1-4 methodology during each test run. Hourly flow measurements were made during each test. (3 determinations per test.)

5.4 Visible Emissions Testing--EPA Method 9

The visible emission tests were performed in accordance with EPA Method 9. The observers maintain semi-annual FDEP certification for the performance of visible emission tests and attend the classroom lecture as required.

All procedures listed in Method 9 were followed including observer's position relative to the sun, distance from the stack, and line of sight. These items are noted on the visible emission data sheet. Observations were made at 15-second intervals and recorded to the nearest five percent. The final opacity was determined by calculating the average of the highest consecutive 24 readings of the observation period.



SOURCE: AIR CONSULTING & ENGINEERING, INC. (VOCCAP) 9/26/01

FIGURE 5.
EPA METHOD 25A CEM SAMPLING SCHEMATIC
CAPTURE EFFICIENCY DETERMINATION
(DETERMINATION OF TOTAL GASEOUS ORGANIC
CONCENTRATION USING A FLAME IONIZATION DETECTOR)

APPENDIX A

FDEP PERMIT 0950125-003-AV

fp Spiralkote, Inc.
Printing Facility
Facility ID No.: 0950125
Orange County

REVISED FINAL Permit No.: 0950125-003-AV

Permitting Authority:
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803
Telephone: 407/893-3334
Fax: 407/897-5963

REVISED FINAL Permit No.: 0950125-003-AV

Table of Contents

Department of Environmental Protection

Jeb Bush
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

David B. Struhs
Secretary

Permittee:
fp Spiralkote, Inc.
1200 Central Florida Parkway
Orlando, Florida 32837-9295
Atten: Carey Mann, Treasurer

REVISED FINAL Permit No.: 0950125-003-AV
Facility ID No.: 0950125
SIC Nos.: 27; 2759
Project: Title V Air Operation Permit Revision

This permit is for the operation of the Printing Facility. This facility is located at 1200 Central Florida Parkway, Orlando, Orange County; UTM Coordinates: Zone 17, 461.4 km East and 3142.0 km North; Latitude: 28° 24' 21" North and Longitude: 81° 23' 40" West.

STATEMENT OF BASIS: This combined Air Construction Permit/ Title V Air Operation Permit Revision is issued under the provisions of Chapter 403, Florida Statutes (F.S.) and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-213. 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 permitting authority, in accordance with the terms and conditions of this permit.

Referenced attachments made a part of this permit:
APPENDIX U-1, LIST of UNREGULATED EMISSION UNITS and/or ACTIVITIES
APPENDIX TV-3, TITLE V CONDITIONS (version dated 4/30/99)
APPENDIX SS-1, STACK SAMPLING FACILITIES (version dated 10/7/96)
Table 297.310-1, CALIBRATION SCHEDULE (version dated 10/7/96)
APPENDIX SUBPART A, GENERAL PROVISIONS

Renewal Application Due Date: September 30, 2001
Expiration Date: March 30, 2002

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

L.T. Kozlov, P.E.
Program Administrator
Air Resources Management

LTK/azc

Section I. Facility Information.

Subsection A. Facility Description.

This facility includes an Optisol In-Line Plate Making System which has a Cyrel 2001 exposure unit, plate processor, Cyrel 2001 dryer/finisher and plate vac solvent recovery system with an emergency only wall sweep. The facility also includes three presses as follows:

a) W&H Olympia 746 Flexographic Press (W&H I) which is a flexographic printing and coating unit with four associated dryers (a 0.4 MMBTU/hr between color dryer, a 0.4 MMBTU/hr tunnel dryer, and two 0.8 MMBTU/hr dryers for coater no. 1). The dryers will operate at an idling level when not being used for production. The associated catalytic incinerator system will have a minimum 70% capture and transport efficiency and 95% destruction efficiency for VOC. VOC emissions from this press are controlled by the Megtec Magnum incinerator which also services the Tachys Press.

b) W&H Olympia Stellaflex 8L Press with In-line Unit (W&H III) which consists of eight printing stations on a central impression and one coating unit. The press is equipped with a Magnum oxidizer/catalytic incinerator which provides a minimum 95% reduction efficiency for the VOC which enters the incinerator inlet and a minimum VOC capture efficiency of 70% for an overall minimum VOC removal efficiency of 66.5% for the system.

c) Tachys FNC 3000 8-color central impression printing press equipped with a Megtec Magnum Model MAG-180-70-6-C catalytic recuperative oxidizer which provides a minimum 95% reduction efficiency for the VOC which enters the oxidizer inlet and a minimum VOC capture efficiency of 70% for an overall minimum VOC removal efficiency of 66.5% for the system.

Also included in this permit are miscellaneous unregulated emission units and/or activities.

Based on the initial Title V permit application received June 14, 1996, this facility is a major source of hazardous air pollutants (HAPs).

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

E.U. ID No.	Brief Description
006	Optisol In-Line Plate Making System
010	W&H Olympia 746 Flexographic Press (W&H I)
011	W&H Olympia Stellaflex 8L Press (W&H III)
012	Tachys FNC-3000 Press

Please reference the Permit No., Facility ID No., and appropriate Emissions Unit(s) ID No(s). on all correspondence, test report submittals, applications, etc.

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit, however, are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:
Appendix A-1, Abbreviations, Acronyms, Citations, and Identification Numbers
Appendix H-1, Permit History/ID Number Changes

These documents are on file with permitting authority:

Construction permit application, December 29, 1999.

Section II. Facility-wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-3, TITLE V CONDITIONS (version dated 04/30/99), is a part of this permit. APPENDIX TV-3, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided one copy when requested or otherwise appropriate.

2. **Not Federally Enforceable.** General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. The permittee shall not cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.
[Rule 62-296.320(2), F.A.C.]

3. General Particulate Emission Limiting Standards. General Visible Emissions Standard. Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Rule 62-297, F.A.C.
[Rule 62-296.320(4)(b)1. & 4., F.A.C.]

4. Prevention of Accidental Releases (Section 112(r) of CAA). If required by 40 CFR 68, the permittee shall submit to the implementing agency:
   a. a risk management plan (RMP) when, and if, such requirement becomes applicable; and
   b. certification forms and/or RMPs according to the promulgated rule schedule.
[40 CFR 68]

5. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. To comply, procedures to minimize pollutant emissions shall include the following:

   a) tightly cover or close all VOC containers when they are not in use,
   b) tightly cover, where possible, all open troughs, basins, baths, tanks, etc. when they are not in use,
   c) maintain all piping, valves, fittings, etc. in good operating condition,
   d) prevent excessive air turbulence across exposed VOC's,
   e) immediately confine and clean up VOC spills and make sure certain wastes are placed in closed containers for reuse, recycling or proper disposal.

[Rule 62-296.320(1)(a), F.A.C.]

6. When appropriate, any recordings, monitoring, or reporting requirements that are time-specific shall be in accordance with the effective date of the permit, which defines day one.
[Rule 62-213.440, F.A.C.]

7. The permittee shall submit all compliance related notifications and reports required of this permit to the following office:

Orange County Environmental Protection Department
Air Program
800 Mercy Drive
Suite 4
Orlando, Florida 32808
Telephone: 407.836.1447

8. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air & EPCRA Enforcement Branch, Air Compliance Section
61 Forsyth Street
Atlanta, Georgia 30303
Telephone: 404/562-9099
Fax: 404/562-9095

9. Annual Operating Report. A DEP Form No. 62-210.900(5), "Annual Operating Report for Air Pollutant Emitting Facility" including the Emissions Report, shall be completed for each calendar year on or before March 1 of the following year and submitted to Orange County Environmental Protection Department .
[Rule 62-210.370(3), F.A.C.]

10. Annual Statement of Compliance. The permittee shall submit a statement of compliance with all terms and conditions of the permit. Such statements shall be submitted to Orange County Environmental Protection Department and EPA **annually from the signature date of the permit**, or more frequently if specified by Rule 62-213.440(2), F.A.C., or by any other applicable requirement. Such statements shall be accompanied by a certification in accordance with Rule 62-213.420(4), F.A.C. The statement of compliance shall include all the provisions of 40 CFR 70.6(c)(5)(iii), incorporated by reference at Rule 62-204.800, F.A.C.

11. Annual Emissions Fee. Each Title V source permitted to operate in Florida must pay between January 15 and March 1 of each year, upon written notice from the Department, an annual emissions fee in accordance with Rule 62-213.205, F.A.C., and the appropriate form and associated instructions.
[Rules 62-213.205 and 62-213.900(1), F.A.C.]

12. Annual Emissions Fee. Any documentation of actual hours of operation, actual material or heat input, actual production amount, or actual emissions used to calculate the annual emissions fee shall be retained by the owner for a minimum of five (5) years and shall be made available to the Department upon request.
[Rule 62-213.205(1)(j), F.A.C.]

13. Annual Emissions Fee. A completed DEP Form 62-213.900(1), F.A.C., "Major Air Pollution Source Annual Emissions Fee Form", must be submitted by the responsible official with the annual emissions fee.
[Rule 62-213.205(1)(k), F.A.C.]

14. At least 180 days prior to the expiration date of this operation permit, the permittee shall submit to this office four copies of the air permit application, DEP Form No. 62-210.900(1).
[Rule 62-4.090(1), F.A.C.]

Excess Emissions

15. Excess emissions resulting from startup, shutdown or malfunction shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration.
[Rule 62-210.700(1), F.A.C.]

16. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown or malfunction shall be prohibited.
[Rule 62-210.700(4), F.A.C.]

17. In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department.
[Rule 62-210.700(6), F.A.C.]

Section III. Emissions Unit(s) and Conditions.

Subsection A. This section addresses the following emissions unit(s).

E.U. ID No./ Brief Description
006 Optisol In-Line Plate Making System

The following conditions apply to the emissions unit(s) listed above:

Essential Potential to Emit (PTE) Parameters

A1. Capacity. The maximum solvent usage rate is 218 tons per consecutive twelve months.
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

A2. Hours of Operation. The unit is allowed to operate a maximum of 8760 hours per consecutive twelve months.
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

Emission Limitations and Standards

A3. Volatile Organic Compound (VOC) emissions shall not exceed 9 tons per consecutive twelve months.
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

Test Methods and Procedures

A4. Supporting documentation, such as Material Safety Data Sheets, purchase orders, EPA "As Supplied" data sheets, EPA Method 24, etc., shall be kept which includes sufficient information to determine compliance. Documentation of each chemical reclaimed will use a mass balance method to determine usage/emissions (amount used minus amount collected for disposal or recycle). The log and documents shall be kept at the facility for at least 5 years and made available to the Department. Monthly logs shall be completed by the end of the following month.
[Rules 62-4.070(3), and 62-213.440(1)(b)2.b., F.A.C.]

Recordkeeping and Reporting Requirements

A5. In order to demonstrate compliance with conditions No. A1 and A3, the permittee shall maintain a log at the facility for a period of at least 5 years from the date the data is recorded. The log at a minimum shall contain the following:

Monthly
a) month
b) consecutive 12 month total of solvent solution usage rate and VOC emission rate.
[Rules 62-4.070(3), and 62-213.440(1)(b)2., F.A.C.]

Section III. Emissions Unit(s).

The following conditions apply to the emissions unit(s) listed above:

Subsection B. This section addresses the following emissions unit(s).

E.U. ID No./ Brief Description	
010	W&H Olympia 746 Flexographic Press (W&H I)
011	W&H Olympia Stellaflex 8L Press (W&H III)
012	Tachys FNC 3000 Press

Essential Potential to Emit (PTE) Parameters

B1. Capacity. The maximum capacities are as follows:

a) E.U. 010 - The maximum VOC input rate shall not exceed 213 tons per consecutive twelve months. [Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

b) E.U. 011 - The maximum VOC input rate shall not exceed 232 tons per consecutive twelve months. [Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

c) E.U. 012 - The maximum VOC input rate shall not exceed 232 tons per consecutive twelve months. [Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

B2. Methods of Operation. Each unit is allowed to fire propane or natural gas only. [Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

B3. Hours of Operation. Each emission unit is allowed to operate a maximum of 8760 hours per consecutive twelve months. [Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

B4. Emissions Unit Operating Rate Limitation After Testing. See specific condition no. B15. [Rule 62-297.310(2), F.A.C.]

Compliance Test of the Tachys Press and Megtec Catayltic Oxidizer

B5. The new press and catayltic oxidizer shall be compliance tested within 180 days after completion of construction. The test shall be identical to the standard compliance test. Each applicable specific condition in the Test Methods and Procedures shall be used for the startup compliance test.

The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction, he must notify the Department in writing at least 90 days prior to the expiration of the construction permit and submit an application for an extension of the construction permit.

Emission Limitations and Standards

B6. The visible emissions for each stack are limited to less than 20% opacity.
[Rule 62-296.320(4)(b)1., F.A.C.]

B7. The applicable VOC emission limitations are as follows:

a) E.U. 010 - VOC emissions shall not exceed 71 tons per consecutive twelve months, including cleanup solvent less solvent waste shipped from the unit. The unit shall maintain a minimum of 70% capture efficiency and a minimum of 95% destruction efficiency (oxidizes at least 95% of the VOC measured as total combustible carbon to carbon dioxide and water).
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

b) E.U. 011 - VOC emissions shall not exceed 83 tons per consecutive twelve months, including cleanup solvent less solvent waste shipped from the unit. The unit shall maintain a minimum of 70% capture efficiency and a minimum of 95% destruction efficiency (oxidizes at least 95% of the VOC measured as total combustible carbon to carbon dioxide and water).
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

c) E.U. 012 - VOC emissions shall not exceed 83 tons per consecutive twelve months, including cleanup solvent less solvent waste shipped from the unit. The unit shall maintain a minimum of 70% capture efficiency and a minimum of 95% destruction efficiency (oxidizes at least 95% of the VOC measured as total combustible carbon to carbon dioxide and water).
[Rule 62-210.200, (PTE), F.A.C., permit 0950125-005-AC]

Test Methods and Procedures

B8. Each catalytic oxidizer stack must be compliance tested for visible emissions in accordance with DEP Method 9 prior to permit expiration date. The test shall be conducted for 60 minutes.
[Rules 62-297.401(9)(c); 62-297.310(7)(a)4.a.; and 62-297.310(4)(a)2., F.A.C.]

B9. DEP Method 9. The provisions of EPA Method 9 (40CFR60, Appendix A) are adopted by reference with the following exceptions:

a) EPA Method 9, Section 2.4, Recording Observations. Opacity observations shall be made and recorded by a certified observer at sequential fifteen second intervals during the required period of observation.

b) EPA Method 9, Section 2.5, Data Reduction. For a set of observations to be acceptable, the observer shall have made and recorded, or verified the recording of, at least 90 percent of the possible individual observations during the required observation period. For single-valued opacity standards (e.g. 20 percent opacity), the test result shall be the highest valid six-minute average for the set of observations taken. For multiple-valued opacity standards (e.g. 20 percent opacity, except that an opacity of 40 percent is permissible for not more than two minutes per hour) opacity shall be computed as follows:

1) For the basic part of the standard (i.e., 20 percent opacity) the opacity shall be determined as specified above for a single-valued opacity standard.

2) For the short-term average part of the standard, opacity shall be the highest valid short-term average (i.e., two-minute, three-minute average) for the set of observations taken.

In order to be valid, any required average (i.e., a six-minute or two-minute average) shall be based on all of the valid observations in the sequential subset of observations selected, and the selected subset shall contain at least 90 percent of the observations possible for the required averaging time. Each required average shall be calculated by summing the opacity value of each of the valid observations in the subset, dividing this sum by the number of valid observations in the subset, and rounding the result to the nearest whole number. The number of missing observations in the subset shall be indicated in parenthesis after the subset average value.
[Rule 62-297.401, F.A.C.]

B10. Each unit shall demonstrate compliance with its emission limits for each affected pollutant prior to permit expiration date.
[Rule 62-297.310(7)(a)4.a., F.A.C.]

B11. Compliance with the VOC standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A and adopted by reference in Rule 62-297, F.A.C.:

a) Method 1	Sample and Velocity Traverse
b) Method 2	Volumetric Flow Rate
c) Method 3A	Gas Analysis
d) Method 4	Determination of the Moisture Content in Stack Gases
f) Method 24	Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings
e) Method 24A	Determination of Volatile Matter Content and Density of Printing Inks and Related Coatings
g) Method 25	Determination of Total Gaseous Nonmethane Organic Emissions as Carbon

[Rule 62-297.401, F.A.C.]

B12. The demonstration of the capture efficiency of each unit shall be conducted prior to permit expiration date using the U.S. EPA's VOC Capture Efficiency Test Procedure per Rule 62-297.450, F.A.C. The permittee shall notify the Orange County Environmental Protection Department in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing.
[Rule 62-297.450, F.A.C.]

B13. The VOC emissions will be calculated based on actual monthly input and the most recent test results for capture and destruction efficiency. A material balance shall be used to assess and report the annual (consecutive twelve months, verifiable monthly) VOC/solvent emissions associated with clean-up. The material balance will account for any VOC/solvents received, any control measures used (must be quantifiable), and any VOC/solvents shipped off the facility by a properly licensed hauler.
[Permit 0950125-005-AC]

B14. For emissions units whose emissions are controlled by multiple incinerators, each incinerator serving the emission unit shall be tested concurrently to prove compliance at one point of operation. Each incinerator temperature shall be recorded and maintained at no less than the value demonstrated during the most recent compliance test.
[Permit 0950125-005-AC]

B15. At least 15 days prior to the date on which each formal compliance test is due to begin, the permittee shall provide written notification of the test to the Orange County Environmental Protection Department. The notification must include the following information: the date, time and location of each test; the name and telephone number of the facility's contact person who will be responsible for coordinating the test; and the name, company, and telephone number of the person conducting the test.
[Rule 62-297.310(7)(a)9, F.A.C.]

B16. Testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity.
[Rule 62-297.310(2)& (2) (b), F.A.C.]

Monitoring of Operations

B17. Determination of Process Variables.

(a) Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

(b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

Recordkeeping and Reporting Requirements

B18. In order to demonstrate compliance with conditions no. B1, B2, B6 and B15, the permittee shall maintain a log at the facility for a period of at least 5 years from the date the data is recorded. The log at a minimum shall contain the following:

Monthly
a) month
b) consecutive 12 month total of VOC material usage rate and VOC emission rate
c) fuel type

[Rules 62-4.070(3), and 62-213.440(1)(b)2., F.A.C.]

B19. Supporting documentation, such as Material Safety Data Sheets, purchase orders, etc., shall be kept which includes sufficient information to determine compliance. Documentation of each chemical reclaimed will use a mass balance method to determine usage/emissions (amount used minus amount collected for disposal or recycle). The log and documents shall be kept at the facility for at least 5 years and made available to the Department. Monthly logs shall be completed by the end of the following month.
[Rules 62-4.070(3), and 62-213.440(1)(b)2.b., F.A.C.]

B20. Reports of the required test report shall be filed with the Orange County Environmental Protection Department as soon as practical but no later than 45 days after the last test is completed.
[Rule 62-297.310(8), F.A.C.]

40 CFR Part 63, NESHAP Requirements

B21. Each emission unit is subject to the following requirements of 40 CFR Part 63, Subpart A, General Provisions (see attached Appendix, Subpart A):

40 CFR 63.1	Applicability (Appendix A page 1)
40 CFR 63.2	Definitions (Appendix A page 3)
40 CFR 63.3	Units and abbreviations (Appendix A page 8)
40 CFR 63.4	Prohibited activities and circumvention (Appendix A page 10)
40 CFR 63.5	Construction and reconstruction (Appendix A page 11)
40 CFR 63.6	Compliance with standards and maintenance requirements (Appendix A page 15)
40 CFR 63.7	Performance testing requirements (Appendix A page 24)
40 CFR 63.8	Monitoring requirements (Appendix A page 30)
40 CFR 63.9	Notification Requirements (Appendix A page 37)
40 CFR 63.10	Recordkeeping and reporting requirements (Appendix A page 41)
40 CFR 63.11	Control device requirements (Appendix A page 49)
40 CFR 63.12	State authority and delegations (Appendix A page 49)
40 CFR 63.13	Address of State air pollution control agencies and EPA Regional Offices (Appendix A page 50)
40 CFR 63.14	Incorporation by reference (Appendix A page 50)
40 CFR 63.15	Availability of information and confidentiality (Appendix A page 51)

[Rule 62-204.800(9), F.A.C. and 40 CFR Part 63, Subpart A]

B22. The facility is subject to the following specific conditions based on Rule 62-204.800(10)(b)21., F.A.C. and 40 CFR Part 63, Subpart KK, for the Printing and Publishing Industry:

1) 40 CFR 63.825 Standards: Product and packaging rotogravure and wide-web flexographic printing.

(a) Each permittee of any product and packaging rotogravure or wide-web flexographic printing affected source that is subject to the requirements of this subpart shall comply with these requirements on and after the compliance dates as specified in 40 CFR 63.826 of this subpart. [40 CFR 63.825(a)]

(b) Each product and packaging rotogravure or wide-web flexographic printing affected source shall limit emissions to no more than five percent of the organic HAP applied for the month; or to no more than four percent of the mass of inks, coatings, varnishes, adhesives, primers, solvents, reducers, thinners, and other materials applied for the month; or to no more than 20 percent of the mass of solids applied for the month; or to a calculated equivalent allowable mass based on the organic HAP and solids contents of the inks, coatings, varnishes, adhesives, primers, solvents, reducers, thinners, and other materials applied for the month. The permittee of each product and packaging rotogravure or wide-web flexographic printing affected source shall demonstrate compliance with this standard by following one of the procedures in paragraphs (b)(1) through (b)(10) of this section. **The applicant has selected (b)(4) as the compliance procedure. Should the applicant desire a different procedure available from (b)(1) through (b)(10), then the construction permit can be amended for this change.**

(4) Demonstrate that the monthly average as-applied organic HAP content, H_L, of all materials applied is less than 0.04 kg HAP per kg of material applied, as determined by Equation 6.

$$H_L = \frac{\sum_{i=1}^{p} M_i C_{hi} + \sum_{j=1}^{q} M_j C_{hj}}{\sum_{i=1}^{p} M_i + \sum_{j=1}^{q} M_j} \qquad \text{Eq 6}$$

APPENDIX SUBPART A

40 CFR 63 Subpart A - General Provisions - Modified for Subpart KK (12/04/97)

SOURCE: 40 CFR 63 (7-1-96 Edition) and Federal Register revision dated 12-17-96.

§ 63.1 Applicability.

(a) *General.*

(1) Terms used throughout this part are defined in § 63.2 or in the Clean Air Act (Act) as amended in 1990, except that individual subparts of this part may include specific definitions in addition to or that supersede definitions in § 63.2.

(2) This part contains national emission standards for hazardous air pollutants (NESHAP) established pursuant to section 112 of the Act as amended November 15, 1990. These standards regulate specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants listed in this part pursuant to section 112(b) of the Act. This section explains the applicability of such standards to sources affected by them. The standards in this part are independent of NESHAP contained in 40 CFR part 61. The NESHAP in part 61 promulgated by signature of the Permitting authority before November 15, 1990 (i.e., the date of enactment of the
Clean Air Act Amendments of 1990) remain in effect until they are amended, if appropriate, and added to this part.

(3) No emission standard or other requirement established under this part shall be interpreted, construed, or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established by the Permitting authority pursuant to other authority of the Act (including those requirements in part 60 of this chapter), or a standard issued under State authority.

(4) The provisions of this subpart (i.e., subpart A of this part) apply to owners or operators who are subject to subsequent subparts of this part, except when otherwise specified in a particular subpart or in a relevant standard. The general provisions in subpart A eliminate the repetition of requirements applicable to all owners or operators affected by this part. The general provisions in subpart A do not apply to regulations developed pursuant to section 112(r) of the amended Act, unless otherwise specified in those regulations.

(5) [Reserved]

(6) & (7) & (8) **Not applicable to Subpart KK.**

(9) [Reserved]

(10) For the purposes of this part, time periods specified in days shall be measured in calendar days, even if the word "calendar" is absent, unless otherwise specified in an applicable requirement.

(11) For the purposes of this part, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, test plan, report, or other written communication to the Permitting authority, the permittee shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide indications of verifiable delivery of information required to be submitted to the

Permitting authority, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(12) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Permitting authority by a permittee, or the review of such information by the Permitting authority, such time periods or deadlines may be changed by mutual agreement between the permittee and the Permitting authority. Procedures governing the implementation of this provision are specified in § 63.9(i).

(13) Special provisions set forth under an applicable subpart of this part or in a relevant standard established under this part shall supersede any conflicting provisions of this subpart.

(14) Any standards, limitations, prohibitions, or other federally enforceable requirements established pursuant to procedural regulations in this part [including, but not limited to, equivalent emission limitations established pursuant to section 112(g) of the Act] shall have the force and effect of requirements promulgated in this part and shall be subject to the provisions of this subpart, except when explicitly specified otherwise.

(b) *Initial applicability determination for this part.*

(1) Subpart KK specifies applicability.

(2) In addition to complying with the provisions of this part, the permittee of any such source may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Permitting authority of the U.S. Environmental Protection Agency (EPA) pursuant to title V of the Act (42 U.S.C. 7661). For more information about obtaining an operating permit, see part 70 of this chapter.

(3) A permittee of a stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants who determines that the source is not subject to a relevant standard or other requirement established under this part, shall keep a record of the applicability determination as specified in § 63.10(b)(3) of this subpart.

(c) *Applicability of this part after a relevant standard has been set under this part.*

(1) If a relevant standard has been established under this part, the permittee of an affected source shall comply with the provisions of this subpart and the provisions of that standard, except as specified otherwise in this subpart or that standard.

(2) Area sources are not subject to subpart KK.

(3) [Reserved]

(4) If the permittee of an existing source obtains an extension of compliance for such source in accordance with the provisions of subpart D of this part, the permittee shall comply with all requirements of this subpart except those requirements that are specifically overridden in the extension of compliance for that source.

(5) Not applicable to Subpart KK.

(d) [Reserved]

(e) *Applicability of permit program before a relevant standard has been set under this part.* After the effective date of an approved permit program in the State in which a stationary source is (or would be) located, the permittee of such source may be required to obtain a title V permit from the permitting authority in that State (or revise such a permit if one has already been issued to the source) before a relevant standard is established under this part. If the permittee is required to obtain (or revise) a title V permit, he/she shall apply to obtain (or revise) such permit

in accordance with the regulations contained in part 70 of this chapter and applicable State regulations, or the regulations codified in this chapter to implement the Federal title V permit program (42 U.S.C. 7661), whichever regulations are applicable.

§ 63.2 Definitions.

Additional definitions in subpart KK

The terms used in this part are defined in the Act or in this section as follows:

Act means the Clean Air Act (42 U.S.C. 7401 et seq., as amended by Pub. L. 101–549, 104 Stat. 2399).

Actual emissions is defined in subpart D of this part for the purpose of granting a compliance extension for an early reduction of hazardous air pollutants.

Permitting authority means the Permitting authority of the United States Environmental Protection Agency or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of this part).

Affected source, for the purposes of this part, means the stationary source, the group of stationary sources, or the portion of a stationary source that is regulated by a relevant standard or other requirement established pursuant to section 112 of the Act. Each relevant standard will define the "affected source" for the purposes of that standard. The term "affected source," as used in this part, is separate and distinct from any other use of that term in EPA regulations such as those implementing title IV of the Act. Sources regulated under part 60 or part 61 of this chapter are not affected sources for the purposes of part 63.

Alternative emission limitation means conditions established pursuant to sections 112(i)(5) or 112(i)(6) of the Act by the Permitting authority or by a State with an approved permit program.

Alternative emission standard means an alternative means of emission limitation that, after notice and opportunity for public comment, has been demonstrated by a permittee to the Permitting authority's satisfaction to achieve a reduction in emissions of any air pollutant at least equivalent to the reduction in emissions of such pollutant achieved under a relevant design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act.

Alternative test method means any method of sampling and analyzing for an air pollutant that is not a test method in this chapter and that has been demonstrated to the Permitting authority's satisfaction, using Method 301 in Appendix A of this part, to produce results adequate for the Permitting authority's determination that it may be used in place of a test method specified in this part.

Approved permit program means a State permit program approved by the Permitting authority as meeting the requirements of part 70 of this chapter or a Federal permit program established in this chapter pursuant to title V of the Act (42 U.S.C. 7661).

Area source means any stationary source of hazardous air pollutants that is not a major source as defined in this part.

Commenced means, with respect to construction or reconstruction of a stationary source, that a permittee has undertaken a continuous program of construction or reconstruction or that a permittee has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or reconstruction.

Compliance date means the date by which an affected source is required to be in compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established by the Permitting authority (or a State with an approved permit program) pursuant to section 112 of the Act.

Compliance plan means a plan that contains all of the following:

(1) A description of the compliance status of the affected source with respect to all applicable requirements established under this part;

(2) A description as follows:

(i) For applicable requirements for which the source is in compliance, a statement that the source will continue to comply with such requirements;

(ii) For applicable requirements that the source is required to comply with by a future date, a statement that the source will meet such requirements on a timely basis;

(iii) For applicable requirements for which the source is not in compliance, a narrative description of how the source will achieve compliance with such requirements on a timely basis;

(3) A compliance schedule, as defined in this section; and

(4) A schedule for the submission of certified progress reports no less frequently than every 6 months for affected sources required to have a schedule of compliance to remedy a violation.

Compliance schedule means:

(1) In the case of an affected source that is in compliance with all applicable requirements established under this part, a statement that the source will continue to comply with such requirements; or

(2) In the case of an affected source that is required to comply with applicable requirements by a future date, a statement that the source will meet such requirements on a timely basis and, if required by an applicable requirement, a detailed schedule of the dates by which each step toward compliance will be reached; or

(3) In the case of an affected source not in compliance with all applicable requirements established under this part, a schedule of remedial measures, including an enforceable sequence of actions or operations with milestones and a schedule for the submission of certified progress reports, where applicable, leading to compliance with a relevant standard, limitation, prohibition, or any federally enforceable requirement established pursuant to section 112 of the Act for which the affected source is not in compliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction non-compliance with, the applicable requirements on which it is based.

Construction means the on-site fabrication, erection, or installation of an affected source.

Continuous emission monitoring system (CEMS) means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of emissions.

Continuous monitoring system (CMS) is a comprehensive term that may include, but is not limited to, continuous emission monitoring systems, continuous opacity monitoring systems, continuous parameter monitoring systems, or other manual or automatic monitoring that is used for demonstrating compliance with an applicable regulation on a continuous basis as defined by the regulation.

Continuous opacity monitoring system (COMS) means a continuous monitoring system that measures the opacity of emissions.

Continuous parameter monitoring system means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of process or control system parameters.

Effective date means:

(1) With regard to an emission standard established under this part, the date of promulgation in the FEDERAL REGISTER of such standard; or

(2) With regard to an alternative emission limitation or equivalent emission limitation determined by the Permitting authority (or a State with an approved permit program), the date that the alternative emission limitation or equivalent emission limitation becomes effective according to the provisions of this part. The effective date of a permit program established under title V of the Act (42 U.S.C. 7661) is determined according to the regulations in this chapter establishing such programs.

Emission standard means a national standard, limitation, prohibition, or other regulation promulgated in a subpart of this part pursuant to sections 112(d), 112(h), or 112(f) of the Act.

Emissions averaging is a way to comply with the emission limitations specified in a relevant standard, whereby an affected source, if allowed under a subpart of this part, may create emission credits by reducing emissions from specific points to a level below that required by the relevant standard, and those credits are used to offset emissions from points that are not controlled to the level required by the relevant standard.

EPA means the United States Environmental Protection Agency.

Equivalent emission limitation means the maximum achievable control technology emission limitation (MACT emission limitation) for hazardous air pollutants that the Permitting authority (or a State with an approved permit program) determines on a case-by-case basis, pursuant to section 112(g) or section 112(j) of the Act, to be equivalent to the emission standard that would apply to an affected source if such standard had been promulgated by the Permitting authority under this part pursuant to section 112(d) or section 112(h) of the Act.

Excess emissions and continuous monitoring system performance report is a report that must be submitted periodically by an affected source in order to provide data on its compliance with relevant emission limits, operating parameters, and the performance of its continuous parameter monitoring systems.

Existing source means any affected source that is not a new source.

Federally enforceable means all limitations and conditions that are enforceable by the Permitting authority and citizens under the Act or that are enforceable under other statutes administered by the Permitting authority. Examples of federally enforceable limitations and conditions include, but are not limited to:

(1) Emission standards, alternative emission standards, alternative emission limitations, and equivalent emission limitations established pursuant to section 112 of the Act as amended in 1990;

(2) New source performance standards established pursuant to section 111 of the Act, and emission standards established pursuant to section 112 of the Act before it was amended in 1990;

(3) All terms and conditions in a title V permit, including any provisions that limit a source's potential to emit, unless expressly designated as not federally enforceable;

(4) Limitations and conditions that are part of an approved State Implementation Plan (SIP) or a Federal Implementation Plan (FIP);

(5) Limitations and conditions that are part of a Federal construction permit issued under 40 CFR 52.21 or any construction permit issued under regulations approved by the EPA in accordance with 40 CFR part 51;

(6) Limitations and conditions that are part of an operating permit issued pursuant to a program approved by the EPA into a SIP as meeting the EPA's minimum criteria for Federal enforceability, including adequate notice and opportunity for EPA and public comment prior to issuance of the final permit and practicable enforceability;

(7) Limitations and conditions in a State rule or program that has been approved by the EPA under subpart E of this part for the purposes of implementing and enforcing section 112; and

(8) Individual consent agreements that the EPA has legal authority to create.

Fixed capital cost means the capital needed to provide all the depreciable components of an existing source.

Fugitive emissions means those emissions from a stationary source that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. Under section 112 of the Act, all fugitive emissions are to be considered in determining whether a stationary source is a major source.

Hazardous air pollutant means any air pollutant listed in or pursuant to section 112(b) of the Act.

Issuance of a part 70 permit will occur, if the State is the permitting authority, in accordance with the requirements of part 70 of this chapter and the applicable, approved State permit program. When the EPA is the permitting authority, issuance of a title V permit occurs immediately after the EPA takes final action on the final permit.

Lesser quantity means a quantity of a hazardous air pollutant that is or may be emitted by a stationary source that the Permitting authority establishes in order to define a major source under an applicable subpart of this part.

Major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Permitting authority establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

New source means any affected source the construction or reconstruction of which is commenced after the Permitting authority first proposes a relevant emission standard under this part.

One-hour period, unless otherwise defined in an applicable subpart, means any 60-minute period commencing on the hour.

Opacity means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background. For continuous opacity monitoring systems, opacity means the fraction of incident light that is attenuated by an optical medium.

Permittee means any person who owns, leases, operates, controls, or supervises a stationary source.

Part 70 permit means any permit issued, renewed, or revised pursuant to part 70 of this chapter.

Performance audit means a procedure to analyze blind samples, the content of which is known by the Permitting authority, simultaneously with the analysis of performance test samples in order to provide a measure of test data quality.

Performance evaluation means the conduct of relative accuracy testing, calibration error testing, and other measurements used in validating the continuous monitoring system data.

Performance test means the collection of data resulting from the execution of a test method (usually three emission test runs) used to demonstrate compliance with a relevant emission standard as specified in the performance test section of the relevant standard.

Permit modification means a change to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

Permit program means a comprehensive State operating permit system established pursuant to title V of the Act (42 U.S.C. 7661) and regulations codified in part 70 of this chapter

and applicable State regulations, or a comprehensive Federal operating permit system established pursuant to title V of the Act and regulations codified in this chapter.

Permit revision means any permit modification or administrative permit amendment to a title V permit as defined in regulations codified in this chapter to implement title V of the Act (42 U.S.C. 7661).

Permitting authority means:

(1) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Permitting authority to carry out a permit program under part 70 of this chapter; or

(2) The Permitting authority, in the case of EPA-implemented permit programs under title V of the Act (42 U.S.C. 7661).

Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

Reconstruction means the replacement of components of an affected or a previously unaffected stationary source to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and

(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Permitting authority (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

Regulation promulgation schedule means the schedule for the promulgation of emission standards under this part, established by the Permitting authority pursuant to section 112(e) of the Act and published in the FEDERAL REGISTER.

Relevant standard means:

(1) An emission standard;

(2) An alternative emission standard;

(3) An alternative emission limitation; or

(4) An equivalent emission limitation established pursuant to section 112 of the Act that applies to the stationary source, the group of stationary sources, or the portion of a stationary source regulated by such standard or limitation. A relevant standard may include or consist of a design, equipment, work practice, or operational requirement, or other measure, process, method, system, or technique (including prohibition of emissions) that the Permitting authority (or a State) establishes for new or existing sources to which such standard or limitation applies. Every relevant standard established pursuant to section 112 of the Act includes subpart A of this part and all applicable appendices of this part or of other parts of this chapter that are referenced in that standard.

Responsible official means one of the following:

(1) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities and either:

(i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

(ii) The delegation of authority to such representative is approved in advance by the Permitting authority.

(2) For a partnership or sole proprietorship: a general partner or the proprietor, respectively.

(3) For a municipality, State, Federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Permitting authority of the EPA).

(4) For affected sources (as defined in this part) applying for or subject to a title V permit: ''responsible official'' shall have the same meaning as defined in part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever is applicable.

Run means one of a series of emission or other measurements needed to determine emissions for a representative operating period or cycle as specified in this part.

Shutdown means the cessation of operation of an affected source for any purpose.

Six-minute period means, with respect to opacity determinations, any one of the 10 equal parts of a 1-hour period.

Standard conditions means a temperature of 293 °K (68° F) and a pressure of 101.3 kilopascals (29.92 in. Hg).

Startup means the setting in operation of an affected source for any purpose.

State means all non-Federal authorities, including local agencies, interstate associations, and State-wide programs, that have delegated authority to implement:

(1) The provisions of this part and/or

(2) the permit program established under part 70 of this chapter. The term State shall have its conventional meaning where clear from the context.

Stationary source means any building, structure, facility, or installation which emits or may emit any air pollutant.

Test method means the validated procedure for sampling, preparing, and analyzing for an air pollutant specified in a relevant standard as the performance test procedure. The test method may include methods described in an appendix of this chapter, test methods incorporated by reference in this part, or methods validated for an application through procedures in Method 301 of appendix A of this part.

Title V permit means any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Act (42 U.S.C. 7661). A title V permit issued by a State permitting authority is called a part 70 permit in this part.

Visible emission means the observation of an emission of opacity or optical density above the threshold of vision.

§ 63.3 Units and abbreviations.

Used in this part are abbreviations and symbols of units of measure. These are defined as follows:

(a) System International (SI) units of measure:

A = ampere
g = gram
Hz = hertz
J = joule
°K = degree Kelvin

kg = kilogram
l = liter
m = meter
m^3 = cubic meter
mg = milligram = 10^{-3} gram
ml = milliliter = 10^{-3} liter
mm = millimeter = 10^{-3} meter
Mg = megagram = 10^{6} gram = metric ton
MJ = megajoule
mol = mole
N = newton
ng = nanogram = 10^{-9} gram
nm = nanometer = 10^{-9} meter
Pa = pascal
s = second
V = volt
W = watt
Ω = ohm
μg = microgram = 10^{-6} gram
μl = microliter = 10^{-6} liter

(b) Other units of measure:

Btu = British thermal unit
°C = degree Celsius (centigrade)
cal = calorie
cfm = cubic feet per minute
cc = cubic centimeter
cu ft = cubic feet
d = day
dcf = dry cubic feet
dcm = dry cubic meter
dscf = dry cubic feet at standard conditions
dscm = dry cubic meter at standard conditions
eq = equivalent
°F = degree Fahrenheit
ft = feet
ft^2 = square feet
ft^3 = cubic feet
gal = gallon
gr = grain
g-eq = gram equivalent
g-mole = gram mole
hr = hour
in. = inch
in. H_2O = inches of water
K = 1,000
kcal = kilocalorie
lb = pound
lpm = liter per minute

meq = milliequivalent
min = minute
MW = molecular weight
oz = ounces
ppb = parts per billion
ppbw = parts per billion by weight
ppbv = parts per billion by volume
ppm = parts per million
ppmw = parts per million by weight
ppmv = parts per million by volume
psia = pounds per square inch absolute
psig = pounds per square inch gage
°R = degree Rankine
scf = cubic feet at standard conditions
scfh = cubic feet at standard conditions per hour
scm = cubic meter at standard conditions
sec = second
sq ft = square feet
std = at standard conditions
v/v = volume per volume
yd^2 = square yards
yr = year

(c) Miscellaneous:

act = actual
avg = average
I.D. = inside diameter
M = molar
N = normal
O.D. = outside diameter
% = percent

§ 63.4 Prohibited activities and circumvention.

(a) *Prohibited activities.*

(1) No permittee subject to the provisions of this part shall operate any affected source in violation of the requirements of this part except under-

(i) An extension of compliance granted by the Permitting authority under this part; or

(ii) An extension of compliance granted under this part by a State with an approved permit program; or

(iii) An exemption from compliance granted by the President under section 112(i)(4) of the Act.

(2) No permittee subject to the provisions of this part shall fail to keep records, notify, report, or revise reports as required under this part.

(3) After the effective date of an approved permit program in a State, no permittee of an affected source in that State who is required under this part to obtain a title V permit shall operate such source except in compliance with the provisions of this part and the applicable requirements of the permit program in that State.

(4) [Reserved]

(5) A permittee of an affected source who is subject to an emission standard promulgated under this part shall comply with the requirements of that standard by the date(s) established in the applicable subpart(s) of this part (including this subpart) regardless of whether -

(i) A title V permit has been issued to that source; or

(ii) If a title V permit has been issued to that source, whether such permit has been revised or modified to incorporate the emission standard.

(b) *Circumvention.* No permittee subject to the provisions of this part shall build, erect, install, or use any article, machine, equipment, or process to conceal an emission that would otherwise constitute noncompliance with a relevant standard. Such concealment includes, but is not limited to

(1) The use of diluents to achieve compliance with a relevant standard based on the concentration of a pollutant in the effluent discharged to the atmosphere;

(2) The use of gaseous diluents to achieve compliance with a relevant standard for visible emissions; and

(3) The fragmentation of an operation such that the operation avoids regulation by a relevant standard.

(c) *Severability.* Notwithstanding any requirement incorporated into a title V permit obtained by a permittee subject to the provisions of this part, the provisions of this part are federally enforceable.

§ 63.5 Construction and reconstruction.

(a) *Applicability.*

(1) This section implements the preconstruction review requirements of section 112(i)(1) for sources subject to a relevant emission standard that has been promulgated in this part. In addition, this section includes other requirements for constructed and reconstructed stationary sources that are or become subject to a relevant promulgated emission standard.

(2) After the effective date of a relevant standard promulgated under this part, the requirements in this section apply to owners or operators who construct a new source or reconstruct a source after the proposal date of that standard. New or reconstructed sources that start up before the standard's effective date are not subject to the preconstruction review requirements specified in paragraphs (b)(3), (d), and (e) of this section.

(b) *Requirements for existing, newly constructed, and reconstructed sources.*

(1) Upon construction an affected source is subject to relevant standards for new sources, including compliance dates. Upon reconstruction, an affected source is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

(2) [Reserved]

(3) After the effective date of any relevant standard promulgated by the Permitting authority under this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, no person may construct a new major affected source or reconstruct a major affected source subject to such standard, or reconstruct a major source such that the source becomes a major affected source subject to the standard, without obtaining written approval, in advance, from the Permitting authority in accordance with the procedures specified in paragraphs (d) and (e) of this section.

(4) After the effective date of any relevant standard promulgated by the Permitting authority under this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, no person may construct a new affected source or reconstruct an affected source subject to such standard, or reconstruct a source such that the source becomes an affected source subject to the standard, without notifying the Permitting authority of the intended construction or reconstruction. The notification shall be submitted in accordance with the procedures in § 63.9(b) and shall include all the information required for an application for approval of construction or reconstruction as specified in paragraph (d) of this section. For major sources, the application for approval of construction or reconstruction may be used to fulfill the notification requirements of this paragraph.

(5) After the effective date of any relevant standard promulgated by the Permitting authority under this part, whether or not an approved permit program is effective in the State in which an affected source is located, no person may operate such source without complying with the provisions of this subpart and the relevant standard unless that person has received an extension of compliance or an exemption from compliance under § 63.6(i) or § 63.6(j) of this subpart.

(6) After the effective date of any relevant standard promulgated by the Permitting authority under this part, whether or not an approved permit program is effective in the State in which an affected source is located, equipment added (or a process change) to an affected source that is within the scope of the definition of affected source under the relevant standard shall be considered part of the affected source and subject to all provisions of the relevant standard established for that affected source. If a new affected source is added to the facility, the new affected source shall be subject to all the provisions of the relevant standard that are established for new sources including compliance dates.

(c) [Reserved]

(d) *Application for approval of construction or reconstruction.* The provisions of this paragraph implement section 112(i)(1) of the Act.

(1) *General application requirements.*

(i) A permittee who is subject to the requirements of paragraph (b)(3) of this section shall submit to the Permitting authority an application for approval of the construction of a new major affected source, the reconstruction of a major affected source, or the reconstruction of a major source such that the source becomes a major affected source subject to the standard. The application shall be submitted as soon as practicable before the construction or reconstruction is planned to commence (but no sooner than the effective date of the relevant standard) if the construction or reconstruction commences after the effective date of a relevant standard promulgated in this part. The application shall be submitted as soon as practicable before startup but no later than 60 days after the effective date of a relevant standard promulgated in this part if the construction or reconstruction had commenced and initial startup had not occurred before the standard's effective date. The application for approval of construction or reconstruction may be used to fulfill the initial notification requirements of § 63.9(b)(5) of this subpart. The permittee may submit the application for approval well in advance of the date construction or reconstruction is planned to commence in order to ensure a timely review by the Permitting authority and that the planned commencement date will not be delayed.

(ii) A separate application shall be submitted for each construction or reconstruction. Each application for approval of construction or reconstruction shall include at a minimum:

(A) The applicant's name and address;

(B) A notification of intention to construct a new major affected source or make any physical or operational change to a major affected source that may meet or has been determined to meet the criteria for a reconstruction, as defined in § 63.2;

(C) The address (i.e., physical location) or proposed address of the source;

(D) An identification of the relevant standard that is the basis of the application;

(E) The expected commencement date of the construction or reconstruction;

(F) The expected completion date of the construction or reconstruction;

(G) The anticipated date of (initial) startup of the source;

(H) The type and quantity of hazardous air pollutants emitted by the source, reported in units and averaging times and in accordance with the test methods specified in the relevant standard, or if actual emissions data are not yet available, an estimate of the type and quantity of hazardous air pollutants expected to be emitted by the source reported in units and averaging times specified in the relevant standard. The permittee may submit percent reduction information if a relevant standard is established in terms of percent reduction.
However, operating parameters, such as flow rate, shall be included in the submission to the extent that they demonstrate performance and compliance; and

(I) [Reserved]

(J) Other information as specified in paragraphs (d)(2) and (d)(3) of this section.

(iii) A permittee who submits estimates or preliminary information in place of the actual emissions data and analysis required in paragraphs (d)(1)(ii)(H) and (d)(2) of this section shall submit the actual, measured emissions data and other correct information as soon as available but no later than with the notification of compliance status required in § 63.9(h) (see § 63.9(h)(5)).

(2) *Application for approval of construction.* Each application for approval of construction shall include, in addition to the information required in paragraph (d)(1)(ii) of this section, technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including an identification of each point of emission for each hazardous air pollutant that is emitted (or could be emitted) and a description of the planned air pollution control system (equipment or method) for each emission point. The description of the equipment to be used for the control of emissions shall include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the control of emissions shall include an estimated control efficiency (percent) for that method. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations. A permittee who submits approximations of control efficiencies under this subparagraph shall submit the actual control efficiencies as specified in paragraph (d)(1)(iii) of this section.

(3) *Application for approval of reconstruction.* Each application for approval of reconstruction shall include, in addition to the information required in paragraph (d)(1)(ii) of this section - (i) A brief description of the affected source and the components that are to be replaced;

(ii) A description of present and proposed emission control systems (i.e., equipment or methods). The description of the equipment to be used for the control of emissions shall include each control device for each hazardous air pollutant and the estimated control efficiency (percent) for each control device. The description of the method to be used for the

control of emissions shall include an estimated control efficiency (percent) for that method. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations;

(iii) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new source;

(iv) The estimated life of the affected source after the replacements; and

(v) A discussion of any economic or technical limitations the source may have in complying with relevant standards or other requirements after the proposed replacements. The discussion shall be sufficiently detailed to demonstrate to the Permitting authority's satisfaction that the technical or economic limitations affect the source's ability to comply with the relevant standard and how they do so.

(vi) If in the application for approval of reconstruction the permittee designates the affected source as a reconstructed source and declares that there are no economic or technical limitations to prevent the source from complying with all relevant standards or other requirements, the permittee need not submit the information required in subparagraphs (d)(3) (iii) through (v) of this section, above.

(4) *Additional information.* The Permitting authority may request additional relevant information after the submittal of an application for approval of construction or reconstruction.

(e) *Approval of construction or reconstruction.*

(1) (i) If the Permitting authority determines that, if properly constructed, or reconstructed, and operated, a new or existing source for which an application under paragraph (d) of this section was submitted will not cause emissions in violation of the relevant standard(s) and any other federally enforceable requirements, the Permitting authority will approve the construction or reconstruction.

(ii) In addition, in the case of reconstruction, the Permitting authority's determination under this paragraph will be based on:

(A) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new source;

(B) The estimated life of the source after the re-placements compared to the life of a comparable entirely new source;

(C) The extent to which the components being replaced cause or contribute to the emissions from the source; and

(D) Any economic or technical limitations on compliance with relevant standards that are inherent in the proposed replacements.

(2) (i) The Permitting authority will notify the permittee in writing of approval or intention to deny approval of construction or reconstruction within 60 calendar days after receipt of sufficient information to evaluate an application submitted under paragraph (d) of this section. The 60-day approval or denial period will begin after the permittee has been notified in writing that his/her application is complete. The Permitting authority will notify the permittee in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original application and within 30 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the permittee that his/her application is not complete, the Permitting authority will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Permitting authority to enable further action on the application.

(3) Before denying any application for approval of construction or reconstruction, the Permitting authority will notify the applicant of the Permitting authority's intention to issue the denial together with - (i) Notice of the information and findings on which the intended denial is based; and

(ii) Notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the intended denial, additional information or arguments to the Permitting authority to enable further action on the application.

(4) A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 calendar days of presentation of additional information or arguments (if the application is complete), or within 60 calendar days after the final date specified for presentation if no presentation is made.

(5) Neither the submission of an application for approval nor the Permitting authority's approval of construction or reconstruction shall -

(i) Relieve a permittee of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(ii) Prevent the Permitting authority from implementing or enforcing this part or taking any other action under the Act.

(f) *Approval of construction or reconstruction based on prior State preconstruction review.*

(1) The Permitting authority may approve an application for construction or reconstruction specified in paragraphs (b)(3) and (d) of this section if the permittee of a new or reconstructed source who is subject to such requirement demonstrates to the Permitting authority's satisfaction that the following conditions have been (or will be) met:

(i) The permittee of the new or reconstructed source has undergone a preconstruction review and approval process in the State in which the source is (or would be) located before the promulgation date of the relevant standard and has received a federally enforceable construction permit that contains a finding that the source will meet the relevant emission standard as proposed, if the source is properly built and operated;

(ii) In making its finding, the State has considered factors substantially equivalent to those specified in paragraph (e)(1) of this section; and either

(iii) The promulgated standard is no more stringent than the proposed standard in any relevant aspect that would affect the Permitting authority's decision to approve or disapprove an application for approval of construction or reconstruction under this section; or

(iv) The promulgated standard is more stringent than the proposed standard but the permittee will comply with the standard as proposed during the 3-year period immediately following the effective date of the standard as allowed for in § 63.6(b)(3) of this subpart.

(2) The permittee shall submit to the Permitting authority the request for approval of construction or reconstruction under this paragraph no later than the application deadline specified in paragraph (d)(1) of this section (see also § 63.9(b)(2) of this subpart). The permittee shall include in the request information sufficient for the Permitting authority's determination. The Permitting authority will evaluate the permittee's request in accordance with the procedures specified in paragraph (e) of this section. The Permitting authority may request additional relevant information after the submittal of a request for approval of construction or reconstruction under this paragraph.

§ 63.6 Compliance with standards and maintenance requirements.

(a) *Applicability.*

(1) The requirements in this section apply to owners or operators of affected sources for which any relevant standard has been established pursuant to section 112 of the Act unless -

(i) The Permitting authority (or a State with an approved permit program) has granted an extension of compliance consistent with paragraph (i) of this section; or

(ii) The President has granted an exemption from compliance with any relevant standard in accordance with section 112(i)(4) of the Act.

(2) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source, such source shall be subject to the relevant emission standard or other requirement.

(b) *Compliance dates for new and reconstructed sources.*

(1) Except as specified in paragraphs (b)(3) and (b)(4) of this section, the permittee of a new or reconstructed source that has an initial startup before the effective date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act shall comply with such standard not later than the standard's effective date.

(2) Except as specified in paragraphs (b)(3) and (b)(4) of this section, the permittee of a new or reconstructed source that has an initial startup after the effective date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act shall comply with such standard upon startup of the source.

(3) The permittee of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established under this part pursuant to section 112(d), 112(f), or 112(h) of the Act but before the effective date (that is, promulgation) of such standard shall comply with the relevant emission standard not later than the date 3 years after the effective date if:

(i) The promulgated standard (that is, the relevant standard) is more stringent than the proposed standard; and

(ii) The permittee complies with the standard as proposed during the 3-year period immediately after the effective date.

(4) The permittee of an affected source for which construction or reconstruction is commenced after the proposal date of a relevant standard established pursuant to section 112(d) of the Act but before the proposal date of a relevant standard established pursuant to section 112(f) shall comply with the emission standard under section 112(f) not later than the date 10 years after the date construction or reconstruction is commenced, except that, if the section 112(f) standard is promulgated more than 10 years after construction or reconstruction is commenced, the owner or operator shall comply with the standard as provided in paragraphs (b)(1) and (b)(2) of this section.

(5) The permittee of a new source that is subject to the compliance requirements of paragraph (b)(3) or paragraph (b)(4) of this section shall notify the Permitting authority in accordance with § 63.9(d) of this subpart.

(6) [Reserved]

(7) After the effective date of an emission standard promulgated under this part, the permittee of an unaffected new area source (i.e., an area source for which construction or reconstruction was commenced after the proposal date of the standard) that increases its emissions of (or its potential to emit) hazardous air pollutants such that the source becomes a major source that is subject to the emission standard, shall comply with the relevant emission standard immediately upon becoming a major source. This compliance date shall apply to new area sources that become affected major sources regardless of whether the new area source previously was

affected by that standard. The new affected major source shall comply with all requirements of that standard that affect new sources.

(c) *Compliance dates for existing sources.*

(1) After the effective date of a relevant standard established under this part pursuant to section 112(d) or 112(h) of the Act, the permittee of an existing source shall comply with such standard by the compliance date established by the Permitting authority in the applicable subpart(s) of this part. Except as otherwise provided for in section 112 of the Act, in no case will the compliance date established for an existing source in an applicable subpart of this part exceed 3 years after the effective date of such standard.

(2) After the effective date of a relevant standard established under this part pursuant to section 112(f) of the Act, the permittee of an existing source shall comply with such standard not later than 90 days after the standard's effective date unless the Permitting authority has granted an extension to the source under paragraph (i)(4)(ii) of this section.

(3)–(4) [Reserved]

(5) After the effective date of an emission standard promulgated under this part, the permittee of an unaffected existing area source that increases its emissions of (or its potential to emit) hazardous air pollutants such that the source becomes a major source that is subject to the emission standard shall comply by the date specified in the standard for existing area sources that become major sources. If no such compliance date is specified in the standard, the source shall have a period of time to comply with the relevant emission standard that is equivalent to the compliance period specified in that standard for other existing sources. This compliance period shall apply to existing area sources that become affected major sources regardless of whether the existing area source previously was affected by that standard. Notwithstanding the previous two sentences, however, if the existing area source becomes a major source by the addition of a new affected source or by reconstructing, the portion of the existing facility that is a new affected source or a reconstructed source shall comply with all requirements of that standard that affect new sources, including the compliance date for new sources.

(d) [Reserved]

(e) *Operation and maintenance requirements.*

Provisions pertaining to start-ups, shutdowns, malfunctions, and CMS do not apply unless an add-on control system is used.

(1) (i) At all times, including periods of startup, shutdown, and malfunction, owners or operators shall operate and maintain any affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards.

(ii) Malfunctions shall be corrected as soon as practicable after their occurrence in accordance with the startup, shutdown, and malfunction plan required in paragraph (e)(3) of this section.

(iii) Operation and maintenance requirements established pursuant to section 112 of the Act are enforceable independent of emissions limitations or other requirements in relevant standards.

(2) Determination of whether acceptable operation and maintenance procedures are being used will be based on information available to the Permitting authority which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the startup, shutdown, and malfunction plan required in paragraph (c)(3) of this section), review of operation and maintenance records, and inspection of the source.

(3) *Startup, shutdown, and malfunction plan.*

(i) The permittee of an affected source shall develop and implement a written startup, shutdown, and malfunction plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning process and air pollution control equipment used to comply with the relevant standard. As required under § 63.8(c)(1)(i), the plan shall identify all routine or otherwise predictable CMS malfunctions. This plan shall be developed by the permittee by the source's compliance date for that relevant standard. The plan shall be incorporated by reference into the source's title V permit. The purpose of the startup, shutdown, and malfunction plan is to -

(A) Ensure that, at all times, owners or operators operate and maintain affected sources, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards;

(B) Ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and

(C) Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

(ii) During periods of startup, shutdown, and malfunction, the permittee of an affected source shall operate and maintain such source (including associated air pollution control equipment) in accordance with the procedures specified in the startup, shutdown, and malfunction plan developed under paragraph (e)(3)(i) of this section.

(iii) When actions taken by the permittee during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) are consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the permittee shall keep records for that event that demonstrate that the procedures specified in the plan were followed. These records may take the form of a "checklist," or other effective form of recordkeeping, that confirms conformance with the startup, shutdown, and malfunction plan for that event. In addition, the permittee shall keep records of these events as specified in § 63.10(b) (and elsewhere in this part), including records of the occurrence and duration of each startup, shutdown, or malfunction of operation and each malfunction of the air pollution control equipment. Furthermore, the permittee shall confirm that actions taken during the relevant reporting period during periods of startup, shutdown, and malfunction were consistent with the affected source's startup, shutdown and malfunction plan in the semiannual (or more frequent) startup, shutdown, and malfunction report required in § 63.10(d)(5).

(iv) If an action taken by the permittee during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the permittee shall record the actions taken for that event and shall report such actions within 2 working days after commencing actions inconsistent with the plan, followed by a letter within 7 working days after the end of the event, in accordance with § 63.10(d)(5) (unless the permittee makes alternative reporting arrangements, in advance, with the Permitting authority (see § 63.10(d)(5)(ii))).

(v) The permittee shall keep the written startup, shutdown, and malfunction plan on record after it is developed to be made available for inspection, upon request, by the Permitting authority for the life of the affected source or until the affected source is no longer subject to the provisions of this part. In addition, if the startup, shutdown, and malfunction plan is revised, the permittee shall keep previous (i.e., superseded) versions of the startup, shutdown, and malfunction

plan on record, to be made available for inspection, upon request, by the Permitting authority, for a period of 5 years after each revision to the plan.

(vi) To satisfy the requirements of this section to develop a startup, shutdown, and malfunction plan, the permittee may use the affected source's standard operating procedures (SOP) manual, or an Occupational Safety and Health Administration (OSHA) or other plan, provided the alternative plans meet all the requirements of this section and are made available for inspection when requested by the Permitting authority.

(vii) Based on the results of a determination made under paragraph (e)(2) of this section, the Permitting authority may require that a permittee of an affected source make changes to the startup, shutdown, and malfunction plan for that source. The Permitting authority may require reasonable revisions to a startup, shutdown, and malfunction plan, if the Permitting authority finds that the plan:

(A) Does not address a startup, shutdown, or malfunction event that has occurred;

(B) Fails to provide for the operation of the source (including associated air pollution control equipment) during a startup, shutdown, or malfunction event in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by all relevant standards; or

(C) Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control equipment as quickly as practicable.

(viii) If the startup, shutdown, and malfunction plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the startup, shutdown, and malfunction plan at the time the permittee developed the plan, the permittee shall revise the startup, shutdown, and malfunction plan within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program of corrective action for similar malfunctions of process or air pollution control equipment.

(f) *Compliance with nonopacity emission standards* -

(1) *Applicability*. The nonopacity emission standards set forth in this part shall apply at all times except during periods of startup, shutdown, and malfunction, and as otherwise specified in an applicable subpart.

(2) *Methods for determining compliance*.

(i) The Permitting authority will determine compliance with nonopacity emission standards in this part based on the results of performance tests conducted according to the procedures in § 63.7, unless otherwise specified in an applicable subpart of this part.

(ii) The Permitting authority will determine compliance with nonopacity emission standards in this part by evaluation of a permittee's conformance with operation and maintenance requirements, including the evaluation of monitoring data, as specified in § 63.6(e) and applicable subparts of this part.

(iii) If an affected source conducts performance testing at startup to obtain an operating permit in the State in which the source is located, the results of such testing may be used to demonstrate compliance with a relevant standard if -

(A) The performance test was conducted within a reasonable amount of time before an initial performance test is required to be conducted under the relevant standard;

(B) The performance test was conducted under representative operating conditions for the source;

(C) The performance test was conducted and the resulting data were reduced using EPA-approved test methods and procedures, as specified in § 63.7(e) of this subpart; and

(D) The performance test was appropriately quality-assured, as specified in § 63.7(c) of this subpart.

(iv) The Permitting authority will determine compliance with design, equipment, work practice, or operational emission standards in this part by review of records, inspection of the source, and other procedures specified in applicable subparts of this part.

(v) The Permitting authority will determine compliance with design, equipment, work practice, or operational emission standards in this part by evaluation of a permittee's conformance with operation and maintenance requirements, as specified in paragraph (e) of this section and applicable subparts of this part.

(3) *Finding of compliance*. The Permitting authority will make a finding concerning an affected
source's compliance with a nonopacity emission standard, as specified in paragraphs (f)(1) and (f)(2) of this section, upon obtaining all the compliance information required by the relevant standard (including the written reports of performance test results, monitoring results, and other information, if applicable) and any information available to the Permitting authority needed to determine whether proper operation and maintenance practices are being used.

(g) *Use of an alternative nonopacity emission standard.*

(1) If, in the Permitting authority's judgment, a permittee of an affected source has established that an alternative means of emission limitation will achieve a reduction in emissions of a hazardous air pollutant from an affected source at least equivalent to the reduction in emissions of that pollutant from that source achieved under any design, equipment, work practice, or operational emission standard, or combination thereof, established under this part pursuant to section 112(h) of the Act, the Permitting authority will publish in the FEDERAL REGISTER a notice permitting the use of the alternative emission standard for purposes of compliance with the promulgated standard. Any FEDERAL REGISTER notice under this paragraph shall be published only after the public is notified and given the opportunity to comment. Such notice will restrict the permission to the stationary source(s) or category(ies) of sources from which the alternative emission standard will achieve equivalent emission reductions. The Permitting authority will condition permission in such notice on requirements to assure the proper operation and maintenance of equipment and practices required for compliance with the alternative emission standard and other requirements, including appropriate quality assurance and quality control requirements, that are deemed necessary.

(2) A permittee requesting permission under this paragraph shall, unless otherwise specified in an applicable subpart, submit a proposed test plan or the results of testing and monitoring in accordance with § 63.7 and § 63.8, a description of the procedures followed in testing or monitoring, and a description of pertinent conditions during testing or monitoring. Any testing or monitoring conducted to request permission to use an alternative nonopacity emission standard shall be appropriately quality assured and quality controlled, as specified in § 63.7 and § 63.8.

(3) The Permitting authority may establish general procedures in an applicable subpart that accomplish the requirements of paragraphs (g)(1) and (g)(2) of this section.

(h) *Compliance with opacity and visible emission standards*
Subpart KK does not require COMS.

(i) *Extension of compliance with emission standards.*

(1) Until an extension of compliance has been granted by the Permitting authority (or a State with an approved permit program) under this paragraph, the permittee of an affected source subject to the requirements of this section shall comply with all applicable requirements of this part.

(2) *Extension of compliance for early reductions and other reductions*

(i) *Early reductions*. Pursuant to section 112(i)(5) of the Act, if the owner or operator of an existing source demonstrates that the source has achieved a reduction in emissions of hazardous air pollutants in accordance with the provisions of subpart D of this part, the Permitting authority (or the State with an approved permit program) will grant the permittee an extension of compliance with specific requirements of this part, as specified in subpart D.

(ii) *Other reductions*. Pursuant to section 112(i)(6) of the Act, if the permittee of an existing source has installed best available control technology (BACT) (as defined in section 169(3) of the Act) or technology required to meet a lowest achievable emission rate (LAER) (as defined in section 171 of the Act) prior to the promulgation of an emission standard in this part applicable to such source and the same pollutant (or stream of pollutants) controlled pursuant to the BACT or LAER installation, the Permitting authority will grant the permittee an extension of compliance with such emission standard that will apply until the date 5 years after the date on which such installation was achieved, as determined by the Permitting authority.

(3) *Request for extension of compliance*. Paragraphs (i)(4) through (i)(7) of this section concern requests for an extension of compliance with a relevant standard under this part (except requests for an extension of compliance under paragraph (i)(2)(i) of this section will be handled through procedures specified in subpart D of this part).

(4) (i) (A) The permittee of an existing source who is unable to comply with a relevant standard established under this part pursuant to section 112(d) of the Act may request that the Permitting authority (or a State, when the State has an approved part 70 permit program and the source is required to obtain a part 70 permit under that program, or a State, when the State has been delegated the authority to implement and enforce the emission standard for that source) grant an extension allowing the source up to 1 additional year to comply with the standard, if such additional period is necessary for the installation of controls. An additional extension of up to 3 years may be added for mining waste operations, if the 1-year extension of compliance is insufficient to dry and cover mining waste in order to reduce emissions of any hazardous air pollutant. The permittee of an affected source who has requested an extension of compliance under this paragraph and who is otherwise required to obtain a title V permit shall apply for such permit or apply to have the source's title V permit revised to incorporate the conditions of the extension of compliance. The conditions of an extension of compliance granted under this paragraph will be incorporated into the affected source's title V permit according to the provisions of part 70 or Federal title V regulations in this chapter (42 U.S.C. 7661), whichever are applicable.

(B) Any request under this paragraph for an extension of compliance with a relevant standard shall be submitted in writing to the appropriate authority not later than 12 months before the affected source's compliance date (as specified in paragraphs (b) and (c) of this section) for sources that are not including emission points in an emissions average, or not later than 18 months before the affected source's compliance date (as specified in paragraphs (b) and (c) of this section) for sources that are including emission points in an emissions average. Emission standards established under this part may specify alternative dates for the submittal of requests for an extension of compliance if alternatives are appropriate for the source categories affected by those standards, e.g., a compliance date specified by the standard is less than 12 (or 18) months after the standard's effective date.

(ii) The permittee of an existing source unable to comply with a relevant standard established under this part pursuant to section 112(f) of the Act may request that the Permitting authority grant an extension allowing the source up to 2 years after the standard's effective date to comply with the standard. The Permitting authority may grant such an extension if he/she finds that such additional period is necessary for the installation of controls and that steps will be taken during the period of the extension to assure that the health of persons will be protected from imminent endangerment. Any request for an extension of compliance with a relevant standard under this paragraph shall be submitted in writing to the Permitting authority not later than 15 calendar days after the effective date of the relevant standard.

(5) The permittee of an existing source that has installed BACT or technology required to meet LAER [as specified in paragraph (i)(2)(ii) of this section] prior to the promulgation of a relevant emission standard in this part may request that the Permitting authority grant an extension allowing the source 5 years from the date on which such installation was achieved, as determined by the Permitting authority, to comply with the standard. Any request for an extension of compliance with a relevant standard under this paragraph shall be submitted in writing to the Permitting authority not later than 120 days after the promulgation date of the standard. The Permitting authority may grant such an extension if he or she finds that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(6) (i) The request for a compliance extension under paragraph (i)(4) of this section shall include the following information:

(A) A description of the controls to be installed to comply with the standard;

(B) A compliance schedule, including the date by which each step toward compliance will be reached. At a minimum, the list of dates shall include:

(*1*) The date by which contracts for emission control systems or process changes for emission control will be awarded, or the date by which orders will be issued for the purchase of component parts to accomplish emission control or process changes;

(*2*) The date by which on-site construction, installation of emission control equipment, or a process change is to be initiated;

(*3*) The date by which on-site construction, installation of emission control equipment, or a process change is to be completed; and

(*4*) The date by which final compliance is to be achieved;

(C) A description of interim emission control steps that will be taken during the extension period, including milestones to assure proper operation and maintenance of emission control and process equipment; and

(D) Whether the permittee is also requesting an extension of other applicable requirements (e.g., performance testing requirements).

(ii) The request for a compliance extension under paragraph (i)(5) of this section shall include all information needed to demonstrate to the Permitting authority's satisfaction that the installation of BACT or technology to meet LAER controls the same pollutant (or stream of pollutants) that would be controlled at that source by the relevant emission standard.

(7) Advice on requesting an extension of compliance may be obtained from the Permitting authority (or the State with an approved permit program).

(8) *Approval of request for extension of compliance.* Paragraphs (i)(9) through (i)(14) of this section concern approval of an extension of compliance requested under paragraphs (i)(4) through (i)(6) of this section.

(9) Based on the information provided in any request made under paragraphs (i)(4) through (i)(6) of this section, or other information, the Permitting authority (or the State with an

approved permit program) may grant an extension of compliance with an emission standard, as specified in paragraphs (i)(4) and (i)(5) of this section.

(10) The extension will be in writing and will -

(i) Identify each affected source covered by the extension;

(ii) Specify the termination date of the extension;

(iii) Specify the dates by which steps toward compliance are to be taken, if appropriate;

(iv) Specify other applicable requirements to which the compliance extension applies (e.g., performance tests); and

(v) (A) Under paragraph (i)(4), specify any additional conditions that the Permitting authority (or the State) deems necessary to assure installation of the necessary controls and protection of the health of persons during the extension period; or

(B) Under paragraph (i)(5), specify any additional conditions that the Permitting authority deems necessary to assure the proper operation and maintenance of the installed controls during the extension period.

(11) The permittee of an existing source that has been granted an extension of compliance under paragraph (i)(10) of this section may be required to submit to the Permitting authority (or the State with an approved permit program) progress reports indicating whether the steps toward compliance outlined in the compliance schedule have been reached. The contents of the progress reports and the dates by which they shall be submitted will be specified in the written extension of compliance granted under paragraph (i)(10) of this section.

(12) (i) The Permitting authority (or the State with an approved permit program) will notify the permittee in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(i) or (i)(5) of this section. The 30-day approval or denial period will begin after the permittee has been notified in writing that his/her application is complete. The Permitting authority (or the State) will notify the permittee in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 30 calendar days after receipt of the original
application and within 30 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the permittee that his/her application is not complete, the Permitting authority will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 30 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Permitting authority to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Permitting authority (or the State with an approved permit program) will notify the permittee in writing of the Permitting authority's (or the State's) intention to issue the denial, together with -

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the permittee to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Permitting authority (or the State) before further action on the request.

(iv) The Permitting authority's final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(13) (i) The Permitting authority will notify the permittee in writing of approval or intention to deny approval of a request for an extension of compliance within 30 calendar days after receipt of sufficient information to evaluate a request submitted under paragraph (i)(4)(ii) of this section. The 30-day approval or denial period will begin after the permittee has been notified in writing that his/her application is complete. The Permitting authority (or the State) will notify the permittee in writing of the status of his/her application, that is, whether the application contains sufficient information to make a determination, within 15 calendar days after receipt of the original application and within 15 calendar days after receipt of any supplementary information that is submitted.

(ii) When notifying the permittee that his/her application is not complete, the Permitting authority will specify the information needed to complete the application and provide notice of opportunity for the applicant to present, in writing, within 15 calendar days after he/she is notified of the incomplete application, additional information or arguments to the Permitting authority to enable further action on the application.

(iii) Before denying any request for an extension of compliance, the Permitting authority will notify the permittee in writing of the Permitting authority's intention to issue the denial, together with -

(A) Notice of the information and findings on which the intended denial is based; and

(B) Notice of opportunity for the permittee to present in writing, within 15 calendar days after he/she is notified of the intended denial, additional information or arguments to the Permitting authority before further action on the request.

(iv) A final determination to deny any request for an extension will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 30 calendar days after presentation of additional information or argument (if the application is complete), or within 30 calendar days after the final date specified for the presentation if no presentation is made.

(14) The Permitting authority (or the State with an approved permit program) may terminate an extension of compliance at an earlier date than specified if any specification under paragraphs (i)(10)(iii) or (i)(10)(iv) of this section is not met.

(15) [Reserved]

(16) The granting of an extension under this section shall not abrogate the Permitting authority's authority under section 114 of the Act.

(j) *Exemption from compliance with emission standards.* The President may exempt any stationary source from compliance with any relevant standard established pursuant to section 112 of the Act for a period of not more than 2 years if the President determines that the technology to implement such standard is not available and that it is in the national security interests of the United States to do so. An exemption under this paragraph may be extended for 1 or more additional periods, each period not to exceed 2 years.

§ 63.7 Performance testing requirements.

(a) *Applicability and performance test dates.*

(1) Unless otherwise specified, this section applies to the permittee of an affected source required to do performance testing, or another form of compliance demonstration, under a relevant standard.

(2) If required to do performance testing by a relevant standard, and unless a waiver of performance testing is obtained under this section or the conditions of paragraph (c)(3)(ii)(B) of this section apply, the permittee of the affected source shall perform such tests as follows -

(i) Within 180 days after the effective date of a relevant standard for a new source that has an initial startup date before the effective date; or

(ii) Within 180 days after initial startup for a new source that has an initial startup date after the effective date of a relevant standard; or

(iii) Within 180 days after the compliance date specified in an applicable subpart of this part for an existing source subject to an emission standard established pursuant to section 112(d) of the Act, or within 180 days after startup of an existing source if the source begins operation after the effective date of the relevant emission standard; or

(iv) Within 180 days after the compliance date for an existing source subject to an emission standard established pursuant to section 112(f) of the Act; or

(v) Within 180 days after the termination date of the source's extension of compliance for an existing source that obtains an extension of compliance under § 63.6(i); or

(vi) Within 180 days after the compliance date for a new source, subject to an emission standard established pursuant to section 112(f) of the Act, for which construction or reconstruction is commenced after the proposal date of a relevant standard established pursuant to section 112(d) of the Act but before the proposal date of the relevant standard established pursuant to section 112(f) [see § 63.6(b)(4)]; or

(vii) [Reserved]; or (viii) [Reserved]; or

(ix) When an emission standard promulgated under this part is more stringent than the standard proposed (see § 63.6(b)(3)), the permittee of a new or reconstructed source subject to that standard for which construction or reconstruction is commenced between the proposal and promulgation dates of the standard shall comply with performance testing requirements within 180 days after the standard's effective date, or within 180 days after startup of the source, whichever is later. If the promulgated standard is more stringent than the proposed standard, the permittee may choose to demonstrate compliance with either the proposed or the promulgated standard. If the permittee chooses to comply with the proposed standard initially, the permittee shall conduct a second performance test within 3 years and 180 days after the effective date of the standard, or after startup of the source, whichever is later, to demonstrate compliance with the promulgated standard.

(3) The Permitting authority may require a permittee to conduct performance tests at the affected source at any other time when the action is authorized by section 114 of the Act.

(b) *Notification of performance test.*

(1) The permittee of an affected source shall notify the Permitting authority in writing of his or her intention to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin to allow the Permitting authority, upon request, to review and approve the site-specific test plan required under paragraph (c) of this section and to have an observer present during the test. Observation of the performance test by the Permitting authority is optional.

(2) In the event the permittee is unable to conduct the performance test on the date specified in the notification requirement specified in paragraph (b)(1) of this section, due to unforeseeable circumstances beyond his or her control, the permittee shall notify the Permitting authority within 5 days prior to the scheduled performance test date and specify the date when the performance test is rescheduled. This notification of delay in conducting the performance test shall not relieve the permittee of legal responsibility for compliance with any other applicable provisions of this part or with any other applicable Federal, State, or local requirement, nor will it prevent the

Permitting authority from implementing or enforcing this part or taking any other action under the Act.

(c) *Quality assurance program.*

(1) The results of the quality assurance program required in this paragraph will be considered by the Permitting authority when he/she determines the validity of a performance test.

(2) (i) *Submission of site-specific test plan.* Before conducting a required performance test, the permittee of an affected source shall develop and, if requested by the Permitting authority, shall submit a site-specific test plan to the Permitting authority for approval. The test plan shall include a test program summary, the test schedule, data quality objectives, and both an internal and external quality assurance (QA) program. Data quality objectives are the pretest expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision; an example of internal QA is the sampling and analysis of replicate samples.

(iii) The external QA program shall include, at a minimum, application of plans for a test method performance audit (PA) during the performance test. The PA's consist of blind audit samples provided by the Permitting authority and analyzed during the performance test in order to provide a measure of test data bias. The external QA program may also include systems audits that include the opportunity for on-site evaluation by the Permitting authority of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iv) The permittee of an affected source shall submit the site-specific test plan to the Permitting authority upon the Permitting authority's request at least 60 calendar days before the performance test is scheduled to take place, that is, simultaneously with the notification of intention to conduct a performance test required under paragraph (b) of this section, or on a mutually agreed upon date.

(v) The Permitting authority may request additional relevant information after the submittal of a site-specific test plan.

(3) *Approval of site-specific test plan.*

(i) The Permitting authority will notify the permittee of approval or intention to deny approval of the site-specific test plan (if review of the site-specific test plan is requested) within 30 calendar days after receipt of the original plan and within 30 calendar days after receipt of any supplementary information that is submitted under paragraph (c)(3)(i)(B) of this section. Before disapproving any site-specific test plan, the Permitting authority will notify the applicant of the Permitting authority's intention to disapprove the plan together with -

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the permittee to present, within 30 calendar days after he/she is notified of the intended disapproval, additional information to the Permitting authority before final action on the plan.

(ii) In the event that the Permitting authority fails to approve or disapprove the site-specific test plan within the time period specified in paragraph (c)(3)(i) of this section, the following conditions shall apply:

(A) If the permittee intends to demonstrate compliance using the test method(s) specified in the relevant standard, the permittee shall conduct the performance test within the time specified in this section using the specified method(s);

(B) If the permittee intends to demonstrate compliance by using an alternative to any test method specified in the relevant standard, the permittee shall refrain from

conducting the performance test until the Permitting authority approves the use of the alternative method when the Permitting authority approves the site-specific test plan (if review of the site-specific test plan is requested) or until after the alternative method is approved (see paragraph (f) of this section). If the Permitting authority does not approve the site-specific test plan (if review is requested) or the use of the alternative method within 30 days before the test is scheduled to begin, the performance test dates specified in paragraph (a) of this section may be extended such that the permittee shall conduct the performance test within 60 calendar days after the Permitting authority approves the site-specific test plan or after use of the alternative method is approved. Notwithstanding the requirements in the preceding two sentences, the permittee may proceed to conduct the performance test as required in this section (without the Permitting authority's prior approval of the site-specific test plan) if he/she subsequently chooses to use the specified testing and monitoring methods instead of an alter-native.

(iii) Neither the submission of a site-specific test plan for approval, nor the Permitting authority's approval or disapproval of a plan, nor the Permitting authority's failure to approve or disapprove a plan in a timely manner shall -

(A) Relieve a permittee of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Permitting authority from implementing or enforcing this part or taking any other action under the Act.

(4) (i) *Performance test method audit program.* The permittee shall analyze performance audit (PA) samples during each performance test. The permittee shall request performance audit materials 45 days prior to the test date. Cylinder audit gases may be obtained by contacting the Cylinder Audit Coordinator, Quality Assurance Division (MD–77B), Atmospheric Research and Exposure Assessment Laboratory (AREAL), U.S. EPA, Research Triangle Park, North Carolina 27711. All other audit materials may be obtained by contacting the Source Test Audit Coordinator, Quality Assurance Division (MD–77B), AREAL, U.S. EPA, Research Triangle Park, North Carolina 27711.

(ii) The Permitting authority will have sole discretion to require any subsequent remedial actions of the permittee based on the PA results.

(iii) If the Permitting authority fails to provide required PA materials to a permittee of an affected source in time to analyze the PA samples during a performance test, the requirement to conduct a PA under this paragraph shall be waived for such source for that performance test. Waiver under this paragraph of the requirement to conduct a PA for a particular performance test does not constitute a waiver of the requirement to conduct a PA for future required performance tests.

(d) *Performance testing facilities.* If required to do performance testing, the permittee of each new source and, at the request of the Permitting authority, the permittee of each existing source, shall provide performance testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such source. This includes:

(i) Constructing the air pollution control system such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures; and

(ii) Providing a stack or duct free of cyclonic flow during performance tests, as demonstrated by applicable test methods and procedures;

(2) Safe sampling platform(s);

(3) Safe access to sampling platform(s);

(4) Utilities for sampling and testing equipment; and

(5) Any other facilities that the Permitting authority deems necessary for safe and adequate testing of a source.

(e) *Conduct of performance tests.*

(1) Performance tests shall be conducted under such conditions as the Permitting authority specifies to the permittee based on representative performance (i.e., performance based on normal operating conditions) of the affected source. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test, nor shall emissions in excess of the level of the relevant standard during periods of startup, shutdown, and malfunction be considered a violation of the relevant standard unless otherwise specified in the relevant standard or a determination of noncompliance is made under § 63.6(e). Upon request, the permittee shall make available to the Permitting authority such records as may be necessary to determine the conditions of performance tests.

(2) Performance tests shall be conducted and data shall be reduced in accordance with the test methods and procedures set forth in this section, in each relevant standard, and, if required, in applicable appendices of parts 51, 60, 61, and 63 of this chapter unless the Permitting authority -

(i) Specifies or approves, in specific cases, the use of a test method with minor changes in methodology; or

(ii) Approves the use of an alternative test method, the results of which the Permitting authority has determined to be adequate for indicating whether a specific affected source is in compliance; or

(iii) Approves shorter sampling times and smaller sample volumes when necessitated by process variables or other factors; or

(iv) Waives the requirement for performance tests because the permittee of an affected source has demonstrated by other means to the Permitting authority's satisfaction that the affected source is in compliance with the relevant standard.

(3) Unless otherwise specified in a relevant standard or test method, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the relevant standard. For the purpose of determining compliance with a relevant standard, the arithmetic mean of the results of the three runs shall apply. Upon receiving approval from the Permitting authority, results of a test run may be replaced with results of an additional test run in the event that

(i) A sample is accidentally lost after the testing team leaves the site; or

(ii) Conditions occur in which one of the three runs must be discontinued because of forced shutdown; or

(iii) Extreme meteorological conditions occur; or

(iv) Other circumstances occur that are beyond the permittee's control.

(4) Nothing in paragraphs (e)(1) through (e)(3) of this section shall be construed to abrogate the Permitting authority's authority to require testing under section 114 of the Act.

(f) *Use of an alternative test method -*

(1) *General.* Until permission to use an alternative test method has been granted by the Permitting authority under this paragraph, the permittee of an affected source remains subject to the requirements of this section and the relevant standard.

(2) The permittee of an affected source required to do performance testing by a relevant standard may use an alternative test method from that specified in the standard provided that the permittee -

(i) Notifies the Permitting authority of his or her intention to use an alternative test method not later than with the submittal of the site-specific test plan (if requested by the Permitting

authority) or at least 60 days before the performance test is scheduled to begin if a site-specific test plan is not submitted;

(ii) Uses Method 301 in appendix A of this part to validate the alternative test method; and

(iii) Submits the results of the Method 301 validation process along with the notification of intention and the justification for not using the specified test method. The permittee may submit the information required in this paragraph well in advance of the deadline specified in paragraph (f)(2)(i) of this section to ensure a timely review by the Permitting authority in order to meet the performance test date specified in this section or the relevant standard.

(3) The Permitting authority will determine whether the permittee's validation of the proposed alternative test method is adequate when the Permitting authority approves or disapproves the site-specific test plan required under paragraph (c) of this section. If the Permitting authority finds reasonable grounds to dispute the results obtained by the Method 301 validation process, the Permitting authority may require the use of a test method specified in a relevant standard.

(4) If the Permitting authority finds reasonable grounds to dispute the results obtained by an alternative test method for the purposes of demonstrating compliance with a relevant standard, the Permitting authority may require the use of a test method specified in a relevant standard.

(5) If the permittee uses an alternative test method for an affected source during a required performance test, the permittee of such source shall continue to use the alternative test method for subsequent performance tests at that affected source until he or she receives approval from the Permitting authority to use another test method as allowed under § 63.7(f).

(6) Neither the validation and approval process nor the failure to validate an alternative test method shall abrogate the permittee's responsibility to comply with the requirements of this part.

(g) *Data analysis, recordkeeping, and reporting.*

(1) Unless otherwise specified in a relevant standard or test method, or as otherwise approved by the Permitting authority in writing, results of a performance test shall include the analysis of samples, determination of emissions, and raw data. A performance test is "completed" when field sample collection is terminated. The permittee of an affected source shall report the results of the performance test to the Permitting authority before the close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as approved otherwise in writing by the Permitting authority (see § 63.9(i)). The results of the performance test shall be submitted as part of the notification of compliance status required under § 63.9(h). Before a title V permit has been issued to the permittee of an affected source, the permittee shall send the results of the performance test to the Permitting authority. After a title V permit has been issued to the permittee of an affected source, the permittee shall send the
results of the performance test to the appropriate permitting authority.

(2) [Reserved]

(3) For a minimum of 5 years after a performance test is conducted, the permittee shall retain and make available, upon request, for inspection by the Permitting authority the records or results of such performance test and other data needed to determine emissions from an affected source.

(h) *Waiver of performance tests.*

(1) Until a waiver of a performance testing requirement has been granted by the Permitting authority under this paragraph, the permittee of an affected source remains subject to the requirements of this section.

(2) Individual performance tests may be waived upon written application to the Permitting authority if, in the Permitting authority's judgment, the source is meeting the relevant standard(s) on a continuous basis, or the source is being operated under an extension of compliance, or the permittee has requested an extension of compliance and the Permitting authority is still considering that request.

(3) Request to waive a performance test.

(i) If a request is made for an extension of compliance under § 63.6(i), the application for a waiver of an initial performance test shall accompany the information required for the request for an extension of compliance. If no extension of compliance is requested or if the permittee has requested an extension of compliance and the Permitting authority is still considering that request, the application for a waiver of an initial performance test shall be submitted at least 60 days before the performance test if the site-specific test plan under paragraph (c) of this section is not submitted.

(ii) If an application for a waiver of a subsequent performance test is made, the application may accompany any required compliance progress report, compliance status report, or excess emissions and continuous monitoring system performance report [such as those required under § 63.6(I), § 63.9(h), and § 63.10(e) or specified in a relevant standard or in the source's title V permit], but it shall be submitted at least 60 days before the performance test if the site-specific test plan required under paragraph (c) of this section is not submitted.

(iii) Any application for a waiver of a performance test shall include information justifying the permittee's request for a waiver, such as the technical or economic infeasibility, or the impracticality, of the affected source performing the required test.

(4) Approval of request to waive performance test. The Permitting authority will approve or deny a request for a waiver of a performance test made under paragraph (h)(3) of this section when
he/she -

(i) Approves or denies an extension of compliance under § 63.6(i)(8); or

(ii) Approves or disapproves a site-specific test plan under § 63.7(c)(3); or

(iii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iv) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) Approval of any waiver granted under this section shall not abrogate the Permitting authority's authority under the Act or in any way prohibit the Permitting authority from later canceling the waiver. The cancellation will be made only after notice is given to the permittee of the affected source.

§ 63.8 Monitoring requirements.

(a) *Applicability.*

(1) (i) Unless otherwise specified in a relevant standard, this section applies to the permittee of an affected source required to do monitoring under that standard.

(ii) Relevant standards established under this part will specify monitoring systems, methods, or procedures, monitoring frequency, and other pertinent requirements for source(s) regulated by those standards. This section specifies general monitoring requirements such as those

governing the conduct of monitoring and requests to use alternative monitoring methods. In addition, this section specifies detailed requirements that apply to affected sources required to use continuous monitoring systems (CMS) under a relevant standard.

(2) For the purposes of this part, all CMS required under relevant standards shall be subject to the provisions of this section upon promulgation of performance specifications for CMS as specified in the relevant standard or otherwise by the Permitting authority.

(3) [Reserved]

(4) Subpart KK specifies the use of solvent recovery devices or oxidizers.

(b) *Conduct of monitoring.*

(1) Monitoring shall be conducted as set forth in this section and the relevant standard(s) unless the Permitting authority -

(i) Specifies or approves the use of minor changes in methodology for the specified monitoring requirements and procedures; or

(ii) Approves the use of alternatives to any monitoring requirements or procedures.

(iii) Owners or operators with flares subject to § 63.11(b) are not subject to the requirements of this section unless otherwise specified in the relevant standard.

(2) (i) When the effluents from a single affected source, or from two or more affected sources, are combined before being released to the atmosphere, the permittee shall install an applicable CMS on each effluent.

(ii) If the relevant standard is a mass emission standard and the effluent from one affected source is released to the atmosphere through more than one point, the permittee shall install an applicable CMS at each emission point unless the installation of fewer systems is -

(A) Approved by the Permitting authority; or

(B) Provided for in a relevant standard (e.g., instead of requiring that a CMS be installed at each emission point before the effluents from those points are channeled to a common control device, the standard specifies that only one CMS is required to be installed at the vent of the control device).

(3) When more than one CMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the permittee shall report the results as required for each CMS. However, when one CMS is used as a backup to another CMS, the permittee shall report the results from the CMS used to meet the monitoring requirements of this part. If both such CMS are used during a particular reporting period to meet the monitoring requirements of this part, then the permittee shall report the results from each CMS for the relevant compliance period.

(c) Operation and maintenance of continuous monitoring systems.

(1) The permittee of an affected source shall maintain and operate each CMS as specified in this section, or in a relevant standard, and in a manner consistent with good air pollution control practices.

(i) The permittee of an affected source shall ensure the immediate repair or replacement of CMS parts to correct "routine" or otherwise predictable CMS malfunctions as defined in the source's startup, shutdown, and malfunction plan required by § 63.6(e)(3). The permittee shall keep the necessary parts for routine repairs of the affected equipment readily available. If the plan is followed and the CMS repaired immediately, this action shall be reported in the semiannual startup, shutdown, and malfunction report required under § 63.10(d)(5)(i).

(ii) For those malfunctions or other events that affect the CMS and are not addressed by the startup, shutdown, and malfunction plan, the permittee shall report actions that are not consistent with the startup, shutdown, and malfunction plan within 24 hours after

commencing actions inconsistent with the plan. The permittee shall send a followup report within 2 weeks after commencing actions inconsistent with the plan that either certifies that corrections have been made or includes a corrective action plan and schedule. The permittee shall provide proof that repair parts have been ordered or any other records that would indicate that the delay in making repairs is beyond his or her control.

(iii) The Permitting authority's determination of whether acceptable operation and maintenance procedures are being used will be based on information that may include, but is not limited to, review of operation and maintenance procedures, operation and maintenance records, manufacturing recommendations and specifications, and inspection of the CMS. Operation and maintenance procedures written by the CMS manufacturer and other guidance also can be used to maintain and operate each CMS.

(2) All CMS shall be installed such that representative measurements of emissions or process parameters from the affected source are obtained. In addition, CEMS shall be located according to procedures contained in the applicable performance specification(s).

(3) All CMS shall be installed, operational, and the data verified as specified in the relevant standard either prior to or in conjunction with conducting performance tests under § 63.7. Verification of operational status shall, at a minimum, include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system.

(4) **Subpart KK specifies CMS sampling requirements.**

(5) **Subpart KK does not require COMS.**

(6) **Provisions for COMS are not applicable.**

The permittee of a CMS installed in accordance with the provisions of this part and the applicable CMS performance specification(s) shall check the zero (low-level) and high-level calibration drifts at least once daily in accordance with the written procedure specified in the performance evaluation plan developed under paragraphs (e)(3)(i) and (e)(3)(ii) of this section. The zero (low-level) and high-level calibration drifts shall be adjusted, at a minimum, whenever the 24-hour zero (low-level) drift exceeds two times the limits of the applicable performance specification(s) specified in the relevant standard. The system must allow the amount of excess zero (low-level) and high-level drift measured at the 24-hour interval checks to be recorded and quantified, whenever specified. For COMS, all optical and instrumental surfaces exposed to the effluent gases shall be cleaned prior to performing the zero (low-level) and high-level drift adjustments; the optical surfaces and instrumental surfaces shall be cleaned when the cumulative automatic zero compensation, if applicable, exceeds 4 percent opacity.

(7) (i) A CMS is out of control if -

(A) The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or

(B) The CMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit; or

(C) The COMS CD exceeds two times the limit in the applicable performance specification in the relevant standard.

(ii) When the CMS is out of control, the permittee of the affected source shall take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out of control. The permittee shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour the permittee conducts a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established under this part. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. During the period the CMS is out of

control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

(8) The permittee of a CMS that is out of control as defined in paragraph (c)(7) of this section shall submit all information concerning out-of-control periods, including start and end dates and hours and descriptions of corrective actions taken, in the excess emissions and continuous monitoring system performance report required in § 63.10(e)(3).

(d) *Quality control program.*

(1) The results of the quality control program required in this paragraph will be considered by the Permitting authority when he/she determines the validity of monitoring data.

(2) The permittee of an affected source that is required to use a CMS and is subject to the monitoring requirements of this section and a relevant standard shall develop and implement a CMS quality control program. As part of the quality control program, the permittee shall develop and submit to the Permitting authority for approval upon request a site-specific performance evaluation test plan for the CMS performance evaluation required in paragraph (e)(3)(i) of this section, according to the procedures specified in paragraph (e). In addition, each quality control program shall include, at a minimum, a written protocol that describes procedures for each of the following operations:

(i) Initial and any subsequent calibration of the CMS;

(ii) Determination and adjustment of the calibration drift of the CMS;

(iii) Preventive maintenance of the CMS, including spare parts inventory;

(iv) Data recording, calculations, and reporting;

(v) Accuracy audit procedures, including sampling and analysis methods; and

(vi) Program of corrective action for a malfunctioning CMS.

(3) The permittee shall keep these written procedures on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Permitting authority. If the performance evaluation plan is revised, the permittee shall keep previous (i.e., superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Permitting authority, for a period of 5 years after each revision to the plan. Where relevant, e.g., program of corrective action for a malfunctioning CMS, these written procedures may be incorporated as part of the affected source's startup, shutdown, and malfunction plan to avoid duplication of planning and recordkeeping efforts.

(e) *Performance evaluation of continuous monitoring systems* -

(1) *General.* When required by a relevant standard, and at any other time the Permitting authority may require under section 114 of the Act, the permittee of an affected source being monitored shall conduct a performance evaluation of the CMS. Such performance evaluation shall be conducted according to the applicable specifications and procedures described in this section or in the relevant standard.

(2) *Notification of performance evaluation.* The permittee shall notify the Permitting authority in writing of the date of the performance evaluation simultaneously with the notification of the performance test date required under § 63.7(b) or at least 60 days prior to the date the performance evaluation is scheduled to begin if no performance test is required.

(3) (i) *Submission of site-specific performance evaluation test plan.* Before conducting a required CMS performance evaluation, the permittee of an affected source shall develop and submit a site-specific performance evaluation test plan to the Permitting authority for approval upon request. The performance evaluation test plan shall include the evaluation program objectives, an evaluation program summary, the performance evaluation schedule, data quality

objectives, and both an internal and external QA program. Data quality objectives are the pre-evaluation expectations of precision, accuracy, and completeness of data.

(ii) The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of CMS performance. The external QA program shall include, at a minimum, systems audits that include the opportunity for on-site evaluation by the Permitting authority of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

(iii) The permittee of an affected source shall submit the site-specific performance evaluation test plan to the Permitting authority (if requested) at least 60 days before the performance test or performance evaluation is scheduled to begin, or on a mutually agreed upon date, and review and approval of the performance evaluation test plan by the Permitting authority will occur with the review and approval of the site-specific test plan (if review of the site-specific test plan is requested).

(iv) The Permitting authority may request additional relevant information after the submittal of a site-specific performance evaluation test plan.

(v) In the event that the Permitting authority fails to approve or disapprove the site-specific performance evaluation test plan within the time period specified in § 63.7(c)(3), the following conditions shall apply:

(A) If the permittee intends to demonstrate compliance using the monitoring method(s) specified in the relevant standard, the permittee shall conduct the performance evaluation within the time specified in this subpart using the specified method(s);

(B) If the permittee intends to demonstrate compliance by using an alternative to a monitoring method specified in the relevant standard, the permittee shall refrain from conducting the performance evaluation until the Permitting authority approves the use of the alternative method. If the Permitting authority does not approve the use of the alternative method within 30 days before the performance evaluation is scheduled to begin, the performance evaluation deadlines specified in paragraph (e)(4) of this section may be extended such that the permittee shall conduct the performance evaluation within 60 calendar days after the Permitting authority approves the use of the alternative method. Notwithstanding the requirements in the preceding two sentences, the permittee may proceed to conduct the performance evaluation as required in this section (without the Permitting authority's prior approval of the site-specific performance evaluation test plan) if he/she subsequently chooses to use the specified monitoring method(s) instead of an alternative.

(vi) Neither the submission of a site-specific performance evaluation test plan for approval, nor the Permitting authority's approval or disapproval of a plan, nor the Permitting authority' failure to approve or disapprove a plan in a timely manner shall -

(A) Relieve a permittee of legal responsibility for compliance with any applicable provisions of this part or with any other applicable Federal, State, or local requirement; or

(B) Prevent the Permitting authority from implementing or enforcing this part or taking any other action under the Act.

(4) *Conduct of performance evaluation and performance evaluation dates.* The permittee of an affected source shall conduct a performance evaluation of a required CMS during any performance test required under § 63.7 in accordance with the applicable performance specification as specified in the relevant standard. Notwithstanding the requirement in the previous sentence, if the permittee of an affected source elects to submit COMS data for compliance with a relevant opacity emission standard as provided under § 63.6(h)(7), he/she shall conduct a performance evaluation of the COMS as specified in the relevant standard, before the performance

test required under § 63.7 is conducted in time to submit the results of the performance evaluation as specified in paragraph (e)(5)(ii) of this section. If a performance test is not required, or the requirement for a performance test has been waived under § 63.7(h), the permittee of an affected source shall conduct the performance evaluation not later than 180 days after the appropriate compliance date for the affected source, as specified in § 63.7(a), or as otherwise specified in the relevant standard.

(5) *Reporting performance evaluation results.*

(i) The permittee shall furnish the Permitting authority a copy of a written report of the results of the performance evaluation simultaneously with the results of the performance test required under § 63.7 or within 60 days of completion of the performance evaluation if no test is required, unless otherwise specified in a relevant standard. The Permitting authority may request that the permittee submit the raw data from a performance evaluation in the report of the performance evaluation results.

(ii) The permittee of an affected source using a COMS to determine opacity compliance during any performance test required under § 63.7 and described in § 63.6(d)(6) shall furnish the Permitting authority two or, upon request, three copies of a written report of the results of the COMS performance evaluation under this paragraph. The copies shall be provided at least 15 calendar days before the performance test required under § 63.7 is conducted.

(f) *Use of an alternative monitoring method* -

(1) *General.* Until permission to use an alternative monitoring method has been granted by the Permitting authority under this paragraph, the permittee of an affected source remains subject to the requirements of this section and the relevant standard.

(2) After receipt and consideration of written application, the Permitting authority may approve alternatives to any monitoring methods or procedures of this part including, but not limited to, the following:

(i) Alternative monitoring requirements when installation of a CMS specified by a relevant standard would not provide accurate measurements due to liquid water or other interferences caused by substances within the effluent gases;

(ii) Alternative monitoring requirements when the affected source is infrequently operated;

(iii) Alternative monitoring requirements to accommodate CEMS that require additional measurements to correct for stack moisture conditions;

(iv) Alternative locations for installing CMS when the permittee can demonstrate that installation at alternate locations will enable accurate and representative measurements;

(v) Alternate methods for converting pollutant concentration measurements to units of the relevant standard;

(vi) Alternate procedures for performing daily checks of zero (low-level) and high-level drift that do not involve use of high-level gases or test cells;

(vii) Alternatives to the American Society for Testing and Materials (ASTM) test methods or sampling procedures specified by any relevant standard;

(viii) Alternative CMS that do not meet the design or performance requirements in this part, but adequately demonstrate a definite and consistent relationship between their measurements and the measurements of opacity by a system complying with the requirements as specified in the relevant standard. The Permitting authority may require that such demonstration be performed for each affected source; or

(ix) Alternative monitoring requirements when the effluent from a single affected source or the combined effluent from two or more affected sources is released to the atmosphere through more than one point.

(3) If the Permitting authority finds reasonable grounds to dispute the results obtained by an alternative monitoring method, requirement, or procedure, the Permitting authority may require the use of a method, requirement, or procedure specified in this section or in the relevant standard. If the results of the specified and alternative method, requirement, or procedure do not agree, the results obtained by the specified method, requirement, or procedure shall prevail.

(4) (i) Request to use alternative monitoring method. A permittee who wishes to use an alternative monitoring method shall submit an application to the Permitting authority as described in paragraph (f)(4)(ii) of this section, below. The application may be submitted at any time provided that the monitoring method is not used to demonstrate compliance with a relevant standard or other requirement. If the alternative monitoring method is to be used to demonstrate compliance with a relevant standard, the application shall be submitted not later than with the site-specific test plan required in § 63.7(c) (if requested) or with the site-specific performance evaluation plan (if requested) or at least 60 days before the performance evaluation is scheduled to begin.

(ii) The application shall contain a description of the proposed alternative monitoring system and a performance evaluation test plan, if required, as specified in paragraph (e)(3) of this section. In addition, the application shall include information justifying the permittee's request for an alternative monitoring method, such as the technical or economic infeasibility, or the impracticality, of the affected source using the required method.

(iii) The permittee may submit the information required in this paragraph well in advance of the submittal dates specified in paragraph (f)(4)(i) above to ensure a timely review by the Permitting authority in order to meet the compliance demonstration date specified in this section or the relevant standard.

(5) Approval of request to use alternative monitoring method.

(i) The Permitting authority will notify the permittee of approval or intention to deny approval of the request to use an alternative monitoring method within 30 calendar days after receipt of the original request and within 30 calendar days after receipt of any supplementary information that is submitted. Before disapproving any request to use an alternative monitoring method, the Permitting authority will notify the applicant of the Permitting authority's intention to disapprove the request together with -

(A) Notice of the information and findings on which the intended disapproval is based; and

(B) Notice of opportunity for the permittee to present additional information to the Permitting authority before final action on the request. At the time the Permitting authority notifies the applicant of his or her intention to disapprove the request, the Permitting authority will specify how much time the permittee will have after being notified of the intended disapproval to submit the additional information.

(ii) The Permitting authority may establish general procedures and criteria in a relevant standard to accomplish the requirements of paragraph (f)(5)(i) of this section.

(iii) If the Permitting authority approves the use of an alternative monitoring method for an affected source under paragraph (f)(5)(i) of this section, the permittee of such source shall continue to use the alternative monitoring method until he or she receives approval from the Permitting authority to use another monitoring method as allowed by § 63.8(f).

(6) Alternative to the relative accuracy test. An alternative to the relative accuracy test for CEMS specified in a relevant standard may be requested as follows:

(i) *Criteria for approval of alternative procedures.* An alternative to the test method for determining relative accuracy is available for affected sources with emission rates demonstrated to be less than 50 percent of the relevant standard. The permittee of an affected source may petition the Permitting authority under paragraph (f)(6)(ii) of this section to substitute

the relative accuracy test in section 7 of Performance Specification 2 with the procedures in section 10 if the results of a performance test conducted according to the requirements in § 63.7, or other tests performed following the criteria in § 63.7, demonstrate that the emission rate of the pollutant of interest in the units of the relevant standard is less than 50 percent of the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the permittee may petition the Permitting authority to substitute the relative accuracy test with the procedures in section 10 of Performance Specification 2 if the control device exhaust emission rate is less than 50 percent of the level needed to meet the control efficiency requirement. The alternative procedures do not apply if the CEMS is used continuously to determine compliance with the relevant standard.

(ii) *Petition to use alternative to relative accuracy test.* The petition to use an alternative to the relative accuracy test shall include a detailed description of the procedures to be applied, the location and the procedure for conducting the alternative, the concentration or response levels of the alternative relative accuracy materials, and the other equipment checks included in the alternative procedure(s). The Permitting authority will review the petition for completeness and applicability. The Permitting authority's determination to approve an alternative will depend on the intended use of the CEMS data and may require specifications more stringent than in Performance Specification 2.

(iii) *Rescission of approval to use alternative to relative accuracy test.* The Permitting authority will review the permission to use an alternative to the CEMS relative accuracy test and may rescind such permission if the CEMS data from a successful completion of the alternative relative accuracy procedure indicate that the affected source's emissions are approaching the level of the relevant standard. The criterion for reviewing the permission is that the collection of CEMS data shows that emissions have exceeded 70 percent of the relevant standard for any averaging period, as specified in the relevant standard. For affected sources subject to emission limitations expressed as control efficiency levels, the criterion for reviewing the permission is that the collection of CEMS data shows that exhaust emissions have exceeded 70 percent of the level needed to meet the control efficiency requirement for any averaging period, as specified in the relevant standard. The permittee of the affected source shall maintain records and determine the level of emissions relative to the criterion for permission to use an alternative for relative accuracy testing. If this criterion is exceeded, the permittee shall notify the Permitting authority within 10 days of such occurrence and include a description of the nature and cause of the increased emissions. The Permitting authority will review the notification and may rescind permission to use an alternative and require the permittee to conduct a relative accuracy test of the CEMS as specified in section 7 of Performance Specification 2.

(g) *Reduction of monitoring data.*

Subpart KK specifies CMS data reduction requirements.

§ 63.9 Notification requirements.

(a) *Applicability and general information.*

(1) The requirements in this section apply to owners and operators of affected sources that are subject to the provisions of this part, unless specified otherwise in a relevant standard.

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a notice that contains all the information required in a notification listed in this section, the permittee may send the Permitting authority a copy of the notice sent to the State to satisfy the requirements of this section for that notification.

(4) (i) Before a State has been delegated the authority to implement and enforce notification requirements established under this part, the permittee of an affected source in such State subject to such requirements shall submit notifications to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in § 63.13).

(ii) After a State has been delegated the authority to implement and enforce notification requirements established under this part, the permittee of an affected source in such State subject to such requirements shall submit notifications to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the permittee shall send a copy of each notification submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any notifications at its discretion.

(b) *Initial notifications.*

(1) (i) The requirements of this paragraph apply to the permittee of an affected source when such source becomes subject to a relevant standard.

(ii) If an area source that otherwise would be subject to an emission standard or other requirement established under this part if it were a major source subsequently increases its emissions of hazardous air pollutants (or its potential to emit hazardous air pollutants) such that the source is a major source that is subject to the emission standard or other requirement, such source shall be subject to the notification requirements of this section.

(iii) Affected sources that are required under this paragraph to submit an initial notification may use the application for approval of construction or reconstruction under § 63.5(d) of this subpart, if relevant, to fulfill the initial notification requirements of this paragraph.

(2) **Initial notification submission date extended.**

The permittee of an affected source that has an initial startup before the effective date of a relevant standard under this part shall notify the Permitting authority in writing that the source is subject to the relevant standard. The notification, which shall be submitted not later than 120 calendar days after the effective date of the relevant standard (or within 120 calendar days after the source becomes subject to the relevant standard), shall provide the following information:

(i) The name and address of the permittee;

(ii) The address (i.e., physical location) of the affected source;

(iii) An identification of the relevant standard, or other requirement, that is the basis of the notification and the source's compliance date;

(iv) A brief description of the nature, size, design, and method of operation of the source, including its operating design capacity and an identification of each point of emission for each hazardous air pollutant, or if a definitive identification is not yet possible, a preliminary identification of each point of emission for each hazardous air pollutant; and

(v) A statement of whether the affected source is a major source or an area source.

(3) The permittee of a new or reconstructed affected source, or a source that has been reconstructed such that it is an affected source, that has an initial startup after the effective date of a relevant standard under this part and for which an application for approval of construction or reconstruction is not required under § 63.5(d), shall notify the Permitting authority in writing that the source is subject to the relevant standard no later than 120 days after initial startup. The notification shall provide all the information required in paragraphs (b)(2)(i) through (b)(2)(v) of this section, delivered or postmarked with the notification required in paragraph (b)(5).

(4) The permittee of a new or reconstructed major affected source that has an initial startup after the effective date of a relevant standard under this part and for which an application for approval of construction or reconstruction is required under § 63.5(d) shall provide the following information in writing to the Permitting authority:

(i) A notification of intention to construct a new major affected source, reconstruct a major affected source, or reconstruct a major source such that the source becomes a major affected source with the application for approval of construction or reconstruction as specified in § 63.5(d)(1)(i);

(ii) A notification of the date when construction or reconstruction was commenced, submitted simultaneously with the application for approval of construction or reconstruction, if construction or reconstruction was commenced before the effective date of the relevant standard;

(iii) A notification of the date when construction or reconstruction was commenced, delivered or postmarked not later than 30 days after such date, if construction or reconstruction was commenced after the effective date of the relevant standard;

(iv) A notification of the anticipated date of startup of the source, delivered or postmarked not more than 60 days nor less than 30 days before such date; and

(v) A notification of the actual date of startup of the source, delivered or postmarked within 15 calendar days after that date.

(5) After the effective date of any relevant standard established by the Permitting authority under
this part, whether or not an approved permit program is effective in the State in which an affected source is (or would be) located, a permittee who intends to construct a new affected
source or reconstruct an affected source subject to such standard, or reconstruct a source such that it becomes an affected source subject to such standard, shall notify the Permitting authority, in writing, of
the intended construction or reconstruction. The notification shall be submitted as soon as practicable before the construction or reconstruction is planned to commence (but no sooner than the effective date of the relevant standard) if the construction or reconstruction commences after the effective date of a relevant standard promulgated in this part. The notification shall be submitted as soon as practicable before startup but no later than 60 days after the effective date of a relevant standard promulgated in this part if the construction or reconstruction had commenced and initial startup had not occurred before the standard's effective date. The notification shall include all the information required for an application for approval of construction or reconstruction as specified in § 63.5(d). For major sources, the application for approval of construction or reconstruction may be used to fulfill the requirements of this paragraph.

(c) *Request for extension of compliance.* If the permittee of an affected source cannot
comply with a relevant standard by the applicable compliance date for that source, or if the permittee has installed BACT or technology to meet LAER consistent with § 63.6(i)(5) of this subpart, he/she may submit to the Permitting authority (or the State with an approved permit program) a
request for an extension of compliance as specified in § 63.6(i)(4) through § 63.6(i)(6).

(d) *Notification that source is subject to special compliance requirements.* A permittee of a new source that is subject to special compliance requirements as specified in § 63.6(b)(3) and
§ 63.6(b)(4) shall notify the Permitting authority of his/her compliance obligations not later than the notification dates established in paragraph (b) of this section for new sources that are not subject to the special provisions.

(e) *Notification of performance test.* The permittee of an affected source shall notify the Permitting authority in writing of his or her intention to conduct a performance test at least 60 calendar
days before the performance test is scheduled to begin to allow the Permitting authority to review and approve the site-specific test plan required under § 63.7(c), if requested by the Permitting authority, and to have an observer present during the test.

(f) *Notification of opacity and visible emission observations.*
Subpart KK does not require opacity and visible emissions observations.

(g) *Additional notification requirements for sources with continuous monitoring systems.*
Provisions for COMS are not applicable.

The permittee of an affected source required to use a CMS by a relevant standard shall furnish
the Permitting authority written notification as follows:

(1) A notification of the date the CMS performance evaluation under § 63.8(e) is scheduled to begin, submitted simultaneously with the notification of the performance test date required under § 63.7(b). If no performance test is required, or if the requirement to conduct a performance test has been waived for an affected source under § 63.7(h), the permittee shall notify the Permitting authority in writing of the date of the performance evaluation at least 60 calendar days before the evaluation is scheduled to begin;

(2) A notification that COMS data results will be used to determine compliance with the applicable opacity emission standard during a performance test required by § 63.7 in lieu of Method 9 or other opacity emissions test method data, as allowed by § 63.6(h)(7)(ii), if compliance with an opacity emission standard is required for the source by a relevant standard. The notification shall be submitted at least 60 calendar days before the performance test is scheduled to begin; and

(3) A notification that the criterion necessary to continue use of an alternative to relative accuracy testing, as provided by § 63.8(f)(6), has been exceeded. The notification shall be delivered or postmarked not later than 10 days after the occurrence of such exceedance, and it shall include a description of the nature and cause of the increased emissions.

(h) *Notification of compliance status.*

(1) The requirements of paragraphs (h)(2) through (h)(4)of this section apply when an affected source becomes subject to a relevant standard.

(2) (i) Before a title V permit has been issued to the permittee of an affected source, and each time a notification of compliance status is required under this part, the permittee of such source shall submit to the Permitting authority a notification of compliance status, signed by the responsible official who shall certify its accuracy, attesting to whether the source has complied with the relevant standard. The notification shall list -

(A) The methods that were used to determine compliance;

(B) The results of any performance tests, opacity or visible emission observations, continuous monitoring system (CMS) performance evaluations, and/or other monitoring procedures or methods that were conducted;

(C) The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods;

(D) The type and quantity of hazardous air pollutants emitted by the source (or surrogate pollutants if specified in the relevant standard), reported in units and averaging times and in accordance with the test methods specified in the relevant standard;

(E) An analysis demonstrating whether the affected source is a major source or an area source (using the emissions data generated for this notification);

(F) A description of the air pollution control equipment (or method) for each emission point, including each control device (or method) for each hazardous air pollutant and the control efficiency (percent) for each control device (or method); and

(G) A statement by the permittee of the affected existing, new, or reconstructed source as to whether the source has complied with the relevant standard or other requirements.

(ii) The notification shall be sent before the close of business on the 60th day following the completion of the relevant compliance demonstration activity specified in the relevant standard (unless a different reporting period is specified in a relevant standard, in which case the letter shall be sent before the close of business on the day the report of the relevant testing or monitoring results is required to be delivered or postmarked). For example, the notification shall be sent before close of business on the 60th (or other required) day following completion of the initial performance test and again before the close of business on the 60th (or other required) day following the completion of any subsequent required performance test. If no performance test is required but opacity or visible emission observations are required to demonstrate compliance with an opacity or visible emission standard under this part, the notification of compliance status shall be sent before close of business on the 30th day following the completion of opacity or visible emission observations.

(3) After a title V permit has been issued to the permittee of an affected source, the permittee of such source shall comply with all requirements for compliance status reports contained in the source's title V permit, including reports required under this part. After a title V permit has been issued to the permittee of an affected source, and each time a notification of compliance status is required under this part, the permittee of such source shall submit the notification of compliance status to the appropriate permitting authority following completion of the relevant compliance demonstration activity specified in the relevant standard.

(4) [Reserved]

(5) If a permittee of an affected source submits estimates or preliminary information in the application for approval of construction or reconstruction required in § 63.5(d) in place of the actual emissions data or control efficiencies required in paragraphs (d)(1)(ii)(H) and (d)(2) of § 63.5, the permittee shall submit the actual emissions data and other correct information as soon as available but no later than with the initial notification of compliance status required in this section.

(6) Advice on a notification of compliance status may be obtained from the Permitting authority.

(i) *Adjustment to time periods or postmark deadlines for submittal and review of required communications.*

(1) (i) Until an adjustment of a time period or postmark deadline has been approved by the Permitting authority under paragraphs (i)(2) and (i)(3) of this section, the permittee of an affected source remains strictly subject to the requirements of this part.

(ii) A permittee shall request the adjustment provided for in paragraphs (i)(2) and (i)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in this part.

(2) Notwithstanding time periods or postmark deadlines specified in this part for the submittal of information to the Permitting authority by a permittee, or the review of such information by the Permitting authority, such time periods or deadlines may be changed by mutual agreement between the permittee and the Permitting authority. A permittee who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the

adjustment in writing as soon as practicable before the subject activity is required to take place. The permittee shall include in the request whatever information he or she considers useful to convince the Permitting authority that an adjustment is warranted.

(3) If, in the Permitting authority's judgment, a permittee's request for an adjustment to a particular time period or postmark deadline is warranted, the Permitting authority will approve the adjustment. The Permitting authority will notify the permittee in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Permitting authority is unable to meet a specified deadline, he or she will notify the permittee of any significant delay and inform the permittee of the amended schedule.

(j) *Change in information already provided.* Any change in the information already provided under this section shall be provided to the Permitting authority in writing within 15 calendar days after the change.

§ 63.10 Recordkeeping and reporting requirements.

(a) *Applicability and general information.*

(1) The requirements of this section apply to owners or operators of affected sources who are subject to the provisions of this part, unless specified otherwise in a relevant standard.

(2) For affected sources that have been granted an extension of compliance under subpart D of this part, the requirements of this section do not apply to those sources while they are operating under such compliance extensions.

(3) If any State requires a report that contains all the information required in a report listed in this section, a permittee may send the Permitting authority a copy of the report sent to the State to satisfy the requirements of this section for that report.

(4) (i) Before a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the permittee of an affected source in such State subject to such requirements shall submit reports to the appropriate Regional Office of the EPA (to the attention of the Director of the Division indicated in the list of the EPA Regional Offices in § 63.13).

(ii) After a State has been delegated the authority to implement and enforce recordkeeping and reporting requirements established under this part, the permittee of an affected source in such State subject to such requirements shall submit reports to the delegated State authority (which may be the same as the permitting authority). In addition, if the delegated (permitting) authority is the State, the permittee shall send a copy of each report submitted to the State to the appropriate Regional Office of the EPA, as specified in paragraph (a)(4)(i) of this section. The Regional Office may waive this requirement for any reports at its discretion.

(5) If a permittee of an affected source in a State with delegated authority is required to submit periodic reports under this part to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such source under this part, the permittee may change the dates by which periodic reports under this part shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the permittee and the State. For each relevant standard established pursuant to section 112 of the Act, the allowance in the previous sentence applies in each State beginning 1 year after the affected source's compliance date for that standard. Procedures governing the implementation of this provision are specified in § 63.9(i).

(6) If a permittee supervises one or more stationary sources affected by more than one standard established pursuant to section 112 of the Act, he/she may arrange by mutual agreement between the permittee and the Permitting authority (or the State permitting authority) a common schedule on which periodic reports required for each source shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the latest compliance date for any relevant standard established pursuant to section 112 of the Act for any such affected source(s). Procedures governing the implementation of this provision are specified in § 63.9(i).

(7) If a permittee supervises one or more stationary sources affected by standards established pursuant to section 112 of the Act (as amended November 15, 1990) and standards set under part 60, part 61, or both such parts of this chapter, he/she may arrange by mutual agreement between the permittee and the Permitting authority (or the State permitting authority) a common schedule on which periodic reports required by each relevant (i.e., applicable) standard shall be submitted throughout the year. The allowance in the previous sentence applies in each State beginning 1 year after the stationary source is required to be in compliance with the relevant section 112 standard, or 1 year after the stationary source is required to be in compliance with the applicable part 60 or part 61 standard, whichever is latest. Procedures governing the implementation of this provision are specified in § 63.9(i).

(b) *General recordkeeping requirements.*

(1) The permittee of an affected source subject to the provisions of this part shall maintain files of all information (including all reports and notifications) required by this part recorded in a form suitable and readily available for expeditious inspection and review. The files shall be retained for at least 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data shall be retained on site. The remaining 3 years of data may be retained off site. Such files may be maintained on microfilm, on a computer, on computer floppy disks, on magnetic tape disks, or on microfiche.

(2) The permittee of an affected source subject to the provisions of this part shall maintain relevant records for such source of -

(i) The occurrence and duration of each startup, shutdown, or malfunction of operation (i.e., process equipment);

(ii) The occurrence and duration of each malfunction of the air pollution control equipment;

(iii) All maintenance performed on the air pollution control equipment;

(iv) Actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) when such actions are different from the procedures specified in the affected source's startup, shutdown, and malfunction plan (see § 63.6(e)(3));

(v) All information necessary to demonstrate conformance with the affected source's startup, shutdown, and malfunction plan (see § 63.6(e)(3)) when all actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation) are consistent with the procedures specified in such plan. (The information needed to demonstrate conformance with the startup, shutdown, and malfunction plan may be recorded using a "checklist," or some other effective form of recordkeeping, in order to minimize the recordkeeping burden for conforming events);

(vi) Each period during which a CMS is malfunctioning or inoperative (including out-of-control periods);

(vii) All required measurements needed to demonstrate compliance with a relevant standard (including, but not limited to, 15-minute averages of CMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that the source is required to re-port);

(viii) All results of performance tests, CMS performance evaluations, and opacity and visible emission observations;

(ix) All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;

(x) All CMS calibration checks;

(xi) All adjustments and maintenance performed on CMS;

(xii) Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under this part, if the source has been granted a waiver under paragraph (f) of this section;

(xiii) All emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission under § 63.8(f)(6); and

(xiv) All documentation supporting initial notifications and notifications of compliance status under § 63.9.

(3) Recordkeeping requirement for applicability determinations. If a permittee determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants is not subject to a relevant standard or other requirement established under this part, the permittee shall keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination shall include an analysis (or other information) that demonstrates why the permittee believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) shall be sufficiently detailed to allow the Permitting authority to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis shall be performed in accordance with requirements established in subparts of this part for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with EPA guidance materials published to assist sources in making applicability determinations under section 112, if any.

(c) *Additional recordkeeping requirements for sources with continuous monitoring systems.* In addition to complying with the requirements specified in paragraphs (b)(1) and (b)(2) of this section, the permittee of an affected source required to install a CMS by a relevant standard shall maintain records for such source of -

(1) All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);

(2)–(4) [Reserved]

(5) The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;

(6) The date and time identifying each period during which the CMS was out of control, as defined in § 63.8(c)(7);

(7) The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during startups, shutdowns, and malfunctions of the affected source;

(8) The specific identification (i.e., the date and time of commencement and completion) of each time period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during periods other than startups, shutdowns, and malfunctions of the affected source;

(9) [Reserved]

(10) The nature and cause of any malfunction (if known);

(11) The corrective action taken or preventive measures adopted;

(12) The nature of the repairs or adjustments to the CMS that was inoperative or out of control;

(13) The total process operating time during the reporting period; and

(14) All procedures that are part of a quality control program developed and implemented for CMS under § 63.8(d).

(15) In order to satisfy the requirements of paragraphs (c)(10) through (c)(12) of this section and to avoid duplicative recordkeeping efforts, the permittee may use the affected source's startup, shutdown, and malfunction plan or records kept to satisfy the recordkeeping requirements of the startup, shutdown, and malfunction plan specified in § 63.6(e), provided that such plan and records adequately address the requirements of paragraphs (c)(10) through (c)(12).

(d) *General reporting requirements.*

(1) Not-withstanding the requirements in this paragraph or paragraph (e) of this section, the permittee of an affected source subject to reporting requirements under this part shall submit reports to the Permitting authority in accordance with the reporting requirements in the relevant standard(s).

(2) *Reporting results of performance tests.* Before a title V permit has been issued to the permittee of an affected source, the permittee shall report the results of any performance test under § 63.7 to the Permitting authority. After a title V permit has been issued to the permittee of an affected source, the permittee shall report the results of a required performance test to the appropriate permitting authority. The permittee of an affected source shall report the results of the performance test to the Permitting authority (or the State with an approved permit program) before the close of business on the 60th day following the completion of the performance test, unless specified otherwise in a relevant standard or as approved otherwise in writing by the Permitting authority. The results of the performance test shall be submitted as part of the notification of compliance status required under § 63.9(h).

(3) *Reporting results of opacity or visible emission observations.*

Subpart KK does not require opacity and visible emissions observations.

(4) *Progress reports.* The permittee of an affected source who is required to submit progress reports as a condition of receiving an extension of compliance under § 63.6(i) shall submit such reports to the Permitting authority (or the State with an approved permit program) by the dates specified in the written extension of compliance.

(5) (i) Periodic startup, shutdown, and malfunction reports. If actions taken by a permittee during a startup, shutdown, or malfunction of an affected source (including actions taken to correct a malfunction) are consistent with the procedures specified in the source's startup, shutdown, and malfunction plan [see § 63.6(e)(3)], the permittee shall state such information in a startup, shutdown, and malfunction report. Reports shall only be required if a startup, shutdown, or malfunction occurred during the reporting period. The startup, shutdown, and malfunction report shall consist of a letter, containing the name, title, and signature of the permittee or other responsible official who is certifying its accuracy, that shall be submitted to the Permitting authority semi-annually (or on a more frequent basis if specified
otherwise in a relevant standard or as established otherwise by the permitting authority in the

source's title V permit). The startup, shutdown, and malfunction report shall be delivered or postmarked by the 30th day following the end of each calendar half (or other calendar reporting period, as appropriate). If the permittee is required to submit excess emissions and continuous monitoring system performance (or other periodic) reports under this part, the startup, shutdown, and malfunction reports required under this paragraph may be submitted simultaneously with the excess emissions and continuous monitoring system performance (or other) reports. If startup, shutdown, and malfunction reports are submitted with excess emissions and continuous monitoring system performance (or other periodic) reports, and the permittee receives approval to reduce the frequency of reporting for the latter under paragraph (e) of this section, the frequency of reporting for the startup, shutdown, and malfunction reports also may be reduced if the Permitting authority does not object to the intended change. The procedures to implement the allowance in the preceding sentence shall be the same as the procedures specified in paragraph (e)(3) of this section.

(ii) Immediate startup, shutdown, and malfunction reports. Notwithstanding the allowance to reduce the frequency of reporting for periodic startup, shutdown, and malfunction reports under paragraph (d)(5)(i) of this section, any time an action taken by a permittee during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures specified in the affected source's startup, shutdown, and malfunction plan, the permittee shall report the actions taken for that event within 2 working days after commencing actions inconsistent with the plan followed by a letter within 7 working days after the end of the event. The immediate report required under this paragraph shall consist of a telephone call (or facsimile (FAX) transmission) to the Permitting authority within 2 working days after commencing actions inconsistent with the plan, and it shall be followed by a letter, delivered or postmarked within 7 working days after the end of the event, that contains the name, title, and signature of the permittee or other responsible official who is certifying its accuracy, explaining the circumstances of the event, the reasons for not following the startup, shutdown, and malfunction plan, and whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred. Notwithstanding the requirements of the previous sentence, after the effective date of an approved permit program in the State in which an affected source is located, the permittee may make alternative reporting arrangements, in advance, with the permitting authority in that State. Procedures governing the arrangement of alternative
reporting requirements under this paragraph are specified in § 63.9(i).

(e) *Additional reporting requirements for sources with continuous monitoring systems* - **Provisions for COMS are not applicable.**

(1) *General.* When more than one CEMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the permittee shall report the results as required for each CEMS.

(2) Reporting results of continuous monitoring system performance evaluations.

(i) The permittee of an affected source required to install a CMS by a relevant standard shall furnish the Permitting authority a copy of a written report of the results of the CMS performance evaluation, as required under § 63.8(e), simultaneously with the results of the performance test required under § 63.7, unless otherwise specified in the relevant standard.

(ii) The permittee of an affected source using a COMS to determine opacity compliance during any performance test required under § 63.7 and described in § 63.6(d)(6) shall furnish the Permitting authority two or, upon request, three copies of a written report of the results of the COMS performance evaluation conducted under § 63.8(e). The copies shall be furnished at least 15 calendar days before the performance test required under § 63.7 is conducted.

(3) *Excess emissions and continuous monitoring system performance report and summary report.*

(i) Excess emissions and parameter monitoring exceedances are defined in relevant standards. The permittee of an affected source required to install a CMS by a relevant standard shall submit an excess emissions and continuous monitoring system performance report and/or a summary report to the Permitting authority semiannually, except when -

(A) More frequent reporting is specifically required by a relevant standard;

(B) The Permitting authority determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source; or

(C) The CMS data are to be used directly for compliance determination and the source experienced excess emissions, in which case quarterly reports shall be submitted. Once a source reports excess emissions, the source shall follow a quarterly reporting format until a request to reduce reporting frequency under paragraph (e)(3)(ii) of this section is approved.

(ii) Request to reduce frequency of excess emissions and continuous monitoring system performance reports. Notwithstanding the frequency of reporting requirements specified in paragraph (e)(3)(i) of this section, a permittee who is required by a relevant standard to submit excess emissions and continuous monitoring system performance (and summary) reports on a quarterly (or more frequent) basis may reduce the frequency of reporting for that standard to semiannual if the following conditions are met:

(A) For 1 full year (e.g., 4 quarterly or 12 monthly reporting periods) the affected source's excess emissions and continuous monitoring system performance reports continually demonstrate that the source is in compliance with the relevant standard;

(B) The permittee continues to comply with all recordkeeping and monitoring requirements specified in this subpart and the relevant standard; and

(C) The Permitting authority does not object to a reduced frequency of reporting for the affected source, as provided in paragraph (e)(3)(iii) of this section.

(iii) The frequency of reporting of excess emissions and continuous monitoring system performance (and summary) reports required to comply with a relevant standard may be reduced only after the permittee notifies the Permitting authority in writing of his or her intention to make such a change and the Permitting authority does not object to the intended change. In deciding whether to approve a reduced frequency of reporting, the Permitting authority may review information concerning the source's entire previous performance history during the 5-year recordkeeping period prior to the intended change, including performance test results, monitoring data, and evaluations of a permittee's conformance with operation and maintenance requirements. Such information may be used by the Permitting authority to make a judgment about the source's potential for noncompliance in the future. If the Permitting authority disapproves the permittee's request to reduce the frequency of reporting, the Permitting authority will notify the permittee in writing within 45 days after receiving notice of the permittee's intention. The notification from the Permitting authority to the permittee will specify the grounds on which the disapproval is based. In the absence of a notice of disapproval within 45 days, approval is automatically granted.

(iv) As soon as CMS data indicate that the source is not in compliance with any emission limitation or operating parameter specified in the relevant standard, the frequency of reporting shall revert to the frequency specified in the relevant standard, and the permittee shall submit an excess emissions and continuous monitoring system performance (and summary) report for the noncomplying emission points at the next appropriate reporting period following the noncomplying event. After demonstrating ongoing compliance with the relevant standard for another full year, the permittee may again request approval from the Permitting authority to reduce the frequency of reporting for that standard, as provided for in paragraphs (e)(3)(ii) and (e)(3)(iii) of this section.

(v) *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required, shall be delivered or postmarked by the 30th day following the end of each calendar half or quarter, as appropriate. Written reports of excess emissions or exceedances of process or control system parameters shall include all the information required in paragraphs (c)(5) through (c)(13) of this section, in § 63.8(c)(7) and § 63.8(c)(8), and in the relevant standard, and they shall contain the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances of a parameter have occurred, or a CMS has not been inoperative, out of control, repaired, or adjusted, such information shall be stated in the report.

(vi) *Summary report*. As required under paragraphs (e)(3)(vii) and (e)(3)(viii) of this section, one summary report shall be submitted for the hazardous air pollutants monitored at each affected source (unless the relevant standard specifies that more than one summary report is required, e.g., one summary report for each hazardous air pollutant monitored). The summary report shall be entitled "Summary Report - Gaseous and Opacity Excess Emission and Continuous Monitoring System Performance" and shall contain the following information:

(A) The company name and address of the affected source;

(B) An identification of each hazardous air pollutant monitored at the affected source;

(C) The beginning and ending dates of the reporting period;

(D) A brief description of the process units;

(E) The emission and operating parameter limitations specified in the relevant standard(s);

(F) The monitoring equipment manufacturer(s) and model number(s);

(G) The date of the latest CMS certification or audit;

(H) The total operating time of the affected source during the reporting period;

(I) An emission data summary (or similar summary if the permittee monitors control system parameters), including the total duration of excess emissions during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of excess emissions expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total duration of excess emissions during the reporting period into those that are due to startup/shutdown, control equipment problems, process problems, other known causes, and other unknown causes;

(J) A CMS performance summary (or similar summary if the permittee monitors control system parameters), including the total CMS downtime during the reporting period (recorded in minutes for opacity and hours for gases), the total duration of CMS downtime expressed as a percent of the total source operating time during that reporting period, and a breakdown of the total CMS downtime during the reporting period into periods that are due to monitoring equipment malfunctions, nonmonitoring equipment malfunctions, quality assurance/quality control calibrations, other known causes, and other unknown causes;

(K) A description of any changes in CMS, processes, or controls since the last reporting period;

(L) The name, title, and signature of the responsible official who is certifying the accuracy of the report; and

(M) The date of the report.

(vii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is less than 1 percent of the total operating time for the reporting period, and CMS downtime for the reporting period is less than 5 percent of the total

operating time for the reporting period, only the summary report shall be submitted, and the full excess emissions and continuous monitoring system performance report need not be submitted unless required by the Permitting authority.

(viii) If the total duration of excess emissions or process or control system parameter exceedances for the reporting period is 1 percent or greater of the total operating time for the reporting period, or the total CMS downtime for the reporting period is 5 percent or greater of the total operating time for the reporting period, both the summary report and the excess emissions and continuous monitoring system performance report shall be submitted.

(4) Reporting continuous opacity monitoring system data produced during a performance test. The permittee of an affected source required to use a COMS shall record the monitoring data produced during a performance test required under § 63.7 and shall furnish the Permitting authority a written report of the monitoring results. The report of COMS data shall be submitted simultaneously with the report of the performance test results required in paragraph (d)(2) of this section.

(f) *Waiver of recordkeeping or reporting requirements.*

(1) Until a waiver of a recordkeeping or reporting requirement has been granted by the Permitting authority under this paragraph, the permittee of an affected source remains subject to the requirements of this section.

(2) Recordkeeping or reporting requirements may be waived upon written application to the Permitting authority if, in the Permitting authority's judgment, the affected source is achieving the relevant
standard(s), or the source is operating under an extension of compliance, or the permittee has requested an extension of compliance and the Permitting authority is still considering that request.

(3) If an application for a waiver of record-keeping or reporting is made, the application shall accompany the request for an extension of compliance under § 63.6(i), any required compliance progress report or compliance status report required under this part (such as under § 63.6(i) and § 63.9(h)) or in the source's title V permit, or an excess emissions and continuous monitoring system performance report required under paragraph (e) of this section, whichever is applicable. The application shall include whatever information the permittee considers useful to convince the Permitting authority that a waiver of recordkeeping or reporting is warranted.

(4) The Permitting authority will approve or deny a request for a waiver of recordkeeping or reporting requirements under this paragraph when he/she -

(i) Approves or denies an extension of compliance; or

(ii) Makes a determination of compliance following the submission of a required compliance status report or excess emissions and continuous monitoring systems performance report; or

(iii) Makes a determination of suitable progress towards compliance following the submission of a compliance progress report, whichever is applicable.

(5) A waiver of any recordkeeping or reporting requirement granted under this paragraph may be conditioned on other recordkeeping or reporting requirements deemed necessary by the Permitting authority.

(6) Approval of any waiver granted under this section shall not abrogate the Permitting authority's authority under the Act or in any way prohibit the Permitting authority from later canceling the waiver. The cancellation will be made only after notice is given to the permittee of the affected source.

§ 63.11 Control device requirements.

Subpart KK specifies the use of solvent recovery devices or oxidizers.

§ 63.12 State authority and delegations.

(a) The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from -

(1) Adopting and enforcing any standard, limitation, prohibition, or other regulation applicable to an affected source subject to the requirements of this part, provided that such standard, limitation, prohibition, or regulation is not less stringent than any requirement applicable to such source established under this part;

(2) Requiring the permittee of an affected source to obtain permits, licenses, or approvals prior to initiating construction, reconstruction, modification, or operation of such source; or

(3) Requiring emission reductions in excess of those specified in subpart D of this part as a condition for granting the extension of compliance authorized by section 112(i)(5) of the Act.

(b) (1) Section 112(l) of the Act directs the Permitting authority to delegate to each State, when appropriate, the authority to implement and enforce standards and other requirements pursuant to section 112 for stationary sources located in that State. Because of the unique nature of radioactive
material, delegation of authority to implement and enforce standards that control radionuclides may require separate approval.

(2) Subpart E of this part establishes procedures consistent with section 112(l) for the approval of State rules or programs to implement and enforce applicable Federal rules promulgated under the authority of section 112. Subpart E also establishes procedures for the review and withdrawal of section 112 implementation and enforcement authorities granted through a section 112(l) approval.

(c) All information required to be submitted to the EPA under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act, provided that each specific delegation may exempt sources from a certain Federal or State reporting requirement. The Permitting authority may permit all or some of the information to be submitted to the appropriate State agency only, instead of to the EPA and the State agency.

§ 63.13 Addresses of State air pollution control agencies and EPA Regional Offices.

(a) All requests, reports, applications, submittals, and other communications to the Permitting authority
pursuant to this part shall be submitted to the appropriate Regional Office of the U.S. Environmental Protection Agency indicated as follows:

EPA Region IV; Director; Air, Pesticides and Toxics, Management Division; 61 Forsyth Street; Atlanta, GA 30303.

(b) All information required to be submitted to the Permitting authority under this part also shall be submitted to the appropriate State agency of any State to which authority has been delegated under section 112(l) of the Act. The permittee of an affected source may contact the appropriate
EPA Regional Office for the mailing addresses for those States whose delegation requests have been approved.

(c) If any State requires a submittal that contains all the information required in an application, notification, request, report, statement, or other communication required in this part, an owner or operator may send the appropriate Regional Office of the EPA a copy of that submittal to satisfy the requirements of this part for that communication.

§ 63.14 Incorporations by reference.

(a) The materials listed in this section are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. These materials are incorporated as they exist on the date of the approval, and notice of any change in these materials will be published in the FEDERAL REGISTER. The materials are available for purchase at the corresponding addresses noted below, and all are available for inspection at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC, at the Air and Radiation Docket and Information Center, U.S. EPA, 401 M Street, SW., Washington, DC, and at the EPA Library (MD–35), U.S. EPA, Research Triangle Park, North Carolina.

(b) The materials listed below are available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; or University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

(1) ASTM D1946–77, Standard Method for Analysis of Reformed Gas by Gas Chromatography, IBR approved for § 63.11(b)(6).

(2) ASTM D2382–76, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved for § 63.11(b)(6).

(3) ASTM D2879–83, Standard Test Method for Vapor Pressure—Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope, IBR approved for § 63.111 of subpart G of this part.

(4) ASTM D 3695–88, Standard Test Method for Volatile Alcohols in Water by Direct Aqueous-Injection Gas Chromatography, IBR approved for § 63.365(e)(1) of subpart O of this part.

(5) ASTM D 1193–77, Standard Specification for Reagent Water, IBR approved for Method 306, section 4.1.1 and section 4.4.2, of appendix A to part 63.

(6) ASTM D 1331–89, Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents, IBR approved for Method 306B, section 2.2, section 3.1, and section 4.2, of appendix A to part 63.

(7) ASTM E 260–91, Standard Practice for Packed Column Gas Chromatography, IBR approved for § 63.750(b)(2) of subpart GG of this part.

(8) ASTM D523–89, Standard Test Method for Specular Gloss, IBR approved for § 63.782.

(9) ASTM D1475–90, Standard Test Method for Density of Paint, Varnish, Lacquer, and Related Products, IBR approved for § 63.788 appendix A.

(10) ASTM D2369–93, Standard Test Method for Volatile Content of Coatings, IBR approved for § 63.788 appendix A.

(11) ASTM D3912–80, Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(12) ASTM D4017–90, Standard Test Method for Water and Paints and Paint Materials by Karl Fischer Method, IBR approved for § 63.788 appendix A.

(13) ASTM D4082–89, Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(14) ASTM D4256–89 [reapproved 1994], Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants, IBR approved for § 63.782.

(15) ASTM D3792–91, Standard Test Method for Water Content of Water-Reducible Paints by Direct Injection into a Gas Chromatograph, IBR approved for § 63.788 appendix A.

(16) ASTM D3257–93, Standard Test Methods for Aromatics in Mineral Spirits by Gas Chromatography, IBR approved for § 63.786(b).

(17) ASTM E260–91, Standard Practice for Packed Column Gas Chromatography, IBR approved for § 63.786(b).

(18) ASTM E180–93, Standard Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals, IBR approved for § 63.786(b).

(c) The materials listed below are available for purchase from the American Petroleum Institute (API), 1220 L Street, NW., Washington, DC 20005.

(1) API Publication 2517, Evaporative Loss from External Floating-Roof Tanks, Third Edition, February 1989, IBR approved for § 63.111 of subpart G of this part.

(2) API Publication 2518, Evaporative Loss from Fixed-roof Tanks, Second Edition, October 1991, IBR approved for § 63.150(g)(3)(i)(C) of subpart G of this part.

(d) *State and Local Requirements.* The materials listed below are available at the Air and Radiation Docket and Information Center, U.S. EPA, 401 M Street, SW., Washington, DC.

(1) California Regulatory Requirements Applicable to the Air Toxics Program, March 1, 1996, IBR approved for § 63.99(a)(5)(ii) of subpart E of this part.

(2) [Reserved]

§ 63.15 Availability of information and confidentiality.

(a) *Availability of information.*

(1) With the exception of information protected through part 2 of this chapter, all reports, records, and other information collected by the Permitting authority under this part are available to the public. In addition, a copy of each permit application, compliance plan (including the schedule of compliance), notification of compliance status, excess emissions and continuous monitoring systems performance report, and title V permit is available to the public, consistent with protections recognized in section 503(e) of the Act.

(2) The availability to the public of information provided to or otherwise obtained by the Permitting authority under this part shall be governed by part 2 of this chapter.

(b) *Confidentiality.*

(1) If a permittee is required to submit information entitled to protection from disclosure under section 114(c) of the Act, the permittee may submit such information separately. The requirements of section 114(c) shall apply to such information.

(2) The contents of a title V permit shall not be entitled to protection under section 114(c) of the Act; however, information submitted as part of an application for a title V permit may be entitled to protection from disclosure.

APPENDIX B

VOLUMETRIC FLOW DATA

WH-1

INCINERATOR INLET

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	1-A		H2O %:	4.03
TIME BEGIN,TIME END:	10:38 AM	10:49 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	135
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	23.4
STACK STATIC in H2O:	-0.20			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.195	133	2-1	0.230	133
1-2	0.240	133	2-2	0.230	133
1-3	0.230	133	2-3	0.220	133
1-4	0.205	133	2-4	0.210	133
1-5	0.190	133	2-5	0.200	134
1-6	0.170	134	2-6	0.200	135
1-7	0.170	134	2-7	0.190	135
1-8	0.180	133	2-8	0.180	135

AVG. SQ. RT. VEL. HEAD:	0.449	AVERAGE VELOCITY(FPS):	26.921
AVG. VEL. HEAD:	0.202	VOLUMETRIC FLOW(ACFM):	10184.1
AVG. STACK TEMP.:	133.5625	VOLUMETRIC FLOW(WVSCFM):	368.5
PERCENT WATER VAPOR:	4.030	VOLUMETRIC FLOW(DSCFM):	8775.5
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9144.0**
GAS MOLECULAR WT.(wet):	28.40		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	1-B		H2O %:	3.85
TIME BEGIN,TIME END:	11:20 AM	11:35 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.02	inches Hg.	TEMP. db:	134
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	23
STACK STATIC in H2O:	-0.27			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.230	134	2-1	0.210	133
1-2	0.240	134	2-2	0.240	133
1-3	0.210	134	2-3	0.220	133
1-4	0.200	134	2-4	0.205	134
1-5	0.210	134	2-5	0.190	134
1-6	0.195	135	2-6	0.180	135
1-7	0.180	135	2-7	0.175	135
1-8	0.170	135	2-8	0.180	135

AVG. SQ. RT. VEL. HEAD:	0.449	AVERAGE VELOCITY(FPS):	26.909
AVG. VEL. HEAD:	0.202	VOLUMETRIC FLOW(ACFM):	10179.7
AVG. STACK TEMP.:	134.1875	VOLUMETRIC FLOW(WVSCFM):	351.4
PERCENT WATER VAPOR:	3.850	VOLUMETRIC FLOW(DSCFM):	8776.0
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9127.4**
GAS MOLECULAR WT.(wet):	28.42		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	1-C		H2O %:	4.49
TIME BEGIN,TIME END:	1241-1254		O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.02	inches Hg.	TEMP. db:	139
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	23.5
STACK STATIC in H2O:	-0.27			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.220	138	2-1	0.230	138
1-2	0.245	139	2-2	0.225	138
1-3	0.230	139	2-3	0.215	139
1-4	0.210	139	2-4	0.190	138
1-5	0.200	139	2-5	0.200	138
1-6	0.170	139	2-6	0.195	138
1-7	0.170	138	2-7	0.180	138
1-8	0.160	138	2-8	0.170	138

AVG. SQ. RT. VEL. HEAD:	0.447	AVERAGE VELOCITY(FPS):	26.918
AVG. VEL. HEAD:	0.200	VOLUMETRIC FLOW(ACFM):	10183.1
AVG. STACK TEMP.:	138.375	VOLUMETRIC FLOW(WVSCFM):	407.1
PERCENT WATER VAPOR:	4.490	VOLUMETRIC FLOW(DSCFM):	8659.5
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9066.6**
GAS MOLECULAR WT.(wet):	28.35		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	2-A		H2O %:	4.21
TIME BEGIN,TIME END:	1:40 PM	1:50 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	29.96	inches Hg.	TEMP. db:	141
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	20.9
STACK STATIC in H2O:	-1.09			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.220	139	2-1	0.210	140
1-2	0.230	140	2-2	0.220	140
1-3	0.220	141	2-3	0.210	141
1-4	0.210	141	2-4	0.195	142
1-5	0.180	142	2-5	0.190	142
1-6	0.150	142	2-6	0.180	142
1-7	0.150	141	2-7	0.170	142
1-8	0.150	140	2-8	0.150	141

AVG. SQ. RT. VEL. HEAD:	0.434	AVERAGE VELOCITY(FPS):	26.222
AVG. VEL. HEAD:	0.189	VOLUMETRIC FLOW(ACFM):	9919.6
AVG. STACK TEMP.:	141	VOLUMETRIC FLOW(WVSCFM):	369.5
PERCENT WATER VAPOR:	4.210	VOLUMETRIC FLOW(DSCFM):	8406.3
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**8775.8**
GAS MOLECULAR WT.(wet):	28.38		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	2-B		H2O %:	4.86
TIME BEGIN,TIME END:	2:40 PM	2:51 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	29.96	inches Hg.	TEMP. db:	139
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	25.4
STACK STATIC in H2O:	-1.09			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.200	138	2-1	0.210	138
1-2	0.230	138	2-2	0.215	138
1-3	0.230	139	2-3	0.205	138
1-4	0.210	139	2-4	0.200	139
1-5	0.195	139	2-5	0.200	139
1-6	0.170	139	2-6	0.210	139
1-7	0.180	139	2-7	0.195	139
1-8	0.150	139	2-8	0.200	138

AVG. SQ. RT. VEL. HEAD:	0.447	AVERAGE VELOCITY(FPS):	26.946
AVG. VEL. HEAD:	0.199	VOLUMETRIC FLOW(ACFM):	10193.7
AVG. STACK TEMP.:	138.625	VOLUMETRIC FLOW(WVSCFM):	440.0
PERCENT WATER VAPOR:	4.860	VOLUMETRIC FLOW(DSCFM):	8614.1
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9054.1**
GAS MOLECULAR WT.(wet):	28.31		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	2-C		H2O %:	5.23
TIME BEGIN,TIME END:	3:40 PM	3:50 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	29.96	inches Hg.	TEMP. db:	132
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	32.8
STACK STATIC in H2O:	-1.09			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.230	130	2-1	0.230	131
1-2	0.240	131	2-2	0.240	132
1-3	0.240	132	2-3	0.230	132
1-4	0.220	132	2-4	0.200	132
1-5	0.200	132	2-5	0.210	132
1-6	0.190	132	2-6	0.200	132
1-7	0.180	132	2-7	0.195	132
1-8	0.170	132	2-8	0.170	132

AVG. SQ. RT. VEL. HEAD:	0.456	AVERAGE VELOCITY(FPS):	27.401
AVG. VEL. HEAD:	0.208	VOLUMETRIC FLOW(ACFM):	10365.7
AVG. STACK TEMP.:	131.75	VOLUMETRIC FLOW(WVSCFM):	487.1
PERCENT WATER VAPOR:	5.230	VOLUMETRIC FLOW(DSCFM):	8826.7
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9313.8**
GAS MOLECULAR WT.(wet):	28.27		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	3-A		H2O %:	4.76
TIME BEGIN,TIME END:	4:45 PM	4:56 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.01	inches Hg.	TEMP. db:	123
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	38.1
STACK STATIC in H2O:	-0.41			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.220	123	2-1	0.240	122
1-2	0.255	123	2-2	0.245	122
1-3	0.245	123	2-3	0.240	122
1-4	0.230	123	2-4	0.220	123
1-5	0.215	123	2-5	0.220	123
1-6	0.210	123	2-6	0.210	123
1-7	0.200	123	2-7	0.200	123
1-8	0.180	122	2-8	0.250	122

AVG. SQ. RT. VEL. HEAD:	0.473	AVERAGE VELOCITY(FPS):	28.096
AVG. VEL. HEAD:	0.223	VOLUMETRIC FLOW(ACFM):	10628.9
AVG. STACK TEMP.:	122.6875	VOLUMETRIC FLOW(WVSCFM):	462.4
PERCENT WATER VAPOR:	4.760	VOLUMETRIC FLOW(DSCFM):	9252.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9715.0**
GAS MOLECULAR WT.(wet):	28.32		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	3-B		H2O %:	4.65
TIME BEGIN,TIME END:	5:45 PM	5:58 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.01	inches Hg.	TEMP. db:	125
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	35.3
STACK STATIC in H2O:	-0.41			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.210	124	2-1	0.230	124
1-2	0.225	124	2-2	0.220	125
1-3	0.230	125	2-3	0.210	125
1-4	0.200	125	2-4	0.200	125
1-5	0.180	125	2-5	0.190	125
1-6	0.170	125	2-6	0.180	125
1-7	0.150	125	2-7	0.210	124
1-8	0.210	125	2-8	0.290	123

AVG. SQ. RT. VEL. HEAD:	0.453	AVERAGE VELOCITY(FPS):	26.992
AVG. VEL. HEAD:	0.205	VOLUMETRIC FLOW(ACFM):	10211.0
AVG. STACK TEMP.:	124.625	VOLUMETRIC FLOW(WVSCFM):	432.5
PERCENT WATER VAPOR:	4.650	VOLUMETRIC FLOW(DSCFM):	8869.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9302.1**
GAS MOLECULAR WT.(wet):	28.33		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/21/01

RUN NUMBER:	3-C		H2O %:	5.37
TIME BEGIN,TIME END:	6:45 PM	6:51 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.01	inches Hg.	TEMP. db:	3.92
STACK AREA:	6.305	SQ. FEET	TEMP. wb:	124
PITOT Cp:	0.84		REL.HUM. %:	41.9
STACK STATIC in H2O:	-0.41			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.220	124	2-1	0.220	124
1-2	0.230	124	2-2	0.210	124
1-3	0.220	124	2-3	0.210	124
1-4	0.210	124	2-4	0.190	124
1-5	0.200	124	2-5	0.190	124
1-6	0.195	124	2-6	0.180	124
1-7	0.170	124	2-7	0.160	124
1-8	0.240	124	2-8	0.190	124

AVG. SQ. RT. VEL. HEAD:	0.449	AVERAGE VELOCITY(FPS):	26.761
AVG. VEL. HEAD:	0.202	VOLUMETRIC FLOW(ACFM):	10123.6
AVG. STACK TEMP.:	124	VOLUMETRIC FLOW(WVSCFM):	495.8
PERCENT WATER VAPOR:	5.370	VOLUMETRIC FLOW(DSCFM):	8736.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**9232.4**
GAS MOLECULAR WT.(wet):	28.25		

2100 NW 34TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-1889 OFFICE (904) 335-1891 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPIRALCOTE INC.
SOURCE WH1 INCINERATOR INLET
DATE 8-21
STACK DIMENSIONS (in) 34" STACK AREA (FT2) 6.305
BAROMETRIC PRES.(in H2O) 30.04 STATIC PRES. (in H2O) -.20
STACK PRES. (in H2O) 30.02 OPERATORS GP/SC
PORT DIAM. ~1.5" NIPPLE LENGTH 0
PITOT TUBE NUMBER 43 TYPE "S" TYPE
RUN NO. 1 TIME 1038 POST TEST(+) 0.0 / 4.2 (-) 0.0 / 3.8
RUN NO. 2 TIME 1120 POST TEST(+) 0.0 / 4.2 (-) 0.0 / 3.8
RUN NO. 3 TIME 1220 POST TEST(+) ____ / ____ (-) ____ / ____

STACK CONFIGURATION
WH1 INCINERATOR INLET

Probe in working out=
RUNS 1, 2, & 3

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-1E 1-1	.195	132		R2W 2-1	.21	133
RH=23.4% 2	.24	133		3.85% 2	.24	133
F°=134.6 3	.23	133		H2O 3	.22	133
4	.205	133		4	.205	134
4.03 5	.19	133		5	.19	134
H2O 6	.17	134		6	.18	135
7	.17	134		END 7	.175	135
8	.18	133		1130 8	.18	135
SOUTH 2-1	.23	133		~	~	~
2	.23	133		R-3E 1-1	.22	138
3	.22	133		RH=23.5 2	.245	139
4	.21	133		F°=139 3	.23	139
5	.20	134		4	.21	139
6	.20	135		4.49 5	.20	139
7	.19	135		O2 6	.17	139
END 1050 8	.18	135		7	.17	138
				8	.16	138
~	~	~				
R-2S 1-1	.23	134		S 2-1	.23	138
RH= 23% 2	.24	134		2	.225	138
F°=134° 3	.21	134		3	.215	139
4	.20	134		4	.19	138
5	.21	134		5	.20	138
6	.195	135		6	.195	138
7	.18	135		END 7	.18	138
8	.17	135		1235 8	.17	138

Best Available Copy

AGES ENGINEERING, Inc.
2106 NW 67th Place, Suite 4
Gainesville, Florida 32653
(904) 335-1889 · Office (904) 335-1891 · Fax

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPIRALKOTE INC
SOURCE: WHI INCINERATOR INLET
DATE: 8-21-01
STACK DIMENSIONS (in): 34" STACK AREA (FT2): 6.305
BAROMETRIC PRES.(in H2O): 30.04 STATIC PRES. (in H2O): -1.1
STACK PRES. (in H2O): 29.96 OPERATORS: GP SC
PORT DIAM.: ~1.5" NIPPLE LENGTH: 0
PITOT TUBE NUMBER: 43 TYPE: 'S' TYPE
RUN NO. 4 TIME 1340 POST TEST(+) 0.0/4.1 (-) 0.0/4.2
RUN NO. 5 TIME 1440 POST TEST(+) 0.0/4.1 (-) 0.0/4.2
RUN NO. 6 TIME 1540 POST TEST(+) 0.0/4.1 (-) 0.0/4.2

STACK CONFIGURATION

WHI INCINERATOR INLET

Probe in working out. Runs 4, 5, & 6

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-4 1-1	.22	139		S R-5 2-1	.21	138
RH=20.9 2	.23	140		2	.215	138
F°= 141° 3	.22	141		3	.205	138
4	.21	141		4	.20	139
4.21 H2O 5	.18	142		5	.20	139
6	.15	142		6	.21	139
7	.15	141		END 7	.195	139
8	.17	140		1451 8	.20	138
2-1	.21	140				
2	.22	140	E	R-6 1-1	.23	130
3	.21	141		RH=32.8% 2	.24	131
4	.195	142		F°= 132° 3	.24	132
5	.19	142		4	.22	132
6	.18	142		[illegible] 5	.20	132
END 7	.17	142		H2O 6	.19	132
1350 8	.15	141		7	.18	132
				8	.17	132
E						
R-5 1-1	.20	138	S	2-1	.23	131
RH=25.4 2	.23	138		2	.24	132
F= 139° 3	.23	139		3	.23	132
4	.21	139		4	.20	132
4.86 H2O 5	.195	139		5	.21	132
6	.17	139		6	.20	132
7	.18	139		END 7	.195	132
8	.15	139		1550 8	.17	132

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DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPIRALKOTE INC.
SOURCE WH 1 INCINERATOR INLET
DATE 9-21-01
STACK DIMENSIONS (in) 34" STACK AREA (FT2) 6.305
BAROMETRIC PRES.(in H2O) 30.04 STATIC PRES. (in H2O) -.40
STACK PRES. (in H2O) 30.01 OPERATORS GP/SC
PORT DIAM. 1.5" NIPPLE LENGTH 0"
PITOT TUBE NUMBER 43 TYPE 'S' TYPE
RUN NO. 7 TIME 1645 POST TEST(+) 0.0 / 2.8 (-) 0.0 / 3.2
RUN NO. 8 TIME 1745 POST TEST(+) 0.0 / 2.8 (-) 0.0 / 3.2
RUN NO. 9 TIME 1845 POST TEST(+) 0.0 / 2.8 (-) 0.0 / 3.2

STACK CONFIGURATION

WH 1 INCINERATOR

INLET

"Probe in working out"
RUNS 7, 8, & 9

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-7 1-1	.22	122		R-8 2-1	.23	124
RH=38.1% 2	.255	122		2	.22	125
F°=123° 3	.245	123		3	.21	125
4	.23	123		4	.20	125
5	.215	123		5	.19	125
6	.21	123		6	.18	125
7	.20	123		END 7	.21	124
8	.18	122		1758 8	.29	123
S 2-1	.24	122		E		
2	.245	122		R-9 1-1	.22	124
4.76 3	.24	122		RH=41.9% 2	.23	124
H2O 4	.22	123		F°=124° 3	.22	124
5	.22	123		4	.21	124
6	.21	123		5	.20	124
END 7	.20	123		6	.195	124
1656 8	.25	122		7	.17	124
				8	.24	124
END						
R-8 1-1	.21	124		S 2-1	.22	124
RH=35.3% 2	.225	124		2	.21	124
F°=125° 3	.23	125		3	.21	124
4	.20	125		4	.19	124
4.6" H2O 5	.18	125		5	.19	124
6	.17	125		6	.18	124
7	.15	125		END 7	.16	124
8	.21	125		1851 8	.19	124

ROOF EXHAUST

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	1-A		H2O %:	4.02
TIME BEGIN,TIME END:	10:00 AM	10:14 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	78
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	80.3
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.645	90	2-1	0.45	90
1-2	0.630	90	2-2	0.41	90
1-3	0.540	90	2-3	0.42	90
1-4	0.150	90	2-4	0.425	90
1-5	0.180	90	2-5	0.42	90
1-6	0.380	90	2-6	0.6	90
1-7	0.390	90	2-7	0.59	90
1-8	0.320	90	2-8	0.52	90

AVG. SQ. RT. VEL. HEAD:	0.655	AVERAGE VELOCITY(FPS):	37.747
AVG. VEL. HEAD:	0.428	VOLUMETRIC FLOW(ACFM):	64035.6
AVG. STACK TEMP.:	90	VOLUMETRIC FLOW(WVSCFM):	2494.4
PERCENT WATER VAPOR:	4.020	VOLUMETRIC FLOW(DSCFM):	59555.2
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**62049.6**
GAS MOLECULAR WT.(wet):	28.40		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	1-B		H2O %:	3.38
TIME BEGIN,TIME END:	11:00 AM	11:12 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.05	inches Hg.	TEMP. db:	81
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	46.6
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.430	104	2-1	0.67	103
1-2	0.410	104	2-2	0.72	104
1-3	0.400	104	2-3	0.7	104
1-4	0.430	105	2-4	0.52	104
1-5	0.370	105	2-5	0.23	104
1-6	0.550	104	2-6	0.45	104
1-7	0.560	104	2-7	0.46	104
1-8	0.560	104	2-8	0.44	103

AVG. SQ. RT. VEL. HEAD:	0.697	AVERAGE VELOCITY(FPS):	40.624
AVG. VEL. HEAD:	0.485	VOLUMETRIC FLOW(ACFM):	68916.1
AVG. STACK TEMP.:	104	VOLUMETRIC FLOW(WVSCFM):	2202.6
PERCENT WATER VAPOR:	3.380	VOLUMETRIC FLOW(DSCFM):	62961.9
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**65164.5**
GAS MOLECULAR WT.(wet):	28.47		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	1-C		H2O %:	3.5
TIME BEGIN,TIME END:	12:00 PM	12:15 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	104
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	48.3
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.560	103	2-1	0.43	103
1-2	0.650	103	2-2	0.43	103
1-3	0.620	104	2-3	0.4	104
1-4	0.450	104	2-4	0.36	105
1-5	0.210	105	2-5	0.35	105
1-6	0.470	105	2-6	0.61	104
1-7	0.430	105	2-7	0.61	104
1-8	0.350	104	2-8	0.6	104

AVG. SQ. RT. VEL. HEAD:	0.680	AVERAGE VELOCITY(FPS):	39.659
AVG. VEL. HEAD:	0.462	VOLUMETRIC FLOW(ACFM):	67279.3
AVG. STACK TEMP.:	104.0625	VOLUMETRIC FLOW(WVSCFM):	2224.9
PERCENT WATER VAPOR:	3.500	VOLUMETRIC FLOW(DSCFM):	61342.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**63567.4**
GAS MOLECULAR WT.(wet):	28.46		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	2-A		H2O %:	3.16
TIME BEGIN,TIME END:	1:20 PM	1:32 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.02	inches Hg.	TEMP. db:	107
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	39.9
STACK STATIC in H2O:	-0.27			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.400	106	2-1	0.72	108
1-2	0.370	106	2-2	0.635	108
1-3	0.370	106	2-3	0.6	108
1-4	0.395	106	2-4	0.43	108
1-5	0.340	106	2-5	0.13	107
1-6	0.550	107	2-6	0.4	107
1-7	0.540	108	2-7	0.37	107
1-8	0.470	108	2-8	0.34	107

AVG. SQ. RT. VEL. HEAD:	0.655	AVERAGE VELOCITY(FPS):	38.308
AVG. VEL. HEAD:	0.429	VOLUMETRIC FLOW(ACFM):	64986.7
AVG. STACK TEMP.:	107.0625	VOLUMETRIC FLOW(WVSCFM):	1929.4
PERCENT WATER VAPOR:	3.160	VOLUMETRIC FLOW(DSCFM):	59126.8
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61056.2**
GAS MOLECULAR WT.(wet):	28.49		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	2-B		H2O %:	3.2
TIME BEGIN,TIME END:	2:20 PM	2:32 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.02	inches Hg.	TEMP. db:	108
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	39.2
STACK STATIC in H2O:	-0.27			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.690	109	2-1	0.395	107
1-2	0.570	109	2-2	0.37	107
1-3	0.570	109	2-3	0.365	107
1-4	0.470	109	2-4	0.46	108
1-5	0.140	108	2-5	0.37	108
1-6	0.290	108	2-6	0.45	107
1-7	0.400	108	2-7	0.63	107
1-8	0.340	108	2-8	0.57	107

AVG. SQ. RT. VEL. HEAD:	0.656	AVERAGE VELOCITY(FPS):	38.406
AVG. VEL. HEAD:	0.431	VOLUMETRIC FLOW(ACFM):	65153.9
AVG. STACK TEMP.:	107.875	VOLUMETRIC FLOW(WVSCFM):	1956.0
PERCENT WATER VAPOR:	3.200	VOLUMETRIC FLOW(DSCFM):	59169.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61125.6**
GAS MOLECULAR WT.(wet):	28.49		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	2-C		H2O %:	3.93
TIME BEGIN,TIME END:	3:20 PM	3:31 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.02	inches Hg.	TEMP. db:	104
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	54.1
STACK STATIC in H2O:	-0.27			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.380	103	2-1	0.67	103
1-2	0.365	104	2-2	0.65	104
1-3	0.350	104	2-3	0.64	104
1-4	0.380	104	2-4	0.46	104
1-5	0.380	104	2-5	0.11	104
1-6	0.570	104	2-6	0.19	103
1-7	0.600	104	2-7	0.34	103
1-8	0.550	104	2-8	0.345	103

AVG. SQ. RT. VEL. HEAD:	0.647	AVERAGE VELOCITY(FPS):	37.792
AVG. VEL. HEAD:	0.419	VOLUMETRIC FLOW(ACFM):	64111.6
AVG. STACK TEMP.:	103.6875	VOLUMETRIC FLOW(WVSCFM):	2381.4
PERCENT WATER VAPOR:	3.930	VOLUMETRIC FLOW(DSCFM):	58213.2
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**60594.6**
GAS MOLECULAR WT.(wet):	28.41		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	3-A		H2O %:	3.69
TIME BEGIN,TIME END:	4:30 PM	4:41 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	96
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	64.8
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.710	95	2-1	0.43	96
1-2	0.675	96	2-2	0.39	96
1-3	0.600	96	2-3	0.37	97
1-4	0.460	96	2-4	0.41	97
1-5	0.170	96	2-5	0.42	96
1-6	0.230	96	2-6	0.64	96
1-7	0.340	96	2-7	0.68	96
1-8	0.350	96	2-8	0.62	96

AVG. SQ. RT. VEL. HEAD:	0.673	AVERAGE VELOCITY(FPS):	39.016
AVG. VEL. HEAD:	0.453	VOLUMETRIC FLOW(ACFM):	66188.2
AVG. STACK TEMP.:	96.0625	VOLUMETRIC FLOW(WVSCFM):	2340.8
PERCENT WATER VAPOR:	3.690	VOLUMETRIC FLOW(DSCFM):	61095.4
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**63436.2**
GAS MOLECULAR WT.(wet):	28.44		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	3-B		H2O %:	3.39
TIME BEGIN,TIME END:	5:30 PM	5:42 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	95
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	61.3
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.460	94	2-1	0.62	94
1-2	0.450	94	2-2	0.64	94
1-3	0.430	95	2-3	0.625	95
1-4	0.430	95	2-4	0.46	95
1-5	0.400	95	2-5	0.23	95
1-6	0.530	95	2-6	0.38	95
1-7	0.535	95	2-7	0.44	95
1-8	0.490	95	2-8	0.45	95

AVG. SQ. RT. VEL. HEAD:	0.684	AVERAGE VELOCITY(FPS):	39.549
AVG. VEL. HEAD:	0.467	VOLUMETRIC FLOW(ACFM):	67092.0
AVG. STACK TEMP.:	94.75	VOLUMETRIC FLOW(WVSCFM):	2185.0
PERCENT WATER VAPOR:	3.390	VOLUMETRIC FLOW(DSCFM):	62269.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**64454.6**
GAS MOLECULAR WT.(wet):	28.47		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/21/01

RUN NUMBER:	3-C		H2O %:	3.89
TIME BEGIN,TIME END:	6:30 PM	6:43 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	95
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	70.3
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP,F	PORT-POINT	VEL. HD.	TEMP,F
1-1	0.640	95	2-1	0.41	94
1-2	0.650	95	2-2	0.39	95
1-3	0.650	95	2-3	0.37	95
1-4	0.550	95	2-4	0.4	95
1-5	0.250	95	2-5	0.47	95
1-6	0.370	95	2-6	0.64	95
1-7	0.330	94	2-7	0.71	95
1-8	0.300	94	2-8	0.63	95

AVG. SQ. RT. VEL. HEAD:	0.688	AVERAGE VELOCITY(FPS):	39.853
AVG. VEL. HEAD:	0.474	VOLUMETRIC FLOW(ACFM):	67608.9
AVG. STACK TEMP.:	94.8125	VOLUMETRIC FLOW(WVSCFM):	2526.3
PERCENT WATER VAPOR:	3.890	VOLUMETRIC FLOW(DSCFM):	62417.5
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**64943.9**
GAS MOLECULAR WT.(wet):	28.41		

2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 332-0197 OFFICE (904) 332-3901 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPRAYKOTE INC.
SOURCE ROOF EXHAUST
DATE 8-21-01
STACK DIMENSIONS (in) 72" STACK AREA (FT2) 28.274
BAROMETRIC PRES.(in H2O) 30.01 STATIC PRES. (in H2O) -.11
STACK PRES. (in H2O) 30.03 OPERATORS GP/SC
PORT DIAM. 3" NIPPLE LENGTH 6"
PITOT TUBE NUMBER 93 TYPE 'S' TYPE
RUN NO. 1 TIME 1000 POST TEST(+) 2.0 / 3.6 (-) 0.0 / 5.2
RUN NO. 2 TIME 1100 POST TEST(+) 0.0 / 3.6 (-) 0.0 / 5.2
RUN NO. 3 TIME 1200 POST TEST(+) 0.0 / 3.6 (-) 0.0 / 5.2

STACK CONFIGURATION

WH 1 Fugitive Exhaust

Probe in working out

RUNS 1, 2, & 3

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-1 EAST 1-1	.645	90	R-21 2-1		.67	103
RH% 80.3 2	.63	90	2		.72	104
°F= 88° 3	.54	90	3		.70	104
4	.15	90	4		.52	104
4.02 5	.18	90	5		.23	104
% 6	.38	90	6		.45	104
H2O 7	.39	90	END 7		.46	104
8	.32	90	1110 8		.44	103
NORTH 2-1	.45	90	R-3-1-1	SOUTH EAST	.56	103
2	.41	90	RH=48.3 2		.65	103
3	.42	90	F°=104° 3		.62	104
4	.425	90	4		.45	104
5	.42	90	3.5% 5		.21	105
6	.60	90	6		.47	105
7	.59	90	H2O 7		.43	105
8	.52	90	8		.35	104
			2-1	NORTH	.43	103
R-2 1-1	.43	104	2		.43	103
RH: 80 2	.41	104	3		.40	104
F°: 104 3	.40	104	4		.36	105
4	.43	105	5		.35	105
5	.37	105	6		.61	104
6	.55	104	7		.61	104
7	.56	104	8	END	.60	104
8	.56	104		1210		

ACE ENGINEERING INC
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-0900 OFFICE (904) 335-0901 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPIRALKOTE INC.
SOURCE ROOF EXHAUST
DATE 8-21-01
STACK DIMENSIONS (in) 72" STACK AREA (FT2) 28.274
BAROMETRIC PRES.(in H2O) 30.04 STATIC PRES. (in H2O) -0.11
STACK PRES. (in H2O) 30.02 OPERATORS GP / SC
PORT DIAM. 3" NIPPLE LENGTH 6"
PITOT TUBE NUMBER 93 TYPE 'S' TYPE
RUN NO. 4 TIME 1320 POST TEST(+) 0.0 / 9.8 (-) 2.7 / 0.0
RUN NO. 5 TIME 1420 POST TEST(+) 6.0 / 5.8 (-) 0.0 / 2.9
RUN NO. 6 TIME 1520 POST TEST(+) ____ / ____ (-) ____ / 2

STACK CONFIGURATION

WHI FUGITIVE EXHAUST

Probe in working out
RUNS 4, 5, & 6

N TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-4 1-1	.40	106		R5 2-1	.395	107
RH=39.9% 2	.37	106		2	.37	107
F°=107 3	.37	106		3	.365	107
4	.395	106		4	.46	108
5	.34	106		5	.37	108
6	.95	107		6	.45	107
7	.54	108		END 7	.63	107
8	.47	108		1432 8	.57	107
E 2-1	.72	108				
2	.635	108		R-6 1-1	.38	103
3	.60	108		RH=54.1% 2	.365	104
4	.43	108		F°=104° 3	.35	104
5	.13	107		4	.38	104
6	.40	107		5	.38	104
END 7	.37	107		6	.57	104
1332 8	.34	107		7	.60	104
				8	.55	104
E						
R-5 1-1	.69	109		2-1	.67	103
RH=39.2% 2	.57	109		2	.65	104
F°=108 3	.57	109		3	.64	104
4	.47	109		4	.46	104
5	.14	108		5	.11	104
3.2 H2O 6	.29	108		6	.19	103
7	.40	108		END 7	.34	103
8	.34	108		1431 8	.345	103

2108 NW 37TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32605
(904) 335-1889 · OFFICE (904) 335-1891 · FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPIRALKOTE
SOURCE ROOF EXHAUST
DATE 6-21-01
STACK DIMENSIONS (in) 72.4 STACK AREA (FT2) 28.274
BAROMETRIC PRES.(in H2O) 30.04 STATIC PRES. (in H2O) 0.11
STACK PRES. (in H2O) 30.03 OPERATORS GP SC
PORT DIAM. 3" NIPPLE LENGTH 6"
PITOT TUBE NUMBER 93 TYPE 'S' TYPE
RUN NO. 7 TIME 1630 POST TEST(+) 0.0 / 3.8 (-) 0.0 / 4.1
RUN NO. 8 TIME 1730 POST TEST(+) 0.0 / 3.8 (-) 0.0 / 4.1
RUN NO. 9 TIME 1830 POST TEST(+) 0.0 / 3.8 (-) 0.0 / 4.1

STACK CONFIGURATION
W/4 FUGITIVE EXHAUST

Probe in working out
RUNS 7, 8, & 9

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-7 1-1	.71	95		R-8 2-1	.62	94
RH=64.8% 2	.675	96		2	.64	94
F°= 96 3	.60	96		3	.625	95
4	.46	96		4	.46	95
3.69 5	.17	96		5	.23	95
H_2O 6	.23	96		6	.38	95
7	.34	96		END 7	.44	95
8	.35	96		1742 8	.45	95
N 2-1	.43	96		=		
2	.39	96		R-9 1-1	.64	95
3	.37	97		RH=70.3% 2	.65	95
4	.41	97		F°= 95 3	.65	95
5	.42	96		4	.55	95
6	.64	96		3.89 5	.25	95
END 7	.68	96		H_2O 6	.37	95
1641 8	.62	96		7	.33	94
				8	.30	94
N R-8- 1-1	.46	94		N 2-1	.41	94
RH=61.3% 2	.45	94		2	.39	95
F°= 95 3	.43	95		3	.37	95
4	.43	95		4	.40	95
3.39 H_2O 5	.40	95		5	.47	95
6	.53	95		6	.64	95
7	.535	95		END 7	.71	95
8	.49	95		1843 8	.63	95

WH-3

INCINERATOR INLET

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	WH 3 INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	1-A		H2O %:	5.44
TIME BEGIN,TIME END:	9:20 AM	9:31 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	163
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	15.7
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.210	163	2-1	0.240	163
1-2	0.240	163	2-2	0.270	164
1-3	0.260	164	2-3	0.290	164
1-4	0.255	164	2-4	0.300	164
1-5	0.260	164	2-5	0.290	164
1-6	0.250	163	2-6	0.290	164
1-7	0.240	160	2-7	0.285	163
1-8	0.180	159	2-8	0.260	163
1-9	0.170	160	2-9	0.210	163
1-10	0.200	162	2-10	0.205	163
1-11	0.300	163	2-11	0.310	162
1-12	0.330	163	2-12	0.380	161

AVG. SQ. RT. VEL. HEAD:	0.507	AVERAGE VELOCITY(FPS):	31.257
AVG. VEL. HEAD:	0.257	VOLUMETRIC FLOW(ACFM):	9206.6
AVG. STACK TEMP.:	162.75	VOLUMETRIC FLOW(WVSCFM):	427.0
PERCENT WATER VAPOR:	5.440	VOLUMETRIC FLOW(DSCFM):	7423.0
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7850.0**
GAS MOLECULAR WT.(wet):	28.25		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME: ,	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	1-B		H2O %:	6.5
TIME BEGIN,TIME END:	10:18 AM	10:27 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	169
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	16.3
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.240	168	2-1	0.190	168
1-2	0.250	168	2-2	0.220	168
1-3	0.250	169	2-3	0.250	168
1-4	0.255	170	2-4	0.280	168
1-5	0.240	170	2-5	0.270	168
1-6	0.240	171	2-6	0.270	169
1-7	0.220	171	2-7	0.290	169
1-8	0.180	171	2-8	0.210	171
1-9	0.115	170	2-9	0.210	170
1-10	0.120	170	2-10	0.200	168
1-11	0.320	169	2-11	0.290	168
1-12	0.310	168	2-12	0.310	168

AVG. SQ. RT. VEL. HEAD:	0.485	AVERAGE VELOCITY(FPS):	30.128
AVG. VEL. HEAD:	0.236	VOLUMETRIC FLOW(ACFM):	8873.8
AVG. STACK TEMP.:	169.0833	VOLUMETRIC FLOW(WVSCFM):	486.9
PERCENT WATER VAPOR:	6.500	VOLUMETRIC FLOW(DSCFM):	7003.3
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7490.1**
GAS MOLECULAR WT.(wet):	28.13		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	1-C		H2O %:	6.99
TIME BEGIN,TIME END:	11:45 AM	11:56 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	173
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	16
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.260	172	2-1	0.245	172
1-2	0.260	172	2-2	0.260	173
1-3	0.270	172	2-3	0.270	173
1-4	0.265	173	2-4	0.270	173
1-5	0.260	173	2-5	0.275	173
1-6	0.260	173	2-6	0.270	174
1-7	0.250	174	2-7	0.280	174
1-8	0.220	174	2-8	0.210	174
1-9	0.185	174	2-9	0.200	173
1-10	0.160	172	2-10	0.230	173
1-11	0.240	172	2-11	0.230	173
1-12	0.210	172	2-12	0.310	173

AVG. SQ. RT. VEL. HEAD:	0.494	AVERAGE VELOCITY(FPS):	30.803
AVG. VEL. HEAD:	0.244	VOLUMETRIC FLOW(ACFM):	9072.6
AVG. STACK TEMP.:	172.9583	VOLUMETRIC FLOW(WVSCFM):	532.0
PERCENT WATER VAPOR:	6.990	VOLUMETRIC FLOW(DSCFM):	7079.0
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7611.0**
GAS MOLECULAR WT.(wet):	28.08		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME: SPIRALKOTE, INC.
LOCATION: ORLANDO, FLORIDA
SOURCE: MAGNUM INCINERATOR INLET
DATE: 8/22/01

RUN NUMBER:	2-A		H2O %:	6.81
TIME BEGIN,TIME END:	12:25 PM	12:36 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	173
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	15.6
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.220	171	2-1	0.240	171
1-2	0.230	171	2-2	0.250	172
1-3	0.250	171	2-3	0.260	173
1-4	0.250	172	2-4	0.250	173
1-5	0.240	172	2-5	0.250	173
1-6	0.230	173	2-6	0.240	173
1-7	0.210	173	2-7	0.240	174
1-8	0.170	173	2-8	0.220	174
1-9	0.170	172	2-9	0.200	173
1-10	0.180	172	2-10	0.170	173
1-11	0.230	171	2-11	0.180	173
1-12	0.180	171	2-12	0.280	171

AVG. SQ. RT. VEL. HEAD:	0.470	AVERAGE VELOCITY(FPS):	29.298
AVG. VEL. HEAD:	0.221	VOLUMETRIC FLOW(ACFM):	8629.5
AVG. STACK TEMP.:	172.2917	VOLUMETRIC FLOW(WVSCFM):	493.5
PERCENT WATER VAPOR:	6.810	VOLUMETRIC FLOW(DSCFM):	6753.4
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7247.0**
GAS MOLECULAR WT.(wet):	28.10		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	2-B		H2O %:	5.33
TIME BEGIN,TIME END:	1:15 PM	1:25 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	173
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	12.2
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.180	171	2-1	0.230	169
1-2	0.260	171	2-2	0.250	170
1-3	0.280	172	2-3	0.270	170
1-4	0.280	173	2-4	0.280	171
1-5	0.260	173	2-5	0.320	173
1-6	0.260	173	2-6	0.310	173
1-7	0.235	173	2-7	0.270	173
1-8	0.200	173	2-8	0.220	173
1-9	0.170	173	2-9	0.220	173
1-10	0.200	172	2-10	0.210	174
1-11	0.270	172	2-11	0.210	173
1-12	0.150	171	2-12	0.230	172

AVG. SQ. RT. VEL. HEAD:	0.488	AVERAGE VELOCITY(FPS):	30.310
AVG. VEL. HEAD:	0.238	VOLUMETRIC FLOW(ACFM):	8927.5
AVG. STACK TEMP.:	172.125	VOLUMETRIC FLOW(WVSCFM):	399.7
PERCENT WATER VAPOR:	5.330	VOLUMETRIC FLOW(DSCFM):	7099.4
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7499.1**
GAS MOLECULAR WT.(wet):	28.26		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	2-C		H2O %:	5.64
TIME BEGIN,TIME END:	2:25 PM	2:35 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	176
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	12.1
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.230	174	2-1	0.240	175
1-2	0.250	174	2-2	0.270	175
1-3	0.270	175	2-3	0.280	176
1-4	0.270	175	2-4	0.270	176
1-5	0.260	175	2-5	0.280	176
1-6	0.260	175	2-6	0.270	176
1-7	0.230	176	2-7	0.260	176
1-8	0.190	176	2-8	0.200	176
1-9	0.190	176	2-9	0.190	176
1-10	0.240	175	2-10	0.190	176
1-11	0.340	175	2-11	0.270	175
1-12	0.250	174	2-12	0.340	175

AVG. SQ. RT. VEL. HEAD:	0.500	AVERAGE VELOCITY(FPS):	31.148
AVG. VEL. HEAD:	0.250	VOLUMETRIC FLOW(ACFM):	9174.3
AVG. STACK TEMP.:	175.3333	VOLUMETRIC FLOW(WVSCFM):	432.4
PERCENT WATER VAPOR:	5.640	VOLUMETRIC FLOW(DSCFM):	7235.1
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7667.6**
GAS MOLECULAR WT.(wet):	28.22		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	3-A		H2O %:	5.45
TIME BEGIN,TIME END:	3:35 PM	3:45 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	174
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	12.2
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.240	173	2-1	0.230	174
1-2	0.250	173	2-2	0.260	174
1-3	0.270	174	2-3	0.260	174
1-4	0.270	174	2-4	0.270	175
1-5	0.270	174	2-5	0.265	175
1-6	0.260	174	2-6	0.250	175
1-7	0.250	175	2-7	0.220	174
1-8	0.180	175	2-8	0.180	174
1-9	0.180	174	2-9	0.180	174
1-10	0.180	174	2-10	0.240	174
1-11	0.330	174	2-11	0.340	173
1-12	0.390	173	2-12	0.210	171

AVG. SQ. RT. VEL. HEAD:	0.496	AVERAGE VELOCITY(FPS):	30.872
AVG. VEL. HEAD:	0.246	VOLUMETRIC FLOW(ACFM):	9093.1
AVG. STACK TEMP.:	173.9167	VOLUMETRIC FLOW(WVSCFM):	415.1
PERCENT WATER VAPOR:	5.450	VOLUMETRIC FLOW(DSCFM):	7201.5
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7616.7**
GAS MOLECULAR WT.(wet):	28.25		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	MAGNUM INCINERATOR INLET
DATE:	8/22/01

RUN NUMBER:	3-B		H2O %:	5.11
TIME BEGIN,TIME END:	4:35 PM	4:46 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	173
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	11.7
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.235	172	2-1	0.230	163
1-2	0.250	172	2-2	0.250	164
1-3	0.270	172	2-3	0.270	164
1-4	0.260	173	2-4	0.280	164
1-5	0.250	173	2-5	0.275	164
1-6	0.260	173	2-6	0.260	164
1-7	0.235	173	2-7	0.270	163
1-8	0.190	173	2-8	0.210	163
1-9	0.180	173	2-9	0.200	163
1-10	0.190	172	2-10	0.200	163
1-11	0.210	171	2-11	0.250	162
1-12	0.200	171	2-12	0.220	161

AVG. SQ. RT. VEL. HEAD:	0.484	AVERAGE VELOCITY(FPS):	29.932
AVG. VEL. HEAD:	0.234	VOLUMETRIC FLOW(ACFM):	8816.2
AVG. STACK TEMP.:	167.75	VOLUMETRIC FLOW(WVSCFM):	381.1
PERCENT WATER VAPOR:	5.110	VOLUMETRIC FLOW(DSCFM):	7076.2
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7457.3**
GAS MOLECULAR WT.(wet):	28.28		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME: SPIRALKOTE, INC.
LOCATION: ORLANDO, FLORIDA
SOURCE: MAGNUM INCINERATOR INLET
DATE: 8/22/01

RUN NUMBER:	3-C		H2O %:	5.99
TIME BEGIN,TIME END:	5:35 PM	5:45 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	29.92	inches Hg.	TEMP. db:	165
STACK AREA:	4.909	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	12.2
STACK STATIC in H2O:	-1.90			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.230	164	2-1	0.220	164
1-2	0.250	164	2-2	0.250	164
1-3	0.260	164	2-3	0.280	165
1-4	0.290	165	2-4	0.310	165
1-5	0.280	165	2-5	0.320	165
1-6	0.285	165	2-6	0.310	165
1-7	0.250	165	2-7	0.270	165
1-8	0.200	165	2-8	0.230	165
1-9	0.200	165	2-9	0.210	165
1-10	0.190	164	2-10	0.200	165
1-11	0.200	164	2-11	0.250	164
1-12	0.240	164	2-12	0.330	164

AVG. SQ. RT. VEL. HEAD:	0.501	AVERAGE VELOCITY(FPS):	30.938
AVG. VEL. HEAD:	0.251	VOLUMETRIC FLOW(ACFM):	9112.6
AVG. STACK TEMP.:	164.5833	VOLUMETRIC FLOW(WVSCFM):	464.0
PERCENT WATER VAPOR:	5.990	VOLUMETRIC FLOW(DSCFM):	7283.0
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7747.1**
GAS MOLECULAR WT.(wet):	28.19		

2106 NW 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-4869 OFFICE (904) 335-3891 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPRAYCOTE INC
SOURCE WH 3 INCINERATOR INLET
DATE 8-22-01
STACK DIMENSIONS (in) 30" STACK AREA (FT2) 4.909
BAROMETRIC PRES.(in H2O) 30.06 STATIC PRES. (in H2O) -1.9
STACK PRES. (in H2O) 29.92 OPERATORS GP/SC
PORT DIAM. 1" NIPPLE LENGTH 0
PITOT TUBE NUMBER 43 TYPE S TYPE
RUN NO. 1 TIME 0920 POST TEST(+) 0.0 / 4.1 (-) 0.0 / 2.4
RUN NO. 2 TIME 1018 POST TEST(+) 0.0 / 4.1 (-) 0.0 / 2.4
RUN NO. 3 TIME ____ POST TEST(+) 0.0 / 4.1 (-) 0.0 / 2.4

STACK CONFIGURATION

WH 3 INCINERATOR INLET

Probe in walking out
Runs 1, 2, .

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-1 1-1	.21	163	.6	R-2 1-1	.24	168
RH= 15.7% 2	.24	163	2.0	RH= 16.3% 2	.25	168
F= 163 3	.26	164	3.5	F= 169° 3	.25	169
4	.255	164	5.3	4	.255	170
5.44 5	.26	164	7.5	6.50% 5	.24	170
H2O 6	.25	163	10.7	H2O 6	.24	171
7	.24	160	19.3	7	.22	171
8	.18	159	22.5	8	.18	171
9	.17	160	24.7	9	.115	170
10	.20	162	26.5	10	.12	170
11	.30	163	28.0	11	.32	169
12	.33	163	29.4	12	.31	168
2-1	.24	163		R-2 1	.19	168
2	.27	164		2	.22 .22	168
3	.29	164		3	.25	168
4	.30	164		4	.28	168
5	.29	164		5	.27	168
6	.29	164		6	.27	169
7	.285	163		7	.29	169
8	.26	163		8	.21	171
9	.21	163		9	.21	170
10	.205	163		10	.20	168
END 11	.31	162		END 11	.29	168
0931 12	.38	161		1027 12	.31	168

ACE
ENVIRONMENTAL ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE FLORIDA 32653
(904) 335-1889 OFFICE (904) 335-1891 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPIRALKOTE
SOURCE: WH 3 INCINERATOR INLET
DATE: 8-22-01
STACK DIMENSIONS (in): 30"
STACK AREA (FT2): 4.909
BAROMETRIC PRES. (in H2O): 30.06
STATIC PRES. (in H2O): -1.9
STACK PRES. (in H2O): 29.92
OPERATORS: GP/SC
PORT DIAM.: 1"
NIPPLE LENGTH: 0
PITOT TUBE NUMBER: 43
TYPE: 'S' TYPE
RUN NO. 3 TIME 1145 POST TEST(+) 0.0 / 5.7 (-) 0.0 / 6.2
RUN NO. 4 TIME 1225 POST TEST(+) 0.0 / 5.7 (-) 0.0 / 6.2
RUN NO. ___ TIME ___ POST TEST(+) ___ / ___ (-) ___ / ___

STACK CONFIGURATION

WH 3 INCINERATOR INLET

Probe in working out Runs 3 & 4

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-3 1-1	.26	172		R4 1-1	.22	171
RH=16% 2	.26	172		RH=15.6% 2	.23	171
F°= 173° 3	.27	172		F°= 173° 3	.25	171
4	.265	173		4	.25	172
6.99 H_2O 5	.26	173		6.81 H_2O 5	.24	172
6	.26	173		6	.23	173
7	.25	174		7	.21	173
8	.22	174		8	.17	173
9	.185	174		9	.17	172
10	.16	172		10	.18	172
11	.24	172		11	.23	171
12	.21	172		12	.18	171
2- 1	.245	172		2- 1	.24	171
2	.26	173		2	.25	172
3	.27	173		3	.26	173
4	.27	173		4	.25	173
5	.275	173		5	.25	173
6	.27	174		6	.24	173
7	.28	174		7	.24	174
8	.21	174		8	.22	174
9	.20	173		9	.20	173
10	.23	173		10	.17	173
End 11	.23	173		END 11	.18	173
1256 12	.31	173		1236 12	.28	171

ACE ENGINEERING, INC.
2100 NW 57TH PLACE SUITE 1
GAINESVILLE FLORIDA 32653

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPIRALKOTE INC.
SOURCE: WH3 INCINERATOR INLET
DATE: 8-22-01
STACK DIMENSIONS (in): 30"   STACK AREA (FT2): 4.909
BAROMETRIC PRES. (in H2O): 30.06   STATIC PRES. (in H2O): -1.9
STACK PRES. (in H2O): 29.92   OPERATORS: GP/SC
PORT DIAM.: 1.0"   NIPPLE LENGTH: 0
PITOT TUBE NUMBER: 43   TYPE: 'S' TYPE
RUN NO. 5 TIME 1325 POST TEST(+) 0.0 / 4.1 (-) 0.0 / 5.6
RUN NO. 6 TIME 1425 POST TEST(+) 0.0 / 4.1 (-) 0.0 / 5.6
RUN NO. — TIME ___ POST TEST(+) ___/___ (-) ___/___

STACK CONFIGURATION

WH3 INCINERATOR INLET

Probe in working at Runs 5 & 6

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R5 1-1	.18	171		R-6 1-1	.23	174
RH=12.2% 2	.26	171		RH=12.1 2	.25	174
F°=173° 3	.28	172		F°=176° 3	.27	175
4	.28	173		4	.27	175
5.33 5	.26	173		5.64 5	.26	175
H2O 6	.26	173		H2O 6	.26	175
7	.235	173		7	.23	176
8	.20	173		8	.19	176
9	.17	173		9	.19	176
10	.20	172		10	.24	175
11	.27	172		11	.34	175
12	.15	171		12	.25	174
2-1	.23	169		2-1	.24	175
2	.25	170		2	.27	175
3	.27	170		3	.28	176
4	.28	171		4	.27	176
5	.32	173		5	.28	176
6	.31	173		6	.27	176
7	.27	173		7	.26	176
8	.22	173		8	.20	176
9	.22	173		9	.19	176
10	.21	174		10	.19	176
END 11	.21	173		END 11	.27	175
1325 12	.23	172		1435 12	.34	175

AGES
ENGINEERING, INC.
2106 NW 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-1889 - OFFICE (904) 335-1891 - FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPIRALKOTE WC
SOURCE: WH 3 INCINERATOR INLET
DATE: 8-22-01
STACK DIMENSIONS (in): 30 STACK AREA (FT2): 4.909
BAROMETRIC PRES. (in H2O): 30.06 STATIC PRES. (in H2O): -4.9
STACK PRES. (in H2O): 29.92 OPERATORS: GP/SC
PORT DIAM.: 1" NIPPLE LENGTH: 0
PITOT TUBE NUMBER: 43 TYPE: "S" TYPE
RUN NO. 7 TIME 1535 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 2.4
RUN NO. 8 TIME 1635 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 2.4
RUN NO. ___ TIME ___ POST TEST(+) ___ / ___ (-) ___ / ___

STACK CONFIGURATION
WH 3 INCINERATOR INLET
RUNS 7 & 8

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-7 1-1	.24	173		R-8 1-1	.235	171
F°: 174° 2	.25	173		RH=11.79% 2	.25	171
RH 12.29% 3	.27	174		F°: 173° 3	.27	172
4	.27	174		4	.26	173
5.45 5	.27	174		5.11 5	.25	173
H2O 6	.26	174		H2O 6	.26	173
7	.25	175		7	.235	173
8	.18	175		8	.19	173
9	.18	174		9	.18	173
10	.18	174		10	.19	172
11	.33	174		11	.21	171
12	.39	173		12	.20	171
2-1	.23	174		2-1	.23	172
2	.26	174		2	.25	172
3	.26	174		3	.27	172
4	.27	175		4	.28	173
5	.265	175		5	.275	173
6	.250	175		6	.26	173
7	.22	174		7	.27	173
8	.18	174		8	.21	174
9	.18	174		9	.20	173
10	.24	174		10	.20	173
End 11	.34	173		END 11	.25	173
1545 12	.21	171		1646 12	.22	172

AGE ENGINEERING, INC.
2106 NW 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-1889 · OFFICE (904) 335-1891 · FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: FP SPRAYKOTE INC.
SOURCE: WH3 INCINERATOR INLET
DATE: 8-22-01
STACK DIMENSIONS (in): 30" STACK AREA (FT2): 4.909
BAROMETRIC PRES. (in H2O): 30.06 STATIC PRES. (in H2O): -1.9
STACK PRES. (in H2O): 29.92 OPERATORS: GP/SC
PORT DIAM.: 1" NIPPLE LENGTH: 0
PITOT TUBE NUMBER: 43 TYPE: "S" TYPE
RUN NO. 9 TIME 1835 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 5.2
RUN NO. ____ TIME ______ POST TEST(+) ____ / ____ (-) ____ / ____
RUN NO. ____ TIME ______ POST TEST(+) ____ / ____ (-) ____ / ____

STACK CONFIGURATION

WH3 INCINERATOR INLET

R-9 Lede in nothing out

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-9 1-1	.23	164				
RH=12.2% 2	.25	164				
F°=165° 3	.26	164				
4	.29	165				
5.99 5	.28	165				
% H_2O 6	.285	165				
7	.25	165				
8	.20	165				
9	.20	165				
10	.19	164				
11	.20	164				
12	.24	164				
2-1	.22	164				
2	.25	164				
3	.28	165				
4	.31	165				
5	.32	165				
6	.31	165				
7	.27	165				
8	.23	165				
9	.21	165				
10	.20	165				
End 11	.25	164				
1845 12	.33	164				

ROOF EXHAUST

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	1-A		H2O %:	3.88
TIME BEGIN,TIME END:	9:00 AM	9:15 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	89
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	84.4
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.460	88	2-1	0.65	88
1-2	0.430	88	2-2	0.66	89
1-3	0.420	89	2-3	0.64	89
1-4	0.410	89	2-4	0.51	89
1-5	0.490	89	2-5	0.21	90
1-6	0.710	89	2-6	0.3	90
1-7	0.700	89	2-7	0.34	89
1-8	0.590	88	2-8	0.31	89

AVG. SQ. RT. VEL. HEAD:	0.691	AVERAGE VELOCITY(FPS):	39.763
AVG. VEL. HEAD:	0.477	VOLUMETRIC FLOW(ACFM):	67455.9
AVG. STACK TEMP.:	88.875	VOLUMETRIC FLOW(WVSCFM):	2542.2
PERCENT WATER VAPOR:	3.880	VOLUMETRIC FLOW(DSCFM):	62977.5
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**65519.7**
GAS MOLECULAR WT.(wet):	28.42		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	1-B		H2O %:	3.77
TIME BEGIN,TIME END:	10:00 AM	10:13 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	96
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	66.1
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.400	96	2-1	0.43	95
1-2	0.440	96	2-2	0.42	95
1-3	0.540	96	2-3	0.43	96
1-4	0.470	96	2-4	0.47	96
1-5	0.240	96	2-5	0.5	96
1-6	0.320	96	2-6	0.71	96
1-7	0.320	96	2-7	0.75	96
1-8	0.330	95	2-8	0.63	95

AVG. SQ. RT. VEL. HEAD:	0.673	AVERAGE VELOCITY(FPS):	38.983
AVG. VEL. HEAD:	0.453	VOLUMETRIC FLOW(ACFM):	66131.6
AVG. STACK TEMP.:	95.75	VOLUMETRIC FLOW(WVSCFM):	2391.6
PERCENT WATER VAPOR:	3.770	VOLUMETRIC FLOW(DSCFM):	61047.1
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**63438.7**
GAS MOLECULAR WT.(wet):	28.43		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME: SPIRALKOTE, INC.
LOCATION: ORLANDO, FLORIDA
SOURCE: FUGITIVE ROOF EXHAUST
DATE: 8/22/01

RUN NUMBER:	1-C		H2O %:	3.56
TIME BEGIN,TIME END:	11:00 AM	11:12 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	98
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	58.8
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.430	97	2-1	0.57	97
1-2	0.450	97	2-2	0.57	97
1-3	0.440	98	2-3	0.56	98
1-4	0.450	98	2-4	0.51	98
1-5	0.380	98	2-5	0.18	98
1-6	0.570	98	2-6	0.41	98
1-7	0.525	98	2-7	0.35	98
1-8	0.350	97	2-8	0.3	98

AVG. SQ. RT. VEL. HEAD:	0.658	AVERAGE VELOCITY(FPS):	38.158
AVG. VEL. HEAD:	0.433	VOLUMETRIC FLOW(ACFM):	64732.7
AVG. STACK TEMP.:	97.6875	VOLUMETRIC FLOW(WVSCFM):	2203.0
PERCENT WATER VAPOR:	3.560	VOLUMETRIC FLOW(DSCFM):	59678.1
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61881.1**
GAS MOLECULAR WT.(wet):	28.45		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	2-A		H2O %:	2.83
TIME BEGIN,TIME END:	12:10 PM	12:20 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	96
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	49.6
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.400	96	2-1	0.41	95
1-2	0.380	96	2-2	0.39	95
1-3	0.440	96	2-3	0.36	96
1-4	0.450	96	2-4	0.39	96
1-5	0.210	96	2-5	0.46	96
1-6	0.380	96	2-6	0.71	96
1-7	0.310	96	2-7	0.7	96
1-8	0.265	95	2-8	0.68	96

AVG. SQ. RT. VEL. HEAD:	0.650	AVERAGE VELOCITY(FPS):	37.593
AVG. VEL. HEAD:	0.423	VOLUMETRIC FLOW(ACFM):	63774.3
AVG. STACK TEMP.:	95.8125	VOLUMETRIC FLOW(WVSCFM):	1731.1
PERCENT WATER VAPOR:	2.830	VOLUMETRIC FLOW(DSCFM):	59439.4
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61170.5**
GAS MOLECULAR WT.(wet):	28.53		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	2-B		H2O %:	3.28
TIME BEGIN,TIME END:	1:10 PM	1:22 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	103
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	46.6
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.420	102	2-1	0.53	102
1-2	0.410	102	2-2	0.53	103
1-3	0.410	102	2-3	0.56	103
1-4	0.425	103	2-4	0.42	103
1-5	0.340	103	2-5	0.21	103
1-6	0.540	104	2-6	0.4	103
1-7	0.570	103	2-7	0.41	102
1-8	0.520	103	2-8	0.36	101

AVG. SQ. RT. VEL. HEAD:	0.660	AVERAGE VELOCITY(FPS):	38.428
AVG. VEL. HEAD:	0.435	VOLUMETRIC FLOW(ACFM):	65190.5
AVG. STACK TEMP.:	102.625	VOLUMETRIC FLOW(WVSCFM):	2026.1
PERCENT WATER VAPOR:	3.280	VOLUMETRIC FLOW(DSCFM):	59745.7
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61771.8**
GAS MOLECULAR WT.(wet):	28.48		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	2-C		H2O %:	3.03
TIME BEGIN,TIME END:	2:10 PM	2:22 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	105
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	40.5
STACK STATIC in H2O:	-0.21			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.370	104	2-1	0.395	105
1-2	0.410	104	2-2	0.4	105
1-3	0.370	105	2-3	0.38	105
1-4	0.265	105	2-4	0.42	105
1-5	0.160	105	2-5	0.47	105
1-6	0.390	105	2-6	0.65	105
1-7	0.340	105	2-7	0.65	105
1-8	0.290	105	2-8	0.51	105

AVG. SQ. RT. VEL. HEAD:	0.628	AVERAGE VELOCITY(FPS):	36.654
AVG. VEL. HEAD:	0.395	VOLUMETRIC FLOW(ACFM):	62180.9
AVG. STACK TEMP.:	104.875	VOLUMETRIC FLOW(WVSCFM):	1778.2
PERCENT WATER VAPOR:	3.030	VOLUMETRIC FLOW(DSCFM):	56907.2
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**58685.3**
GAS MOLECULAR WT.(wet):	28.51		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	3-A		H2O %:	3.04
TIME BEGIN,TIME END:	3:20 PM	3:31 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	105
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	40.7
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.440	104	2-1	0.6	104
1-2	0.430	104	2-2	0.48	105
1-3	0.410	105	2-3	0.495	105
1-4	0.430	105	2-4	0.47	105
1-5	0.510	105	2-5	0.17	105
1-6	0.670	105	2-6	0.32	104
1-7	0.770	105	2-7	0.32	104
1-8	0.640	104	2-8	0.31	104

AVG. SQ. RT. VEL. HEAD:	0.674	AVERAGE VELOCITY(FPS):	39.300
AVG. VEL. HEAD:	0.454	VOLUMETRIC FLOW(ACFM):	66670.0
AVG. STACK TEMP.:	104.5625	VOLUMETRIC FLOW(WVSCFM):	1913.3
PERCENT WATER VAPOR:	3.040	VOLUMETRIC FLOW(DSCFM):	61022.7
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**62935.9**
GAS MOLECULAR WT.(wet):	28.51		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	3-B		H2O %:	3.03
TIME BEGIN,TIME END:	4:20 PM	4:32 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	105
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	40.6
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.580	104	2-1	0.41	105
1-2	0.570	105	2-2	0.42	105
1-3	0.590	105	2-3	0.41	106
1-4	0.570	105	2-4	0.415	106
1-5	0.150	105	2-5	0.49	105
1-6	0.260	105	2-6	0.66	105
1-7	0.270	105	2-7	0.68	105
1-8	0.295	104	2-8	0.65	104

AVG. SQ. RT. VEL. HEAD:	0.670	AVERAGE VELOCITY(FPS):	39.070
AVG. VEL. HEAD:	0.449	VOLUMETRIC FLOW(ACFM):	66279.3
AVG. STACK TEMP.:	104.9375	VOLUMETRIC FLOW(WVSCFM):	1894.5
PERCENT WATER VAPOR:	3.030	VOLUMETRIC FLOW(DSCFM):	60631.1
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**62525.6**
GAS MOLECULAR WT.(wet):	28.51		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	FUGITIVE ROOF EXHAUST
DATE:	8/22/01

RUN NUMBER:	3-C		H2O %:	3.02
TIME BEGIN,TIME END:	5:20 PM	5:31 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.04	inches Hg.	C02%:	0
STACK PRESSURE:	30.03	inches Hg.	TEMP. db:	108
STACK AREA:	28.274	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	37
STACK STATIC in H2O:	-0.11			

PORT-POINT	VEL. HD.	TEMP.F
1-1	0.440	107
1-2	0.400	107
1-3	0.390	107
1-4	0.410	108
1-5	0.480	108
1-6	0.660	108
1-7	0.720	108
1-8	0.520	107

PORT-POINT	VEL. HD.	TEMP.F
2-1	0.53	107
2-2	0.49	108
2-3	0.57	108
2-4	0.51	108
2-5	0.14	108
2-6	0.28	108
2-7	0.28	108
2-8	0.285	107

AVG. SQ. RT. VEL. HEAD:	0.656	AVERAGE VELOCITY(FPS):	38.369
AVG. VEL. HEAD:	0.431	VOLUMETRIC FLOW(ACFM):	65091.1
AVG. STACK TEMP.:	107.625	VOLUMETRIC FLOW(WVSCFM):	1845.6
PERCENT WATER VAPOR:	3.020	VOLUMETRIC FLOW(DSCFM):	59268.3
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**61113.9**
GAS MOLECULAR WT.(wet):	28.51		

ACE Engineering Inc.
2106 NW 67th Place Suite 4
Gainesville, Florida 32653
(904) 335-1889 Office (904) 335-1891 Fax

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPIRALKOTE INC
SOURCE: ROOF EXHAUST
DATE: 8-22-01
STACK DIMENSIONS (in): 72" STACK AREA (FT2): 28.274
BAROMETRIC PRES. (in H2O): 30.06 STATIC PRES. (in H2O): -.21
STACK PRES. (in H2O): 30.04 OPERATORS: GP/SC
PORT DIAM.: 3" NIPPLE LENGTH: 6"
PITOT TUBE NUMBER: 93 TYPE: 'S' TYPE
RUN NO. 1 TIME 0900 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 5.6
RUN NO. 2 TIME 1000 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 5.6
RUN NO. 3 TIME 1100 POST TEST(+) 0.0 / 4.0 (-) 0.0 / 5.6

STACK CONFIGURATION

FUGITIVE OUTLET EXHAUST

Probe in working out Runs 1, 2, & 3

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
N				N.		
R-1 1-1	.46	88		R-2 2-1	.43	95
RH=84.4% 2	.43	88		2	.42	95
F°=89 3	.42	89		3	.43	96
4	.41	89		4	.47	96
3.88 H2O 5	.49	89		5	.50	96
6	.71	89		6	.71	96
7	.70	89		END 7	.75	96
8	.59	88		1013 8	.63	95
E 2-1	.65	88				
2	.66	89	N	R-3 1-1	.43	97
3	.64	89		RH=58.8% 2	.45	98
4	.51	89		F°=98° 3	.44	98
5	.21	90		4	.45	98
6	.30	90		3.56 H2O 5	.38	98
END 7	.34	89		6	.57	98
0915 8	.31	89		7	.525	98
				8	.35	97
R-2 1-1	.40	96		E 2-1	.57	97
RH=66.1% 2	.44	96		2	.57	97
F°=96° 3	.54	96		3	.56	98
4	.47	96		4	.51	98
3.77% H2O 5	.24	96		5	.18	98
6	.32	96		1112 6	.41	98
7	.32	96		END 7	.35	98
8	.33	95		8	.30	98

2100 NW 27TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
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DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPIRALKOTE
SOURCE ROOF EXHAUST
DATE 5-22-9
STACK DIMENSIONS (in) 72" STACK AREA (FT2) 28.294
BAROMETRIC PRES.(in H2O) 30.06 STATIC PRES. (in H2O) -.22
STACK PRES. (in H2O) 30.04 OPERATORS GP/SC
PORT DIAM. 3" NIPPLE LENGTH 6
PITOT TUBE NUMBER 93 TYPE S TYPE
RUN NO. 4 TIME 1210 POST TEST(+) 0.0 / (-) 0.0
RUN NO. 5 TIME 1310 POST TEST(+) 0.0 / (-) 0.0
RUN NO. 6 TIME 1410 POST TEST(+) 0.0 / (-) 0.0

STACK CONFIGURATION

WH3 FUGITIVE OUTLET

Probe in working out
RUNS 4, 5, & 6

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R4 1-1	.40	96		R-5 2-1	.53	102
RH=49.6%2	.38	96		2	.53	103
F°=96 3	.44	96		3	.56	103
4	.45	96		4	.42	103
2.83 5	.21	96		5	.21	103
H2O 6	.38	96		6	.40	103
7	.31	96		END 1311 7	.41	102
8	.265	95		~~1301~~ 8	.36	101
N 2-1	.41	95				
2	.39	95				
3	.36	96		R-6 1-1	.37	104
4	.39	96		RH=40.5%2	.41	104
5	.46	96		F°=105° 3	.37	105
6	.71	96		4	.265	105
END 7	.70	96		3.03 H2O 5	.16	105
1220 8	.68	96		6	.39	105
				7	.34	105
				8	.29	105
R-5 1-1	.42	102		2-1	.395	105
RH=46.6%2	.41	102		2	.40	105
F°=103.9 3	.41	102		3	.38	105
4	.425	103		4	.42	105
3.28 H2O 5	.34	103		5	.47	105
6	.54	104		1422 6	.65	105
7	.57	103		END 7	.65	105
8	.52	103		8	.51	105

ACE
2106 NW 67th PLACE SUITE 4
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DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT: SPRAKOTE INC
SOURCE: ROOF EXHAUST
DATE: 8-22-01
STACK DIMENSIONS (in): 72" STACK AREA (FT2): 28.274
BAROMETRIC PRES.(in H2O): 30.06 STATIC PRES. (in H2O): -.11
STACK PRES. (in H2O): 30.04 OPERATORS: GP/SC
PORT DIAM.: 3" NIPPLE LENGTH: 3"
PITOT TUBE NUMBER: 93 TYPE: "S" TYPE
RUN NO. 7 TIME 1520 POST TEST(+) 0.0/4.0 (-) 0.0/2.9
RUN NO. 8 TIME 1620 POST TEST(+) 0.0/4.0 (-) 0.0/2.9
RUN NO. 9 TIME 1720 POST TEST(+) 0.0/4.0 (-) 0.0/2.9

STACK CONFIGURATION

WH 3 FUGITIVE EXHAUST

RUNS 7, 8 & 9

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R7 - 1-1	.44	104		R8 - 2-1	.41	105
RH 40-71 2	.43	104		2	.42	105
F= 105° 3	.41	105		3	.41	106
4	.43	105		4	.415	106
3.04 H2O 5	.51	105		5	.49	105
6	.67	105		6	.66	105
7	.77	105		END 7	.68	105
8	.64	104		1632 8	.65	104
2-1	.60	104				
2	.48	105				
3	.495	105		R9 1-1	.44	107
4	.47	105		RH=37.6% 2	.40	107
5	.17	105		F°=108° 3	.39	107
6	.32	104		3.02 4	.41	108
END 7	.32	104		H2O 5	.48	108
1531 8	.31	104		6	.66	108
				7	.72	108
				8	.52	107
R-8 1-1	.58	104		2-1	.53	107
RH=40.6 2	.57	105		2	.49	108
F°=105 3	.59	105		3	.57	108
3.03 4	.57	105		4	.51	108
H2O 5	.15	105		5	.14	108
6	.26	105		1731 6	.28	109
7	.27	105		END 7	.28	108
8	.295	104		8	.285	107

INCINERATOR OUTLET

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	WH-3 INCINERATOR OUTLET
DATE:	8/22/01

RUN NUMBER:	1		H2O %:	3.13
TIME BEGIN,TIME END:	9:40 AM	9:52 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	
STACK AREA:	7.069	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	
STACK STATIC in H2O:	-0.23			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.190	402	2-1	0.175	402
1-2	0.190	404	2-2	0.190	404
1-3	0.180	404	2-3	0.190	404
1-4	0.170	405	2-4	0.180	405
1-5	0.170	405	2-5	0.180	405
1-6	0.170	404	2-6	0.200	404
1-7	0.180	404	2-7	0.195	404
1-8	0.180	404	2-8	0.100	404

AVG. SQ. RT. VEL. HEAD:	0.420	AVERAGE VELOCITY(FPS):	30.324
AVG. VEL. HEAD:	0.177	VOLUMETRIC FLOW(ACFM):	12861.6
AVG. STACK TEMP.:	404	VOLUMETRIC FLOW(WVSCFM):	248.4
PERCENT WATER VAPOR:	3.130	VOLUMETRIC FLOW(DSCFM):	7687.7
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7936.1**
GAS MOLECULAR WT.(wet):	28.50		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	WH-3 INCINERATOR OUTLET
DATE:	8/22/01

RUN NUMBER:	2		H2O %:	3.13
TIME BEGIN,TIME END:	11:30 AM	11:46 AM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	
STACK AREA:	7.069	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	
STACK STATIC in H2O:	-0.23			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.190	413	2-1	0.170	414
1-2	0.180	413	2-2	0.180	415
1-3	0.170	414	2-3	0.170	415
1-4	0.160	414	2-4	0.165	415
1-5	0.155	414	2-5	0.180	415
1-6	0.170	415	2-6	0.185	415
1-7	0.150	415	2-7	0.160	414
1-8	0.090	414	2-8	0.090	414

AVG. SQ. RT. VEL. HEAD:	0.398	AVERAGE VELOCITY(FPS):	28.917
AVG. VEL. HEAD:	0.159	VOLUMETRIC FLOW(ACFM):	12264.9
AVG. STACK TEMP.:	414.3125	VOLUMETRIC FLOW(WVSCFM):	234.1
PERCENT WATER VAPOR:	3.130	VOLUMETRIC FLOW(DSCFM):	7244.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7478.7**
GAS MOLECULAR WT.(wet):	28.50		

AIR CONSULTING and ENGINEERING, INC.
VOLUMETRIC FLOW

COMPANY NAME:	SPIRALKOTE, INC.
LOCATION:	ORLANDO, FLORIDA
SOURCE:	WH-3 INCINERATOR OUTLET
DATE:	8/22/01

RUN NUMBER:	3		H2O %:	3.13
TIME BEGIN,TIME END:	12:40 PM	12:49 PM	O2%:	20.9
BAROMETRIC PRESSURE:	30.06	inches Hg.	C02%:	0
STACK PRESSURE:	30.04	inches Hg.	TEMP. db:	
STACK AREA:	7.069	SQ. FEET	TEMP. wb:	
PITOT Cp:	0.84		REL.HUM. %:	
STACK STATIC in H2O:	-0.23			

PORT-POINT	VEL. HD.	TEMP.F	PORT-POINT	VEL. HD.	TEMP.F
1-1	0.190	419	2-1	0.200	419
1-2	0.180	419	2-2	0.200	420
1-3	0.170	419	2-3	0.190	421
1-4	0.170	420	2-4	0.170	421
1-5	0.170	420	2-5	0.160	420
1-6	0.180	421	2-6	0.180	420
1-7	0.180	420	2-7	0.180	420
1-8	0.070	420	2-8	0.150	418

AVG. SQ. RT. VEL. HEAD:	0.412	AVERAGE VELOCITY(FPS):	29.979
AVG. VEL. HEAD:	0.170	VOLUMETRIC FLOW(ACFM):	12715.3
AVG. STACK TEMP.:	419.8125	VOLUMETRIC FLOW(WVSCFM):	241.2
PERCENT WATER VAPOR:	3.130	VOLUMETRIC FLOW(DSCFM):	7463.6
GAS MOLECULAR WT.(dry):	28.836	**VOLUMETRIC FLOW (WSCFM):**	**7704.8**
GAS MOLECULAR WT.(wet):	28.50		

2100 NW 39TH PLACE SUITE J
GAINESVILLE, FLORIDA 32605
(904) 335-0889 OFFICE (904) 335-3901 FAX

DETERMINATION OF STACK GAS VELOCITY & VOLUMETRIC FLOW RATE

PLANT SPRACKATE INC
SOURCE WH 3 INCINERATOR OUTLET
DATE 8-22-01
STACK DIMENSIONS (in) 36" STACK AREA (FT2) 7.069
BAROMETRIC PRES.(in H2O) 30.06 STATIC PRES. (in H2O) -.23
STACK PRES. (in H2O) 30.04 OPERATORS CP/SC
PORT DIAM. 3" NIPPLE LENGTH 3"
PITOT TUBE NUMBER 43 TYPE 'S' TYPE
RUN NO. 1 TIME 0940 POST TEST(+) 0.0 / 3.8 (-) 0.0 / 5.6
RUN NO. 2 TIME 1130 POST TEST(+) 0.0 / 3.4 (-) 0.0 / 5.0
RUN NO. 3 TIME 1240 POST TEST(+) 0.0 / 3.8 (-) 0.0 / 5.6

STACK CONFIGURATION

WH 3 INCINERATOR OUTLET
DURRING M-25 RUNS
Probe in working out
RUNS 1, 2 & 3 2% H2O EPA-4

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔPs) in H2O	STACK GAS TEMPERATURE (Ts) F
R-1 1-1	.19	401		R-2 2-1	.17	414
RH= 2	.19	403		2	.18	415
F°=404 3	.18	404		3	.17	415
4	.17	404		4	.165	415
5	.17	404		5	.18	415
6	.17	405		6	.185	415
7	.18	404		END 7	.16	414
8	.18	404		1146 8	.09	414
2-1	.175	402				
2	.19	404		R-3 1-1	.19	419
3	.19	404		RH= 2	.18	419
4	.18	405		F°=420 3	.17	419
5	.18	405		4	.17	420
6	.20	404		5	.17	420
END 7	.195	404		6	.18	421
8	.10	404		7	.18	420
				8	.07	420
R-2 1-1	.19	413		2-1	.20	419
RH= 2	.18	413		2	.20	420
F°=414 3	.17	414		3	.19	421
4	.16	414		4	.17	421
5	.155	414		5	.16	420
6	.17	415		6	.18	420
7	.15	415		END 7	.18	420
8	.09	414		1249 8	.15	418

PLANT SPRAYKOTE INC

SOURCE WH 3 INCINERATOR OUTLET

PLANT LOCATION ORLANDO FL.

TYPE OF SAMPLING TRAIN EPA - 4

TYPE OF SAMPLES MOISTURE

DATE 8-22-01 RUN NUMBER 1

TIME START 1053 TIME END 1123

SAMPLE TIME 5 / 6 (MIN/PT)= 30 TOTAL MIN

ASSUMED MOISTURE(%) _____ FDA _____

NOMOGRAPH CI NA PITOT CI NA

Pb ("Hg) 30.06 Ps ("Hg) 30.04

WEATHER Clear TEMP (F) ~90's

METER BOX NO. 4 H 1.5846 Y 1.0128

NOZZLE IDENTIFICATION NO. NA

NOZZLE CAL NA / _____

STACK DIMENSIONS 36"

STACK AREA (FT2) _____ EFFECTIVE (FT2) —

STACK DIAMETERS:(UPSTREAM) V (DOWNSTREAM) V

PORT SIZE 3" NIPPLE LENGTH 3"

STACK HEIGHT (FT) _____ UMBILICAL LENGTH 100'

AGENCY OBSERVER(S) _____

TEST COORDINATOR(S) _____

V. E. OBSERVER _____

ACE AIR CONSULTING & ENGINEERING, INC
2106 NW 67TH PLACE SUITE A
GAINESVILLE, FLORIDA 32653
(904) 335-1889 - OFFICE / (904) 335 1891 - FAX

STACK CONFIGURATION

.765 WV
23.705 SCF
24.470 TUNC
3.13% H_2O

Std Vol 23.304

REMARKS: _____

TEST ID 1

PAGE 1 OF 1

MATERIAL PROCESSING RATE NA

GAS METER READINGS: FINAL 599.694 (FT3)
INITIAL 575 360 (FT3)
NET 24.384 (FT3)

FILTER NO. NA IMP. VOL.GAIN 10 (ml)

SILICA GEL NO. J WT. GAIN 6.2 (ml)

TOTAL CONDENSATE _____ (ml)

ORSAT

	1	2	3	4	AVG
%CO2	NA				
%O2	↓				
%CO	↓				
%N2	↓				

Fo= NA Fo RANGE= NA ORSAT ANALYZER N

LEAK CHECKS

PRE 0.00 CFM 15 ("Hg) POST 0.00 CFM 12 ("Hg)

METER BOX/PUMP OK GAS SYSTEM OK ORSAT BAG —

PITOT TUBE NO. NA PRE-TEST LEAK CHECK NA

POST TEST (+) NA / — "H20 (15 SECONDS)

POST TEST (-) NA / — "H20 (15 SECONDS)

PYROMETER NUMBER ATK-2

BOX OPERATOR PROWS PROBE HOLDER CARTER

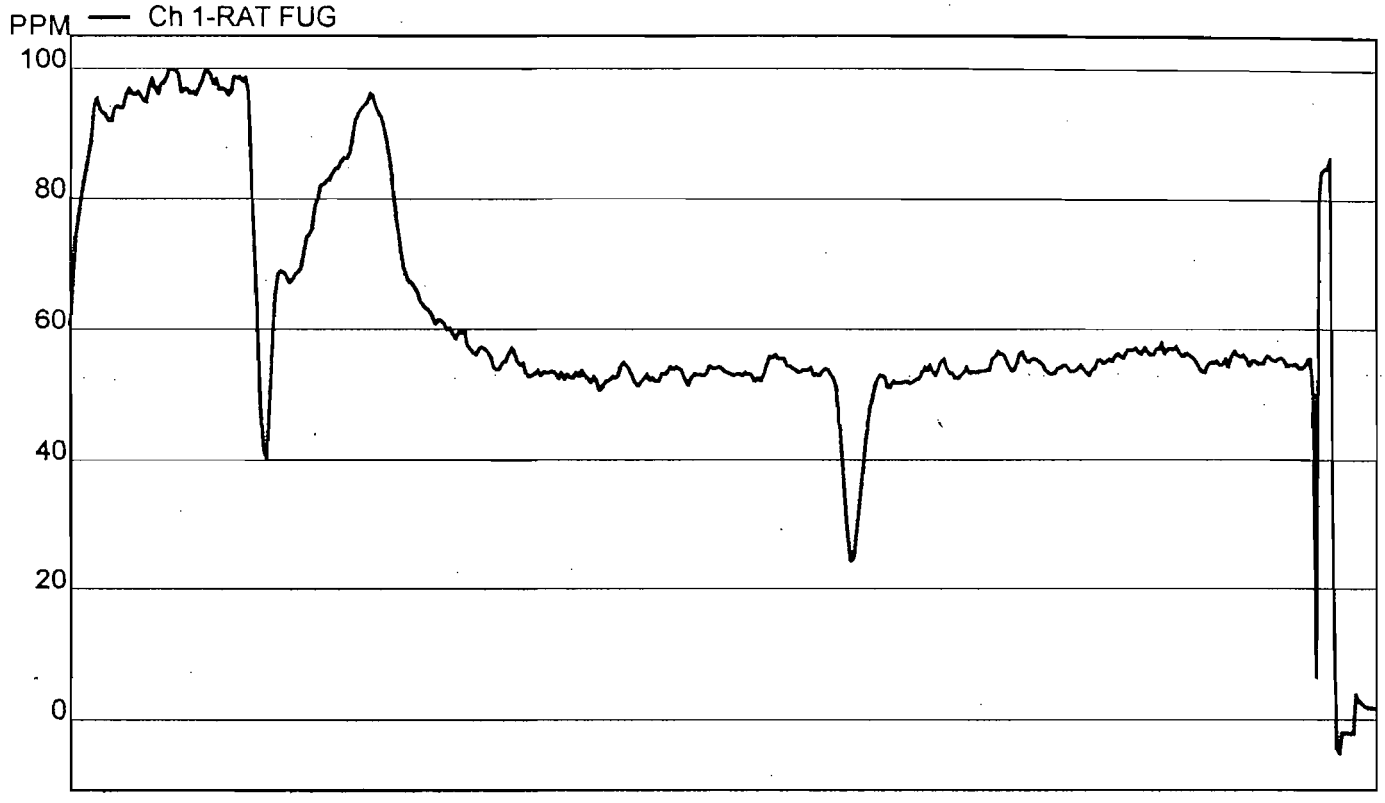
POINT & TRAVERSE PT NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM OF SAMPLE TRAIN ("Hg)
1		1053	575.36	NA	NA	2.0	NA	NA	63	80	3.5
2		1058	~~579.47~~ 581.22			2.0			61	81	3.5
3		1103	~~583.58~~ 587.07			2.0			59	82	3.5
4		1108	587.07			2.0			57	82	3.5
5		1113	591.18			2.0			58	83	3.5
6		1118	595.51			2.0			58	84	3.5

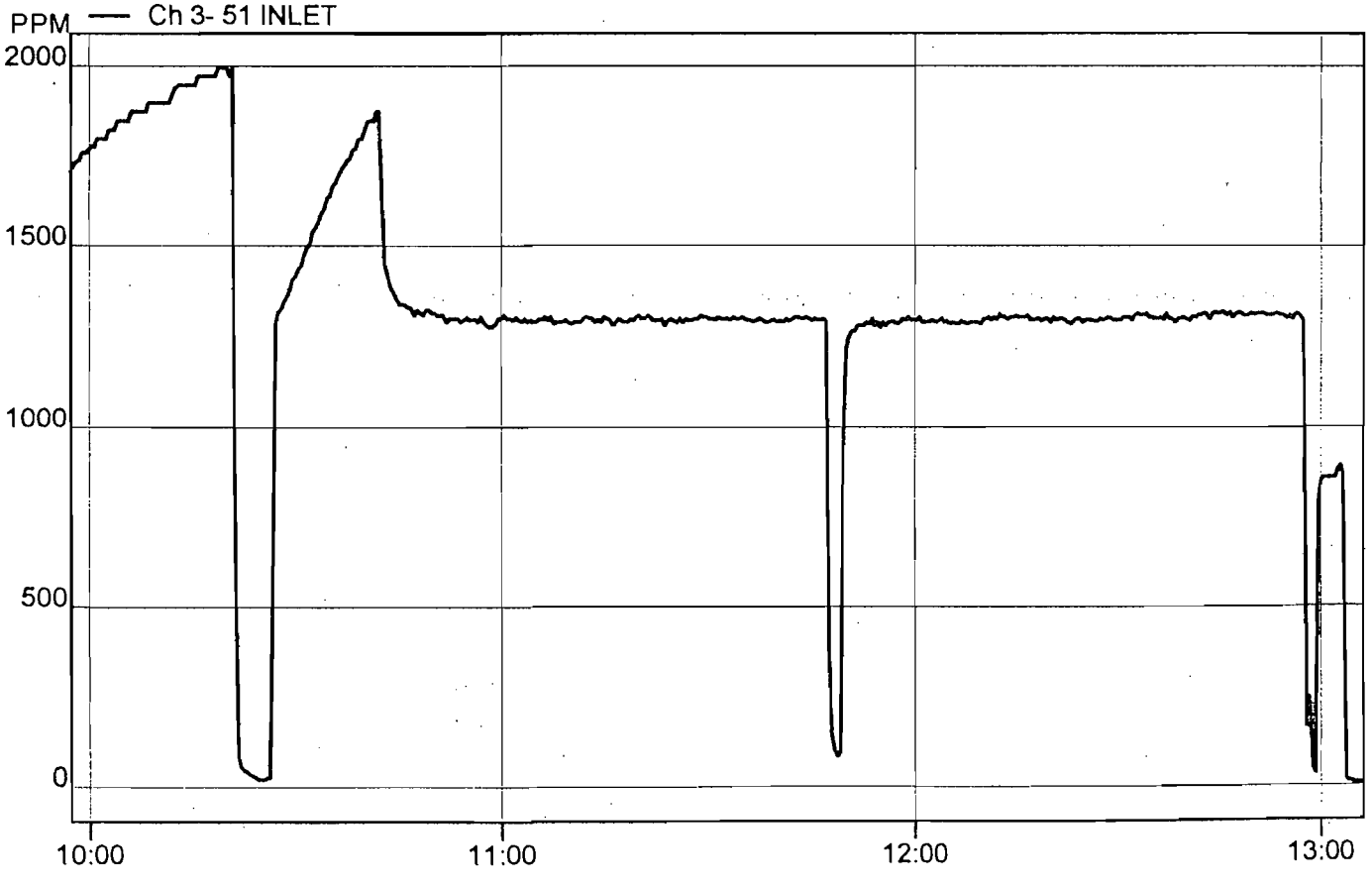
APPENDIX C

EPA 25A TEST DATA WITH STRIP CHART AND DATA LOGGER COPIES

WH-1

WH-1 RUN 1

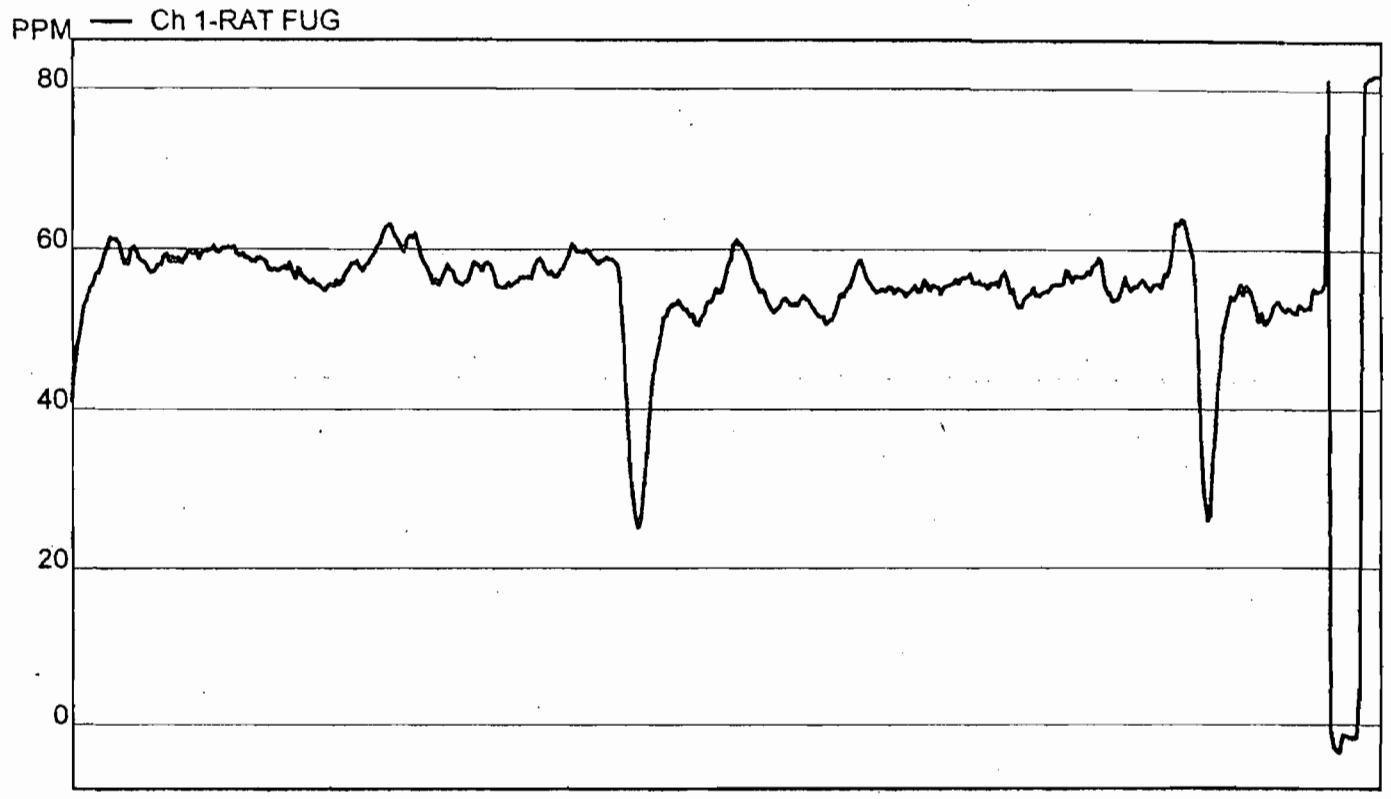


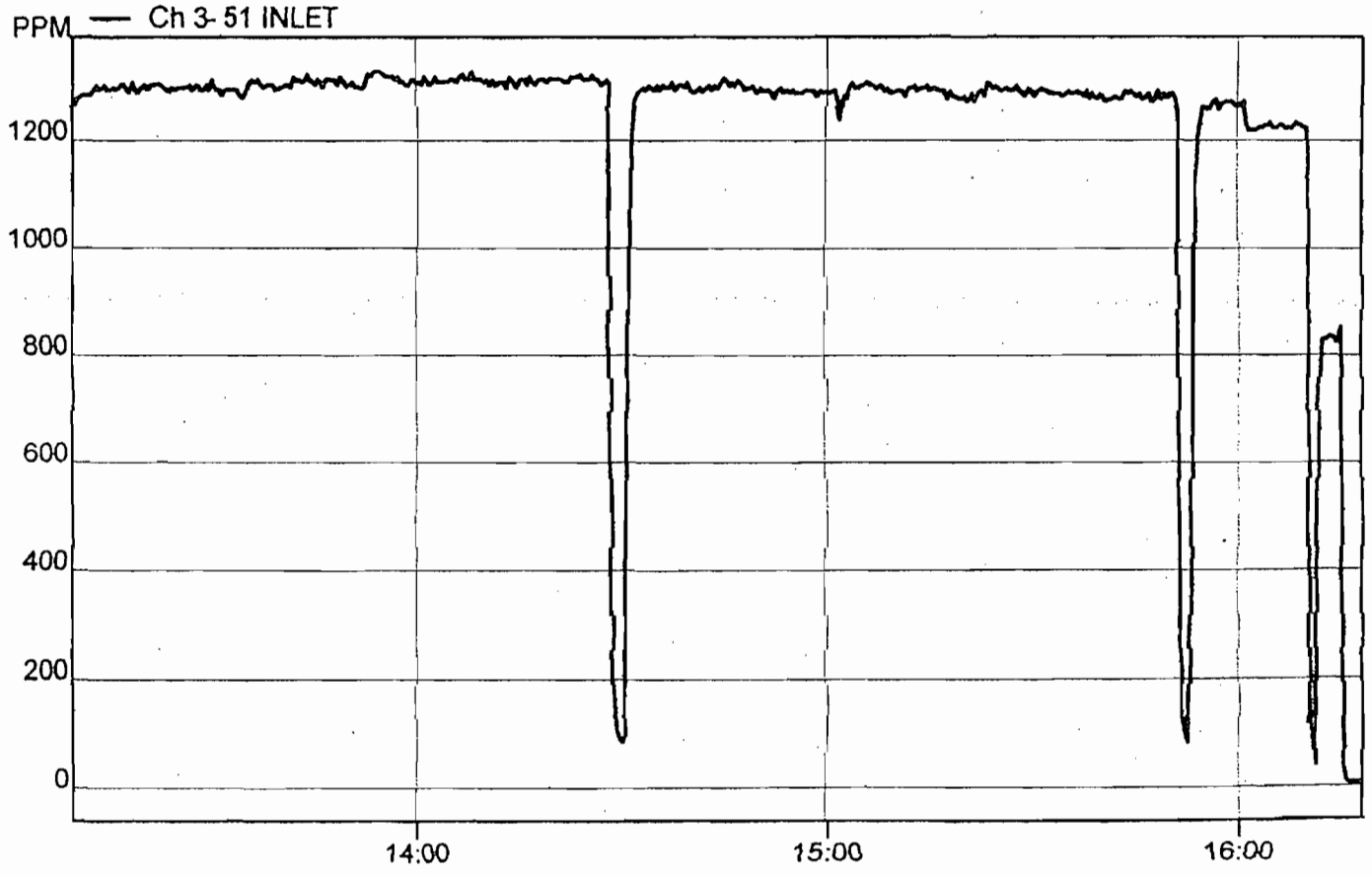


C:\PICO\WH11.PLW 8/21/01 09:57:20

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

WH-1 RUN 2

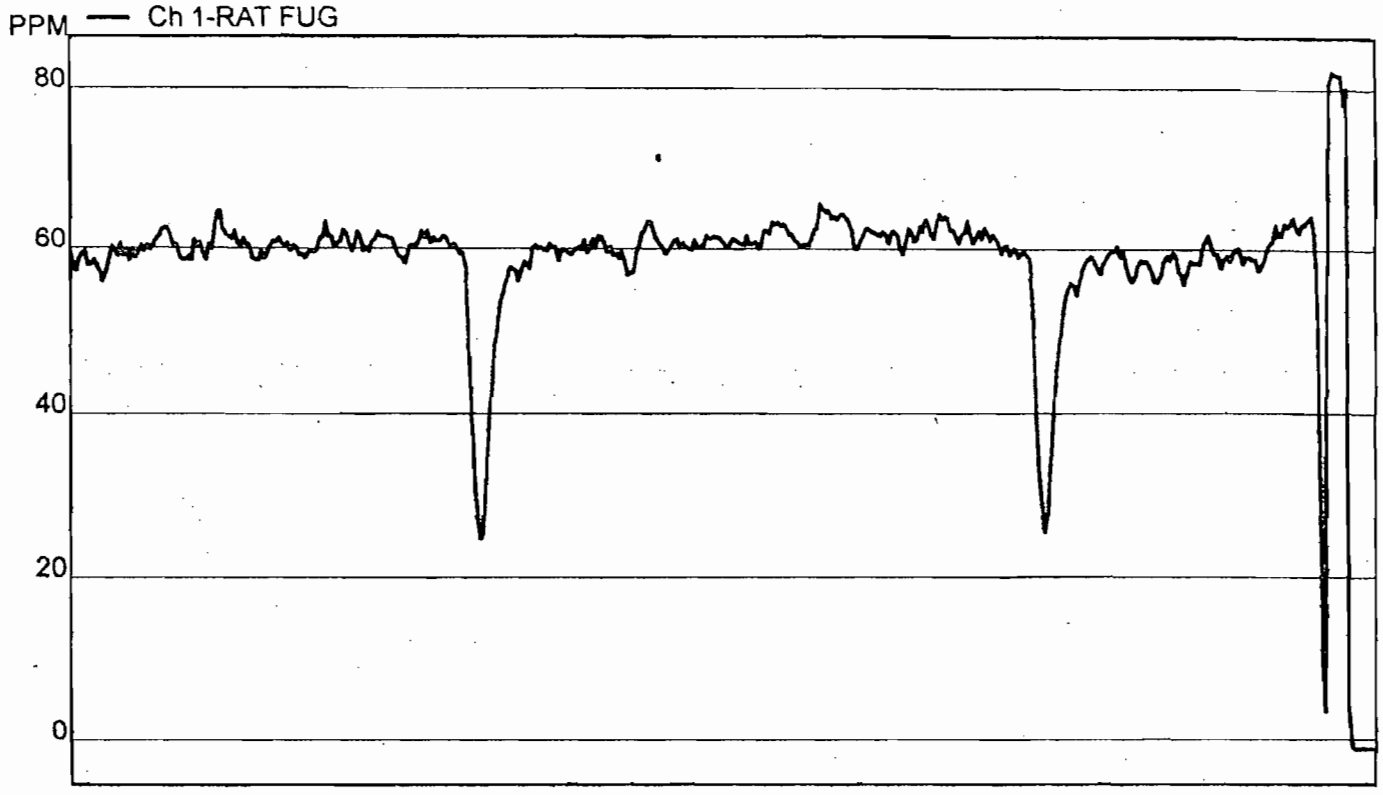


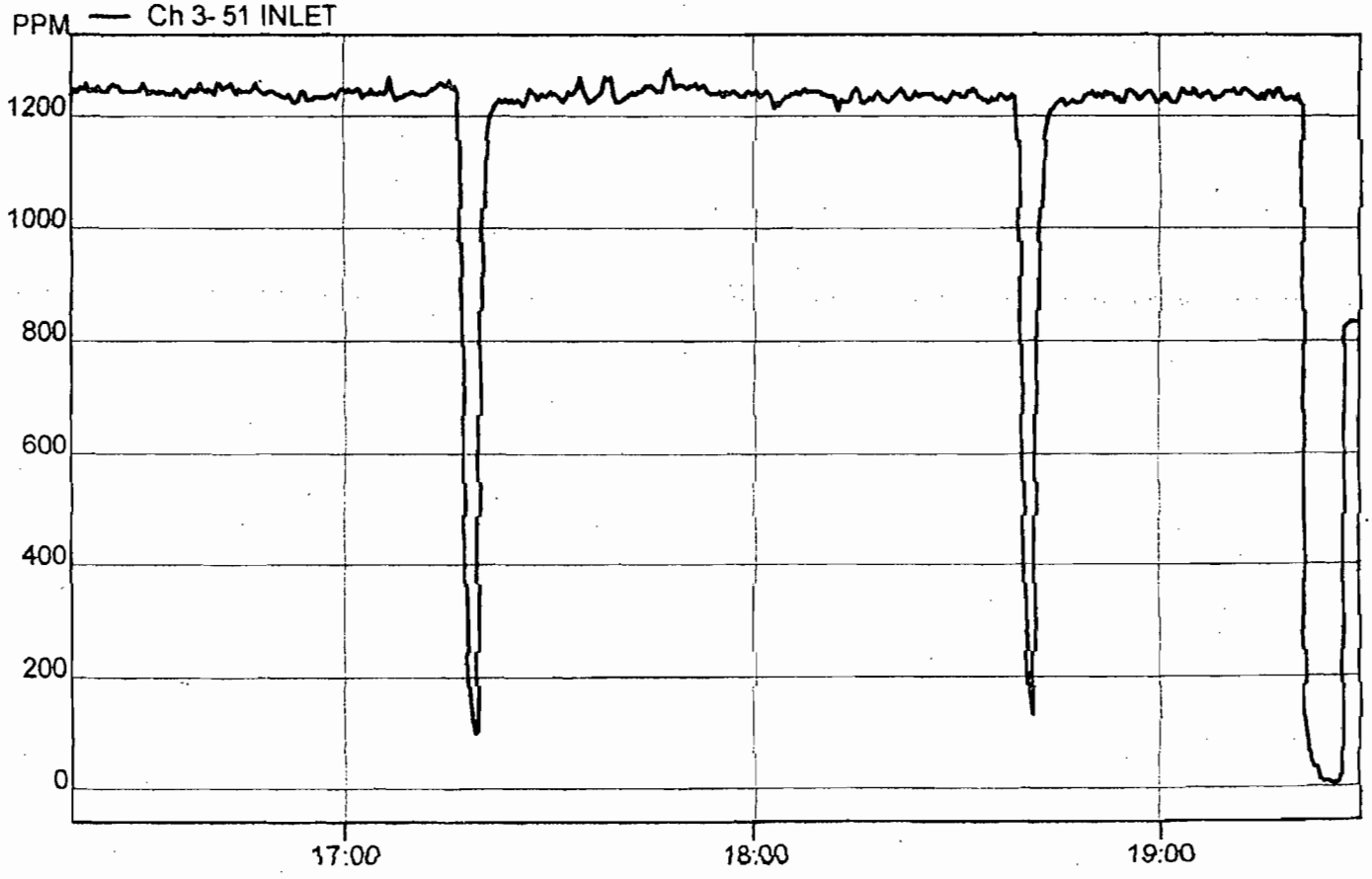


C:\PICO\WH12.PLW 8/21/01 13:10:20

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

WH-1 RUN 3





WH13.PLW 8/21/01 16:20:32

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

VOC CAPTURE EFFFICIENCY TESTS
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/21/01

MAGNUM INCINERATOR INLET

RUN NUMBER:	1	2	3
START TIME:	9:57	13:10	16:20
END TIME:	12:57	16:10	19:20
DATA LOGGER C3H8 PPM:	1350.84	1261.17	1208.32
C3H8 INITIAL BIAS:	860	859.18	833.23
C3H8 FINAL BIAS:	859.18	833.23	833.09
C3H8 AVERAGE BIAS:	859.59	846.205	833.16
C3H8 INITIAL ZERO:	5.1	5.09	5.18
C3H8 FINAL ZERO:	5.09	5.18	5.14
C3H8 AVERAGE ZERO:	5.095	5.135	5.16
C3H8 CAL. GAS VALUE:	861.8	861.8	861.8
C3H8 CORRECTED AVERAGE:	1357.25	1286.99	1252.27
PERCENT H2O:	4.12	4.77	4.93
C3H8 DRY BASIS:	1415.62	1351.41	1317.17
VOLUMETRIC FLOW SCFMD:	8737	8616	8953
C3H8 LB/HR:	84.733	79.766	80.788

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/21/01

4

FUGITIVE ROOF EXHAUST

RUN NUMBER:	1	2	3
START TIME:	9:57	13:10	16:20
END TIME:	12:57	16:10	19:20
DATA LOGGER C3H8 PPM:	62.76	58.00	59.17
C3H8 INITIAL BIAS:	84.97	84.51	81.62
C3H8 FINAL BIAS:	84.51	81.62	81.78
C3H8 AVERAGE BIAS:	84.74	83.065	81.7
C3H8 INITIAL ZERO:	0.3	-2.1	-1.49
C3H8 FINAL ZERO:	-2.1	-1.49	-1.25
C3H8 AVERAGE ZERO:	-0.9	-1.795	-1.37
C3H8 CAL. GAS VALUE:	84.7	84.7	84.7
C3H8 CORRECTED AVERAGE:	62.96	59.68	61.73
PERCENT H2O:	3.63	3.43	3.66
C3H8 DRY BASIS:	65.34	61.80	64.07
VOLUMETRIC FLOW SCFMD:	61287	58837	61928
C3H8 LB/HR:	27.43	24.911	27.182
VOC CAPTURE EFFICIENCY:	75.54	76.20	74.82

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/21/01

DATA LOGGER RECORDS
RUN 1
0957-1257

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/21/01	9:57:20	54.13	1696.6
8/21/01	9:57:35	59.67	1705.64
8/21/01	9:57:50	63.19	1717.54
8/21/01	9:58:05	68.52	1729.29
8/21/01	9:58:20	72.22	1737.56
8/21/01	9:58:35	75.66	1737.21
8/21/01	9:58:50	77.52	1740.01
8/21/01	9:59:05	78.87	1748.11
8/21/01	9:59:20	80.67	1758.33
8/21/01	9:59:35	82.1	1764.48
8/21/01	9:59:50	84.87	1758.61
8/21/01	10:00:05	86.02	1766.94
8/21/01	10:00:20	87.36	1774.8
8/21/01	10:00:35	88.76	1774.57
8/21/01	10:00:50	92.2	1771.19
8/21/01	10:01:05	94.29	1777.57
8/21/01	10:01:20	94.92	1787.51
8/21/01	10:01:35	95.32	1776.99
8/21/01	10:01:50	93.72	1795.21
8/21/01	10:02:05	92.93	1796.7
8/21/01	10:02:20	93.07	1796.79
8/21/01	10:02:35	92.95	1796.77
8/21/01	10:02:50	92.48	1796.91
8/21/01	10:03:05	91.82	1817.59
8/21/01	10:03:20	92.22	1820.88
8/21/01	10:03:35	91.99	1820.87
8/21/01	10:03:50	93.36	1830.59
8/21/01	10:04:05	94.21	1822
8/21/01	10:04:20	94.54	1845.33
8/21/01	10:04:35	94.18	1845.38
8/21/01	10:04:50	93.7	1845.23
8/21/01	10:05:05	94.05	1845.37
8/21/01	10:05:20	94.11	1845.3
8/21/01	10:05:35	95.33	1845.42
8/21/01	10:05:50	96.71	1848.74
8/21/01	10:06:05	96.52	1849.92
8/21/01	10:06:20	95.89	1850.61
8/21/01	10:06:35	95.75	1871.61
8/21/01	10:06:50	95.59	1871.6
8/21/01	10:07:05	95.92	1871.59

8/21/01	10:07:20	96.12	1871.62
8/21/01	10:07:35	96.37	1871.73
8/21/01	10:07:50	95.64	1871.61
8/21/01	10:08:05	95.51	1871.62
8/21/01	10:08:20	94.81	1871.72
8/21/01	10:08:35	94.89	1877.51
8/21/01	10:08:50	95.95	1895.77
8/21/01	10:09:05	97.1	1896.03
8/21/01	10:09:20	97.96	1896.1
8/21/01	10:09:35	97.92	1895.93
8/21/01	10:09:50	96.93	1896.06
8/21/01	10:10:05	97.01	1895.94
8/21/01	10:10:20	96.32	1895.94
8/21/01	10:10:35	96.97	1895.95
8/21/01	10:10:50	97.68	1896.03
8/21/01	10:11:05	97.8	1896
8/21/01	10:11:20	98.63	1896.03
8/21/01	10:11:35	98.98	1896.01
8/21/01	10:11:50	99.94	1896.01
8/21/01	10:12:05	99.75	1913.68
8/21/01	10:12:20	99.74	1920.13
8/21/01	10:12:35	100.28	1920.18
8/21/01	10:12:50	99.83	1934.32
8/21/01	10:13:05	99.8	1944.57
8/21/01	10:13:20	98.59	1944.51
8/21/01	10:13:35	96.57	1944.57
8/21/01	10:13:50	95.79	1944.47
8/21/01	10:14:05	96.49	1944.53
8/21/01	10:14:20	96.79	1944.59
8/21/01	10:14:35	96.88	1944.72
8/21/01	10:14:50	96.81	1944.63
8/21/01	10:15:05	95.61	1944.67
8/21/01	10:15:20	96.36	1944.64
8/21/01	10:15:35	96.52	1944.75
8/21/01	10:15:50	96	1944.71
8/21/01	10:16:05	96.85	1949.73
8/21/01	10:16:20	97.03	1967.54
8/21/01	10:16:35	97.69	1960.39
8/21/01	10:16:50	98.1	1969.93
8/21/01	10:17:05	99.45	1969.84
8/21/01	10:17:20	99.82	1969.95
8/21/01	10:17:35	98.96	1969.89
8/21/01	10:17:50	98.81	1969.97
8/21/01	10:18:05	98.92	1970
8/21/01	10:18:20	98	1969.96
8/21/01	10:18:35	98.34	1987.36
8/21/01	10:18:50	97.83	1979.7
8/21/01	10:19:05	97.15	1994.39
8/21/01	10:19:20	97.27	1994.41
8/21/01	10:19:35	96.99	1994.44

8/21/01	10:19:50	96.49	1994.37
8/21/01	10:20:05	96.25	1991.28
8/21/01	10:20:20	95.9	1981.64
8/21/01	10:20:35	96	1987.88
8/21/01	10:20:50	96.65	1970.19
8/21/01	10:21:05	98.42	1979.69
8/21/01	10:21:20	98.28	1918.27
8/21/01	10:21:35	98.37	692.3
8/21/01	10:21:50	97.91	244.68
8/21/01	10:22:05	98.5	95.37
8/21/01	10:22:20	98.5	65.12
8/21/01	10:22:35	98.26	50.72
8/21/01	10:22:50	98.16	44.55
8/21/01	10:23:05	98.27	41
8/21/01	10:23:20	96.16	41.35
8/21/01	10:23:35	89.54	35.46
8/21/01	10:23:50	82.39	34.04
8/21/01	10:24:05	75.28	31.03
8/21/01	10:24:20	67.73	28.53
8/21/01	10:24:35	60.61	24.61
8/21/01	10:24:50	54.14	24.61
8/21/01	10:25:05	48.48	22.85
8/21/01	10:25:20	43.86	22.17
8/21/01	10:25:35	40.8	19.75
8/21/01	10:25:50	40.12	19.75
8/21/01	10:26:05	41.78	19.75
8/21/01	10:26:20	45.99	24.27
8/21/01	10:26:35	51.91	24.57
8/21/01	10:26:50	58.86	160.47
8/21/01	10:27:05	64.14	502.54
8/21/01	10:27:20	66.99	1078.81
8/21/01	10:27:35	68.36	1277.58
8/21/01	10:27:50	68.71	1301.13
8/21/01	10:28:05	69.08	1314.39
8/21/01	10:28:20	68.75	1321.31
8/21/01	10:28:35	68.28	1333.3
8/21/01	10:28:50	68.07	1346.57
8/21/01	10:29:05	67.7	1357.76
8/21/01	10:29:20	67.06	1361.45
8/21/01	10:29:35	67.51	1375.75
8/21/01	10:29:50	67.99	1385.97
8/21/01	10:30:05	68.46	1403.15
8/21/01	10:30:20	68.7	1410.37
8/21/01	10:30:35	69.01	1418.29
8/21/01	10:30:50	69.5	1426.12
8/21/01	10:31:05	70.33	1441.09
8/21/01	10:31:20	72.08	1451.13
8/21/01	10:31:35	73.52	1463.56
8/21/01	10:31:50	74.4	1475.22
8/21/01	10:32:05	74.89	1494.75

8/21/01	10:32:20	74.71	1500.69
8/21/01	10:32:35	75.48	1507.56
8/21/01	10:32:50	76.96	1525.35
8/21/01	10:33:05	79.11	1541.46
8/21/01	10:33:20	80.24	1543.29
8/21/01	10:33:35	80.26	1556.33
8/21/01	10:33:50	81.2	1565.61
8/21/01	10:34:05	81.71	1582.68
8/21/01	10:34:20	82.05	1585
8/21/01	10:34:35	81.86	1597.93
8/21/01	10:34:50	82.92	1609.56
8/21/01	10:35:05	83.14	1628.27
8/21/01	10:35:20	83.48	1637.09
8/21/01	10:35:35	83.79	1641.09
8/21/01	10:35:50	83.82	1648.87
8/21/01	10:36:05	84.31	1665.27
8/21/01	10:36:20	84.69	1678.01
8/21/01	10:36:35	85	1688.67
8/21/01	10:36:50	85.7	1695.63
8/21/01	10:37:05	85.98	1706.9
8/21/01	10:37:20	86.28	1717.48
8/21/01	10:37:35	86.49	1725.71
8/21/01	10:37:50	86.39	1728.58
8/21/01	10:38:05	86.93	1737.53
8/21/01	10:38:20	87.74	1740.08
8/21/01	10:38:35	89.38	1742.92
8/21/01	10:38:50	91.31	1761.95
8/21/01	10:39:05	91.71	1771.51
8/21/01	10:39:20	92.99	1784.95
8/21/01	10:39:35	93.36	1772.49
8/21/01	10:39:50	93.83	1787.24
8/21/01	10:40:05	94.29	1797.2
8/21/01	10:40:20	94.17	1797.18
8/21/01	10:40:35	94.46	1814.67
8/21/01	10:40:50	94.85	1835.83
8/21/01	10:41:05	95.74	1845.52
8/21/01	10:41:20	96.01	1845.6
8/21/01	10:41:35	95.24	1845.52
8/21/01	10:41:50	94.16	1853.05
8/21/01	10:42:05	93.58	1866.49
8/21/01	10:42:20	92.9	1871.78
8/21/01	10:42:35	92.28	1871.76
8/21/01	10:42:50	91.69	1869.44
8/21/01	10:43:05	90.73	1720.3
8/21/01	10:43:20	89.97	1554.24
8/21/01	10:43:35	88.64	1480.49
8/21/01	10:43:50	86.13	1437.03
8/21/01	10:44:05	84.41	1409.58
8/21/01	10:44:20	81.75	1390.07
8/21/01	10:44:35	79.16	1379.5

8/21/01	10:44:50	76.72	1369.92
8/21/01	10:45:05	74.82	1359.47
8/21/01	10:45:20	73.28	1350.8
8/21/01	10:45:35	71.27	1340.51
8/21/01	10:45:50	69.74	1335.58
8/21/01	10:46:05	68.98	1337.89
8/21/01	10:46:20	68.25	1329.7
8/21/01	10:46:35	67.48	1333.46
8/21/01	10:46:50	67.09	1322.58
8/21/01	10:47:05	66.98	1320.11
8/21/01	10:47:20	66.72	1322.58
8/21/01	10:47:35	66.24	1313.49
8/21/01	10:47:50	65.53	1307.89
8/21/01	10:48:05	64.47	1314.6
8/21/01	10:48:20	64.15	1316.02
8/21/01	10:48:35	63.79	1314.97
8/21/01	10:48:50	63.33	1310.99
8/21/01	10:49:05	63.22	1308.67
8/21/01	10:49:20	63.09	1318.12
8/21/01	10:49:35	63.04	1322.38
8/21/01	10:49:50	62.36	1320.33
8/21/01	10:50:05	61.77	1317.64
8/21/01	10:50:20	61.1	1311.04
8/21/01	10:50:35	61.32	1312.83
8/21/01	10:50:50	61.48	1312.38
8/21/01	10:51:05	60.67	1312.54
8/21/01	10:51:20	61.22	1306.96
8/21/01	10:51:35	60.89	1306.16
8/21/01	10:51:50	60.53	1303.96
8/21/01	10:52:05	59.93	1304.34
8/21/01	10:52:20	59.84	1297.74
8/21/01	10:52:35	59.51	1289.57
8/21/01	10:52:50	59.05	1296.79
8/21/01	10:53:05	58.91	1297.72
8/21/01	10:53:20	58.51	1297.46
8/21/01	10:53:35	58.85	1303.82
8/21/01	10:53:50	59.52	1299.13
8/21/01	10:54:05	59.57	1296.09
8/21/01	10:54:20	59.68	1292.67
8/21/01	10:54:35	59.76	1289.6
8/21/01	10:54:50	58.64	1290.73
8/21/01	10:55:05	57.33	1295.49
8/21/01	10:55:20	56.83	1300.7
8/21/01	10:55:35	56.76	1299.87
8/21/01	10:55:50	56.41	1290.76
8/21/01	10:56:05	56.3	1288.87
8/21/01	10:56:20	56.12	1292.35
8/21/01	10:56:35	56.74	1294.24
8/21/01	10:56:50	57.02	1292.21
8/21/01	10:57:05	57.24	1286.6

8/21/01	10:57:20	56.81	1292.47
8/21/01	10:57:35	56.75	1297.99
8/21/01	10:57:50	56.72	1288.28
8/21/01	10:58:05	56.15	1279.96
8/21/01	10:58:20	55.98	1281.09
8/21/01	10:58:35	55.05	1276.39
8/21/01	10:58:50	54.4	1276.55
8/21/01	10:59:05	54.08	1275.77
8/21/01	10:59:20	53.92	1285.66
8/21/01	10:59:35	54.06	1288.12
8/21/01	10:59:50	54.18	1294.04
8/21/01	11:00:05	54.72	1296.33
8/21/01	11:00:20	54.53	1291.62
8/21/01	11:00:35	55.53	1297.06
8/21/01	11:00:50	56.13	1304.37
8/21/01	11:01:05	56.42	1295.45
8/21/01	11:01:20	56.94	1295.92
8/21/01	11:01:35	56.82	1291.51
8/21/01	11:01:50	56.34	1295.01
8/21/01	11:02:05	55.41	1292.55
8/21/01	11:02:20	55.02	1294.88
8/21/01	11:02:35	54.76	1298.67
8/21/01	11:02:50	54.7	1293.86
8/21/01	11:03:05	54.83	1291.45
8/21/01	11:03:20	54.09	1294.21
8/21/01	11:03:35	53.46	1285.25
8/21/01	11:03:50	52.98	1288.65
8/21/01	11:04:05	52.79	1290.02
8/21/01	11:04:20	53.16	1287.24
8/21/01	11:04:35	53.33	1293.03
8/21/01	11:04:50	53.34	1291.36
8/21/01	11:05:05	53.6	1287.97
8/21/01	11:05:20	53.27	1291.56
8/21/01	11:05:35	53.02	1287.4
8/21/01	11:05:50	53.22	1290.44
8/21/01	11:06:05	53.41	1295.91
8/21/01	11:06:20	53.28	1295.33
8/21/01	11:06:35	53.1	1289.73
8/21/01	11:06:50	53.26	1295.39
8/21/01	11:07:05	54.08	1289
8/21/01	11:07:20	53.65	1291.23
8/21/01	11:07:35	53.53	1296.12
8/21/01	11:07:50	53.09	1286.25
8/21/01	11:08:05	52.63	1285.44
8/21/01	11:08:20	53.01	1286.49
8/21/01	11:08:35	53.28	1289.72
8/21/01	11:08:50	52.84	1288.36
8/21/01	11:09:05	52.46	1286.98
8/21/01	11:09:20	53.09	1284.64
8/21/01	11:09:35	52.63	1284

8/21/01	11:22:20	51.92	1293.4
8/21/01	11:22:35	52.82	1297.5
8/21/01	11:22:50	53.24	1289.14
8/21/01	11:23:05	53.08	1291.41
8/21/01	11:23:20	53.05	1290.58
8/21/01	11:23:35	53.28	1294.75
8/21/01	11:23:50	53.69	1294.26
8/21/01	11:24:05	54.09	1281.38
8/21/01	11:24:20	54.07	1287.86
8/21/01	11:24:35	53.96	1288.32
8/21/01	11:24:50	54.51	1288.96
8/21/01	11:25:05	54.25	1293.38
8/21/01	11:25:20	53.83	1288.02
8/21/01	11:25:35	54.23	1291.29
8/21/01	11:25:50	53.36	1288.51
8/21/01	11:26:05	52.46	1295.76
8/21/01	11:26:20	52.01	1294.76
8/21/01	11:26:35	51.55	1288.44
8/21/01	11:26:50	51.98	1293.94
8/21/01	11:27:05	52.59	1294.06
8/21/01	11:27:20	52.8	1296.94
8/21/01	11:27:35	53.06	1286.57
8/21/01	11:27:50	53.28	1290.15
8/21/01	11:28:05	53.41	1290.41
8/21/01	11:28:20	53.23	1294.55
8/21/01	11:28:35	53.11	1293.86
8/21/01	11:28:50	52.9	1297.85
8/21/01	11:29:05	53.03	1301.49
8/21/01	11:29:20	53.51	1298.59
8/21/01	11:29:35	54.08	1298.85
8/21/01	11:29:50	54.66	1299.47
8/21/01	11:30:05	54.21	1299.14
8/21/01	11:30:20	54.26	1294.91
8/21/01	11:30:35	53.98	1299.35
8/21/01	11:30:50	54.11	1294.74
8/21/01	11:31:05	54.06	1295.04
8/21/01	11:31:20	54.06	1291.46
8/21/01	11:31:35	53.67	1299.82
8/21/01	11:31:50	53.66	1297.88
8/21/01	11:32:05	53.72	1296.37
8/21/01	11:32:20	53.1	1298.1
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8/21/01	11:32:50	52.97	1299.17
8/21/01	11:33:05	53.05	1293.79
8/21/01	11:33:20	53.17	1293.07
8/21/01	11:33:35	53.46	1293.97
8/21/01	11:33:50	53.2	1296.83
8/21/01	11:34:05	53.15	1295.07
8/21/01	11:34:20	53.06	1292.61
8/21/01	11:34:35	53.14	1294.56

8/21/01	11:34:50	53.33	1295.18
8/21/01	11:35:05	52.99	1298.09
8/21/01	11:35:20	53.03	1296.39
8/21/01	11:35:35	52.86	1293.64
8/21/01	11:35:50	52.17	1291.25
8/21/01	11:36:05	52.02	1297.27
8/21/01	11:36:20	52.24	1293.39
8/21/01	11:36:35	51.78	1287.76
8/21/01	11:36:50	52.5	1289.54
8/21/01	11:37:05	53.03	1291.8
8/21/01	11:37:20	53.51	1296.12
8/21/01	11:37:35	54.18	1304.06
8/21/01	11:37:50	54.87	1292.49
8/21/01	11:38:05	55.74	1292.93
8/21/01	11:38:20	55.8	1289.36
8/21/01	11:38:35	55.95	1289.66
8/21/01	11:38:50	56.28	1289.92
8/21/01	11:39:05	55.72	1283.28
8/21/01	11:39:20	55.5	1287.81
8/21/01	11:39:35	55.56	1288.7
8/21/01	11:39:50	55.36	1288.11
8/21/01	11:40:05	55.6	1286.38
8/21/01	11:40:20	55.04	1290.05
8/21/01	11:40:35	54.42	1291.3
8/21/01	11:40:50	54.01	1290.34
8/21/01	11:41:05	54.44	1287.96
8/21/01	11:41:20	54.28	1296.11
8/21/01	11:41:35	53.75	1292.3
8/21/01	11:41:50	53.63	1289.52
8/21/01	11:42:05	53.56	1298.08
8/21/01	11:42:20	53.43	1294.02
8/21/01	11:42:35	53.47	1296.51
8/21/01	11:42:50	53.94	1298.68
8/21/01	11:43:05	53.87	1302.81
8/21/01	11:43:20	54.03	1299.73
8/21/01	11:43:35	53.85	1298.47
8/21/01	11:43:50	54.1	1300.3
8/21/01	11:44:05	53.85	1301.15
8/21/01	11:44:20	53.25	1300.81
8/21/01	11:44:35	53.47	1295.45
8/21/01	11:44:50	53.17	1293.36
8/21/01	11:45:05	53	1300.29
8/21/01	11:45:20	52.81	1289.61
8/21/01	11:45:35	53.31	1299.91
8/21/01	11:45:50	53.64	1300.77
8/21/01	11:46:05	53.94	1295.03
8/21/01	11:46:20	53.83	1296.32
8/21/01	11:46:35	53.83	1293.16
8/21/01	11:46:50	53.39	1295.67
8/21/01	11:47:05	53.11	1285.84

8/21/01	11:47:20	52.63	1287.21
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8/21/01	11:47:50	50.92	378.42
8/21/01	11:48:05	48.21	187.85
8/21/01	11:48:20	44.64	127.97
8/21/01	11:48:35	40.27	102.5
8/21/01	11:48:50	36.31	89.62
8/21/01	11:49:05	32.48	87.13
8/21/01	11:49:20	29.25	91.98
8/21/01	11:49:35	26.46	307.66
8/21/01	11:49:50	24.37	853.2
8/21/01	11:50:05	24.14	1127.93
8/21/01	11:50:20	25.04	1206.43
8/21/01	11:50:35	26.85	1233.3
8/21/01	11:50:50	29.68	1247.62
8/21/01	11:51:05	32.45	1257.6
8/21/01	11:51:20	34.82	1274.01
8/21/01	11:51:35	37.53	1264.65
8/21/01	11:51:50	40.26	1279.88
8/21/01	11:52:05	42.77	1278.63
8/21/01	11:52:20	44.69	1277.89
8/21/01	11:52:35	46.59	1280.25
8/21/01	11:52:50	48.12	1281.28
8/21/01	11:53:05	49.59	1284.22
8/21/01	11:53:20	50.68	1282.89
8/21/01	11:53:35	51.72	1286.17
8/21/01	11:53:50	52.16	1287.63
8/21/01	11:54:05	52.84	1291
8/21/01	11:54:20	52.91	1286.43
8/21/01	11:54:35	52.75	1277.55
8/21/01	11:54:50	52.82	1282.97
8/21/01	11:55:05	52.31	1285.28
8/21/01	11:55:20	51.44	1278.27
8/21/01	11:55:35	51.09	1279.65
8/21/01	11:55:50	51.17	1284.52
8/21/01	11:56:05	51.85	1277.41
8/21/01	11:56:20	51.97	1279.95
8/21/01	11:56:35	51.89	1285.01
8/21/01	11:56:50	51.85	1287.27
8/21/01	11:57:05	51.93	1287.4
8/21/01	11:57:20	51.96	1289.4
8/21/01	11:57:35	51.75	1289.58
8/21/01	11:57:50	52.04	1284.7
8/21/01	11:58:05	52.09	1292.05
8/21/01	11:58:20	52.16	1284.7
8/21/01	11:58:35	52.14	1291.57
8/21/01	11:58:50	52.01	1292.44
8/21/01	11:59:05	52.08	1291.95
8/21/01	11:59:20	52.19	1299.2
8/21/01	11:59:35	52.43	1298.6

8/21/01	11:59:50	52.74	1298.03
8/21/01	12:00:05	52.71	1296.3
8/21/01	12:00:20	53.34	1297.52
8/21/01	12:00:35	53.3	1291.35
8/21/01	12:00:50	54.2	1289.02
8/21/01	12:01:05	54	1296.31
8/21/01	12:01:20	53.83	1304.96
8/21/01	12:01:35	54.45	1295.94
8/21/01	12:01:50	54.34	1283.23
8/21/01	12:02:05	53.71	1285.09
8/21/01	12:02:20	53.14	1285.91
8/21/01	12:02:35	52.99	1288.31
8/21/01	12:02:50	53.59	1288.08
8/21/01	12:03:05	54.34	1290.73
8/21/01	12:03:20	55.12	1290.67
8/21/01	12:03:35	55.12	1283.16
8/21/01	12:03:50	55.25	1287.74
8/21/01	12:04:05	54.21	1285.12
8/21/01	12:04:20	54.08	1286.27
8/21/01	12:04:35	53.49	1294.04
8/21/01	12:04:50	53.51	1287.56
8/21/01	12:05:05	53.34	1288.38
8/21/01	12:05:20	52.97	1295.71
8/21/01	12:05:35	52.47	1289
8/21/01	12:05:50	52.58	1283.6
8/21/01	12:06:05	52.64	1287.32
8/21/01	12:06:20	53.15	1285.36
8/21/01	12:06:35	53.26	1284.03
8/21/01	12:06:50	53.51	1287.33
8/21/01	12:07:05	54.2	1286.99
8/21/01	12:07:20	53.97	1288.28
8/21/01	12:07:35	53.44	1290.35
8/21/01	12:07:50	53.58	1285.07
8/21/01	12:08:05	53.57	1284.92
8/21/01	12:08:20	53.45	1279.12
8/21/01	12:08:35	53.35	1282.54
8/21/01	12:08:50	53.43	1286.44
8/21/01	12:09:05	53.53	1291.57
8/21/01	12:09:20	53.79	1285.31
8/21/01	12:09:35	53.64	1280.63
8/21/01	12:09:50	53.81	1286.56
8/21/01	12:10:05	53.79	1285.95
8/21/01	12:10:20	53.93	1281.25
8/21/01	12:10:35	53.92	1281.54
8/21/01	12:10:50	54.69	1292.66
8/21/01	12:11:05	55.85	1295.74
8/21/01	12:11:20	56.14	1295.91
8/21/01	12:11:35	56.35	1295.76
8/21/01	12:11:50	56.59	1297.87
8/21/01	12:12:05	56.51	1298.55

8/21/01	12:12:20	56.21	1293.82
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8/21/01	12:13:05	55.63	1298.11
8/21/01	12:13:20	54.6	1302.36
8/21/01	12:13:35	54.18	1301.89
8/21/01	12:13:50	54.04	1298.51
8/21/01	12:14:05	54.12	1304.28
8/21/01	12:14:20	54.03	1304.85
8/21/01	12:14:35	54.36	1298.54
8/21/01	12:14:50	55.15	1296.86
8/21/01	12:15:05	55.63	1300.84
8/21/01	12:15:20	56.3	1300.76
8/21/01	12:15:36	56.35	1299.24
8/21/01	12:15:50	56.03	1297.88
8/21/01	12:16:05	55.41	1301.37
8/21/01	12:16:20	55.25	1300.56
8/21/01	12:16:35	55.21	1300.08
8/21/01	12:16:50	55.47	1297.93
8/21/01	12:17:05	55.41	1300.28
8/21/01	12:17:20	55.55	1302.89
8/21/01	12:17:35	55.44	1294.74
8/21/01	12:17:50	55.42	1303.03
8/21/01	12:18:05	55.07	1296.03
8/21/01	12:18:20	54.81	1292.7
8/21/01	12:18:35	54.65	1290.77
8/21/01	12:18:50	54.45	1299.28
8/21/01	12:19:05	53.73	1294.99
8/21/01	12:19:20	53.66	1295.15
8/21/01	12:19:35	53.11	1292.06
8/21/01	12:19:50	53.14	1293.22
8/21/01	12:20:05	53.16	1288.61
8/21/01	12:20:20	53.5	1294.32
8/21/01	12:20:35	53.87	1295.21
8/21/01	12:20:50	54.05	1301.79
8/21/01	12:21:05	53.94	1294.28
8/21/01	12:21:20	53.93	1295.44
8/21/01	12:21:35	54.65	1303.78
8/21/01	12:21:50	54.65	1297.94
8/21/01	12:22:05	54.2	1292.5
8/21/01	12:22:20	53.84	1295.71
8/21/01	12:22:35	53.32	1289.7
8/21/01	12:22:50	53.52	1295.59
8/21/01	12:23:05	53.7	1296.22
8/21/01	12:23:20	53.8	1289.76
8/21/01	12:23:35	54.09	1288.34
8/21/01	12:23:50	54.28	1288.6
8/21/01	12:24:05	54.51	1284.1
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8/21/01	12:24:35	54.02	1288.66

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8/21/01	12:25:20	52.72	1296.18
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8/21/01	12:25:50	53.8	1287.12
8/21/01	12:26:05	53.96	1297.04
8/21/01	12:26:20	54.42	1289.5
8/21/01	12:26:35	55.02	1290.57
8/21/01	12:26:50	55.35	1288.41
8/21/01	12:27:05	55.05	1294.07
8/21/01	12:27:20	54.7	1294
8/21/01	12:27:35	54.95	1286.28
8/21/01	12:27:50	55.03	1291.31
8/21/01	12:28:05	55.22	1292.04
8/21/01	12:28:20	55.35	1293.28
8/21/01	12:28:35	55.1	1294.41
8/21/01	12:28:50	54.86	1284.34
8/21/01	12:29:05	55.82	1293.49
8/21/01	12:29:20	55.88	1298.33
8/21/01	12:29:35	56.05	1299.34
8/21/01	12:29:50	55.88	1296.81
8/21/01	12:30:05	55.52	1295.36
8/21/01	12:30:20	55.58	1289.99
8/21/01	12:30:35	55.91	1294.89
8/21/01	12:30:50	56.52	1287.73
8/21/01	12:31:05	56.69	1290.34
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8/21/01	12:31:35	56.75	1297.54
8/21/01	12:31:50	56.79	1301.05
8/21/01	12:32:05	56.91	1300.16
8/21/01	12:32:20	56.04	1300.11
8/21/01	12:32:35	56.28	1299.56
8/21/01	12:32:50	55.98	1292.83
8/21/01	12:33:05	56.61	1303.6
8/21/01	12:33:20	57.03	1308.92
8/21/01	12:33:35	56.56	1304.87
8/21/01	12:33:50	56.53	1311.51
8/21/01	12:34:05	56.03	1307.22
8/21/01	12:34:20	56.05	1315.25
8/21/01	12:34:35	56.11	1309.65
8/21/01	12:34:50	56.4	1309.02
8/21/01	12:35:05	57.11	1308.31
8/21/01	12:35:20	57.01	1299.9
8/21/01	12:35:35	57.04	1297.81
8/21/01	12:35:50	57.68	1300.59
8/21/01	12:36:05	57.42	1296.42
8/21/01	12:36:20	56.32	1296.49
8/21/01	12:36:35	56.63	1294.68
8/21/01	12:36:50	57	1298.76
8/21/01	12:37:05	56.99	1302.62

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8/21/01	12:37:50	57.26	1307.57
8/21/01	12:38:05	57.38	1301.71
8/21/01	12:38:20	56.8	1292.59
8/21/01	12:38:35	56.33	1300.41
8/21/01	12:38:50	55.85	1296.44
8/21/01	12:39:05	55.66	1299.44
8/21/01	12:39:20	56.34	1289.6
8/21/01	12:39:35	56.37	1296.39
8/21/01	12:39:50	55.79	1295.45
8/21/01	12:40:05	55.81	1298.41
8/21/01	12:40:20	55.81	1305.34
8/21/01	12:40:35	55.46	1301.68
8/21/01	12:40:50	55.18	1301.07
8/21/01	12:41:05	54.83	1290.82
8/21/01	12:41:20	54.25	1290.54
8/21/01	12:41:35	54.02	1301.97
8/21/01	12:41:50	53.64	1303.42
8/21/01	12:42:05	53.5	1302.46
8/21/01	12:42:20	53.75	1307.25
8/21/01	12:42:35	54.29	1310.91
8/21/01	12:42:50	54.48	1300.48
8/21/01	12:43:05	54.84	1308.67
8/21/01	12:43:20	54.82	1311.73
8/21/01	12:43:35	54.99	1313.19
8/21/01	12:43:50	55.41	1312.67
8/21/01	12:44:05	54.59	1315.14
8/21/01	12:44:20	54.62	1303.48
8/21/01	12:44:35	54.72	1309.16
8/21/01	12:44:50	54.55	1307.21
8/21/01	12:45:05	55.27	1307.54
8/21/01	12:45:20	55.54	1317.65
8/21/01	12:45:35	54.59	1312.55
8/21/01	12:45:50	55.2	1308.73
8/21/01	12:46:05	56.06	1317.79
8/21/01	12:46:20	56.66	1317.25
8/21/01	12:46:35	56.98	1314.68
8/21/01	12:46:50	56.17	1302.89
8/21/01	12:47:05	56.27	1307.19
8/21/01	12:47:20	55.78	1313.13
8/21/01	12:47:35	56.22	1309.57
8/21/01	12:47:50	55.87	1308.13
8/21/01	12:48:05	55.66	1309.25
8/21/01	12:48:20	54.94	1297.37
8/21/01	12:48:35	54.54	1313
8/21/01	12:48:50	55.06	1309.86
8/21/01	12:49:05	55.02	1311.44
8/21/01	12:49:20	55.16	1310.39
8/21/01	12:49:35	54.6	1307.4

8/21/01	12:49:50	54.81	1307.94		
8/21/01	12:50:05	54.82	1307.56		
8/21/01	12:50:20	54.73	1308.11		
8/21/01	12:50:35	54.54	1307.47		
8/21/01	12:50:50	55.1	1313.5		
8/21/01	12:51:05	55.96	1310.7		
8/21/01	12:51:20	55.83	1311.9		
8/21/01	12:51:35	55.77	1312.33		
8/21/01	12:51:50	55.28	1311.49		
8/21/01	12:52:05	55.05	1307.8		
8/21/01	12:52:20	55.12	1309.48		
8/21/01	12:52:35	55.75	1305.15		
8/21/01	12:52:50	55.53	1309.17		
8/21/01	12:53:05	55.65	1303.25		
8/21/01	12:53:20	55.4	1303.09		
8/21/01	12:53:35	55.31	1305.57		
8/21/01	12:53:50	54.89	1306.76		
8/21/01	12:54:05	54.64	1309.56		
8/21/01	12:54:20	54.56	1311.56		
8/21/01	12:54:35	54.69	1309.59		
8/21/01	12:54:50	54.48	1309.56		
8/21/01	12:55:05	54.7	1309.99		
8/21/01	12:55:20	54.63	1305.89		
8/21/01	12:55:35	54.29	1297.12		
8/21/01	12:55:50	54.22	1303.77		
8/21/01	12:56:05	54.13	1302.92		
8/21/01	12:56:20	54.39	1304.24		
8/21/01	12:56:35	54.43	1296.13		
8/21/01	12:56:50	54.65	1302.84		
8/21/01	12:57:05	55.42	1313.63		
8/21/01	12:57:20	55.4	1314.86		
AVERAGES:		62.76	1350.84		
8/21/01	12:57:35	40.15	84.7 C3H8	1312.67	
8/21/01	12:57:50	47.51		1301.45	
8/21/01	12:58:05	40.35		1294.44	
8/21/01	12:58:20	50.82		1293.35	
8/21/01	12:58:35	75.9		482.51	
8/21/01	12:58:50	83.22		247.72	
8/21/01	12:59:05	**84.22**		238.15	
8/21/01	12:59:20	**84.48**		194.19	
8/21/01	12:59:35	**84.69**		47.11	
8/21/01	12:59:50	**84.66**	**84.51**	35.45	
8/21/01	13:00:05	81.11		34.56	
8/21/01	13:00:20	80.75		623.66	**861.8 C3H8**
8/21/01	13:00:35	74.61		849.15	
8/21/01	13:00:51	14.08		853.69	

8/21/01	13:01:05	-2.73		858.66	
8/21/01	13:01:20	-4.53	**ZERO C3H8**	**859.19**	**861.8 C3H8**
8/21/01	13:01:35	-4.93		**859.19**	
8/21/01	13:01:50	-3.2		**859.22**	
8/21/01	13:02:05	-2		**859.14**	
8/21/01	13:02:20	**-2.07**		**859.14**	
8/21/01	13:02:35	**-2.07**		**859.14**	
8/21/01	13:02:50	**-2.05**		**859.2**	
8/21/01	13:03:05	**-2.08**		**859.23**	**859.18**
8/21/01	13:03:20	**-2.15**		878.5	
8/21/01	13:03:35	**-2.18**	**-2.1**	892.93	
8/21/01	13:03:50	0.05		887.79	
8/21/01	13:04:05	3.93		854.75	
8/21/01	13:04:20	3.1		149.05	
8/21/01	13:04:35	2.65		23.09	
8/21/01	13:04:50	2.4		10.81	
8/21/01	13:05:05	2.24		9.6	
8/21/01	13:05:20	1.97		9.62	**ZERO C3H8**
8/21/01	13:05:35	1.74		5.71	
8/21/01	13:05:50	1.67		**5.1**	
8/21/01	13:06:05	1.63		**5.08**	
8/21/01	13:06:20	1.63		**5.09**	**5.09**

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/21/01

DATA LOGGER RECORDS
RUN 2
1310-1610

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/21/01	13:10:20	38.17	1261.19
8/21/01	13:10:35	40.67	1262.66
8/21/01	13:10:50	43.58	1271.6
8/21/01	13:11:05	45.57	1268.65
8/21/01	13:11:20	47.28	1273.78
8/21/01	13:11:35	48.84	1277.14
8/21/01	13:11:50	50.2	1276.28
8/21/01	13:12:05	51.46	1278.13
8/21/01	13:12:20	52.65	1281.38
8/21/01	13:12:35	53.22	1282.96
8/21/01	13:12:50	54.13	1283.77
8/21/01	13:13:05	55.24	1280.77
8/21/01	13:13:20	55.63	1281.35
8/21/01	13:13:35	55.81	1289.35
8/21/01	13:13:50	56.54	1293.71
8/21/01	13:14:05	57.02	1293.45
8/21/01	13:14:20	57.19	1295.35
8/21/01	13:14:35	57.21	1295.84
8/21/01	13:14:50	57.9	1298.78
8/21/01	13:15:05	58.47	1301.19
8/21/01	13:15:20	59.41	1303.77
8/21/01	13:15:35	60.21	1295.91
8/21/01	13:15:50	60.97	1292.22
8/21/01	13:16:05	61.37	1295.04
8/21/01	13:16:20	61.27	1298.73
8/21/01	13:16:35	61.1	1296.72
8/21/01	13:16:50	61.29	1298.68
8/21/01	13:17:05	61.1	1306.59
8/21/01	13:17:20	60.55	1300.1
8/21/01	13:17:35	59.28	1301.94
8/21/01	13:17:50	58.92	1295.9
8/21/01	13:18:05	58.28	1295.39
8/21/01	13:18:20	57.68	1292.85
8/21/01	13:18:35	58.24	1295.92
8/21/01	13:18:50	59.2	1298.98
8/21/01	13:19:05	59.89	1289.64
8/21/01	13:19:20	60.02	1298.8
8/21/01	13:19:35	60.24	1304.69
8/21/01	13:19:50	59.64	1295.04
8/21/01	13:20:05	58.94	1292.16
8/21/01	13:20:20	58.8	1288

8/21/01	13:20:35	58.66	1294.8
8/21/01	13:20:50	58.66	1296.76
8/21/01	13:21:05	58.27	1300.89
8/21/01	13:21:20	57.62	1297.4
8/21/01	13:21:35	57.27	1294.13
8/21/01	13:21:50	57.14	1296.05
8/21/01	13:22:05	57	1302.09
8/21/01	13:22:20	57.34	1300.84
8/21/01	13:22:35	57.92	1301.37
8/21/01	13:22:50	57.77	1297.86
8/21/01	13:23:05	57.7	1295.88
8/21/01	13:23:20	58.05	1297.43
8/21/01	13:23:35	58.85	1296.75
8/21/01	13:23:50	59.16	1306
8/21/01	13:24:05	59.04	1291.54
8/21/01	13:24:20	58.94	1287.52
8/21/01	13:24:35	58.28	1295.5
8/21/01	13:24:50	58.74	1296.76
8/21/01	13:25:05	59.02	1293.3
8/21/01	13:25:20	58.6	1293.11
8/21/01	13:25:35	58.95	1296.65
8/21/01	13:25:50	58.55	1298.52
8/21/01	13:26:05	58.34	1295.49
8/21/01	13:26:20	58.83	1292.37
8/21/01	13:26:35	58.88	1296.37
8/21/01	13:26:50	59.65	1293.07
8/21/01	13:27:05	59.93	1296.7
8/21/01	13:27:20	59.86	1299.93
8/21/01	13:27:35	59.74	1295.97
8/21/01	13:27:50	59.51	1291.68
8/21/01	13:28:05	60.15	1294.44
8/21/01	13:28:20	59.79	1300.57
8/21/01	13:28:35	58.98	1300.94
8/21/01	13:28:50	59.07	1292.71
8/21/01	13:29:05	59.51	1288.54
8/21/01	13:29:20	59.7	1289.55
8/21/01	13:29:35	59.83	1297.29
8/21/01	13:29:50	59.82	1297
8/21/01	13:30:05	59.97	1296.02
8/21/01	13:30:20	59.98	1292.29
8/21/01	13:30:35	60.35	1297.32
8/21/01	13:30:50	60.11	1303.72
8/21/01	13:31:05	59.65	1298.14
8/21/01	13:31:20	59.33	1303.1
8/21/01	13:31:35	59.69	1293.82
8/21/01	13:31:50	59.82	1291.64
8/21/01	13:32:05	59.99	1291.59
8/21/01	13:32:20	59.71	1287.34
8/21/01	13:32:35	60.15	1285.53
8/21/01	13:32:50	60.28	1293.26

8/21/01	13:33:05	60.26	1292.23
8/21/01	13:33:20	60.31	1292.38
8/21/01	13:33:35	60.21	1293.21
8/21/01	13:33:50	60.08	1293.47
8/21/01	13:34:05	59.48	1294.21
8/21/01	13:34:20	59.38	1291.87
8/21/01	13:34:35	59.32	1291.63
8/21/01	13:34:50	59.39	1288.79
8/21/01	13:35:05	58.93	1286.02
8/21/01	13:35:20	58.83	1279.59
8/21/01	13:35:35	58.71	1287.65
8/21/01	13:35:50	58.68	1294.26
8/21/01	13:36:05	58.56	1302.06
8/21/01	13:36:20	58.61	1299.77
8/21/01	13:36:35	58.45	1307.13
8/21/01	13:36:50	58.88	1307.17
8/21/01	13:37:05	58.84	1308.54
8/21/01	13:37:20	59.11	1309.52
8/21/01	13:37:35	58.77	1311.03
8/21/01	13:37:50	58.42	1303.55
8/21/01	13:38:05	58.12	1299.69
8/21/01	13:38:20	58.18	1298.58
8/21/01	13:38:35	57.66	1300.18
8/21/01	13:38:50	57.47	1304.01
8/21/01	13:39:05	57.41	1300.05
8/21/01	13:39:20	57.73	1292.45
8/21/01	13:39:35	57.51	1302.99
8/21/01	13:39:50	57.25	1298.09
8/21/01	13:40:05	57.47	1299.21
8/21/01	13:40:20	57.62	1301.9
8/21/01	13:40:35	57.87	1303.89
8/21/01	13:40:50	57.89	1297.94
8/21/01	13:41:05	57.9	1301.96
8/21/01	13:41:20	57.81	1301.81
8/21/01	13:41:35	58.21	1300.47
8/21/01	13:41:50	57.87	1302.77
8/21/01	13:42:05	57.18	1299.73
8/21/01	13:42:20	56.63	1307.59
8/21/01	13:42:35	56.7	1315.4
8/21/01	13:42:50	57.47	1310.73
8/21/01	13:43:05	57.51	1305.55
8/21/01	13:43:20	56.76	1311.11
8/21/01	13:43:35	56.32	1303.95
8/21/01	13:43:50	56.27	1309.99
8/21/01	13:44:05	56.1	1308.69
8/21/01	13:44:20	56.06	1317.41
8/21/01	13:44:35	55.8	1316.49
8/21/01	13:44:50	56.29	1309.26
8/21/01	13:45:05	55.79	1309.67
8/21/01	13:45:20	55.59	1309.59

8/21/01	13:45:35	55.21	1310.75
8/21/01	13:45:50	55.37	1304.16
8/21/01	13:46:05	54.99	1310.88
8/21/01	13:46:20	55.05	1306.53
8/21/01	13:46:35	54.84	1306.5
8/21/01	13:46:50	55.05	1306.44
8/21/01	13:47:05	55.43	1299.9
8/21/01	13:47:20	55.54	1311.88
8/21/01	13:47:35	55.68	1301.94
8/21/01	13:47:50	55.17	1310.44
8/21/01	13:48:05	56.11	1302.57
8/21/01	13:48:20	56.07	1307.9
8/21/01	13:48:35	55.39	1304.2
8/21/01	13:48:50	55.68	1311.65
8/21/01	13:49:05	56.12	1306.1
8/21/01	13:49:20	56.25	1307.65
8/21/01	13:49:35	56.9	1311.1
8/21/01	13:49:50	56.83	1304.92
8/21/01	13:50:05	57.66	1307.08
8/21/01	13:50:20	57.94	1304.9
8/21/01	13:50:35	58.52	1311.59
8/21/01	13:50:50	58.27	1303.43
8/21/01	13:51:05	58.48	1302.67
8/21/01	13:51:20	58.3	1302.08
8/21/01	13:51:35	57.84	1293.9
8/21/01	13:51:50	57.96	1300.24
8/21/01	13:52:05	57.23	1297.13
8/21/01	13:52:20	57.19	1297.93
8/21/01	13:52:35	58.05	1294.97
8/21/01	13:52:50	58.36	1298.29
8/21/01	13:53:05	58.85	1312.97
8/21/01	13:53:20	59.02	1316.27
8/21/01	13:53:35	59.21	1316.58
8/21/01	13:53:50	59.6	1320.79
8/21/01	13:54:05	59.94	1324.6
8/21/01	13:54:20	60.85	1321.09
8/21/01	13:54:35	60.84	1323.96
8/21/01	13:54:50	61.4	1321.38
8/21/01	13:55:05	61.84	1328.49
8/21/01	13:55:20	62.33	1326.28
8/21/01	13:55:35	62.91	1320.97
8/21/01	13:55:50	63.01	1316.58
8/21/01	13:56:05	62.77	1317.26
8/21/01	13:56:20	62.58	1318.23
8/21/01	13:56:35	62.41	1311.63
8/21/01	13:56:50	61.32	1315.23
8/21/01	13:57:05	61.11	1311.6
8/21/01	13:57:20	60.69	1307.71
8/21/01	13:57:35	60.44	1313.39
8/21/01	13:57:50	60.17	1309.38

8/21/01	13:58:05	59.78	1306.61
8/21/01	13:58:20	61.26	1310.38
8/21/01	13:58:35	61.89	1306.75
8/21/01	13:58:50	61.85	1301.88
8/21/01	13:59:05	61.81	1308.98
8/21/01	13:59:20	61.4	1303.94
8/21/01	13:59:35	61.66	1302.83
8/21/01	13:59:50	61.39	1312.91
8/21/01	14:00:05	60.65	1313.2
8/21/01	14:00:20	60.07	1307.32
8/21/01	14:00:35	58.86	1302.73
8/21/01	14:00:50	58.62	1305.9
8/21/01	14:01:05	57.93	1312.11
8/21/01	14:01:20	57.69	1303.33
8/21/01	14:01:35	57.04	1305.18
8/21/01	14:01:50	56.56	1313.8
8/21/01	14:02:05	55.92	1311.01
8/21/01	14:02:20	55.72	1311.89
8/21/01	14:02:35	55.95	1304.56
8/21/01	14:02:50	55.67	1308.24
8/21/01	14:03:05	55.78	1307.55
8/21/01	14:03:20	56.49	1316.43
8/21/01	14:03:35	57.03	1310.47
8/21/01	14:03:50	57.49	1303.31
8/21/01	14:04:05	58.27	1299.93
8/21/01	14:04:20	58.24	1309.33
8/21/01	14:04:35	57.74	1313.06
8/21/01	14:04:50	57.05	1308.36
8/21/01	14:05:05	56.98	1307.91
8/21/01	14:05:20	56.56	1311.19
8/21/01	14:05:35	55.96	1313.39
8/21/01	14:05:50	55.77	1314.56
8/21/01	14:06:05	55.59	1305.69
8/21/01	14:06:20	55.53	1306.11
8/21/01	14:06:35	55.73	1308.27
8/21/01	14:06:50	55.92	1313
8/21/01	14:07:05	56.16	1313.38
8/21/01	14:07:20	56.75	1317.47
8/21/01	14:07:35	57.2	1309.66
8/21/01	14:07:50	58.06	1311.84
8/21/01	14:08:05	58.25	1312.99
8/21/01	14:08:20	58.27	1313.04
8/21/01	14:08:35	58.33	1311.49
8/21/01	14:08:50	58.02	1310.15
8/21/01	14:09:05	57.8	1307.89
8/21/01	14:09:20	57.81	1309.24
8/21/01	14:09:35	58.44	1305.18
8/21/01	14:09:50	58.25	1310.34
8/21/01	14:10:05	58.3	1309.59
8/21/01	14:10:20	58.54	1309.23

8/21/01	14:10:35	57.81	1305.51
8/21/01	14:10:50	57.07	1301.81
8/21/01	14:11:05	56.45	1301.17
8/21/01	14:11:20	55.6	1310.2
8/21/01	14:11:35	55.08	1304.8
8/21/01	14:11:50	55.12	1303.53
8/21/01	14:12:05	55.17	1309.77
8/21/01	14:12:20	55.34	1303.85
8/21/01	14:12:35	55.35	1305.96
8/21/01	14:12:50	55.62	1295.78
8/21/01	14:13:05	55.88	1304.86
8/21/01	14:13:20	55.64	1296.9
8/21/01	14:13:35	55.35	1296.83
8/21/01	14:13:50	55.89	1308.98
8/21/01	14:14:05	56.04	1314.69
8/21/01	14:14:20	55.91	1310.63
8/21/01	14:14:35	56.11	1304.82
8/21/01	14:14:50	56.58	1305.87
8/21/01	14:15:05	56.53	1298.94
8/21/01	14:15:20	56.83	1306.69
8/21/01	14:15:35	56.41	1310.19
8/21/01	14:15:50	56.54	1311.74
8/21/01	14:16:05	56.5	1312.62
8/21/01	14:16:20	56.3	1311.81
8/21/01	14:16:35	56.96	1311.07
8/21/01	14:16:50	57.81	1303.97
8/21/01	14:17:05	58.35	1314.92
8/21/01	14:17:20	58.55	1311.3
8/21/01	14:17:35	58.78	1304.91
8/21/01	14:17:50	58.54	1303.6
8/21/01	14:18:05	58.37	1303.72
8/21/01	14:18:20	58.02	1310.95
8/21/01	14:18:35	57.36	1305.7
8/21/01	14:18:50	56.92	1308.04
8/21/01	14:19:05	56.85	1297.08
8/21/01	14:19:20	57.09	1310.45
8/21/01	14:19:35	56.82	1309.81
8/21/01	14:19:50	56.7	1305.2
8/21/01	14:20:05	56.67	1309.16
8/21/01	14:20:20	57.1	1306.28
8/21/01	14:20:35	57.27	1312.12
8/21/01	14:20:50	57.39	1309.69
8/21/01	14:21:05	57.53	1312.18
8/21/01	14:21:20	58.25	1305.82
8/21/01	14:21:35	59.21	1310.77
8/21/01	14:21:50	59.39	1311.17
8/21/01	14:22:05	60.31	1303.88
8/21/01	14:22:20	60.81	1308.92
8/21/01	14:22:35	60.51	1308.68
8/21/01	14:22:50	60.37	1313.22

8/21/01	14:35:35	50.97	1294.02
8/21/01	14:35:50	51.46	1291.8
8/21/01	14:36:05	51.73	1298.1
8/21/01	14:36:20	52.6	1288.22
8/21/01	14:36:35	52.89	1293
8/21/01	14:36:50	53.08	1300.91
8/21/01	14:37:05	53.31	1298.98
8/21/01	14:37:20	53.14	1294.6
8/21/01	14:37:35	53.74	1292.05
8/21/01	14:37:50	53.5	1295.55
8/21/01	14:38:05	53.22	1296.58
8/21/01	14:38:20	52.91	1301.02
8/21/01	14:38:35	52.56	1294.78
8/21/01	14:38:50	52.42	1301.52
8/21/01	14:39:05	52.27	1301.33
8/21/01	14:39:20	51.58	1299.54
8/21/01	14:39:35	51.17	1298.95
8/21/01	14:39:50	51.47	1296.72
8/21/01	14:40:05	50.99	1301.87
8/21/01	14:40:20	50.57	1301.13
8/21/01	14:40:35	50.48	1292.1
8/21/01	14:40:50	50.8	1290.05
8/21/01	14:41:05	51.43	1290.05
8/21/01	14:41:20	51.78	1296.92
8/21/01	14:41:35	52.08	1294.41
8/21/01	14:41:50	52.67	1296.91
8/21/01	14:42:05	53.32	1297.11
8/21/01	14:42:20	53.25	1291.27
8/21/01	14:42:35	53.26	1296.01
8/21/01	14:42:50	53.86	1299.06
8/21/01	14:43:05	54.61	1299.51
8/21/01	14:43:20	55.07	1298.41
8/21/01	14:43:35	54.65	1300.72
8/21/01	14:43:50	54.91	1297.46
8/21/01	14:44:05	55.1	1302.03
8/21/01	14:44:20	56.07	1300.84
8/21/01	14:44:35	56.89	1300.39
8/21/01	14:44:50	58.04	1306.45
8/21/01	14:45:05	58.44	1317.2
8/21/01	14:45:20	58.98	1314.13
8/21/01	14:45:35	60.54	1318.6
8/21/01	14:45:50	60.96	1312.59
8/21/01	14:46:05	61.27	1309.13
8/21/01	14:46:20	60.94	1305.15
8/21/01	14:46:35	60.75	1305.12
8/21/01	14:46:50	60.32	1306.43
8/21/01	14:47:05	60.57	1301.81
8/21/01	14:47:20	59.98	1309.34
8/21/01	14:47:35	59.35	1305.4
8/21/01	14:47:50	59.24	1304.45

8/21/01	14:48:05	58.22	1303.11
8/21/01	14:48:20	57.54	1296.6
8/21/01	14:48:35	56.36	1298.39
8/21/01	14:48:50	55.95	1301.96
8/21/01	14:49:05	55.55	1298.35
8/21/01	14:49:20	55.28	1296.25
8/21/01	14:49:35	54.77	1294.57
8/21/01	14:49:50	54.99	1301.17
8/21/01	14:50:05	54.49	1302.45
8/21/01	14:50:20	54.42	1293.87
8/21/01	14:50:35	53.82	1290.55
8/21/01	14:50:50	53.08	1288.86
8/21/01	14:51:05	52.82	1292.48
8/21/01	14:51:20	52.52	1295.82
8/21/01	14:51:35	52.29	1295.88
8/21/01	14:51:50	52.53	1294.05
8/21/01	14:52:05	52.67	1290.96
8/21/01	14:52:20	52.96	1291.76
8/21/01	14:52:35	53.58	1296.42
8/21/01	14:52:50	53.93	1289.5
8/21/01	14:53:05	54.41	1284.09
8/21/01	14:53:20	53.94	1281.38
8/21/01	14:53:35	53.34	1290.74
8/21/01	14:53:50	53.02	1289.12
8/21/01	14:54:05	52.82	1295.01
8/21/01	14:54:20	52.85	1292.05
8/21/01	14:54:35	53.18	1282.71
8/21/01	14:54:50	53.17	1289.3
8/21/01	14:55:05	53.15	1294.46
8/21/01	14:55:20	53.58	1289.79
8/21/01	14:55:35	53.62	1290.71
8/21/01	14:55:50	54.18	1291.21
8/21/01	14:56:05	53.8	1283.6
8/21/01	14:56:20	53.8	1286.97
8/21/01	14:56:35	53.62	1286.85
8/21/01	14:56:50	53.36	1286.91
8/21/01	14:57:05	53	1286.82
8/21/01	14:57:20	52.51	1286.96
8/21/01	14:57:35	52.17	1288.03
8/21/01	14:57:50	51.96	1287.1
8/21/01	14:58:05	51.85	1285.05
8/21/01	14:58:20	51.57	1286.87
8/21/01	14:58:35	51.55	1292.58
8/21/01	14:58:50	51.3	1284.93
8/21/01	14:59:05	50.75	1281.5
8/21/01	14:59:20	50.89	1284.98
8/21/01	14:59:35	51.08	1287.91
8/21/01	14:59:50	50.93	1282.43
8/21/01	15:00:05	51.2	1284.37
8/21/01	15:00:20	51.78	1291.38

8/21/01	15:00:35	52.74	1292.33
8/21/01	15:00:50	53.21	1286.83
8/21/01	15:01:05	53.91	1289.34
8/21/01	15:01:20	54.25	1291.67
8/21/01	15:01:35	54.28	1289.38
8/21/01	15:01:50	54.13	1282.82
8/21/01	15:02:05	54.94	1275.71
8/21/01	15:02:20	54.8	1279.02
8/21/01	15:02:35	55.69	1246.65
8/21/01	15:02:50	56.12	1275.45
8/21/01	15:03:05	57.01	1273.84
8/21/01	15:03:20	57.8	1277.52
8/21/01	15:03:35	58.04	1296.9
8/21/01	15:03:50	58.6	1305.44
8/21/01	15:04:05	58.56	1305.37
8/21/01	15:04:20	58.24	1301.61
8/21/01	15:04:35	57.45	1297.74
8/21/01	15:04:50	56.97	1300.72
8/21/01	15:05:05	56.08	1299.1
8/21/01	15:05:20	55.91	1303.05
8/21/01	15:05:35	55.12	1298.12
8/21/01	15:05:50	55.01	1300.85
8/21/01	15:06:05	55.1	1301.44
8/21/01	15:06:20	54.69	1299.46
8/21/01	15:06:35	54.92	1303.39
8/21/01	15:06:50	54.87	1299.41
8/21/01	15:07:05	55.04	1298.68
8/21/01	15:07:20	54.86	1295.95
8/21/01	15:07:35	55.14	1303
8/21/01	15:07:50	55.39	1296.12
8/21/01	15:08:05	55.36	1293.29
8/21/01	15:08:20	55.43	1299.81
8/21/01	15:08:35	54.56	1294.29
8/21/01	15:08:50	54.68	1295.05
8/21/01	15:09:05	54.93	1288.44
8/21/01	15:09:20	54.98	1292.59
8/21/01	15:09:35	54.91	1295.9
8/21/01	15:09:50	54.56	1292.89
8/21/01	15:10:05	54.28	1287.63
8/21/01	15:10:20	54.03	1288.74
8/21/01	15:10:35	54.25	1292.7
8/21/01	15:10:50	54.46	1291.74
8/21/01	15:11:05	54.85	1285.32
8/21/01	15:11:20	55.24	1291.56
8/21/01	15:11:35	55.58	1288.1
8/21/01	15:11:50	55.54	1287.93
8/21/01	15:12:05	54.86	1281.75
8/21/01	15:12:20	54.75	1289.48
8/21/01	15:12:35	54.69	1296.88
8/21/01	15:12:50	55.86	1301.27

8/21/01	15:13:05	56.11	1294.04
8/21/01	15:13:20	56.09	1298.8
8/21/01	15:13:35	55.13	1293.88
8/21/01	15:13:50	55.04	1291.63
8/21/01	15:14:05	55.27	1289.42
8/21/01	15:14:20	55.52	1288.44
8/21/01	15:14:35	55.51	1293.17
8/21/01	15:14:50	55.76	1294.52
8/21/01	15:15:05	55.18	1300.75
8/21/01	15:15:20	54.48	1296.41
8/21/01	15:15:35	54.4	1294.39
8/21/01	15:15:50	54.74	1295.77
8/21/01	15:16:05	55.37	1295.77
8/21/01	15:16:20	55.5	1295.73
8/21/01	15:16:35	55.66	1294.04
8/21/01	15:16:50	55.47	1288.65
8/21/01	15:17:05	55.58	1289.7
8/21/01	15:17:20	55.72	1285.12
8/21/01	15:17:35	56.15	1289.59
8/21/01	15:17:50	55.8	1283.2
8/21/01	15:18:05	55.97	1284
8/21/01	15:18:20	56.52	1291.89
8/21/01	15:18:35	56.5	1289.89
8/21/01	15:18:50	56.64	1288.23
8/21/01	15:19:05	56.51	1283.04
8/21/01	15:19:20	56.51	1283.2
8/21/01	15:19:35	56.84	1286.09
8/21/01	15:19:50	56.4	1279.06
8/21/01	15:20:05	55.78	1276.84
8/21/01	15:20:20	55.87	1277.4
8/21/01	15:20:35	55.85	1277.75
8/21/01	15:20:50	55.97	1271.57
8/21/01	15:21:05	55.48	1277.8
8/21/01	15:21:20	55.67	1278.39
8/21/01	15:21:35	55.98	1284.12
8/21/01	15:21:50	55.53	1284.65
8/21/01	15:22:05	55.34	1279.96
8/21/01	15:22:20	55.29	1273.84
8/21/01	15:22:35	55.83	1283.97
8/21/01	15:22:50	55.86	1281.33
8/21/01	15:23:05	55.72	1288.22
8/21/01	15:23:20	55.65	1291.15
8/21/01	15:23:35	55.97	1291.22
8/21/01	15:23:50	55.68	1285.58
8/21/01	15:24:05	55.68	1303.67
8/21/01	15:24:20	56.84	1302.84
8/21/01	15:24:35	57.22	1297.57
8/21/01	15:24:50	57.3	1299.04
8/21/01	15:25:05	56.68	1295.9
8/21/01	15:25:20	55.57	1298.32

8/21/01	15:25:35	54.84	1297.91
8/21/01	15:25:50	54.69	1295.53
8/21/01	15:26:05	54.77	1292.79
8/21/01	15:26:20	53.75	1292.6
8/21/01	15:26:35	52.67	1297.55
8/21/01	15:26:50	52.58	1296.82
8/21/01	15:27:05	52.75	1292.52
8/21/01	15:27:20	52.96	1294.64
8/21/01	15:27:35	53.86	1291.04
8/21/01	15:27:50	54.15	1290.61
8/21/01	15:28:05	53.97	1289.81
8/21/01	15:28:20	54.13	1293.8
8/21/01	15:28:35	54.67	1290.76
8/21/01	15:28:50	55.11	1287.91
8/21/01	15:29:05	54.76	1290.4
8/21/01	15:29:20	54.18	1286.15
8/21/01	15:29:35	54.02	1284.81
8/21/01	15:29:50	54.83	1279.32
8/21/01	15:30:05	54.8	1290.31
8/21/01	15:30:20	54.65	1294.3
8/21/01	15:30:35	54.72	1290.97
8/21/01	15:30:50	54.87	1287.31
8/21/01	15:31:05	54.82	1283.84
8/21/01	15:31:20	55.49	1289.83
8/21/01	15:31:35	55.21	1289.07
8/21/01	15:31:50	55.45	1293.53
8/21/01	15:32:05	55.98	1291.22
8/21/01	15:32:20	55.89	1286.25
8/21/01	15:32:35	55.62	1286.63
8/21/01	15:32:50	56.15	1282.32
8/21/01	15:33:05	56.01	1284.63
8/21/01	15:33:20	56.81	1284.21
8/21/01	15:33:35	57.4	1288.3
8/21/01	15:33:50	57.22	1286.71
8/21/01	15:34:05	56.65	1284.24
8/21/01	15:34:20	56.17	1284.66
8/21/01	15:34:35	56.5	1280.59
8/21/01	15:34:50	56.79	1280.78
8/21/01	15:35:05	56.71	1284.6
8/21/01	15:35:20	56.75	1288.47
8/21/01	15:35:35	56.42	1287.95
8/21/01	15:35:50	55.99	1288.15
8/21/01	15:36:05	56.87	1288.32
8/21/01	15:36:20	57.21	1285.58
8/21/01	15:36:35	57.18	1286.68
8/21/01	15:36:50	57.22	1290.34
8/21/01	15:37:05	57.43	1289.46
8/21/01	15:37:20	58.05	1287.03
8/21/01	15:37:35	58.39	1294
8/21/01	15:37:50	58.15	1283.15

8/21/01	15:38:05	58.98	1278.76
8/21/01	15:38:20	58.78	1290.33
8/21/01	15:38:35	58.28	1291.2
8/21/01	15:38:50	56.48	1279.94
8/21/01	15:39:05	55.12	1279.91
8/21/01	15:39:20	54.83	1283.96
8/21/01	15:39:35	54.48	1279.39
8/21/01	15:39:50	54.41	1282.35
8/21/01	15:40:05	54.06	1278.9
8/21/01	15:40:20	53.78	1275.79
8/21/01	15:40:35	53.72	1281.4
8/21/01	15:40:50	53.06	1276.8
8/21/01	15:41:05	53.9	1279.43
8/21/01	15:41:20	54.88	1278.52
8/21/01	15:41:35	55.51	1265.1
8/21/01	15:41:50	56.4	1274.37
8/21/01	15:42:05	56.97	1274.75
8/21/01	15:42:20	55.77	1277.87
8/21/01	15:42:35	55.41	1282.77
8/21/01	15:42:50	54.94	1282.31
8/21/01	15:43:05	55.43	1282.77
8/21/01	15:43:20	55.19	1285.33
8/21/01	15:43:35	55.6	1279.98
8/21/01	15:43:50	55.64	1283.18
8/21/01	15:44:05	55.99	1281.4
8/21/01	15:44:20	56.1	1288.23
8/21/01	15:44:35	56.52	1284.75
8/21/01	15:44:50	56.11	1284.89
8/21/01	15:45:05	56.07	1287.58
8/21/01	15:45:20	55.33	1286.73
8/21/01	15:45:35	55.05	1286.58
8/21/01	15:45:50	55.6	1286.02
8/21/01	15:46:05	55.34	1281.02
8/21/01	15:46:20	55.41	1285.29
8/21/01	15:46:35	55.59	1285.16
8/21/01	15:46:50	55.41	1278.58
8/21/01	15:47:05	55.61	1278.53
8/21/01	15:47:20	55.4	1279
8/21/01	15:47:35	56.01	1280.77
8/21/01	15:47:50	56.93	1282.89
8/21/01	15:48:05	56.66	1268.95
8/21/01	15:48:20	57.18	1272.75
8/21/01	15:48:35	58.05	1277.1
8/21/01	15:48:50	59.29	1282.6
8/21/01	15:49:05	61.52	1285.9
8/21/01	15:49:20	63.6	1275.66
8/21/01	15:49:35	62.84	1278.69
8/21/01	15:49:50	62.89	1287.48
8/21/01	15:50:05	64.01	1280.19
8/21/01	15:50:20	63.93	1276.5

8/21/01	15:50:35	63.89	1279.9
8/21/01	15:50:50	62.92	1283.77
8/21/01	15:51:05	62.2	1284.49
8/21/01	15:51:20	60.8	1278.56
8/21/01	15:51:35	60.53	1276.89
8/21/01	15:51:50	59.79	1273.17
8/21/01	15:52:05	57.64	828.54
8/21/01	15:52:20	53.38	345.42
8/21/01	15:52:35	48.11	177.7
8/21/01	15:52:50	43.14	123.31
8/21/01	15:53:05	37.9	103.12
8/21/01	15:53:20	33.51	90.3
8/21/01	15:53:35	30.1	83.46
8/21/01	15:53:50	27.48	96.83
8/21/01	15:54:05	25.89	509.86
8/21/01	15:54:20	26.08	981.5
8/21/01	15:54:35	28.15	1158.22
8/21/01	15:54:50	31.74	1199.01
8/21/01	15:55:05	35.65	1222.1
8/21/01	15:55:20	38.92	1239.13
8/21/01	15:55:35	42.37	1253.1
8/21/01	15:55:50	44.95	1259.9
8/21/01	15:56:05	48.26	1257.57
8/21/01	15:56:20	49.74	1257.05
8/21/01	15:56:35	51.08	1259.06
8/21/01	15:56:50	51.99	1266.09
8/21/01	15:57:05	53.14	1262.71
8/21/01	15:57:20	54.06	1267.46
8/21/01	15:57:35	54.65	1268.16
8/21/01	15:57:50	54.13	1271.81
8/21/01	15:58:05	54.42	1273.4
8/21/01	15:58:20	55.09	1255.79
8/21/01	15:58:35	55.69	1263.7
8/21/01	15:58:50	54.81	1265.94
8/21/01	15:59:05	54.56	1270.2
8/21/01	15:59:20	55.13	1272.32
8/21/01	15:59:35	55.31	1265.11
8/21/01	15:59:50	55.14	1267.48
8/21/01	16:00:05	54.54	1270.96
8/21/01	16:00:20	54.3	1268.4
8/21/01	16:00:35	53.46	1263.64
8/21/01	16:00:50	52.6	1261.19
8/21/01	16:01:05	51.38	1266.84
8/21/01	16:01:20	50.74	1268.46
8/21/01	16:01:35	51.99	1261.61
8/21/01	16:01:50	51.13	1224.12
8/21/01	16:02:05	50.82	1226.95
8/21/01	16:02:20	50.93	1217.63
8/21/01	16:02:35	51.78	1216.41
8/21/01	16:02:50	51.8	1213.91

8/21/01	16:03:05	52.76	1210.08		
8/21/01	16:03:20	53.09	1214.52		
8/21/01	16:03:35	53.34	1222.32		
8/21/01	16:03:50	53.91	1222.37		
8/21/01	16:04:05	53.64	1221.7		
8/21/01	16:04:20	52.97	1224.77		
8/21/01	16:04:35	51.89	1221.16		
8/21/01	16:04:50	52.71	1228.53		
8/21/01	16:05:05	52.05	1222.53		
8/21/01	16:05:20	52.87	1229.13		
8/21/01	16:05:35	52.58	1225.76		
8/21/01	16:05:50	52.31	1221.16		
8/21/01	16:06:05	52.02	1227.07		
8/21/01	16:06:20	51.92	1223.84		
8/21/01	16:06:35	52.01	1227.72		
8/21/01	16:06:50	53.71	1230.95		
8/21/01	16:07:05	53.22	1222.36		
8/21/01	16:07:20	52.9	1219.96		
8/21/01	16:07:35	53.21	1225.6		
8/21/01	16:07:50	52.87	1222.96		
8/21/01	16:08:05	53.13	1219.27		
8/21/01	16:08:20	52.69	1221.79		
8/21/01	16:08:35	52.75	1224.22		
8/21/01	16:08:50	53.17	1229.69		
8/21/01	16:09:05	55.05	1228.25		
8/21/01	16:09:20	55.27	1228.04		
8/21/01	16:09:35	54.93	1226.02		
8/21/01	16:09:50	54.96	1221.99		
8/21/01	16:10:05	55.22	1225.62		
8/21/01	16:10:20	55.28	1220.83		
AVERAGES:		55.31	1261.17		
8/21/01	16:10:35	55.67		1225.37	
8/21/01	16:10:50	55.04		919.78	
8/21/01	16:11:05	61.96		101.39	
8/21/01	16:11:20	60.63		105.38	
8/21/01	16:11:35	3.42		118.51	
8/21/01	16:11:50	-2.08	**ZERO C3H8**	54.13	
8/21/01	16:12:05	-2.81		35.1	
8/21/01	16:12:20	-3.13		156.11	
8/21/01	16:12:35	-3.37		794.25	
8/21/01	16:12:50	-3.47		827.72	
8/21/01	16:13:05	-3.52		829.28	**861.7 C3H8**
8/21/01	16:13:20	**-1.33**		830.45	
8/21/01	16:13:35	**-1.42**		**833.19**	
8/21/01	16:13:50	**-1.5**		**833.25**	
8/21/01	16:14:05	**-1.57**		**833.26**	
8/21/01	16:14:20	**-1.64**	**-1.49**	**833.23**	**833.23**

8/21/01	16:14:35	-1.68		832.63	
8/21/01	16:14:50	-1.75		820.73	
8/21/01	16:15:05	-1.79		821.8	
8/21/01	16:15:20	-1.78		830.96	
8/21/01	16:15:35	4.64		840.82	
8/21/01	16:15:50	3.88		846.42	
8/21/01	16:16:05	16.8		604.95	
8/21/01	16:16:20	76.04	**84.7 C3H8**	34.64	**ZERO C3H8**
8/21/01	16:16:35	80.81		16.97	
8/21/01	16:16:50	81.33		6.98	
8/21/01	16:17:05	**81.56**		**5.14**	
8/21/01	16:17:20	**81.55**		**5.2**	
8/21/01	16:17:35	**81.57**		**5.19**	
8/21/01	16:17:50	**81.79**	**81.62**	**5.18**	**5.18**

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/21/01

DATA LOGGER RECORDS
RUN 3
1620-1920

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/21/01	16:20:32	60.36	1241.84
8/21/01	16:20:47	59.85	1241.52
8/21/01	16:21:02	59.42	1248.26
8/21/01	16:21:17	58.04	1249.15
8/21/01	16:21:32	57.09	1245.04
8/21/01	16:21:47	57.1	1244.53
8/21/01	16:22:02	58.7	1249.2
8/21/01	16:22:17	59.08	1251.72
8/21/01	16:22:32	59.15	1250.17
8/21/01	16:22:47	59.47	1254.56
8/21/01	16:23:02	59.41	1250.05
8/21/01	16:23:17	58.44	1242.47
8/21/01	16:23:32	58.26	1248.77
8/21/01	16:23:47	57.87	1245.32
8/21/01	16:24:02	58.19	1244.61
8/21/01	16:24:17	57.96	1245.37
8/21/01	16:24:32	57.84	1250.75
8/21/01	16:24:47	58.07	1256.98
8/21/01	16:25:02	56.92	1244.2
8/21/01	16:25:17	56.47	1241.78
8/21/01	16:25:32	56.45	1247.56
8/21/01	16:25:47	56.79	1242.12
8/21/01	16:26:02	58.45	1244.36
8/21/01	16:26:17	58.51	1251.86
8/21/01	16:26:32	58.95	1251.94
8/21/01	16:26:47	59.79	1254.16
8/21/01	16:27:02	59.64	1249.48
8/21/01	16:27:17	60.37	1252.89
8/21/01	16:27:32	59.38	1249.52
8/21/01	16:27:47	60.03	1242.01
8/21/01	16:28:02	60.14	1243.93
8/21/01	16:28:17	59.86	1239.04
8/21/01	16:28:32	59.41	1245
8/21/01	16:28:47	59.91	1241.94
8/21/01	16:29:02	59.47	1239.15
8/21/01	16:29:17	58.59	1239.74
8/21/01	16:29:32	59.14	1237.84
8/21/01	16:29:47	59.9	1241.94
8/21/01	16:30:02	58.99	1241.99
8/21/01	16:30:17	59.13	1241.96
8/21/01	16:30:32	60.7	1236.62

8/21/01	16:30:47	60.69	1240.81
8/21/01	16:31:02	59.52	1249.42
8/21/01	16:31:17	59.54	1252.68
8/21/01	16:31:32	60.27	1244.84
8/21/01	16:31:47	60.2	1246.45
8/21/01	16:32:02	59.79	1238.68
8/21/01	16:32:17	60.03	1241.05
8/21/01	16:32:32	60.25	1241.97
8/21/01	16:32:47	61.03	1242.11
8/21/01	16:33:02	61.61	1241.93
8/21/01	16:33:17	61.8	1237.53
8/21/01	16:33:32	61.4	1241.01
8/21/01	16:33:47	61.88	1241.05
8/21/01	16:34:02	62.35	1242.9
8/21/01	16:34:17	62.58	1242.02
8/21/01	16:34:32	62.25	1241.11
8/21/01	16:34:47	62.02	1237.18
8/21/01	16:35:02	61.43	1238.15
8/21/01	16:35:17	61.14	1240.34
8/21/01	16:35:32	60.35	1237.17
8/21/01	16:35:47	60.62	1238.44
8/21/01	16:36:02	60	1243.74
8/21/01	16:36:17	59.28	1242.05
8/21/01	16:36:32	58.48	1237.71
8/21/01	16:36:47	58.53	1232.38
8/21/01	16:37:02	58.78	1227.84
8/21/01	16:37:17	59.45	1236.01
8/21/01	16:37:32	59.25	1242.01
8/21/01	16:37:47	58.92	1242.03
8/21/01	16:38:02	58.64	1244.96
8/21/01	16:38:17	59.62	1249.39
8/21/01	16:38:32	61.48	1240.71
8/21/01	16:38:47	60.78	1238.12
8/21/01	16:39:02	60.6	1242.64
8/21/01	16:39:17	60.63	1254.49
8/21/01	16:39:32	59.86	1250.03
8/21/01	16:39:47	59.21	1243.97
8/21/01	16:40:02	58.67	1241.95
8/21/01	16:40:17	59.16	1246.12
8/21/01	16:40:32	60.35	1244.77
8/21/01	16:40:47	60.86	1240.35
8/21/01	16:41:02	59.96	1237.8
8/21/01	16:41:17	61.24	1236.16
8/21/01	16:41:32	63.12	1238.67
8/21/01	16:41:47	64.04	1249.9
8/21/01	16:42:02	64.95	1252.22
8/21/01	16:42:17	64.51	1255.26
8/21/01	16:42:32	62.8	1247.12
8/21/01	16:42:47	62.05	1250.35
8/21/01	16:43:02	61.54	1253.46

8/21/01	16:43:17	61.93	1248.78
8/21/01	16:43:32	61.69	1251.75
8/21/01	16:43:47	61.49	1256.38
8/21/01	16:44:02	61.47	1251.25
8/21/01	16:44:17	61.88	1246.11
8/21/01	16:44:32	60.86	1237.13
8/21/01	16:44:47	60.55	1240.22
8/21/01	16:45:02	60.54	1246.49
8/21/01	16:45:17	60.38	1246.89
8/21/01	16:45:32	61.31	1242.97
8/21/01	16:45:47	60.06	1243.58
8/21/01	16:46:02	60.44	1242.64
8/21/01	16:46:17	60.68	1241.98
8/21/01	16:46:32	60.27	1244.59
8/21/01	16:46:47	59.24	1245.63
8/21/01	16:47:02	58.27	1239.68
8/21/01	16:47:17	58.43	1244.9
8/21/01	16:47:32	58.08	1251.04
8/21/01	16:47:47	58.73	1254.19
8/21/01	16:48:02	59.32	1248.72
8/21/01	16:48:17	59.24	1245.3
8/21/01	16:48:32	58.76	1239.68
8/21/01	16:48:47	59.04	1237.25
8/21/01	16:49:02	59.85	1235.3
8/21/01	16:49:17	60.03	1240.45
8/21/01	16:49:32	60.2	1246.29
8/21/01	16:49:47	60.66	1241.39
8/21/01	16:50:02	60.57	1238.39
8/21/01	16:50:17	60.85	1241.88
8/21/01	16:50:32	61.03	1240.29
8/21/01	16:50:47	61.51	1238.36
8/21/01	16:51:02	60.78	1239.66
8/21/01	16:51:17	60.76	1231.5
8/21/01	16:51:32	60.85	1235.5
8/21/01	16:51:47	60.91	1234.98
8/21/01	16:52:02	60.38	1234.4
8/21/01	16:52:17	59.75	1234.89
8/21/01	16:52:32	59.75	1234.9
8/21/01	16:52:47	59.96	1228.33
8/21/01	16:53:02	60.16	1227.07
8/21/01	16:53:17	59.78	1224.85
8/21/01	16:53:32	59.27	1228.74
8/21/01	16:53:47	59.69	1235.9
8/21/01	16:54:02	59.08	1244.89
8/21/01	16:54:17	58.6	1245.79
8/21/01	16:54:32	59	1240.77
8/21/01	16:54:47	59.42	1226.7
8/21/01	16:55:02	60.22	1220.23
8/21/01	16:55:17	59.54	1229.36
8/21/01	16:55:32	59.25	1232.58

8/21/01	16:55:47	59.42	1232.59
8/21/01	16:56:02	59.69	1235.29
8/21/01	16:56:17	60.89	1234.63
8/21/01	16:56:32	61.42	1232.54
8/21/01	16:56:47	61.44	1235.38
8/21/01	16:57:02	62.06	1232.59
8/21/01	16:57:17	62.95	1235.58
8/21/01	16:57:32	62.62	1235.24
8/21/01	16:57:47	61.27	1232.84
8/21/01	16:58:02	61.06	1232.5
8/21/01	16:58:17	61.41	1237.12
8/21/01	16:58:32	60.45	1237.04
8/21/01	16:58:47	59.75	1237.1
8/21/01	16:59:02	60.79	1235.3
8/21/01	16:59:17	60.61	1240.02
8/21/01	16:59:32	60.75	1241.94
8/21/01	16:59:47	61.94	1244.22
8/21/01	17:00:02	62.01	1244.52
8/21/01	17:00:17	62.1	1246.78
8/21/01	17:00:32	60.96	1244.26
8/21/01	17:00:47	60.09	1241.97
8/21/01	17:01:02	59.71	1243.93
8/21/01	17:01:17	59.93	1245.16
8/21/01	17:01:32	60.63	1241.97
8/21/01	17:01:47	60.91	1241.93
8/21/01	17:02:02	62.1	1241.96
8/21/01	17:02:17	61.39	1245.01
8/21/01	17:02:32	61.15	1246.82
8/21/01	17:02:47	59.73	1246.26
8/21/01	17:03:02	59.6	1237.22
8/21/01	17:03:17	59.78	1235.68
8/21/01	17:03:32	59.63	1239.04
8/21/01	17:03:47	59.95	1237.14
8/21/01	17:04:02	60.88	1236.99
8/21/01	17:04:17	60.48	1242.01
8/21/01	17:04:32	61.27	1245.22
8/21/01	17:04:47	61.64	1240.71
8/21/01	17:05:02	61.63	1237.06
8/21/01	17:05:17	61.45	1238.79
8/21/01	17:05:32	61.29	1241.91
8/21/01	17:05:47	61.58	1242.01
8/21/01	17:06:02	61.56	1238.05
8/21/01	17:06:17	61.07	1235.25
8/21/01	17:06:32	61.19	1241.33
8/21/01	17:06:47	60.83	1246.82
8/21/01	17:07:02	60.97	1265.21
8/21/01	17:07:17	60.53	1255.89
8/21/01	17:07:32	59.08	1236.83
8/21/01	17:07:47	58.85	1227.69
8/21/01	17:08:02	58.64	1231.37

8/21/01	17:08:17	58.83	1232.45
8/21/01	17:08:32	58.35	1232.63
8/21/01	17:08:47	58.02	1232.61
8/21/01	17:09:02	58.92	1234.67
8/21/01	17:09:17	59.7	1234.03
8/21/01	17:09:32	60.53	1237.75
8/21/01	17:09:47	60.17	1241.91
8/21/01	17:10:02	60.18	1242
8/21/01	17:10:17	59.99	1241.3
8/21/01	17:10:32	60.22	1235.29
8/21/01	17:10:47	61.3	1237.07
8/21/01	17:11:02	62.24	1236.99
8/21/01	17:11:17	62.08	1237.06
8/21/01	17:11:32	61.63	1237.05
8/21/01	17:11:47	61.64	1238.71
8/21/01	17:12:02	62.28	1237.76
8/21/01	17:12:17	61.42	1244.23
8/21/01	17:12:32	60.6	1241.97
8/21/01	17:12:47	60.97	1245.87
8/21/01	17:13:02	61.2	1249.37
8/21/01	17:13:17	61.09	1246.81
8/21/01	17:13:32	61.31	1246.74
8/21/01	17:13:47	61.36	1251.66
8/21/01	17:14:02	61.72	1256.19
8/21/01	17:14:17	61.83	1256.26
8/21/01	17:14:32	61.34	1256.18
8/21/01	17:14:47	61.18	1253.25
8/21/01	17:15:02	61.32	1251.73
8/21/01	17:15:17	60.51	1251.67
8/21/01	17:15:32	59.61	1253.86
8/21/01	17:15:47	60.3	1261.03
8/21/01	17:16:02	60.23	1254.46
8/21/01	17:16:17	59.95	1247.16
8/21/01	17:16:32	59.71	1251.7
8/21/01	17:16:47	59.34	1244.93
8/21/01	17:17:02	59.53	1241.99
8/21/01	17:17:17	59.89	1125.07
8/21/01	17:17:32	56.78	794.71
8/21/01	17:17:47	51.08	519.54
8/21/01	17:18:02	45.38	327.74
8/21/01	17:18:17	40.27	218.84
8/21/01	17:18:32	35.67	159.36
8/21/01	17:18:47	31.94	122.23
8/21/01	17:19:02	28.95	101.86
8/21/01	17:19:17	26.73	90.58
8/21/01	17:19:32	25.04	100.69
8/21/01	17:19:47	24.46	284.19
8/21/01	17:20:02	25.48	593.45
8/21/01	17:20:17	28.78	844.26
8/21/01	17:20:32	33.36	1004.77

8/21/01	17:20:47	37.91	1095.15
8/21/01	17:21:02	41.21	1150.31
8/21/01	17:21:17	43.7	1178.7
8/21/01	17:21:32	46.99	1195.21
8/21/01	17:21:47	48.27	1202.95
8/21/01	17:22:02	50.14	1210.42
8/21/01	17:22:17	52.1	1218.43
8/21/01	17:22:32	53.48	1222.52
8/21/01	17:22:47	52.84	1226.4
8/21/01	17:23:02	54.73	1227.7
8/21/01	17:23:17	55.74	1225.6
8/21/01	17:23:32	56.27	1225.29
8/21/01	17:23:47	57.43	1226.41
8/21/01	17:24:02	57.45	1222.52
8/21/01	17:24:17	57.6	1222.46
8/21/01	17:24:32	57.55	1225.86
8/21/01	17:24:47	56.74	1222.59
8/21/01	17:25:02	56.06	1220.61
8/21/01	17:25:17	56.27	1224
8/21/01	17:25:32	57.43	1226.33
8/21/01	17:25:47	58.01	1219.26
8/21/01	17:26:02	58.34	1220.99
8/21/01	17:26:17	58.15	1217.67
8/21/01	17:26:32	57.3	1221.6
8/21/01	17:26:47	57.79	1227.95
8/21/01	17:27:02	59.59	1240.34
8/21/01	17:27:17	60.31	1245.87
8/21/01	17:27:32	60.3	1241.32
8/21/01	17:27:47	60.13	1239.7
8/21/01	17:28:02	60.31	1237.81
8/21/01	17:28:17	60.24	1229.67
8/21/01	17:28:32	60	1228.04
8/21/01	17:28:47	60.03	1234.3
8/21/01	17:29:02	59.89	1232.57
8/21/01	17:29:17	59.7	1234.67
8/21/01	17:29:32	60.44	1232.55
8/21/01	17:29:47	60.07	1232.61
8/21/01	17:30:02	60.07	1234.94
8/21/01	17:30:17	60.26	1237.49
8/21/01	17:30:32	59.84	1242.92
8/21/01	17:30:47	59.09	1238.52
8/21/01	17:31:02	58.61	1235.91
8/21/01	17:31:17	59.55	1235.61
8/21/01	17:31:32	59.47	1236.56
8/21/01	17:31:47	59.78	1232.64
8/21/01	17:32:02	60.14	1231.31
8/21/01	17:32:17	59.34	1230.66
8/21/01	17:32:32	59.23	1225.01
8/21/01	17:32:47	59.56	1224.95
8/21/01	17:33:02	59.36	1231.91

8/21/01	17:33:17	59.64	1234.12
8/21/01	17:33:32	60.07	1239.43
8/21/01	17:33:47	60.21	1237.13
8/21/01	17:34:02	59.46	1241.01
8/21/01	17:34:17	59.66	1241.92
8/21/01	17:34:32	60.55	1248.43
8/21/01	17:34:47	60.51	1256.31
8/21/01	17:35:02	59.73	1263.17
8/21/01	17:35:17	58.55	1256.63
8/21/01	17:35:32	59.89	1243.56
8/21/01	17:35:47	60.89	1232.62
8/21/01	17:36:02	60.76	1230.33
8/21/01	17:36:17	60.18	1224.22
8/21/01	17:36:32	61.02	1222.52
8/21/01	17:36:47	61.46	1227.21
8/21/01	17:37:02	61.16	1232.33
8/21/01	17:37:17	61.13	1235.32
8/21/01	17:37:32	60.8	1237.06
8/21/01	17:37:47	60.67	1241.6
8/21/01	17:38:02	59.9	1242.93
8/21/01	17:38:17	60.27	1252.3
8/21/01	17:38:32	60.22	1264.22
8/21/01	17:38:47	59.8	1260.23
8/21/01	17:39:02	59.38	1262.75
8/21/01	17:39:17	59.23	1264.6
8/21/01	17:39:32	58.57	1245.8
8/21/01	17:39:47	58.95	1233.44
8/21/01	17:40:02	59.44	1226.3
8/21/01	17:40:17	59.41	1222.51
8/21/01	17:40:32	58.4	1223.62
8/21/01	17:40:47	57.04	1227.72
8/21/01	17:41:02	56.61	1227.72
8/21/01	17:41:17	56.76	1231.93
8/21/01	17:41:32	57.32	1239.06
8/21/01	17:41:47	57.14	1238.14
8/21/01	17:42:02	58.28	1237.08
8/21/01	17:42:17	59.38	1240.95
8/21/01	17:42:32	60.17	1239.38
8/21/01	17:42:47	60.99	1244.52
8/21/01	17:43:02	62.02	1243.91
8/21/01	17:43:17	62.32	1237.1
8/21/01	17:43:32	62.57	1240.67
8/21/01	17:43:47	63.47	1242.94
8/21/01	17:44:02	63.46	1248.41
8/21/01	17:44:17	63.54	1251.54
8/21/01	17:44:32	63	1252.73
8/21/01	17:44:47	62.23	1253.74
8/21/01	17:45:02	61.86	1251.57
8/21/01	17:45:17	60.99	1248.8
8/21/01	17:45:32	60.55	1246.77

8/21/01	17:45:47	60.74	1246.47
8/21/01	17:46:02	60.17	1241.91
8/21/01	17:46:17	59.83	1241.25
8/21/01	17:46:32	59.45	1244.12
8/21/01	17:46:47	59.6	1242.36
8/21/01	17:47:02	60.32	1242.88
8/21/01	17:47:17	60.5	1254.72
8/21/01	17:47:32	60.61	1269.07
8/21/01	17:47:47	61.34	1275.94
8/21/01	17:48:02	61.88	1280.39
8/21/01	17:48:17	61.39	1274.7
8/21/01	17:48:32	60.38	1265.75
8/21/01	17:48:47	60.58	1252.51
8/21/01	17:49:02	60.45	1246.14
8/21/01	17:49:17	60.19	1247.38
8/21/01	17:49:32	60.23	1253.44
8/21/01	17:49:47	60.04	1252.49
8/21/01	17:50:02	60.01	1247.1
8/21/01	17:50:17	60.46	1250.91
8/21/01	17:50:32	61.16	1250.02
8/21/01	17:50:47	60.86	1246.79
8/21/01	17:51:02	60.52	1250.02
8/21/01	17:51:17	60.33	1251.6
8/21/01	17:51:32	60.31	1251.81
8/21/01	17:51:47	60.42	1255.6
8/21/01	17:52:02	60.55	1253.4
8/21/01	17:52:17	61.34	1246.74
8/21/01	17:52:32	61.84	1246.71
8/21/01	17:52:47	61.32	1249.91
8/21/01	17:53:02	61.48	1247.39
8/21/01	17:53:17	61.4	1248.99
8/21/01	17:53:32	61.44	1242.52
8/21/01	17:53:47	61.35	1239.96
8/21/01	17:54:02	61.61	1234.61
8/21/01	17:54:17	61.27	1232.84
8/21/01	17:54:32	60.94	1237.02
8/21/01	17:54:47	61.03	1239.29
8/21/01	17:55:02	60.4	1237.07
8/21/01	17:55:17	60.06	1240.23
8/21/01	17:55:32	60.56	1235.25
8/21/01	17:55:47	60.43	1235.84
8/21/01	17:56:02	60.95	1240.24
8/21/01	17:56:17	60.99	1238.02
8/21/01	17:56:32	61.18	1237.09
8/21/01	17:56:47	61.55	1239.28
8/21/01	17:57:02	60.7	1241.91
8/21/01	17:57:17	60.58	1240.04
8/21/01	17:57:32	60.31	1240.6
8/21/01	17:57:47	60.4	1237.04
8/21/01	17:58:02	61.34	1237.08

8/21/01	17:58:17	61.24	1235.2
8/21/01	17:58:32	60.42	1233.1
8/21/01	17:58:47	60.69	1235.16
8/21/01	17:59:02	60.64	1241.88
8/21/01	17:59:17	60.93	1241.73
8/21/01	17:59:32	60.78	1241.23
8/21/01	17:59:47	60.38	1236.96
8/21/01	18:00:02	59.78	1240.19
8/21/01	18:00:17	60.42	1241.72
8/21/01	18:00:32	62.12	1241.87
8/21/01	18:00:47	62.37	1238.61
8/21/01	18:01:02	62.34	1233.8
8/21/01	18:01:17	62.38	1233.05
8/21/01	18:01:32	61.97	1238.28
8/21/01	18:01:47	62.3	1243.77
8/21/01	18:02:02	63.38	1241.85
8/21/01	18:02:17	63.32	1241.87
8/21/01	18:02:32	63.2	1238.58
8/21/01	18:02:47	63.3	1237.23
8/21/01	18:03:02	63.01	1234.59
8/21/01	18:03:17	62.84	1221.32
8/21/01	18:03:32	62.92	1208.17
8/21/01	18:03:47	62.89	1217.08
8/21/01	18:04:02	62.83	1222.42
8/21/01	18:04:17	62.17	1222.43
8/21/01	18:04:32	61.69	1220.19
8/21/01	18:04:47	62.3	1227.32
8/21/01	18:05:02	61.35	1228.69
8/21/01	18:05:17	61.06	1232.56
8/21/01	18:05:32	61.19	1232.61
8/21/01	18:05:47	60.78	1233.8
8/21/01	18:06:02	60.44	1237.16
8/21/01	18:06:17	60.25	1237.11
8/21/01	18:06:32	60.48	1237.14
8/21/01	18:06:47	60.16	1235.27
8/21/01	18:07:02	60.33	1241.24
8/21/01	18:07:17	60.46	1238.54
8/21/01	18:07:32	60.58	1238
8/21/01	18:07:47	61.16	1241.8
8/21/01	18:08:02	61.95	1244.17
8/21/01	18:08:17	62.29	1246.78
8/21/01	18:08:32	62.35	1246.73
8/21/01	18:08:47	63.08	1242.58
8/21/01	18:09:02	64.88	1241.98
8/21/01	18:09:17	65.29	1244.48
8/21/01	18:09:32	65	1243.57
8/21/01	18:09:47	65.39	1243.6
8/21/01	18:10:02	64.56	1241.91
8/21/01	18:10:17	64.93	1241.94
8/21/01	18:10:32	64.57	1241.83

8/21/01	18:10:47	64.02	1238.09
8/21/01	18:11:02	64.18	1237.04
8/21/01	18:11:17	63.87	1233.97
8/21/01	18:11:32	63.58	1230.66
8/21/01	18:11:47	63.74	1232.58
8/21/01	18:12:02	64.21	1233.56
8/21/01	18:12:17	64.27	1229.71
8/21/01	18:12:32	64.37	1224.9
8/21/01	18:12:47	64.35	1215.5
8/21/01	18:13:02	63.46	1214.35
8/21/01	18:13:17	63.48	1225.58
8/21/01	18:13:32	63.61	1226.35
8/21/01	18:13:47	62.04	1222.48
8/21/01	18:14:02	60.43	1222.52
8/21/01	18:14:17	59.67	1222.43
8/21/01	18:14:32	60.12	1227.34
8/21/01	18:14:47	60.45	1238.05
8/21/01	18:15:02	60.94	1244.57
8/21/01	18:15:17	60.99	1246.74
8/21/01	18:15:32	61.61	1246.82
8/21/01	18:15:47	62.43	1242.24
8/21/01	18:16:02	63.01	1229.94
8/21/01	18:16:17	62.63	1222.56
8/21/01	18:16:32	62.76	1222.47
8/21/01	18:16:47	62.32	1224.59
8/21/01	18:17:02	62.15	1226.27
8/21/01	18:17:17	61.57	1231.57
8/21/01	18:17:32	61.84	1233.67
8/21/01	18:17:47	62.21	1234.64
8/21/01	18:18:02	61.76	1229.61
8/21/01	18:18:17	62.04	1235.26
8/21/01	18:18:32	61.68	1242.61
8/21/01	18:18:47	61.61	1242
8/21/01	18:19:02	61.56	1239.94
8/21/01	18:19:17	61.02	1237.12
8/21/01	18:19:32	61.75	1230.63
8/21/01	18:19:47	62	1224.65
8/21/01	18:20:02	62.12	1226.35
8/21/01	18:20:17	61.94	1227.72
8/21/01	18:20:32	61.2	1224.32
8/21/01	18:20:47	59.96	1230.01
8/21/01	18:21:02	59.49	1227.38
8/21/01	18:21:17	59.06	1230
8/21/01	18:21:32	60.03	1237.09
8/21/01	18:21:47	61	1239.25
8/21/01	18:22:02	62	1238.42
8/21/01	18:22:17	63.13	1242.04
8/21/01	18:22:32	62.39	1244.56
8/21/01	18:22:47	61.27	1245.54
8/21/01	18:23:02	60.82	1241.04

8/21/01	18:23:17	61.18	1233.28
8/21/01	18:23:32	62.11	1225.57
8/21/01	18:23:47	62.51	1227.71
8/21/01	18:24:02	61.82	1229.86
8/21/01	18:24:17	62.31	1233.23
8/21/01	18:24:32	62.92	1239.44
8/21/01	18:24:47	63.94	1238.13
8/21/01	18:25:02	63.58	1234.32
8/21/01	18:25:17	61.92	1235.88
8/21/01	18:25:32	61.64	1237.23
8/21/01	18:25:47	61.55	1237.19
8/21/01	18:26:02	61.49	1237.2
8/21/01	18:26:17	62.69	1237.99
8/21/01	18:26:32	63.83	1238.1
8/21/01	18:26:47	64.4	1235.95
8/21/01	18:27:02	64.32	1232.72
8/21/01	18:27:17	63.54	1237.2
8/21/01	18:27:32	63.87	1234.23
8/21/01	18:27:47	63.11	1225.69
8/21/01	18:28:02	63.56	1225.74
8/21/01	18:28:17	63.18	1229.17
8/21/01	18:28:32	62.49	1228.36
8/21/01	18:28:47	62.4	1224.79
8/21/01	18:29:02	61.8	1227.14
8/21/01	18:29:17	61.61	1225.04
8/21/01	18:29:32	61.22	1228.71
8/21/01	18:29:47	60.49	1234.12
8/21/01	18:30:02	61.53	1240.37
8/21/01	18:30:17	62.43	1235.45
8/21/01	18:30:32	62.55	1235.71
8/21/01	18:30:47	63.58	1236.02
8/21/01	18:31:02	63.33	1234.23
8/21/01	18:31:17	62.28	1232.69
8/21/01	18:31:32	61.32	1229.81
8/21/01	18:31:47	60.98	1232.61
8/21/01	18:32:02	61.5	1235.47
8/21/01	18:32:17	61.24	1243.63
8/21/01	18:32:32	61.99	1244.7
8/21/01	18:32:47	61.76	1244
8/21/01	18:33:02	61.25	1246.29
8/21/01	18:33:17	62.64	1242.02
8/21/01	18:33:32	62.71	1241.29
8/21/01	18:33:47	61.96	1235.39
8/21/01	18:34:02	61.67	1232.69
8/21/01	18:34:17	61	1232.68
8/21/01	18:34:32	61.4	1231.77
8/21/01	18:34:47	61.67	1227.84
8/21/01	18:35:02	61.28	1227.94
8/21/01	18:35:17	61.16	1224.33
8/21/01	18:35:32	60.82	1222.57

8/21/01	18:35:47	60.31	1227.03
8/21/01	18:36:02	59.48	1230.42
8/21/01	18:36:17	59.89	1227.78
8/21/01	18:36:32	60.66	1227.71
8/21/01	18:36:47	60.5	1227.91
8/21/01	18:37:02	59.94	1228.79
8/21/01	18:37:17	59.39	1236.33
8/21/01	18:37:32	60.06	1234.23
8/21/01	18:37:47	60.07	1237.24
8/21/01	18:38:02	60.43	1235.09
8/21/01	18:38:17	60.08	1232.59
8/21/01	18:38:32	59.18	1229.43
8/21/01	18:38:47	59.17	1230.7
8/21/01	18:39:02	59.64	1236.02
8/21/01	18:39:17	59.6	1239.78
8/21/01	18:39:32	59.26	1240.11
8/21/01	18:39:47	59.13	1232.6
8/21/01	18:40:02	59.3	1223.47
8/21/01	18:40:17	57.85	937.73
8/21/01	18:40:32	53.92	637.53
8/21/01	18:40:47	48.49	451.42
8/21/01	18:41:02	42.25	319.04
8/21/01	18:41:17	37.2	235.67
8/21/01	18:41:32	33.31	180.45
8/21/01	18:41:47	30.11	145.23
8/21/01	18:42:02	27.33	124.92
8/21/01	18:42:17	25.54	220.04
8/21/01	18:42:32	26.13	521.28
8/21/01	18:42:47	28.74	782.44
8/21/01	18:43:02	32.33	937.04
8/21/01	18:43:17	35.92	1036.3
8/21/01	18:43:32	39.33	1093.68
8/21/01	18:43:47	42.4	1134.35
8/21/01	18:44:02	45.31	1169.22
8/21/01	18:44:17	47.21	1185.36
8/21/01	18:44:32	49.74	1195.5
8/21/01	18:44:47	51.29	1206.74
8/21/01	18:45:02	52.66	1208.14
8/21/01	18:45:17	53.99	1213.6
8/21/01	18:45:32	54.65	1219.15
8/21/01	18:45:47	54.74	1223.85
8/21/01	18:46:02	55.13	1227.62
8/21/01	18:46:17	55.74	1227.6
8/21/01	18:46:32	54.94	1227.59
8/21/01	18:46:47	54.23	1221.46
8/21/01	18:47:02	54.81	1221.14
8/21/01	18:47:17	55.72	1223.73
8/21/01	18:47:32	56.82	1227.69
8/21/01	18:47:47	57.9	1224.82
8/21/01	18:48:02	58.29	1223.88

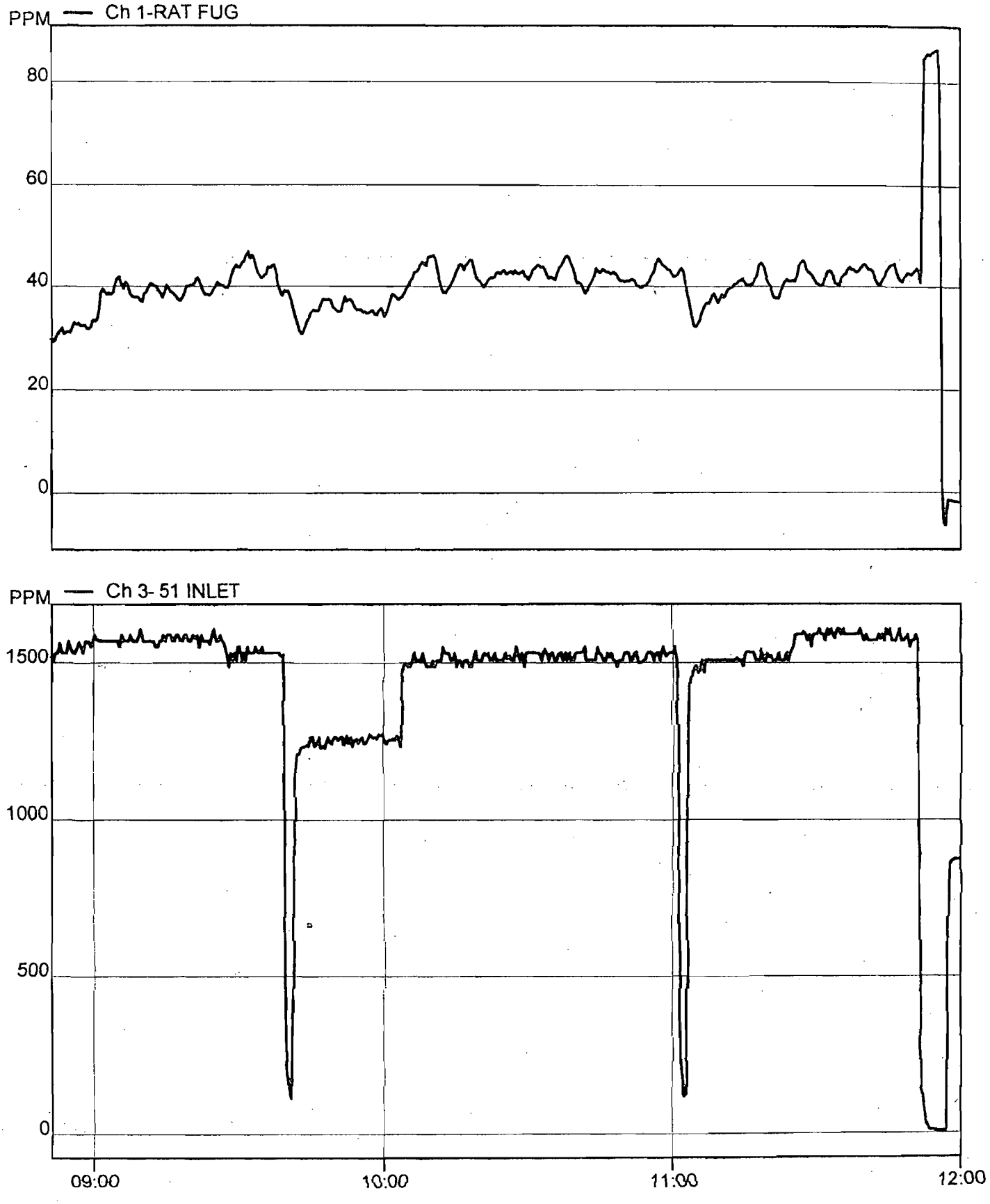
8/21/01	18:48:17	58.72	1222.34
8/21/01	18:48:32	58.88	1222.39
8/21/01	18:48:47	58.56	1222.1
8/21/01	18:49:02	59.01	1223.28
8/21/01	18:49:17	58.66	1231.53
8/21/01	18:49:32	58.26	1235.86
8/21/01	18:49:47	57.62	1237.1
8/21/01	18:50:02	56.6	1235.3
8/21/01	18:50:17	56.89	1238.21
8/21/01	18:50:32	57.5	1242.02
8/21/01	18:50:47	58.38	1239.01
8/21/01	18:51:02	58.98	1235.57
8/21/01	18:51:17	58.85	1232.7
8/21/01	18:51:32	59.14	1236.1
8/21/01	18:51:47	59.72	1239.35
8/21/01	18:52:02	59.93	1237.1
8/21/01	18:52:17	59.98	1234.4
8/21/01	18:52:32	59.47	1232.56
8/21/01	18:52:47	60.19	1239.13
8/21/01	18:53:02	59.8	1237.7
8/21/01	18:53:17	59.23	1236.51
8/21/01	18:53:32	59.94	1235.91
8/21/01	18:53:47	59.17	1241.02
8/21/01	18:54:02	57.89	1236.16
8/21/01	18:54:17	57.65	1229.89
8/21/01	18:54:32	56.44	1227.67
8/21/01	18:54:47	56.36	1230.89
8/21/01	18:55:02	55.59	1230.94
8/21/01	18:55:17	56.09	1223.82
8/21/01	18:55:32	57.02	1226.97
8/21/01	18:55:47	57.75	1225.19
8/21/01	18:56:02	58.46	1237.59
8/21/01	18:56:17	58.62	1241.97
8/21/01	18:56:32	58.53	1243.04
8/21/01	18:56:47	58.51	1238.99
8/21/01	18:57:02	58.58	1241.9
8/21/01	18:57:17	58.38	1239.01
8/21/01	18:57:32	57.96	1230.23
8/21/01	18:57:47	57.3	1227.75
8/21/01	18:58:02	56.48	1231.92
8/21/01	18:58:17	55.69	1235.22
8/21/01	18:58:32	55.57	1237.05
8/21/01	18:58:47	56.47	1237.1
8/21/01	18:59:02	56.9	1239.97
8/21/01	18:59:17	56.98	1238.7
8/21/01	18:59:32	58.38	1239.36
8/21/01	18:59:47	58.82	1233.49
8/21/01	19:00:02	59.16	1231.85
8/21/01	19:00:17	58.47	1225.3
8/21/01	19:00:32	58.71	1227.72

8/21/01	19:00:47	59.72	1232.14
8/21/01	19:01:02	59.96	1237.08
8/21/01	19:01:17	58.07	1237.16
8/21/01	19:01:32	57.26	1237.06
8/21/01	19:01:47	57.06	1231.23
8/21/01	19:02:02	56.84	1227.75
8/21/01	19:02:17	55.96	1223.14
8/21/01	19:02:32	56.05	1221.81
8/21/01	19:02:47	57.32	1221.12
8/21/01	19:03:02	57.97	1226.85
8/21/01	19:03:17	58.57	1234.34
8/21/01	19:03:32	58.66	1240.05
8/21/01	19:03:47	58.21	1245.45
8/21/01	19:04:02	58.01	1243.86
8/21/01	19:04:17	58.68	1239.7
8/21/01	19:04:32	58.37	1234.38
8/21/01	19:04:47	59.7	1235.26
8/21/01	19:05:02	60.48	1240.95
8/21/01	19:05:17	61.13	1246.41
8/21/01	19:05:32	62.1	1242.54
8/21/01	19:05:47	61.79	1235.26
8/21/01	19:06:02	61.02	1232.49
8/21/01	19:06:17	60.04	1234.63
8/21/01	19:06:32	59.4	1238.98
8/21/01	19:06:47	59.85	1240.65
8/21/01	19:07:02	59.58	1238.63
8/21/01	19:07:17	58.28	1240.05
8/21/01	19:07:32	57.91	1238.02
8/21/01	19:07:47	58.1	1235.65
8/21/01	19:08:02	59.42	1236.45
8/21/01	19:08:17	59.21	1228.1
8/21/01	19:08:32	58.45	1229.95
8/21/01	19:08:47	58.93	1229.66
8/21/01	19:09:02	59.36	1230.29
8/21/01	19:09:17	59.42	1233.79
8/21/01	19:09:32	60.1	1238.07
8/21/01	19:09:47	60.46	1238.44
8/21/01	19:10:02	59.76	1239.45
8/21/01	19:10:17	58.72	1241.34
8/21/01	19:10:32	58.58	1239.42
8/21/01	19:10:47	59.07	1240.67
8/21/01	19:11:02	58.93	1243.67
8/21/01	19:11:17	59.07	1246.81
8/21/01	19:11:32	59.05	1239.42
8/21/01	19:11:47	58.98	1236.26
8/21/01	19:12:02	58.88	1236.67
8/21/01	19:12:17	58.53	1242.3
8/21/01	19:12:32	57.64	1246.92
8/21/01	19:12:47	57.92	1246.85
8/21/01	19:13:02	58.12	1244.65

8/21/01	19:13:17	58.73	1241.99	
8/21/01	19:13:32	59.55	1242.11	
8/21/01	19:13:47	60.1	1237.24	
8/21/01	19:14:02	59.98	1232.62	
8/21/01	19:14:17	60.87	1232.75	
8/21/01	19:14:32	60.92	1231.05	
8/21/01	19:14:47	61.36	1233.18	
8/21/01	19:15:02	62.87	1235.47	
8/21/01	19:15:17	62.57	1231.09	
8/21/01	19:15:32	61.41	1231.62	
8/21/01	19:15:47	61.12	1238.23	
8/21/01	19:16:02	62.15	1242.05	
8/21/01	19:16:17	62.85	1239.85	
8/21/01	19:16:32	62.46	1233.31	
8/21/01	19:16:47	63	1237.98	
8/21/01	19:17:02	63.03	1246.64	
8/21/01	19:17:17	63.97	1247.41	
8/21/01	19:17:32	63.93	1246.3	
8/21/01	19:17:47	63.56	1237.49	
8/21/01	19:18:02	62.72	1233.57	
8/21/01	19:18:17	61.78	1227.89	
8/21/01	19:18:32	62.45	1234.13	
8/21/01	19:18:47	63.05	1232.63	
8/21/01	19:19:02	63.18	1232.69	
8/21/01	19:19:17	63.38	1232.98	
8/21/01	19:19:32	63.34	1233.25	
8/21/01	19:19:47	63.91	1227.76	
8/21/01	19:20:02	64.14	1234.75	
8/21/01	19:20:17	63.74	1235.3	
8/21/01	19:20:32	62.11	1222.64	
AVERAGES:		59.17	1208.32	
8/21/01	19:20:47	60.13		1221.92
8/21/01	19:21:02	55.81		402.84
8/21/01	19:21:17	42.96		150.83
8/21/01	19:21:32	15.84		105.71
8/21/01	19:21:47	6.37		80.11
8/21/01	19:22:02	3.71		53.9
8/21/01	19:22:17	19.99		43.77
8/21/01	19:22:32	80.32	**84.7 C3H8**	36.14
8/21/01	19:22:47	81.2		38.5
8/21/01	19:23:02	82.34		31.96
8/21/01	19:23:17	82.08		21.01
8/21/01	19:23:32	**81.91**		14.55
8/21/01	19:23:47	**81.85**		11.66
8/21/01	19:24:02	**81.76**		9.73
8/21/01	19:24:17	**81.78**		9.74
8/21/01	19:24:32	**81.6**	**81.78**	9.76

WH-3

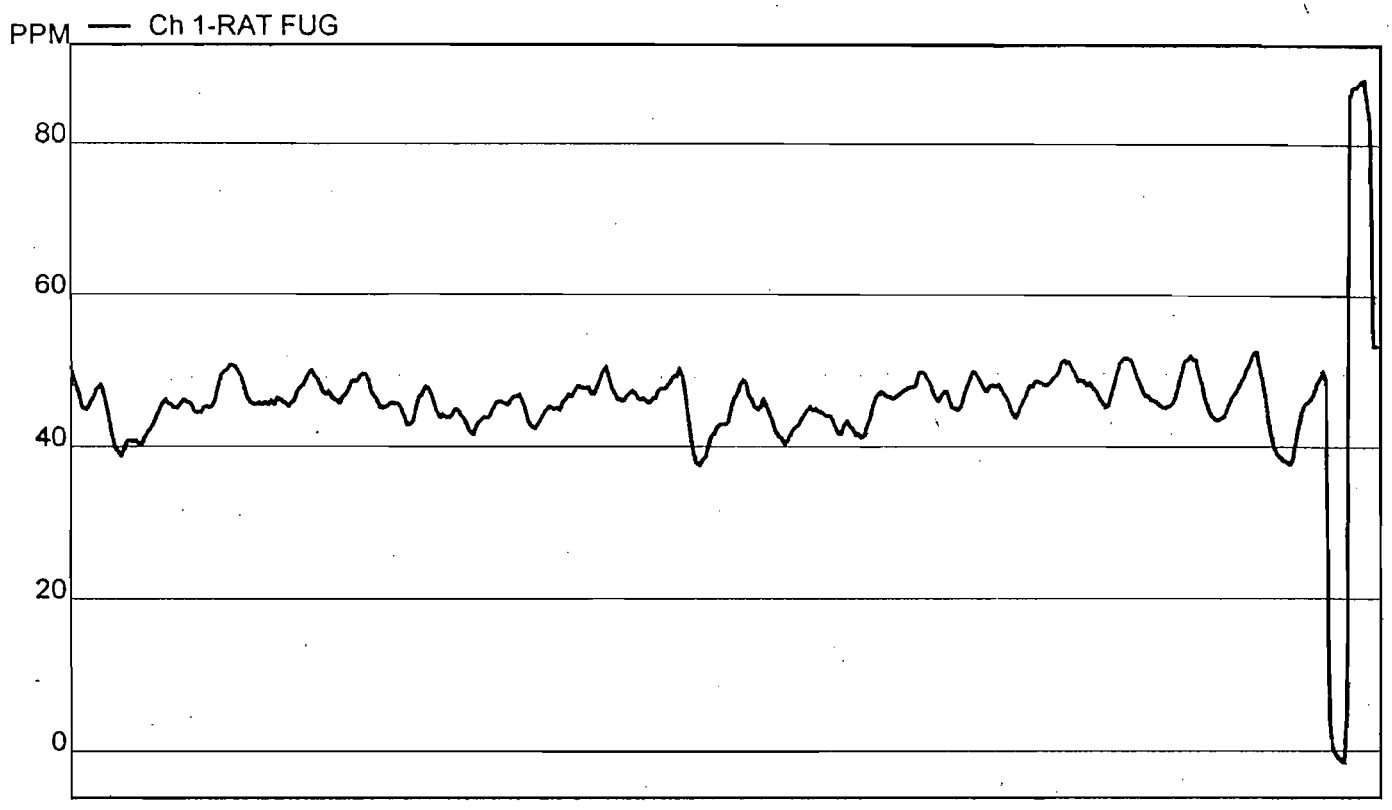
WH-3 RUN 1

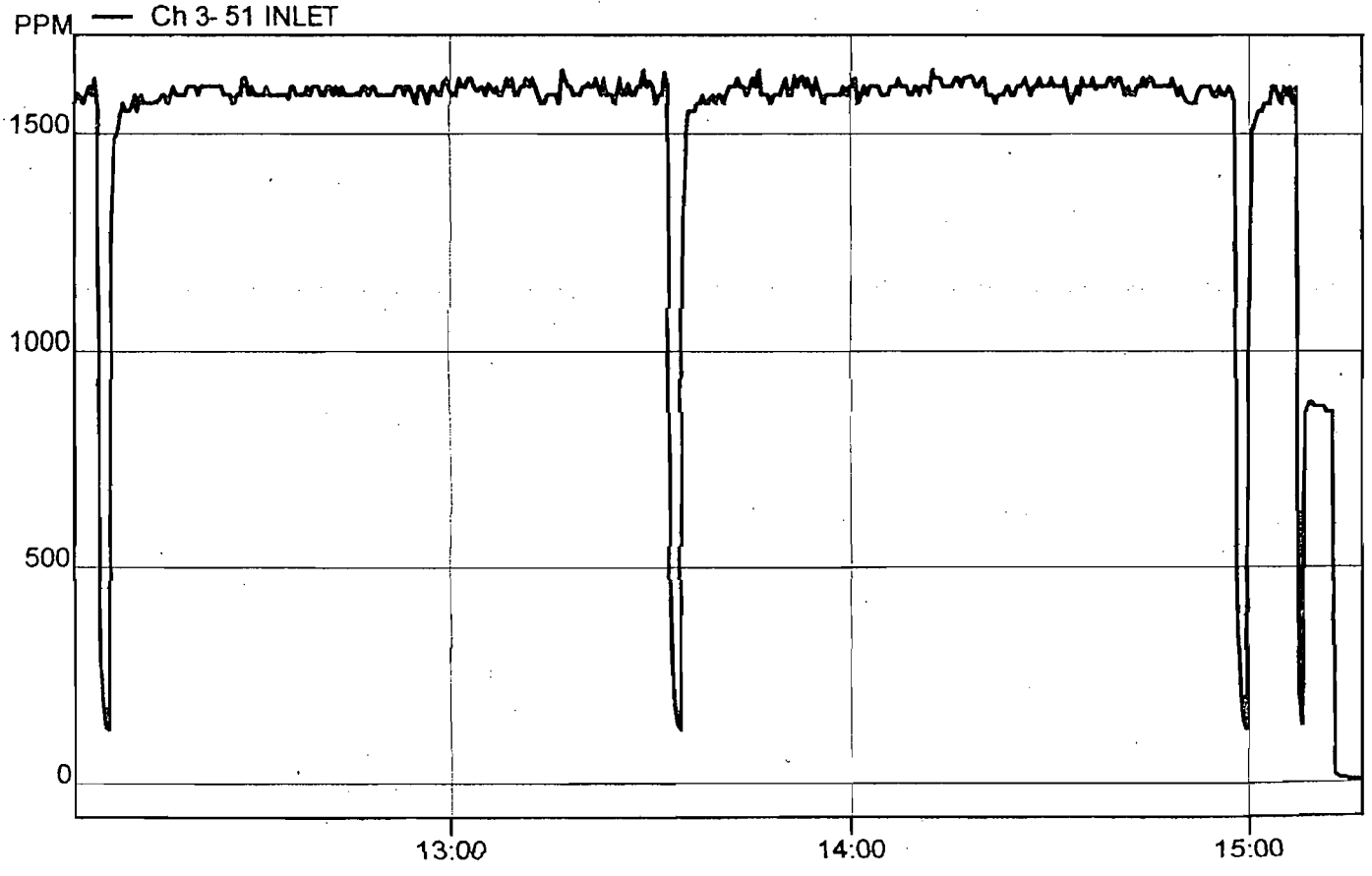


C:\PICO\WH31.PLW 8/22/01 08:51:24

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

WH-3 RUN 2





C:\PICO\WH32.PLW 8/22/01 12:04:24

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

VOC CAPTURE EFFFICIENCY TESTS
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/22/01

WH-3 INCINERATOR INLET

RUN NUMBER:	1	2	3
START TIME:	8:51	12:04	15:18
END TIME:	11:51	15:04	18:18
DATA LOGGER C3H8 PPM:	1472.96	1555.62	1509.70
C3H8 INITIAL BIAS:	890.08	876.55	876.49
C3H8 FINAL BIAS:	876.55	876.49	890.04
C3H8 AVERAGE BIAS:	883.315	876.52	883.265
C3H8 INITIAL ZERO:	5.07	5.09	5.09
C3H8 FINAL ZERO:	5.09	5.09	5.34
C3H8 AVERAGE ZERO:	5.08	5.09	5.215
C3H8 CAL. GAS VALUE:	861.8	861.8	861.8
C3H8 CORRECTED AVERAGE:	1440.41	1533.40	1476.64
PERCENT H2O:	6.31	5.93	5.52
C3H8 DRY BASIS:	1537.42	1630.00	1562.86
VOLUMETRIC FLOW SCFMD:	7168	7029	7187
C3H8 LB/HR:	75.502	78.495	76.949

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/22/01

DATA LOGGER RECORDS
RUN 1
0851-1151

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/22/01	8:51:24	29.89	1510.21
8/22/01	8:51:39	29.84	1513.51
8/22/01	8:51:54	29.72	1505.45
8/22/01	8:52:09	29.37	1505.39
8/22/01	8:52:24	29.49	1507.03
8/22/01	8:52:39	29.91	1533.81
8/22/01	8:52:54	30.79	1542.97
8/22/01	8:53:09	31.28	1548.16
8/22/01	8:53:24	31.61	1554.46
8/22/01	8:53:39	32.08	1539.06
8/22/01	8:53:54	31.66	1530.01
8/22/01	8:54:09	30.98	1529.87
8/22/01	8:54:24	30.62	1530.06
8/22/01	8:54:39	31.11	1529.91
8/22/01	8:54:54	31.36	1535.61
8/22/01	8:55:09	31.17	1568.15
8/22/01	8:55:24	31.16	1549.5
8/22/01	8:55:39	31.28	1549.4
8/22/01	8:55:54	32.22	1532.58
8/22/01	8:56:09	32.87	1540.38
8/22/01	8:56:24	33	1531.31
8/22/01	8:56:39	32.79	1543.01
8/22/01	8:56:54	32.81	1560.68
8/22/01	8:57:09	32.9	1562.92
8/22/01	8:57:24	32.49	1559.54
8/22/01	8:57:39	32.41	1545.17
8/22/01	8:57:54	32.46	1529.99
8/22/01	8:58:09	32.41	1546.97
8/22/01	8:58:24	32.46	1560.69
8/22/01	8:58:39	32.26	1555.05
8/22/01	8:58:54	31.82	1560.6
8/22/01	8:59:09	31.76	1568.25
8/22/01	8:59:24	31.96	1568.17
8/22/01	8:59:39	32.23	1557.07
8/22/01	8:59:54	32.6	1568.14
8/22/01	9:00:09	33.38	1568.18
8/22/01	9:00:24	33.4	1578.47
8/22/01	9:00:39	33.42	1582.89
8/22/01	9:00:54	33.62	1571.65
8/22/01	9:01:09	34.34	1570.63
8/22/01	9:01:24	35.41	1568.26

8/22/01	9:01:39	37.38	1568.26
8/22/01	9:01:54	38.86	1565.02
8/22/01	9:02:09	39.45	1568.17
8/22/01	9:02:24	39.64	1568.25
8/22/01	9:02:39	39.01	1568.17
8/22/01	9:02:54	38.27	1559.49
8/22/01	9:03:09	38.35	1568.2
8/22/01	9:03:24	38.64	1568.22
8/22/01	9:03:39	38.81	1568.27
8/22/01	9:03:54	38.46	1568.24
8/22/01	9:04:09	38.53	1568.2
8/22/01	9:04:24	39.05	1568.33
8/22/01	9:04:39	40.04	1568.24
8/22/01	9:04:54	41.07	1579.89
8/22/01	9:05:09	41.67	1573.37
8/22/01	9:05:24	41.82	1551.93
8/22/01	9:05:39	41.87	1560.75
8/22/01	9:05:54	41.09	1579.96
8/22/01	9:06:09	40.1	1586.55
8/22/01	9:06:24	39.52	1568.4
8/22/01	9:06:39	40.21	1560.81
8/22/01	9:06:54	40.9	1568.19
8/22/01	9:07:09	41.04	1568.25
8/22/01	9:07:24	39.83	1567.67
8/22/01	9:07:39	38.79	1581.88
8/22/01	9:07:54	38.39	1560.76
8/22/01	9:08:09	37.91	1564.32
8/22/01	9:08:24	37.79	1568.14
8/22/01	9:08:39	37.94	1564.29
8/22/01	9:08:54	37.82	1568.12
8/22/01	9:09:09	37.81	1584.37
8/22/01	9:09:24	37.9	1578.56
8/22/01	9:09:39	37.7	1590.35
8/22/01	9:09:54	37.14	1591.63
8/22/01	9:10:09	37.01	1569.43
8/22/01	9:10:24	37.56	1568.17
8/22/01	9:10:39	38.53	1560.6
8/22/01	9:10:54	39.04	1558.78
8/22/01	9:11:09	39.06	1568.04
8/22/01	9:11:24	39.63	1568.73
8/22/01	9:11:39	39.89	1568.16
8/22/01	9:11:54	40.56	1568.21
8/22/01	9:12:09	40.51	1568.23
8/22/01	9:12:24	40.13	1568.26
8/22/01	9:12:39	39.9	1565.98
8/22/01	9:12:54	39.99	1544.66
8/22/01	9:13:09	39.89	1545.62
8/22/01	9:13:24	39.59	1563.96
8/22/01	9:13:39	39.12	1568.26
8/22/01	9:13:54	38.89	1568.36

8/22/01	9:14:09	38.31	1585.2
8/22/01	9:14:24	37.84	1577.58
8/22/01	9:14:39	38.26	1568.81
8/22/01	9:14:54	39.15	1575.99
8/22/01	9:15:09	40.09	1587.72
8/22/01	9:15:24	39.91	1577.36
8/22/01	9:15:39	39.63	1587.82
8/22/01	9:15:54	39.57	1587.75
8/22/01	9:16:09	38.87	1586.51
8/22/01	9:16:24	38.79	1568.27
8/22/01	9:16:39	38.77	1568.36
8/22/01	9:16:54	38.43	1568.27
8/22/01	9:17:09	38.09	1572.2
8/22/01	9:17:24	37.87	1587.74
8/22/01	9:17:39	37.5	1587.84
8/22/01	9:17:54	37.17	1587.87
8/22/01	9:18:09	37.25	1572.26
8/22/01	9:18:24	37.56	1568.29
8/22/01	9:18:39	38.2	1568.38
8/22/01	9:18:54	38.71	1580.02
8/22/01	9:19:09	38.98	1587.9
8/22/01	9:19:24	39.77	1587.87
8/22/01	9:19:39	40.08	1587.82
8/22/01	9:19:54	39.96	1575.32
8/22/01	9:20:09	40.11	1572.51
8/22/01	9:20:24	40.48	1568.4
8/22/01	9:20:39	40.5	1580.09
8/22/01	9:20:54	40.44	1569.7
8/22/01	9:21:09	40.7	1575.36
8/22/01	9:21:24	41.34	1587.83
8/22/01	9:21:39	41.79	1576.96
8/22/01	9:21:54	41.49	1562.71
8/22/01	9:22:09	40.82	1573.24
8/22/01	9:22:24	40.11	1594.53
8/22/01	9:22:39	39.66	1606.31
8/22/01	9:22:54	39.06	1571.09
8/22/01	9:23:09	38.58	1580.06
8/22/01	9:23:24	38.65	1574.86
8/22/01	9:23:39	38.59	1577.54
8/22/01	9:23:54	38.45	1549.76
8/22/01	9:24:09	38.3	1571.7
8/22/01	9:24:24	38.61	1582.65
8/22/01	9:24:39	38.69	1587.96
8/22/01	9:24:54	39.13	1605.74
8/22/01	9:25:09	39.76	1578.01
8/22/01	9:25:24	40.05	1561.42
8/22/01	9:25:39	40.54	1564.77
8/22/01	9:25:54	40.55	1570.99
8/22/01	9:26:09	40.38	1587.93
8/22/01	9:26:24	40.47	1582.8

8/22/01	9:26:39	40.2	1571.13
8/22/01	9:26:54	40.29	1578.62
8/22/01	9:27:09	39.99	1565.88
8/22/01	9:27:24	39.66	1548.73
8/22/01	9:27:39	39.57	1494.78
8/22/01	9:27:54	39.77	1495.31
8/22/01	9:28:09	40.12	1515.5
8/22/01	9:28:24	41.21	1530.29
8/22/01	9:28:39	42.14	1513.91
8/22/01	9:28:54	43.1	1526.97
8/22/01	9:29:09	43.53	1526.75
8/22/01	9:29:24	43.99	1542.58
8/22/01	9:29:39	43.93	1509.32
8/22/01	9:29:54	43.7	1537.16
8/22/01	9:30:09	43.47	1549.78
8/22/01	9:30:24	43.5	1544.66
8/22/01	9:30:39	43.53	1521.27
8/22/01	9:30:54	44.57	1520.11
8/22/01	9:31:09	44.94	1515.61
8/22/01	9:31:24	45.21	1530.31
8/22/01	9:31:39	45.96	1522.18
8/22/01	9:31:54	46.7	1517.24
8/22/01	9:32:09	46.73	1547.25
8/22/01	9:32:24	45.9	1530.21
8/22/01	9:32:39	45.29	1542.51
8/22/01	9:32:54	45.96	1530.21
8/22/01	9:33:09	45.64	1510.71
8/22/01	9:33:24	45.18	1528.55
8/22/01	9:33:39	44.26	1532.06
8/22/01	9:33:54	43.47	1549.71
8/22/01	9:34:09	42.61	1535.83
8/22/01	9:34:24	42.04	1530.21
8/22/01	9:34:39	41.94	1534.95
8/22/01	9:34:54	41.57	1531.05
8/22/01	9:35:09	41.69	1539.34
8/22/01	9:35:24	42.02	1530.25
8/22/01	9:35:39	42.3	1546.84
8/22/01	9:35:54	42.43	1536.63
8/22/01	9:36:09	42.87	1547.06
8/22/01	9:36:24	43.73	1537.55
8/22/01	9:36:39	43.66	1536.97
8/22/01	9:36:54	43.86	1530.15
8/22/01	9:37:09	44.12	1537.89
8/22/01	9:37:24	44.44	1549.68
8/22/01	9:37:39	43.9	1532.77
8/22/01	9:37:54	42.97	1530.13
8/22/01	9:38:09	41.88	1530.08
8/22/01	9:38:24	40.46	1530.16
8/22/01	9:38:39	39.34	1534.76
8/22/01	9:38:54	38.78	1524.98

8/22/01	9:39:09	38.2	1527.58
8/22/01	9:39:24	38.25	1334.43
8/22/01	9:39:39	38.85	443.68
8/22/01	9:39:54	39.14	236.14
8/22/01	9:40:09	38.95	186.51
8/22/01	9:40:24	38.93	158.58
8/22/01	9:40:39	38.72	142.15
8/22/01	9:40:54	37.91	115.05
8/22/01	9:41:09	37.01	119.65
8/22/01	9:41:24	36.04	480.37
8/22/01	9:41:39	35.07	1059.13
8/22/01	9:41:54	34.08	1170.26
8/22/01	9:42:09	33.32	1201.97
8/22/01	9:42:24	32.38	1200.79
8/22/01	9:42:39	31.51	1205.75
8/22/01	9:42:54	30.96	1214.49
8/22/01	9:43:09	30.62	1237.74
8/22/01	9:43:24	30.8	1245.38
8/22/01	9:43:39	31.57	1221.24
8/22/01	9:43:54	32.38	1228.9
8/22/01	9:44:09	32.81	1229.67
8/22/01	9:44:24	33.39	1229.05
8/22/01	9:44:39	33.78	1225.33
8/22/01	9:44:54	34.57	1246.41
8/22/01	9:45:09	34.97	1261.36
8/22/01	9:45:24	35.49	1259.35
8/22/01	9:45:39	35.39	1256.97
8/22/01	9:45:54	35.16	1234.79
8/22/01	9:46:09	35.28	1233.44
8/22/01	9:46:24	35.16	1242.86
8/22/01	9:46:39	35.26	1252.43
8/22/01	9:46:54	35.69	1256.72
8/22/01	9:47:09	36.16	1243.9
8/22/01	9:47:24	36.98	1237.9
8/22/01	9:47:39	37.53	1236.86
8/22/01	9:47:54	37.5	1227.43
8/22/01	9:48:09	37.4	1232.16
8/22/01	9:48:24	37.17	1254.95
8/22/01	9:48:39	37.43	1260.5
8/22/01	9:48:54	37.45	1250.26
8/22/01	9:49:09	37.27	1250.97
8/22/01	9:49:24	37.14	1240.99
8/22/01	9:49:39	36.46	1250.33
8/22/01	9:49:54	35.88	1256.12
8/22/01	9:50:09	35.73	1263.03
8/22/01	9:50:24	35.35	1237.9
8/22/01	9:50:39	35.25	1248.78
8/22/01	9:50:54	35.12	1266.59
8/22/01	9:51:09	34.87	1256.73
8/22/01	9:51:24	34.96	1255.58

8/22/01	9:51:39	36	1261.21
8/22/01	9:51:54	36.66	1242.16
8/22/01	9:52:09	37.33	1244.79
8/22/01	9:52:24	37.98	1268.46
8/22/01	9:52:39	37.48	1250.65
8/22/01	9:52:54	36.99	1259.99
8/22/01	9:53:09	37.38	1263.81
8/22/01	9:53:24	37.55	1246.33
8/22/01	9:53:39	37.22	1234.06
8/22/01	9:53:54	36.84	1242.6
8/22/01	9:54:09	36.24	1246.72
8/22/01	9:54:24	35.75	1253.2
8/22/01	9:54:39	35.35	1253.61
8/22/01	9:54:54	35.35	1245.36
8/22/01	9:55:09	35.18	1246.51
8/22/01	9:55:24	35.53	1262.91
8/22/01	9:55:39	35.55	1261.95
8/22/01	9:55:54	35.09	1254.35
8/22/01	9:56:09	34.91	1243.85
8/22/01	9:56:24	35.05	1242.93
8/22/01	9:56:39	34.96	1249.73
8/22/01	9:56:54	34.72	1259.02
8/22/01	9:57:09	34.87	1266.16
8/22/01	9:57:24	34.88	1272.09
8/22/01	9:57:39	35.14	1263.14
8/22/01	9:57:54	35.29	1247.06
8/22/01	9:58:09	35.45	1250.21
8/22/01	9:58:24	35.14	1263.51
8/22/01	9:58:39	34.59	1261.33
8/22/01	9:58:54	34.25	1255.65
8/22/01	9:59:09	34.66	1257.23
8/22/01	9:59:24	35.12	1276.93
8/22/01	9:59:39	35.63	1268.16
8/22/01	9:59:54	35.74	1268.16
8/22/01	10:00:09	35.24	1267.82
8/22/01	10:00:24	34.81	1265.1
8/22/01	10:00:39	34.27	1251.7
8/22/01	10:00:54	34.18	1239.43
8/22/01	10:01:09	34.74	1245.73
8/22/01	10:01:24	35.32	1265.19
8/22/01	10:01:39	36.22	1251.83
8/22/01	10:01:54	36.99	1255.57
8/22/01	10:02:09	37.81	1246.34
8/22/01	10:02:24	38.39	1256.61
8/22/01	10:02:39	38.29	1263.48
8/22/01	10:02:54	38.18	1252.83
8/22/01	10:03:09	37.92	1261.55
8/22/01	10:03:24	37.78	1256.48
8/22/01	10:03:39	37.42	1253.34
8/22/01	10:03:54	37.57	1235.22

8/22/01	10:04:09	37.73	1281.68
8/22/01	10:04:24	37.83	1438.32
8/22/01	10:04:39	38.06	1467.78
8/22/01	10:04:54	38.57	1491.49
8/22/01	10:05:09	39.04	1505.91
8/22/01	10:05:24	39.42	1502.44
8/22/01	10:05:39	39.88	1505.99
8/22/01	10:05:54	40.26	1486.49
8/22/01	10:06:09	40.72	1486.46
8/22/01	10:06:24	41.38	1493.55
8/22/01	10:06:39	41.59	1506.01
8/22/01	10:06:54	42.18	1509.15
8/22/01	10:07:09	42.63	1530.81
8/22/01	10:07:24	42.66	1509.01
8/22/01	10:07:39	42.67	1506.05
8/22/01	10:07:54	43.05	1506.15
8/22/01	10:08:09	43.63	1494.29
8/22/01	10:08:24	44.4	1493.41
8/22/01	10:08:39	44.78	1514.01
8/22/01	10:08:54	44.74	1524.15
8/22/01	10:09:09	44.45	1506.09
8/22/01	10:09:24	44.04	1486.63
8/22/01	10:09:39	44.22	1486.62
8/22/01	10:09:54	45.26	1486.58
8/22/01	10:10:09	45.64	1494.81
8/22/01	10:10:24	45.75	1486.69
8/22/01	10:10:39	45.93	1486.72
8/22/01	10:10:54	45.84	1502.21
8/22/01	10:11:09	46.15	1486.74
8/22/01	10:11:24	45.77	1490.59
8/22/01	10:11:39	45.15	1498.43
8/22/01	10:11:54	44.54	1506.12
8/22/01	10:12:09	43.05	1506.26
8/22/01	10:12:24	41.91	1506.13
8/22/01	10:12:39	40.87	1514.39
8/22/01	10:12:54	39.91	1544.94
8/22/01	10:13:09	39.15	1534.55
8/22/01	10:13:24	38.74	1515.92
8/22/01	10:13:39	38.63	1511.1
8/22/01	10:13:54	38.94	1529.78
8/22/01	10:14:09	39.22	1525.41
8/22/01	10:14:24	40.05	1527.98
8/22/01	10:14:39	39.91	1517.79
8/22/01	10:14:54	40.29	1530.03
8/22/01	10:15:09	40.71	1506.1
8/22/01	10:15:24	41.09	1524.94
8/22/01	10:15:39	41.81	1509.56
8/22/01	10:15:54	42.59	1490.26
8/22/01	10:16:09	43.12	1506.06
8/22/01	10:16:24	43.49	1518.13

8/22/01	10:16:39	44.03	1511.03
8/22/01	10:16:54	44.21	1499.7
8/22/01	10:17:09	44.07	1491.94
8/22/01	10:17:24	43.43	1515.86
8/22/01	10:17:39	43.21	1513.59
8/22/01	10:17:54	43.76	1512.77
8/22/01	10:18:09	44.31	1506.15
8/22/01	10:18:24	44.55	1506.15
8/22/01	10:18:39	44.79	1499.66
8/22/01	10:18:54	45.26	1489.63
8/22/01	10:19:09	45.19	1498.31
8/22/01	10:19:24	44.61	1497.05
8/22/01	10:19:39	43.51	1506.13
8/22/01	10:19:54	42.32	1521.24
8/22/01	10:20:09	41.64	1543.51
8/22/01	10:20:24	41.41	1513.99
8/22/01	10:20:39	41.32	1506.24
8/22/01	10:20:54	41.02	1506.12
8/22/01	10:21:09	40.77	1506.2
8/22/01	10:21:24	40.35	1506.06
8/22/01	10:21:39	39.95	1520.98
8/22/01	10:21:54	39.88	1525.25
8/22/01	10:22:09	40.36	1513.87
8/22/01	10:22:24	40.84	1529.45
8/22/01	10:22:39	41.24	1530.75
8/22/01	10:22:54	41.56	1519.3
8/22/01	10:23:09	41.86	1506.24
8/22/01	10:23:24	41.7	1506.21
8/22/01	10:23:39	41.54	1506.28
8/22/01	10:23:54	41.78	1522.65
8/22/01	10:24:09	42.35	1506.26
8/22/01	10:24:24	42.6	1506.33
8/22/01	10:24:39	42.57	1506.32
8/22/01	10:24:54	42.47	1506.36
8/22/01	10:25:09	42.5	1511.57
8/22/01	10:25:24	42.79	1508.48
8/22/01	10:25:39	42.93	1504.83
8/22/01	10:25:54	42.88	1524.32
8/22/01	10:26:09	42.74	1519.76
8/22/01	10:26:24	42.4	1514.8
8/22/01	10:26:39	42.16	1530.82
8/22/01	10:26:54	42.67	1513.29
8/22/01	10:27:09	42.78	1501.52
8/22/01	10:27:24	42.7	1506.26
8/22/01	10:27:39	42.37	1507.29
8/22/01	10:27:54	42.61	1518.72
8/22/01	10:28:09	43.05	1550.45
8/22/01	10:28:24	42.79	1533.18
8/22/01	10:28:39	42.47	1527.99
8/22/01	10:28:54	42.45	1520.98

8/22/01	10:29:09	42.45	1506.33
8/22/01	10:29:24	42.74	1527.59
8/22/01	10:29:39	42.89	1503.4
8/22/01	10:29:54	42.55	1498.79
8/22/01	10:30:09	42.08	1516.85
8/22/01	10:30:24	41.74	1530.83
8/22/01	10:30:39	41.75	1523.38
8/22/01	10:30:54	41.3	1508.87
8/22/01	10:31:09	41.4	1514.52
8/22/01	10:31:24	41.89	1514.52
8/22/01	10:31:39	42.43	1511.49
8/22/01	10:31:54	43.27	1525.86
8/22/01	10:32:09	43.41	1546.48
8/22/01	10:32:24	43.6	1532.2
8/22/01	10:32:39	43.9	1531.02
8/22/01	10:32:54	44.25	1530.92
8/22/01	10:33:09	44.01	1530.89
8/22/01	10:33:24	43.5	1530.92
8/22/01	10:33:39	43.7	1509.56
8/22/01	10:33:54	43.82	1526.79
8/22/01	10:34:09	43.7	1530.91
8/22/01	10:34:24	43.15	1535.48
8/22/01	10:34:39	42.56	1530.91
8/22/01	10:34:54	42.07	1524.33
8/22/01	10:35:09	41.68	1511.13
8/22/01	10:35:24	41.68	1509.67
8/22/01	10:35:39	41.61	1530.77
8/22/01	10:35:54	41.65	1530.94
8/22/01	10:36:09	41.54	1529.41
8/22/01	10:36:24	41.5	1506.34
8/22/01	10:36:39	41.49	1506.34
8/22/01	10:36:54	42.4	1506.22
8/22/01	10:37:09	43.12	1516.47
8/22/01	10:37:24	43.7	1538.6
8/22/01	10:37:39	43.94	1530.93
8/22/01	10:37:54	44.34	1529.21
8/22/01	10:38:09	44.86	1511.93
8/22/01	10:38:24	45.43	1512.7
8/22/01	10:38:39	45.74	1538.73
8/22/01	10:38:54	45.75	1524
8/22/01	10:39:09	45.97	1505.98
8/22/01	10:39:24	45.6	1509.71
8/22/01	10:39:39	44.8	1527.57
8/22/01	10:39:54	44.21	1506.39
8/22/01	10:40:09	43.66	1506.2
8/22/01	10:40:24	42.93	1506.31
8/22/01	10:40:39	41.95	1521.3
8/22/01	10:40:54	41.35	1530.91
8/22/01	10:41:09	40.67	1530.88
8/22/01	10:41:24	40.65	1509.24

8/22/01	10:41:39	40.7	1527.54
8/22/01	10:41:54	40.63	1530.91
8/22/01	10:42:09	39.93	1530.89
8/22/01	10:42:24	39.49	1539.99
8/22/01	10:42:39	38.94	1514.79
8/22/01	10:42:54	38.66	1507.98
8/22/01	10:43:09	38.95	1521.79
8/22/01	10:43:24	39.55	1506.34
8/22/01	10:43:39	40.15	1516.24
8/22/01	10:43:54	40.49	1506.4
8/22/01	10:44:09	40.98	1506.38
8/22/01	10:44:24	41.49	1508.51
8/22/01	10:44:39	42.19	1514.64
8/22/01	10:44:54	43.32	1538.28
8/22/01	10:45:09	43.23	1544
8/22/01	10:45:24	42.98	1538.65
8/22/01	10:45:39	42.68	1538.43
8/22/01	10:45:54	42.77	1508.82
8/22/01	10:46:09	43.25	1506.35
8/22/01	10:46:24	43.31	1506.34
8/22/01	10:46:39	43.17	1506.37
8/22/01	10:46:54	43.03	1508.31
8/22/01	10:47:09	42.7	1528.6
8/22/01	10:47:24	42.76	1526.61
8/22/01	10:47:39	42.79	1511.48
8/22/01	10:47:54	42.43	1530.89
8/22/01	10:48:09	42.59	1517.87
8/22/01	10:48:24	42.61	1508.7
8/22/01	10:48:39	42.67	1506.43
8/22/01	10:48:54	42.57	1505.31
8/22/01	10:49:09	42.22	1493.61
8/22/01	10:49:24	41.94	1506.45
8/22/01	10:49:39	41.55	1498.54
8/22/01	10:49:54	41.26	1506.49
8/22/01	10:50:09	41.02	1520.48
8/22/01	10:50:24	41.01	1506.4
8/22/01	10:50:39	40.75	1512.91
8/22/01	10:50:54	40.9	1530.99
8/22/01	10:51:09	41.04	1530.96
8/22/01	10:51:24	40.91	1509.04
8/22/01	10:51:39	40.85	1522.63
8/22/01	10:51:54	40.9	1546.18
8/22/01	10:52:09	41.17	1514.58
8/22/01	10:52:24	41.16	1518.44
8/22/01	10:52:39	41.19	1522.77
8/22/01	10:52:54	41.06	1519.49
8/22/01	10:53:09	40.63	1531.04
8/22/01	10:53:24	40.12	1521.11
8/22/01	10:53:39	40.06	1506.43
8/22/01	10:53:54	39.99	1490.25

8/22/01	10:54:09	39.82	1491.52
8/22/01	10:54:24	39.83	1500.84
8/22/01	10:54:39	40.15	1514.65
8/22/01	10:54:54	40.13	1531.01
8/22/01	10:55:09	40	1506.49
8/22/01	10:55:24	40.39	1516.64
8/22/01	10:55:39	40.7	1525.38
8/22/01	10:55:54	41.17	1528.16
8/22/01	10:56:09	41.92	1531.03
8/22/01	10:56:24	42.4	1527.63
8/22/01	10:56:39	42.64	1506.96
8/22/01	10:56:54	43.44	1516.34
8/22/01	10:57:09	44.25	1530.95
8/22/01	10:57:24	44.85	1537.8
8/22/01	10:57:39	45.48	1531.02
8/22/01	10:57:54	45.52	1522.91
8/22/01	10:58:09	45.09	1526.3
8/22/01	10:58:24	44.51	1550.6
8/22/01	10:58:39	43.89	1544.07
8/22/01	10:58:54	43.95	1531.12
8/22/01	10:59:09	43.94	1528.86
8/22/01	10:59:24	43.74	1526.89
8/22/01	10:59:39	43.4	1527.05
8/22/01	10:59:54	43.13	1531.09
8/22/01	11:00:09	43.06	1531.13
8/22/01	11:00:24	42.71	1531.11
8/22/01	11:00:39	42.09	1531.15
8/22/01	11:00:54	41.86	1544.09
8/22/01	11:01:09	41.95	1540.84
8/22/01	11:01:24	42.05	1506.51
8/22/01	11:01:39	42.23	1480.75
8/22/01	11:01:54	42.64	729.15
8/22/01	11:02:09	43.15	266.32
8/22/01	11:02:24	43.36	199.21
8/22/01	11:02:39	43.43	164.27
8/22/01	11:02:54	43.18	138.91
8/22/01	11:03:09	42.32	115.64
8/22/01	11:03:24	41.06	121.54
8/22/01	11:03:39	39.79	675.34
8/22/01	11:03:54	38.39	1278.81
8/22/01	11:04:09	37.21	1395.75
8/22/01	11:04:24	35.99	1437.7
8/22/01	11:04:39	34.8	1461.06
8/22/01	11:04:54	33.5	1467.16
8/22/01	11:05:09	32.5	1476.43
8/22/01	11:05:24	32.11	1487.06
8/22/01	11:05:39	32.28	1480.42
8/22/01	11:05:54	32.67	1473.23
8/22/01	11:06:09	32.89	1476.37
8/22/01	11:06:24	33.63	1476.47

8/22/01	11:06:39	34.44	1493.58
8/22/01	11:06:54	35.09	1493.47
8/22/01	11:07:09	35.86	1475.15
8/22/01	11:07:24	36.38	1485.67
8/22/01	11:07:39	36.52	1496.21
8/22/01	11:07:54	36.59	1506.59
8/22/01	11:08:09	36.64	1506.68
8/22/01	11:08:24	36.78	1502.48
8/22/01	11:08:39	37.15	1506.71
8/22/01	11:08:54	37.82	1506.63
8/22/01	11:09:09	38.23	1512.47
8/22/01	11:09:24	38.58	1500.15
8/22/01	11:09:39	38.17	1506.64
8/22/01	11:09:54	37.54	1504.39
8/22/01	11:10:09	37	1506.13
8/22/01	11:10:24	36.85	1506.7
8/22/01	11:10:39	37.51	1507.91
8/22/01	11:10:54	37.78	1506.69
8/22/01	11:11:09	38.24	1506.57
8/22/01	11:11:24	37.9	1506.65
8/22/01	11:11:39	38.07	1506.59
8/22/01	11:11:54	38.61	1501.44
8/22/01	11:12:09	39.18	1490.96
8/22/01	11:12:24	39.38	1506.7
8/22/01	11:12:39	39.61	1505.33
8/22/01	11:12:54	39.76	1496.91
8/22/01	11:13:09	39.92	1506.54
8/22/01	11:13:24	40.02	1506.67
8/22/01	11:13:39	40.37	1518.09
8/22/01	11:13:54	40.49	1528.76
8/22/01	11:14:09	40.44	1507.12
8/22/01	11:14:24	40.89	1506.7
8/22/01	11:14:39	41.14	1511.37
8/22/01	11:14:54	41.17	1506.59
8/22/01	11:15:09	41.45	1491.78
8/22/01	11:15:24	41.26	1504.12
8/22/01	11:15:39	40.9	1529.14
8/22/01	11:15:54	40.4	1519.83
8/22/01	11:16:09	40.19	1531.28
8/22/01	11:16:24	40.26	1510.86
8/22/01	11:16:39	40.12	1522.16
8/22/01	11:16:54	40.1	1531.2
8/22/01	11:17:09	40.16	1529.83
8/22/01	11:17:24	40.64	1529.3
8/22/01	11:17:39	41.06	1506.68
8/22/01	11:17:54	41.57	1506.66
8/22/01	11:18:09	42	1509.97
8/22/01	11:18:24	42.93	1547
8/22/01	11:18:39	44.18	1512.03
8/22/01	11:18:54	44.51	1541.84

8/22/01	11:19:09	44.55	1534.78
8/22/01	11:19:24	44.4	1510.85
8/22/01	11:19:39	43.76	1521.49
8/22/01	11:19:54	43.16	1506.66
8/22/01	11:20:09	42.31	1518.61
8/22/01	11:20:24	41.28	1515.93
8/22/01	11:20:39	40.8	1510.24
8/22/01	11:20:54	40.51	1519.02
8/22/01	11:21:09	40.01	1525.55
8/22/01	11:21:24	39.28	1506.59
8/22/01	11:21:39	38.46	1506.6
8/22/01	11:21:54	37.91	1506.68
8/22/01	11:22:09	37.79	1506.69
8/22/01	11:22:24	37.69	1515.87
8/22/01	11:22:39	37.78	1514.79
8/22/01	11:22:54	37.79	1526.26
8/22/01	11:23:09	38.42	1511.7
8/22/01	11:23:24	39.34	1506.75
8/22/01	11:23:39	39.99	1506.72
8/22/01	11:23:54	40.49	1506.76
8/22/01	11:24:09	41.03	1506.71
8/22/01	11:24:24	41.39	1528.03
8/22/01	11:24:39	41.29	1516.55
8/22/01	11:24:54	41.11	1506.75
8/22/01	11:25:09	41	1506.73
8/22/01	11:25:24	41.02	1535.08
8/22/01	11:25:39	40.95	1545.66
8/22/01	11:25:54	40.98	1569.32
8/22/01	11:26:09	40.97	1580
8/22/01	11:26:24	41.27	1589.09
8/22/01	11:26:39	41.98	1579.99
8/22/01	11:26:54	42.84	1573.44
8/22/01	11:27:09	44.26	1582.55
8/22/01	11:27:24	44.66	1579.88
8/22/01	11:27:39	45.08	1589.09
8/22/01	11:27:54	45.07	1598.86
8/22/01	11:28:09	44.82	1589.07
8/22/01	11:28:24	44.23	1579.94
8/22/01	11:28:39	43.38	1569.49
8/22/01	11:28:54	42.82	1580.8
8/22/01	11:29:09	42.52	1590.71
8/22/01	11:29:24	42.56	1572.21
8/22/01	11:29:39	42.22	1561.98
8/22/01	11:29:54	42.06	1587.72
8/22/01	11:30:09	41.6	1589.07
8/22/01	11:30:24	41.25	1577.37
8/22/01	11:30:39	40.86	1584.51
8/22/01	11:30:54	40.51	1594.38
8/22/01	11:31:09	40.56	1608.7
8/22/01	11:31:24	40.22	1598.26

8/22/01	11:31:39	40.17	1583.83
8/22/01	11:31:54	40.42	1578.65
8/22/01	11:32:09	40.47	1581.46
8/22/01	11:32:24	40.97	1580.85
8/22/01	11:32:39	41.82	1581.21
8/22/01	11:32:54	42.53	1600.79
8/22/01	11:33:09	43.08	1589.1
8/22/01	11:33:24	43.03	1589.01
8/22/01	11:33:39	42.89	1608.67
8/22/01	11:33:54	42.59	1600.79
8/22/01	11:34:09	42.03	1589.12
8/22/01	11:34:24	41.23	1582.14
8/22/01	11:34:39	40.76	1575.21
8/22/01	11:34:54	40.57	1600.39
8/22/01	11:35:09	40.16	1608.74
8/22/01	11:35:24	40.07	1600.87
8/22/01	11:35:39	40.63	1603.45
8/22/01	11:35:54	41.69	1588.93
8/22/01	11:36:09	42.05	1616.52
8/22/01	11:36:24	42.08	1608.72
8/22/01	11:36:39	42.37	1604.79
8/22/01	11:36:54	42.55	1602.12
8/22/01	11:37:09	43.26	1589.14
8/22/01	11:37:24	43.49	1589.08
8/22/01	11:37:39	43.84	1589.08
8/22/01	11:37:54	43.58	1589.15
8/22/01	11:38:09	43.37	1589.02
8/22/01	11:38:24	43.42	1581.45
8/22/01	11:38:39	42.85	1597.68
8/22/01	11:38:54	42.72	1589.13
8/22/01	11:39:09	42.9	1586.18
8/22/01	11:39:24	43.2	1589.18
8/22/01	11:39:39	43.46	1595.65
8/22/01	11:39:54	43.62	1588.33
8/22/01	11:40:09	44.16	1585.18
8/22/01	11:40:24	44.35	1569.63
8/22/01	11:40:39	44.12	1569.66
8/22/01	11:40:54	44.04	1581.8
8/22/01	11:41:09	43.69	1591.28
8/22/01	11:41:24	43.25	1574.79
8/22/01	11:41:39	43.22	1560.87
8/22/01	11:41:54	43.08	1581.25
8/22/01	11:42:09	43.04	1582.72
8/22/01	11:42:24	42.45	1579.6
8/22/01	11:42:39	41.88	1569.67
8/22/01	11:42:54	41.53	1569.53
8/22/01	11:43:09	40.84	1577.98
8/22/01	11:43:24	40.22	1582.88
8/22/01	11:43:39	40.28	1589.16
8/22/01	11:43:54	40.19	1579.91

8/22/01	11:44:09	40.68	1581.97		
8/22/01	11:44:24	41.22	1588.51		
8/22/01	11:44:39	41.7	1580.14		
8/22/01	11:44:54	42.33	1589.14		
08/22/01	11:45:09	42.99	1601.84		
8/22/01	11:45:24	43.39	1606.22		
8/22/01	11:45:39	43.73	1580.06		
8/22/01	11:45:54	43.96	1581.48		
8/22/01	11:46:09	44.17	1590.41		
8/22/01	11:46:24	44.27	1569.73		
8/22/01	11:46:39	44.45	1578.79		
8/22/01	11:46:54	44.32	1568.58		
8/22/01	11:47:09	43.67	1563.46		
8/22/01	11:47:24	42.58	1569.75		
8/22/01	11:47:39	41.97	1585.28		
8/22/01	11:47:54	41.3	1589.32		
8/22/01	11:48:09	41.16	1601.03		
8/22/01	11:48:24	40.95	1573.67		
8/22/01	11:48:39	41.14	1569.71		
8/22/01	11:48:54	41.64	1571.65		
8/22/01	11:49:09	42.3	1569.74		
8/22/01	11:49:24	42.46	1583.21		
8/22/01	11:49:39	42.52	1589.34		
8/22/01	11:49:54	42.53	1572.32		
8/22/01	11:50:09	42.35	1557.3		
8/22/01	11:50:24	42.59	1585.76		
8/22/01	11:50:39	42.72	1581.51		
8/22/01	11:50:54	42.86	1573.55		
8/22/01	11:51:09	43.1	1567.25		
8/22/01	11:51:24	43.51	1572.58		
AVERAGES:		40.04	1472.96		
8/22/01	11:51:39	43.47		1589.24	
8/22/01	11:51:54	43.05		1139.66	
8/22/01	11:52:09	42.09		141.81	
8/22/01	11:52:24	41.07		140.95	
8/22/01	11:52:39	58.81		135.63	
8/22/01	11:52:54	81.02		45.34	
8/22/01	11:53:09	84.7		28.56	
8/22/01	11:53:24	84.79		24.67	
8/22/01	11:53:39	85.4		54.71	
8/22/01	11:53:54	85.62		14.64	
8/22/01	11:54:09	85.59		9.67	
8/22/01	11:54:24	85.44		9.67	
8/22/01	11:54:39	85.53	**84.7 C3H8**	9.68	**ZERO C3H8**
8/22/01	11:54:54	85.84		9.68	
8/22/01	11:55:09	86		6.9	
8/22/01	11:55:24	**86.21**		**5.15**	

8/22/01	11:55:39	**86.25**		**5.12**	
8/22/01	11:55:54	**86.28**	**86.25**	**5.11**	
8/22/01	11:56:09	84.34		**5.16**	
8/22/01	11:56:24	81.13		**5.07**	
8/22/01	11:56:39	81.18		**5.12**	
8/22/01	11:56:54	8.84		**5.04**	
8/22/01	11:57:09	-1.88		**5.01**	
8/22/01	11:57:24	-5.75		**5.07**	**5.09**
8/22/01	11:57:39	-6.07	**ZERO C3H8**	5.63	
8/22/01	11:57:54	-2.97		14.14	
8/22/01	11:58:09	**-1.45**		337.95	
8/22/01	11:58:24	**-1.51**		854.25	
8/22/01	11:58:39	**-1.54**		868.23	
8/22/01	11:58:54	**-1.55**		871.63	**861.8 C3H8**
8/22/01	11:59:09	**-1.57**		873.53	
8/22/01	11:59:24	**-1.63**		**876.49**	
8/22/01	11:59:39	**-1.67**		**876.5**	
8/22/01	11:59:54	**-1.79**	**-1.59**	**876.55**	**876.55**

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/22/01

DATA LOGGER RECORDS
RUN 2
1204-1504

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/22/01	12:04:24	51.27	1569.81
8/22/01	12:04:39	50.44	1575.02
8/22/01	12:04:54	49.56	1589.32
8/22/01	12:05:09	48.97	1590.93
8/22/01	12:05:24	48.52	1576.2
8/22/01	12:05:39	47.6	1586.18
8/22/01	12:05:54	46.86	1581.49
8/22/01	12:06:09	46.04	1569.78
8/22/01	12:06:24	45.16	1582.81
8/22/01	12:06:39	44.96	1589.38
8/22/01	12:06:54	44.69	1607.59
8/22/01	12:07:09	44.8	1591.71
8/22/01	12:07:24	45.57	1596.08
8/22/01	12:07:39	46.05	1617.39
8/22/01	12:07:54	46.42	1611.53
8/22/01	12:08:09	46.59	1505.39
8/22/01	12:08:24	46.75	611.37
8/22/01	12:08:39	47.57	268.07
8/22/01	12:08:54	47.83	194.61
8/22/01	12:09:09	47.72	160.62
8/22/01	12:09:24	47.27	131.82
8/22/01	12:09:39	46.15	111.9
8/22/01	12:09:54	45.43	156.25
8/22/01	12:10:09	44.34	916.11
8/22/01	12:10:24	43.02	1363.84
8/22/01	12:10:39	41.69	1466.49
8/22/01	12:10:54	40.61	1503.01
8/22/01	12:11:09	39.85	1507.01
8/22/01	12:11:24	39.53	1522.23
8/22/01	12:11:39	39.15	1550.19
8/22/01	12:11:54	38.86	1556.08
8/22/01	12:12:09	38.82	1565.16
8/22/01	12:12:24	39.51	1543.31
8/22/01	12:12:39	40.52	1545.82
8/22/01	12:12:54	40.73	1551.31
8/22/01	12:13:09	40.75	1553.03
8/22/01	12:13:24	40.68	1574.99
8/22/01	12:13:39	40.59	1584.09
8/22/01	12:13:54	40.72	1558.99
8/22/01	12:14:09	40.71	1551.12
8/22/01	12:14:24	40.53	1566.47

8/22/01	12:14:39	40.25	1580.22
8/22/01	12:14:54	40.26	1573.78
8/22/01	12:15:09	40.46	1569.72
8/22/01	12:15:24	41.03	1569.79
8/22/01	12:15:39	41.45	1566
8/22/01	12:15:54	42.05	1565.31
8/22/01	12:16:09	42.34	1556.98
8/22/01	12:16:24	42.63	1577.8
8/22/01	12:16:39	43.04	1576.51
8/22/01	12:16:54	43.51	1579
8/22/01	12:17:09	43.95	1585.14
8/22/01	12:17:24	44.37	1589.74
8/22/01	12:17:39	44.92	1589.37
8/22/01	12:17:54	45.39	1589.45
8/22/01	12:18:09	45.94	1573.76
8/22/01	12:18:24	46.08	1577.29
8/22/01	12:18:39	45.57	1609.1
8/22/01	12:18:54	45.5	1591.51
8/22/01	12:19:09	45.57	1588.98
8/22/01	12:19:24	45.24	1599.83
8/22/01	12:19:39	44.98	1589.37
8/22/01	12:19:54	44.73	1578.96
8/22/01	12:20:09	44.94	1583.93
8/22/01	12:20:24	45.17	1594.41
8/22/01	12:20:39	45.6	1590.78
8/22/01	12:20:54	45.95	1589.35
8/22/01	12:21:09	45.98	1598.56
8/22/01	12:21:24	45.92	1611.27
8/22/01	12:21:39	45.8	1634.81
8/22/01	12:21:54	45.74	1598.55
8/22/01	12:22:09	45.47	1591.95
8/22/01	12:22:24	45.07	1609.01
8/22/01	12:22:39	44.56	1609.16
8/22/01	12:22:54	44.28	1606.42
8/22/01	12:23:09	44.38	1589.34
8/22/01	12:23:24	44.42	1606.41
8/22/01	12:23:39	44.62	1606.39
8/22/01	12:23:54	45.05	1597.28
8/22/01	12:24:09	45.09	1640.66
8/22/01	12:24:24	45.21	1612.92
8/22/01	12:24:39	45.14	1609
8/22/01	12:24:54	45.12	1609.15
8/22/01	12:25:09	45.29	1609.01
8/22/01	12:25:24	45.49	1595.91
8/22/01	12:25:39	45.92	1609.07
8/22/01	12:25:54	46.64	1609.18
8/22/01	12:26:09	48.12	1609.05
8/22/01	12:26:24	49.01	1602.76
8/22/01	12:26:39	49.52	1611.59
8/22/01	12:26:54	49.72	1589.44

8/22/01	12:27:09	49.76	1589.39
8/22/01	12:27:24	50.05	1589.35
8/22/01	12:27:39	50.57	1589.44
8/22/01	12:27:54	50.88	1589.39
8/22/01	12:28:09	50.8	1581.62
8/22/01	12:28:24	50.32	1582.82
8/22/01	12:28:39	50.39	1596.71
8/22/01	12:28:54	49.91	1589.38
8/22/01	12:29:09	49.61	1579.06
8/22/01	12:29:24	49.41	1610.22
8/22/01	12:29:39	48.45	1624.7
8/22/01	12:29:54	47.88	1615.55
8/22/01	12:30:09	46.96	1609.4
8/22/01	12:30:24	46.38	1590.04
8/22/01	12:30:39	45.93	1609.04
8/22/01	12:30:54	45.87	1607.72
8/22/01	12:31:09	45.67	1589.51
8/22/01	12:31:24	45.34	1601.58
8/22/01	12:31:39	45.36	1582.96
8/22/01	12:31:54	45.65	1579.02
8/22/01	12:32:09	45.67	1589.37
8/22/01	12:32:24	45.54	1589.54
8/22/01	12:32:39	45.54	1589.69
8/22/01	12:32:54	45.71	1593.64
8/22/01	12:33:09	45.81	1602.59
8/22/01	12:33:24	45.51	1580.41
8/22/01	12:33:39	45.64	1586.58
8/22/01	12:33:54	45.92	1577.82
8/22/01	12:34:09	45.65	1580.34
8/22/01	12:34:24	45.72	1589.48
8/22/01	12:34:39	46.17	1589.44
8/22/01	12:34:54	46.33	1582.91
8/22/01	12:35:09	46.21	1589.77
8/22/01	12:35:24	45.95	1601.3
8/22/01	12:35:39	45.79	1581.3
8/22/01	12:35:54	45.65	1589.18
8/22/01	12:36:09	45.49	1606.54
8/22/01	12:36:24	45.31	1585.44
8/22/01	12:36:39	45.63	1590.84
8/22/01	12:36:54	45.67	1609.17
8/22/01	12:37:09	46	1609.15
8/22/01	12:37:24	46.36	1602.55
8/22/01	12:37:39	46.9	1589.53
8/22/01	12:37:54	47.35	1589.51
8/22/01	12:38:09	47.75	1599.16
8/22/01	12:38:24	48.03	1601.96
8/22/01	12:38:39	48.2	1589.51
8/22/01	12:38:54	48.74	1589.54
8/22/01	12:39:09	49.41	1589.54
8/22/01	12:39:24	49.64	1614.28

8/22/01	12:39:39	49.85	1595.66
8/22/01	12:39:54	49.75	1598.25
8/22/01	12:40:09	49.42	1609.15
8/22/01	12:40:24	49.09	1589.61
8/22/01	12:40:39	48.78	1602.54
8/22/01	12:40:54	48.22	1589.1
8/22/01	12:41:09	47.86	1602.52
8/22/01	12:41:24	47.25	1592.14
8/22/01	12:41:39	46.99	1589.42
8/22/01	12:41:54	46.83	1589.58
8/22/01	12:42:09	46.88	1589.45
8/22/01	12:42:24	47.14	1613.62
8/22/01	12:42:39	47	1620.77
8/22/01	12:42:54	46.53	1609.16
8/22/01	12:43:09	46.25	1592.14
8/22/01	12:43:24	46.05	1611.77
8/22/01	12:43:39	45.91	1610.8
8/22/01	12:43:54	45.64	1575.8
8/22/01	12:44:09	45.86	1589.48
8/22/01	12:44:24	46.37	1599.94
8/22/01	12:44:39	46.62	1610.33
8/22/01	12:44:54	46.79	1607.68
8/22/01	12:45:09	46.96	1598.71
8/22/01	12:45:24	47.56	1589.49
8/22/01	12:45:39	48.09	1589.53
8/22/01	12:45:54	48.51	1589.45
8/22/01	12:46:09	48.57	1589.07
8/22/01	12:46:24	48.45	1579.49
8/22/01	12:46:39	48.62	1599.24
8/22/01	12:46:54	48.97	1609.2
8/22/01	12:47:09	49.27	1598.02
8/22/01	12:47:24	49.58	1625.28
8/22/01	12:47:39	49.41	1600.65
8/22/01	12:47:54	49.32	1606.41
8/22/01	12:48:09	49.13	1609.05
8/22/01	12:48:24	48.54	1592.76
8/22/01	12:48:39	47.39	1582.52
8/22/01	12:48:54	46.96	1620.81
8/22/01	12:49:09	46.69	1622.34
8/22/01	12:49:24	46.27	1585.01
8/22/01	12:49:39	45.99	1590.32
8/22/01	12:49:54	45.62	1593.14
8/22/01	12:50:09	45.06	1589.5
8/22/01	12:50:24	44.9	1589.47
8/22/01	12:50:39	45.01	1589.45
8/22/01	12:50:54	45.1	1589.48
8/22/01	12:51:09	45.37	1589.47
8/22/01	12:51:24	45.53	1589.42
8/22/01	12:51:39	45.88	1603.6
8/22/01	12:51:54	45.73	1581.64

8/22/01	12:52:09	45.62	1580.25
8/22/01	12:52:24	45.47	1571.16
8/22/01	12:52:39	45.47	1597.29
8/22/01	12:52:54	45.49	1598.32
8/22/01	12:53:09	44.97	1609.11
8/22/01	12:53:24	44.27	1618.11
8/22/01	12:53:39	43.54	1598.63
8/22/01	12:53:54	42.98	1590.68
8/22/01	12:54:09	42.62	1623.19
8/22/01	12:54:24	42.84	1609.14
8/22/01	12:54:39	43.17	1609.02
8/22/01	12:54:54	43.73	1609.12
8/22/01	12:55:09	44.73	1605.25
8/22/01	12:55:24	45.59	1597.27
8/22/01	12:55:39	46.37	1576.42
8/22/01	12:55:54	46.65	1589.4
8/22/01	12:56:09	46.83	1603.55
8/22/01	12:56:24	47.43	1609.15
8/22/01	12:56:39	47.83	1601.18
8/22/01	12:56:54	47.61	1589.44
8/22/01	12:57:09	47.52	1589.34
8/22/01	12:57:24	47.08	1581.32
8/22/01	12:57:39	46.26	1591.89
8/22/01	12:57:54	45.59	1609.04
8/22/01	12:58:09	44.91	1618.14
8/22/01	12:58:24	44.29	1597.23
8/22/01	12:58:39	43.92	1584.16
8/22/01	12:58:54	44.25	1591.97
8/22/01	12:59:09	44.16	1595.95
8/22/01	12:59:24	43.9	1609.92
8/22/01	12:59:39	43.85	1617.31
8/22/01	12:59:54	43.88	1615.53
8/22/01	13:00:09	43.9	1616.33
8/22/01	13:00:24	44.22	1603.56
8/22/01	13:00:39	44.64	1606.43
8/22/01	13:00:54	44.88	1589.34
8/22/01	13:01:09	44.86	1589.38
8/22/01	13:01:24	44.72	1606.26
8/22/01	13:01:39	44.3	1624.88
8/22/01	13:01:54	43.84	1611.68
8/22/01	13:02:09	43.53	1609.08
8/22/01	13:02:24	43.29	1598.22
8/22/01	13:02:39	42.63	1611.48
8/22/01	13:02:54	42.15	1628.55
8/22/01	13:03:09	41.72	1636.5
8/22/01	13:03:24	41.71	1619.46
8/22/01	13:03:39	41.95	1612.76
8/22/01	13:03:54	42.53	1624.63
8/22/01	13:04:09	43.06	1606.95
8/22/01	13:04:24	43.22	1611.48

8/22/01	13:04:39	43.44	1608.97
8/22/01	13:04:54	43.75	1609.13
8/22/01	13:05:09	43.83	1608.89
8/22/01	13:05:24	43.71	1601.17
8/22/01	13:05:39	43.79	1581.56
8/22/01	13:05:54	44.03	1610.49
8/22/01	13:06:09	44.34	1608.93
8/22/01	13:06:24	45.01	1609.03
8/22/01	13:06:39	45.77	1621.17
8/22/01	13:06:54	45.56	1604.68
8/22/01	13:07:09	45.63	1616.8
8/22/01	13:07:24	45.68	1598.45
8/22/01	13:07:39	45.76	1582.84
8/22/01	13:07:54	45.61	1609.07
8/22/01	13:08:09	45.6	1589.4
8/22/01	13:08:24	45.55	1598.47
8/22/01	13:08:39	45.68	1622.07
8/22/01	13:08:54	45.96	1625.92
8/22/01	13:09:09	46.25	1609.13
8/22/01	13:09:24	46.51	1608.98
8/22/01	13:09:39	46.42	1624.74
8/22/01	13:09:54	46.49	1615.54
8/22/01	13:10:09	46.68	1589.44
8/22/01	13:10:24	46.59	1593.3
8/22/01	13:10:39	46.07	1599.87
8/22/01	13:10:54	45.71	1609.06
8/22/01	13:11:09	44.74	1609.02
8/22/01	13:11:24	43.66	1609.04
8/22/01	13:11:39	43.21	1609.03
8/22/01	13:11:54	42.93	1614.35
8/22/01	13:12:09	42.48	1625.22
8/22/01	13:12:24	42.32	1609.3
8/22/01	13:12:39	42.38	1612.26
8/22/01	13:12:54	42.86	1628.13
8/22/01	13:13:09	43.26	1597.78
8/22/01	13:13:24	43.63	1609.13
8/22/01	13:13:39	44.04	1592.92
8/22/01	13:13:54	44.21	1589.35
8/22/01	13:14:09	44.69	1573.09
8/22/01	13:14:24	44.95	1580.3
8/22/01	13:14:39	45.24	1583.9
8/22/01	13:14:54	45.16	1589.38
8/22/01	13:15:09	45.09	1588.96
8/22/01	13:15:24	44.88	1590.92
8/22/01	13:15:39	45.05	1589.37
8/22/01	13:15:54	45.07	1589.36
8/22/01	13:16:09	44.73	1589.48
8/22/01	13:16:24	45.12	1600.25
8/22/01	13:16:39	45.67	1576.39
8/22/01	13:16:54	46.04	1602.79

8/22/01	13:17:09	46.29	1648.13
8/22/01	13:17:24	46.66	1630
8/22/01	13:17:39	46.7	1610.71
8/22/01	13:17:54	46.5	1605.5
8/22/01	13:18:09	46.68	1618.22
8/22/01	13:18:24	47.19	1609.15
8/22/01	13:18:39	47.78	1605.21
8/22/01	13:18:54	47.79	1589.4
8/22/01	13:19:09	47.75	1591.83
8/22/01	13:19:24	47.89	1593.26
8/22/01	13:19:39	47.68	1594.21
8/22/01	13:19:54	47.5	1589.8
8/22/01	13:20:09	47.64	1605.17
8/22/01	13:20:24	47.66	1595.93
8/22/01	13:20:39	47.19	1623.49
8/22/01	13:20:54	46.89	1622.62
8/22/01	13:21:09	46.69	1609.21
8/22/01	13:21:24	46.99	1618.14
8/22/01	13:21:39	47.53	1609.1
8/22/01	13:21:54	48.04	1609.13
8/22/01	13:22:09	48.79	1618.19
8/22/01	13:22:24	49.29	1609.13
8/22/01	13:22:39	49.92	1609.07
8/22/01	13:22:54	50.27	1590.84
8/22/01	13:23:09	50.29	1603.19
8/22/01	13:23:24	49.43	1617.2
8/22/01	13:23:39	48.48	1599.89
8/22/01	13:23:54	47.72	1589.45
8/22/01	13:24:09	47.15	1585.07
8/22/01	13:24:24	46.88	1589.48
8/22/01	13:24:39	46.2	1578.76
8/22/01	13:24:54	46.09	1589.49
8/22/01	13:25:09	46.12	1576.57
8/22/01	13:25:24	46.11	1569.9
8/22/01	13:25:39	45.97	1581.62
8/22/01	13:25:54	46.28	1587.56
8/22/01	13:26:09	46.61	1616.95
8/22/01	13:26:24	46.82	1596.21
8/22/01	13:26:39	47.15	1589.51
8/22/01	13:26:54	47.35	1589.44
8/22/01	13:27:09	47.26	1607.88
8/22/01	13:27:24	46.94	1611.22
8/22/01	13:27:39	46.55	1598.66
8/22/01	13:27:54	46.31	1589.45
8/22/01	13:28:09	46.19	1589.49
8/22/01	13:28:24	45.97	1600
8/22/01	13:28:39	46.1	1609.17
8/22/01	13:28:54	46.02	1609.16
8/22/01	13:29:09	45.84	1620.98
8/22/01	13:29:24	45.74	1646.99

8/22/01	13:29:39	45.78	1635.16
8/22/01	13:29:54	46.15	1620.91
8/22/01	13:30:09	46.39	1601.22
8/22/01	13:30:24	46.44	1626.17
8/22/01	13:30:39	47.22	1616.9
8/22/01	13:30:54	47.27	1602.6
8/22/01	13:31:09	47.24	1583.7
8/22/01	13:31:24	47.54	1579.07
8/22/01	13:31:39	47.54	1589.43
8/22/01	13:31:54	47.97	1596.12
8/22/01	13:32:09	48.2	1589.43
8/22/01	13:32:24	48.42	1627.78
8/22/01	13:32:39	48.8	1620.9
8/22/01	13:32:54	49.19	1594.84
8/22/01	13:33:09	49.19	1143.42
8/22/01	13:33:24	49.27	359.45
8/22/01	13:33:39	49.79	220.68
8/22/01	13:33:54	50.04	174.45
8/22/01	13:34:09	49.41	148.03
8/22/01	13:34:24	48.77	120.06
8/22/01	13:34:39	47.33	121.93
8/22/01	13:34:54	45.85	657.4
8/22/01	13:35:09	43.65	1309.61
8/22/01	13:35:24	41.87	1474.23
8/22/01	13:35:39	40.11	1537.61
8/22/01	13:35:54	39.07	1546.76
8/22/01	13:36:09	38.25	1542.84
8/22/01	13:36:24	37.76	1548.77
8/22/01	13:36:39	37.53	1551.16
8/22/01	13:36:54	37.56	1543.78
8/22/01	13:37:09	37.94	1568.59
8/22/01	13:37:24	38.56	1569.83
8/22/01	13:37:39	38.77	1569.91
8/22/01	13:37:54	39.54	1571.88
8/22/01	13:38:09	40.35	1588.63
8/22/01	13:38:24	41.16	1585.58
8/22/01	13:38:39	41.74	1569.96
8/22/01	13:38:54	41.74	1570.02
8/22/01	13:39:09	42.04	1579.57
8/22/01	13:39:24	42.61	1586.59
8/22/01	13:39:39	42.67	1592.36
8/22/01	13:39:54	43.2	1572.58
8/22/01	13:40:09	43.09	1570.01
8/22/01	13:40:24	42.8	1569.87
8/22/01	13:40:39	42.85	1582.98
8/22/01	13:40:54	43.06	1589.52
8/22/01	13:41:09	43.62	1589.54
8/22/01	13:41:24	44.58	1573.62
8/22/01	13:41:39	45.46	1571.5
8/22/01	13:41:54	46.12	1576.43

8/22/01	13:42:09	46.47	1598.86
8/22/01	13:42:24	46.99	1607.33
8/22/01	13:42:39	48.01	1615.62
8/22/01	13:42:54	48.2	1602.59
8/22/01	13:43:09	48.62	1608.84
8/22/01	13:43:24	48.57	1597.41
8/22/01	13:43:39	48.11	1627.35
8/22/01	13:43:54	47.24	1628.63
8/22/01	13:44:09	46.48	1605.81
8/22/01	13:44:24	46.07	1597.76
8/22/01	13:44:39	45.78	1611.37
8/22/01	13:44:54	45.22	1596.75
8/22/01	13:45:09	44.88	1622.19
8/22/01	13:45:24	44.95	1609.99
8/22/01	13:45:39	45.33	1626.63
8/22/01	13:45:54	45.49	1624.82
8/22/01	13:46:09	46.02	1609.2
8/22/01	13:46:24	45.83	1618.32
8/22/01	13:46:39	45.28	1638.67
8/22/01	13:46:54	44.73	1606.45
8/22/01	13:47:09	44.28	1603.32
8/22/01	13:47:24	43.56	1593.86
8/22/01	13:47:39	42.85	1598.65
8/22/01	13:47:54	42.1	1589.54
8/22/01	13:48:09	41.73	1589.5
8/22/01	13:48:24	41.52	1577.99
8/22/01	13:48:39	41.32	1589.52
8/22/01	13:48:54	41.03	1589.43
8/22/01	13:49:09	40.78	1593.53
8/22/01	13:49:24	40.31	1589.4
8/22/01	13:49:39	40.48	1589.51
8/22/01	13:49:54	40.77	1602.6
8/22/01	13:50:09	41.66	1609.25
8/22/01	13:50:24	42.06	1623.6
8/22/01	13:50:39	42.37	1607.9
8/22/01	13:50:54	42.53	1593.46
8/22/01	13:51:09	42.84	1609.26
8/22/01	13:51:24	43	1592.19
8/22/01	13:51:39	43.41	1605.27
8/22/01	13:51:54	43.91	1622.99
8/22/01	13:52:09	44.24	1609.18
8/22/01	13:52:24	44.4	1609.19
8/22/01	13:52:39	44.71	1620.87
8/22/01	13:52:54	45.07	1621.92
8/22/01	13:53:09	45.07	1625.8
8/22/01	13:53:24	44.83	1609.21
8/22/01	13:53:39	44.6	1609.06
8/22/01	13:53:54	44.87	1622.86
8/22/01	13:54:09	44.66	1613.13
8/22/01	13:54:24	44.64	1619.69

8/22/01	13:54:39	44.5	1601.73
8/22/01	13:54:54	44.45	1610.52
8/22/01	13:55:09	44.35	1626.17
8/22/01	13:55:24	44.22	1609.18
8/22/01	13:55:39	43.96	1609.2
8/22/01	13:55:54	44.1	1597.33
8/22/01	13:56:09	43.92	1579.15
8/22/01	13:56:24	43.53	1577.67
8/22/01	13:56:39	43.21	1569.97
8/22/01	13:56:54	42.59	1580.39
8/22/01	13:57:09	41.9	1575.21
8/22/01	13:57:24	41.66	1594.21
8/22/01	13:57:39	41.5	1602.08
8/22/01	13:57:54	41.86	1582.95
8/22/01	13:58:09	42.48	1588.06
8/22/01	13:58:24	42.99	1589.55
8/22/01	13:58:39	43.18	1596.14
8/22/01	13:58:54	43.16	1607.64
8/22/01	13:59:09	42.62	1589.27
8/22/01	13:59:24	42.48	1601.89
8/22/01	13:59:39	41.84	1590.83
8/22/01	13:59:54	41.51	1589.56
8/22/01	14:00:09	41.52	1601.33
8/22/01	14:00:24	41.61	1615.67
8/22/01	14:00:39	41.34	1602.61
8/22/01	14:00:54	41.12	1620.91
8/22/01	14:01:09	41.32	1628.22
8/22/01	14:01:24	42.12	1596.22
8/22/01	14:01:39	42.67	1570.35
8/22/01	14:01:54	43.07	1576.48
8/22/01	14:02:09	43.92	1589.41
8/22/01	14:02:24	44.69	1596.85
8/22/01	14:02:39	45.84	1589.49
8/22/01	14:02:54	46.31	1590.26
8/22/01	14:03:09	46.56	1581.32
8/22/01	14:03:24	46.9	1605.31
8/22/01	14:03:39	47.19	1599.99
8/22/01	14:03:54	46.86	1618.24
8/22/01	14:04:09	46.76	1607.73
8/22/01	14:04:24	46.64	1602.54
8/22/01	14:04:39	46.44	1607.77
8/22/01	14:04:54	46.51	1589.38
8/22/01	14:05:09	46.34	1586.75
8/22/01	14:05:24	46.16	1589.45
8/22/01	14:05:39	46.15	1589.48
8/22/01	14:05:54	46.43	1595.96
8/22/01	14:06:09	46.68	1609.18
8/22/01	14:06:24	46.79	1609.11
8/22/01	14:06:39	47.01	1609.16
8/22/01	14:06:54	47.15	1609.06

8/22/01	14:07:09	47.34	1609.12
8/22/01	14:07:24	47.55	1638.88
8/22/01	14:07:39	47.62	1630.76
8/22/01	14:07:54	47.44	1619.55
8/22/01	14:08:09	47.79	1609.06
8/22/01	14:08:24	47.98	1609.03
8/22/01	14:08:39	47.69	1616.53
8/22/01	14:08:54	48.08	1620.89
8/22/01	14:09:09	48.86	1589.33
8/22/01	14:09:24	49.57	1578.95
8/22/01	14:09:39	49.73	1576.02
8/22/01	14:09:54	49.79	1589.51
8/22/01	14:10:09	49.66	1604.26
8/22/01	14:10:24	49.29	1614.32
8/22/01	14:10:39	48.92	1616.88
8/22/01	14:10:54	48.48	1602.55
8/22/01	14:11:09	47.97	1589.45
8/22/01	14:11:24	47.44	1593.75
8/22/01	14:11:39	46.87	1609.08
8/22/01	14:11:54	46.28	1609.04
8/22/01	14:12:09	45.89	1615.11
8/22/01	14:12:24	45.95	1608.97
8/22/01	14:12:39	46.36	1595.3
8/22/01	14:12:54	46.72	1604.02
8/22/01	14:13:09	46.99	1635.93
8/22/01	14:13:24	47.24	1645.85
8/22/01	14:13:39	47.1	1621.33
8/22/01	14:13:54	46.51	1635.93
8/22/01	14:14:09	45.9	1628.61
8/22/01	14:14:24	45.26	1627.3
8/22/01	14:14:39	45.07	1593.77
8/22/01	14:14:54	44.96	1601.38
8/22/01	14:15:09	44.78	1601.18
8/22/01	14:15:24	44.76	1609.07
8/22/01	14:15:39	45.05	1610.11
8/22/01	14:15:54	45.25	1615.68
8/22/01	14:16:09	45.88	1617.8
8/22/01	14:16:24	46.88	1612.95
8/22/01	14:16:39	47.79	1626.42
8/22/01	14:16:54	48.33	1621.56
8/22/01	14:17:09	48.87	1615.65
8/22/01	14:17:24	49.53	1609.09
8/22/01	14:17:39	49.95	1609.13
8/22/01	14:17:54	49.72	1616.91
8/22/01	14:18:09	49.3	1609.17
8/22/01	14:18:24	49.15	1622.06
8/22/01	14:18:39	48.74	1624.76
8/22/01	14:18:54	48.12	1612.45
8/22/01	14:19:09	47.6	1629.8
8/22/01	14:19:24	47.45	1605.42

8/22/01	14:19:39	47.25	1613.28
8/22/01	14:19:54	47.59	1613.03
8/22/01	14:20:09	47.9	1609.14
8/22/01	14:20:24	48.01	1614.38
8/22/01	14:20:39	47.91	1628.57
8/22/01	14:20:54	47.72	1622.15
8/22/01	14:21:09	48.06	1599.92
8/22/01	14:21:24	47.99	1590.22
8/22/01	14:21:39	47.67	1589.33
8/22/01	14:21:54	47.44	1589.45
8/22/01	14:22:09	46.95	1589.44
8/22/01	14:22:24	46.55	1589.37
8/22/01	14:22:39	46.43	1578.98
8/22/01	14:22:54	46.09	1579
8/22/01	14:23:09	45.39	1605.22
8/22/01	14:23:24	44.89	1615.6
8/22/01	14:23:39	44.35	1588.16
8/22/01	14:23:54	44.02	1583.53
8/22/01	14:24:09	43.9	1609.15
8/22/01	14:24:24	44.26	1614.23
8/22/01	14:24:39	44.81	1623.23
8/22/01	14:24:54	45.36	1597.28
8/22/01	14:25:09	45.77	1589.55
8/22/01	14:25:24	46.24	1606.53
8/22/01	14:25:39	46.77	1597.35
8/22/01	14:25:54	47.56	1603.96
8/22/01	14:26:09	47.91	1605.97
8/22/01	14:26:24	47.83	1601.32
8/22/01	14:26:39	47.95	1609.08
8/22/01	14:26:54	48.46	1612.14
8/22/01	14:27:09	48.46	1623.81
8/22/01	14:27:24	48.49	1625.92
8/22/01	14:27:39	48.46	1623.52
8/22/01	14:27:54	48.22	1609.18
8/22/01	14:28:09	48.07	1589.38
8/22/01	14:28:24	48.02	1592.76
8/22/01	14:28:39	48.09	1608.99
8/22/01	14:28:54	48.18	1609.25
8/22/01	14:29:09	48.63	1629.28
8/22/01	14:29:24	48.97	1639.33
8/22/01	14:29:39	49.06	1628.71
8/22/01	14:29:54	49.23	1610.44
8/22/01	14:30:09	49.46	1617.89
8/22/01	14:30:24	49.94	1609.15
8/22/01	14:30:39	50.76	1609.13
8/22/01	14:30:54	51.27	1614.28
8/22/01	14:31:09	51.33	1640.6
8/22/01	14:31:24	50.88	1596.51
8/22/01	14:31:39	50.95	1615.65
8/22/01	14:31:54	51.13	1610.16

8/22/01	14:32:09	50.84	1603.9
8/22/01	14:32:24	50.26	1593.32
8/22/01	14:32:39	49.96	1593.88
8/22/01	14:32:54	49.61	1607.9
8/22/01	14:33:09	49.12	1601.24
8/22/01	14:33:24	48.46	1624.7
8/22/01	14:33:39	48.62	1597.81
8/22/01	14:33:54	48.75	1580.33
8/22/01	14:34:09	48.68	1569.84
8/22/01	14:34:24	48.32	1590.68
8/22/01	14:34:39	47.98	1598.98
8/22/01	14:34:54	48.35	1609.15
8/22/01	14:35:09	48.24	1602.64
8/22/01	14:35:24	47.96	1600.57
8/22/01	14:35:39	47.72	1601.17
8/22/01	14:35:54	47.56	1619.45
8/22/01	14:36:09	47.23	1619.46
8/22/01	14:36:24	46.8	1609.12
8/22/01	14:36:39	46.33	1616.9
8/22/01	14:36:54	45.96	1592.03
8/22/01	14:37:09	45.71	1609.04
8/22/01	14:37:24	45.31	1609.08
8/22/01	14:37:39	45.15	1627.48
8/22/01	14:37:54	45.18	1623.37
8/22/01	14:38:09	45.73	1597.54
8/22/01	14:38:24	46.54	1621.36
8/22/01	14:38:39	47.18	1599.9
8/22/01	14:38:54	48.13	1602.09
8/22/01	14:39:09	49.19	1609.12
8/22/01	14:39:24	50.24	1609.09
8/22/01	14:39:39	50.71	1609.14
8/22/01	14:39:54	51.14	1601.20
8/22/01	14:40:09	51.43	1618.28
8/22/01	14:40:24	51.55	1620.81
8/22/01	14:40:39	51.64	1616.93
8/22/01	14:40:54	51.65	1599.84
8/22/01	14:41:09	51.36	1611.74
8/22/01	14:41:24	51.24	1628.38
8/22/01	14:41:39	50.9	1628.57
8/22/01	14:41:54	50.23	1622.13
8/22/01	14:42:09	49.54	1622.14
8/22/01	14:42:24	48.91	1605.2
8/22/01	14:42:39	48.36	1580.37
8/22/01	14:42:54	47.86	1589.45
8/22/01	14:43:09	47.2	1597.35
8/22/01	14:43:24	46.74	1598.1
8/22/01	14:43:39	46.57	1594.54
8/22/01	14:43:54	46.56	1589.45
8/22/01	14:44:09	46.34	1607.33
8/22/01	14:44:24	46.08	1609.22

8/22/01	14:44:39	46.02	1590.69
8/22/01	14:44:54	45.99	1614.28
8/22/01	14:45:09	45.72	1628.47
8/22/01	14:45:24	45.61	1618.14
8/22/01	14:45:39	45.31	1609.11
8/22/01	14:45:54	45.25	1609.13
8/22/01	14:46:09	45.08	1625.45
8/22/01	14:46:24	44.95	1628.65
8/22/01	14:46:39	45.13	1620.97
8/22/01	14:46:54	45.35	1609.1
8/22/01	14:47:09	45.32	1609.12
8/22/01	14:47:24	45.47	1609.12
8/22/01	14:47:39	45.72	1589.41
8/22/01	14:47:54	46.31	1599.88
8/22/01	14:48:09	47.27	1615.73
8/22/01	14:48:24	48.26	1609.86
8/22/01	14:48:39	49.22	1609.2
8/22/01	14:48:54	50.11	1610.42
8/22/01	14:49:09	50.96	1620.83
8/22/01	14:49:24	51.24	1609.09
8/22/01	14:49:39	51.44	1613.82
8/22/01	14:49:54	51.82	1595.26
8/22/01	14:50:09	52.03	1617.24
8/22/01	14:50:24	51.78	1595.42
8/22/01	14:50:39	51.39	1590.27
8/22/01	14:50:54	51.31	1602.08
8/22/01	14:51:09	50.51	1589.42
8/22/01	14:51:24	49.33	1595.98
8/22/01	14:51:39	48.48	1595.29
8/22/01	14:51:54	47.74	1570.63
8/22/01	14:52:09	46.55	1569.87
8/22/01	14:52:24	45.81	1569.85
8/22/01	14:52:39	45.24	1574.9
8/22/01	14:52:54	44.57	1589.47
8/22/01	14:53:09	44.03	1571.13
8/22/01	14:53:24	43.85	1577.26
8/22/01	14:53:39	43.69	1609
8/22/01	14:53:54	43.42	1609.07
8/22/01	14:54:09	43.45	1590.76
8/22/01	14:54:24	43.63	1606.48
8/22/01	14:54:39	43.68	1609.16
8/22/01	14:54:54	44	1590.62
8/22/01	14:55:09	44.36	1603.16
8/22/01	14:55:24	44.98	1589.43
8/22/01	14:55:39	45.59	1582.02
8/22/01	14:55:54	46.16	1570.92
8/22/01	14:56:09	46.66	1588.63
8/22/01	14:56:24	46.95	1603.9
8/22/01	14:56:39	47.21	1597.76
8/22/01	14:56:54	47.76	1589.43

8/22/01	14:57:09	48.05	1589.41
8/22/01	14:57:24	48.51	1597.95
8/22/01	14:57:39	49.22	1624.69
8/22/01	14:57:54	49.67	1605.25
08/22/01	14:58:09	50.18	1601.99
8/22/01	14:58:24	50.51	1580.33
8/22/01	14:58:39	51.1	1573.68
8/22/01	14:58:54	51.9	1082.27
8/22/01	14:59:09	52.43	352.57
8/22/01	14:59:24	52.48	231.71
8/22/01	14:59:39	51.84	176.65
8/22/01	14:59:54	50.68	144.76
8/22/01	15:00:09	49.5	120.06
8/22/01	15:00:24	48.57	127.98
8/22/01	15:00:39	47.26	743.77
8/22/01	15:00:54	45.78	1335.71
8/22/01	15:01:09	44.22	1488.33
8/22/01	15:01:24	42.84	1529.9
8/22/01	15:01:39	41.49	1539.5
8/22/01	15:01:54	40.24	1558.56
8/22/01	15:02:09	39.42	1564.98
8/22/01	15:02:24	38.94	1562.32
8/22/01	15:02:39	38.82	1553.68
8/22/01	15:02:54	38.62	1576.35
8/22/01	15:03:09	38.3	1585.15
8/22/01	15:03:24	38.16	1563.02
8/22/01	15:03:39	37.99	1560.41
8/22/01	15:03:54	37.86	1583.39
8/22/01	15:04:09	37.68	1607.46
8/22/01	15:04:24	37.94	1609.14
AVERAGES:		**45.93**	**1555.62**
8/22/01	15:04:39	38.32	1603.82
8/22/01	15:04:54	39.33	1589.34
8/22/01	15:05:09	40.77	1573.7
8/22/01	15:05:24	42.09	1571.18
8/22/01	15:05:39	43.53	1592.5
8/22/01	15:05:54	44.54	1616.96
8/22/01	15:06:09	45.09	1619.67
8/22/01	15:06:24	45.5	1602.73
8/22/01	15:06:39	45.6	1609.1
8/22/01	15:06:54	45.96	1609.23
8/22/01	15:07:09	46.2	1587.66
8/22/01	15:07:24	46.87	1576.67
8/22/01	15:07:39	47.05	1350.32
8/22/01	15:07:54	47.72	213.6
8/22/01	15:08:09	48.52	211.66
8/22/01	15:08:24	48.94	162.45

8/22/01	15:08:39	49.38		78.44	
8/22/01	15:08:54	49.64		762.29	
8/22/01	15:09:09	48.32		880.77	
8/22/01	15:09:24	96.41		886.35	
8/22/01	15:09:39	34.57		886.62	
8/22/01	15:09:54	2.22		886.54	**861.8 C3H8**
8/22/01	15:10:09	0.68		880.53	
8/22/01	15:10:24	-0.02	**ZERO C3H8**	**876.48**	
8/22/01	15:10:39	-0.47		**876.46**	
8/22/01	15:10:54	-0.81		**876.54**	
8/22/01	15:11:09	-1.06		**876.43**	
8/22/01	15:11:24	**-1.24**		**876.53**	**876.49**
8/22/01	15:11:39	**-1.45**		864.11	
8/22/01	15:11:54	**-1.6**	**-1.6**	864.17	
8/22/01	15:12:09	-1.07		862.15	
8/22/01	15:12:24	5.48		862.18	
8/22/01	15:12:39	55.08	**84.7 C3H8**	862.26	
8/22/01	15:12:54	87.01		697.56	
8/22/01	15:13:09	87.39		27.79	
8/22/01	15:13:24	**87.45**		15.21	
8/22/01	15:13:39	**87.51**		12.61	
8/22/01	15:13:54	**87.75**		9.71	
8/22/01	15:14:09	**87.95**	**87.67**	9.68	**ZERO C3H8**
8/22/01	15:14:24	88.34		9.71	
8/22/01	15:14:39	88.36		9.68	
8/22/01	15:14:54	88.58		9.67	
8/22/01	15:15:09	86.32		5.75	
8/22/01	15:15:24	85.14		**5.13**	
8/22/01	15:15:39	86.94		**5.12**	
8/22/01	15:15:54	37.74		**5.07**	
8/22/01	15:16:09	53.05		**5.05**	**5.09**

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
8/22/01

DATA LOGGER RECORDS
RUN 3
1518-1818

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/22/01	15:18:16	53.61	1299.56
8/22/01	15:18:31	54.4	1273.48
8/22/01	15:18:46	55.11	1233.55
8/22/01	15:19:01	55.37	1216.79
8/22/01	15:19:16	55.39	1223.32
8/22/01	15:19:31	55.5	1228.27
8/22/01	15:19:46	55.86	1221.66
8/22/01	15:20:01	55.91	1217.71
8/22/01	15:20:16	55.52	1227.18
8/22/01	15:20:31	55.02	1228.13
8/22/01	15:20:46	54.34	1213.88
8/22/01	15:21:01	53.4	1222.88
8/22/01	15:21:16	52.51	1243.8
8/22/01	15:21:31	51.68	1409.42
8/22/01	15:21:46	51.17	1537.52
8/22/01	15:22:01	51.24	1562.89
8/22/01	15:22:16	51.51	1552.4
8/22/01	15:22:31	51.93	1570.02
8/22/01	15:22:46	52.38	1570
8/22/01	15:23:01	52.99	1575.98
8/22/01	15:23:16	54.11	1581.7
8/22/01	15:23:31	54.75	1556.27
8/22/01	15:23:46	55.58	1538.31
8/22/01	15:24:01	56.33	1531.86
8/22/01	15:24:16	56.61	1549.99
8/22/01	15:24:31	56.42	1551.22
8/22/01	15:24:46	55.96	1551.09
8/22/01	15:25:01	56.11	1571.43
8/22/01	15:25:16	56.55	1563.12
8/22/01	15:25:31	56.71	1556.19
8/22/01	15:25:46	56.63	1563.61
8/22/01	15:26:01	56.07	1572.48
8/22/01	15:26:16	55.52	1579.14
8/22/01	15:26:31	54.95	1569.97
8/22/01	15:26:46	54.74	1570.02
8/22/01	15:27:01	54.95	1557.51
8/22/01	15:27:16	54.93	1553.87
8/22/01	15:27:31	55.05	1565.03
8/22/01	15:27:46	54.97	1567.61
8/22/01	15:28:01	54.37	1555.06
8/22/01	15:28:16	54	1551.23

8/22/01	15:28:31	53.48	1557
8/22/01	15:28:46	53.08	1544.61
8/22/01	15:29:01	52.82	1544.65
8/22/01	15:29:16	52.49	1551.24
8/22/01	15:29:31	52.17	1544.54
8/22/01	15:29:46	51.95	1531.83
8/22/01	15:30:01	51.93	1564.93
8/22/01	15:30:16	52.07	1570.02
8/22/01	15:30:31	52.6	1570.12
8/22/01	15:30:46	52.87	1588.27
8/22/01	15:31:01	53.33	1581.61
8/22/01	15:31:16	53.77	1570.69
8/22/01	15:31:31	54.16	1578.43
8/22/01	15:31:46	54.54	1580.03
8/22/01	15:32:01	54.42	1589.48
8/22/01	15:32:16	53.92	1578.99
8/22/01	15:32:31	53.52	1553.83
8/22/01	15:32:46	53.22	1568.82
8/22/01	15:33:01	52.96	1581.82
8/22/01	15:33:16	52.68	1555.56
8/22/01	15:33:31	52.27	1539.4
8/22/01	15:33:46	52.19	1551.3
8/22/01	15:34:01	52.22	1551.37
8/22/01	15:34:16	51.61	1551.31
8/22/01	15:34:31	50.75	1558.88
8/22/01	15:34:46	49.52	1556.38
8/22/01	15:35:01	48.76	1555.7
8/22/01	15:35:16	48.1	1589.67
8/22/01	15:35:31	48.01	1581.85
8/22/01	15:35:46	48.33	1551.36
8/22/01	15:36:01	48.45	1556.05
8/22/01	15:36:16	49.03	1551.43
8/22/01	15:36:31	49.73	1543.53
8/22/01	15:36:46	50.02	1551.47
8/22/01	15:37:01	50.05	1551.32
8/22/01	15:37:16	50.44	1551.48
8/22/01	15:37:31	50.69	1559.53
8/22/01	15:37:46	51.02	1552
8/22/01	15:38:01	50.98	1545.88
8/22/01	15:38:16	51.19	1531.79
8/22/01	15:38:31	51.14	1531.85
8/22/01	15:38:46	50.92	1535.44
8/22/01	15:39:01	50.47	1553.88
8/22/01	15:39:16	50.13	1577.86
8/22/01	15:39:31	50.56	1560.71
8/22/01	15:39:46	51.32	1549.33
8/22/01	15:40:01	52.29	1564.99
8/22/01	15:40:16	53.26	1552.01
8/22/01	15:40:31	54.75	1572.8
8/22/01	15:40:46	55.58	1589.63

8/22/01	15:41:01	56.15	1581.94
8/22/01	15:41:16	56.42	1556.41
8/22/01	15:41:31	56.41	1551.49
8/22/01	15:41:46	56.36	1553.84
8/22/01	15:42:01	56.62	1568.3
8/22/01	15:42:16	56.3	1551.48
8/22/01	15:42:31	56.01	1552.34
8/22/01	15:42:46	55.67	1571.69
8/22/01	15:43:01	54.88	1572.38
8/22/01	15:43:16	54.18	1554.71
8/22/01	15:43:31	53.99	1551.37
8/22/01	15:43:46	53.64	1531.88
8/22/01	15:44:01	52.78	1549.84
8/22/01	15:44:16	52.11	1555.14
8/22/01	15:44:31	51.5	1551.36
8/22/01	15:44:46	51.4	1567.52
8/22/01	15:45:01	51.04	1558.02
8/22/01	15:45:16	50.45	1571.25
8/22/01	15:45:31	50.05	1602.98
8/22/01	15:45:46	49.41	1601.44
8/22/01	15:46:01	48.78	1589.58
8/22/01	15:46:16	48.45	1587.52
8/22/01	15:46:31	48.27	1586.08
8/22/01	15:46:46	48.26	1579.11
8/22/01	15:47:01	48.13	1570.01
8/22/01	15:47:16	47.3	1581.67
8/22/01	15:47:31	46.66	1560.38
8/22/01	15:47:46	45.87	1551.27
8/22/01	15:48:01	45.73	1567.52
8/22/01	15:48:16	46.69	1569.87
8/22/01	15:48:31	48.95	1571.23
8/22/01	15:48:46	51.49	1581.34
8/22/01	15:49:01	53.84	1574.72
8/22/01	15:49:16	55.96	1592.34
8/22/01	15:49:31	57.78	1605.22
8/22/01	15:49:46	58.78	1598.74
8/22/01	15:50:01	59.31	1585.5
8/22/01	15:50:16	59.27	1569.98
8/22/01	15:50:31	59.14	1569.81
8/22/01	15:50:46	58.59	1553.59
8/22/01	15:51:01	58.42	1554.81
8/22/01	15:51:16	57.76	1570.92
8/22/01	15:51:31	57.39	1586.67
8/22/01	15:51:46	57.43	1556.28
8/22/01	15:52:01	57.41	1553.1
8/22/01	15:52:16	57.72	1570.01
8/22/01	15:52:31	58.03	1567.28
8/22/01	15:52:46	58.02	1560.18
8/22/01	15:53:01	57.02	1555.3
8/22/01	15:53:16	55.95	1560.85

8/22/01	15:53:31	54.64	1580.32
8/22/01	15:53:46	53.3	1572.47
8/22/01	15:54:01	52	1562.41
8/22/01	15:54:16	51.05	1551.12
8/22/01	15:54:31	50.57	1559.9
8/22/01	15:54:46	50.59	1558.52
8/22/01	15:55:01	50.53	1551.13
8/22/01	15:55:16	50.82	1551.16
8/22/01	15:55:31	51.46	1571.26
8/22/01	15:55:46	51.58	1575.03
8/22/01	15:56:01	50.76	1566.79
8/22/01	15:56:16	50.28	1569.79
8/22/01	15:56:31	50.08	1570.43
8/22/01	15:56:46	50.31	1577.73
8/22/01	15:57:01	50.46	1569.86
8/22/01	15:57:16	50.8	1559.76
8/22/01	15:57:31	51.06	1543.31
8/22/01	15:57:46	51.41	1553.58
8/22/01	15:58:01	51.67	1569.85
8/22/01	15:58:16	51.62	1572.69
8/22/01	15:58:31	51.19	1569.67
8/22/01	15:58:46	51.1	1557.24
8/22/01	15:59:01	51.42	1563.59
8/22/01	15:59:16	51.91	1571.33
8/22/01	15:59:31	51.97	1551.06
8/22/01	15:59:46	51.45	1551.09
8/22/01	16:00:01	50.61	1561.95
8/22/01	16:00:16	50.01	1597.24
8/22/01	16:00:31	49.2	1628.49
8/22/01	16:00:46	48.35	1601.19
8/22/01	16:01:01	47.51	1589.26
8/22/01	16:01:16	46.91	1573.62
8/22/01	16:01:31	46.51	1574.89
8/22/01	16:01:46	46.4	1576.19
8/22/01	16:02:01	46.56	1550.95
8/22/01	16:02:16	46.74	1547.63
8/22/01	16:02:31	47.45	1576.89
8/22/01	16:02:46	48.29	1569.7
8/22/01	16:03:01	49.03	1569.68
8/22/01	16:03:16	49.64	1569.61
8/22/01	16:03:31	49.94	1569.62
8/22/01	16:03:46	50.24	1569.6
8/22/01	16:04:01	50.62	1578.68
8/22/01	16:04:16	50.76	1553.39
8/22/01	16:04:31	50.2	1551.05
8/22/01	16:04:46	49.51	1568.26
8/22/01	16:05:01	49.21	1569.51
8/22/01	16:05:16	49.32	1569.5
8/22/01	16:05:31	49.73	1552.18
8/22/01	16:05:46	50.38	1564.62

8/22/01	16:06:01	51.25	1588.95
8/22/01	16:06:16	52.12	1589.7
8/22/01	16:06:31	52.86	1585.43
8/22/01	16:06:46	53.15	1576.17
8/22/01	16:07:01	53.83	1589.13
8/22/01	16:07:16	54.07	1585.2
8/22/01	16:07:31	54.28	1573.47
8/22/01	16:07:46	54.05	1569.6
8/22/01	16:08:01	53.54	1576.82
8/22/01	16:08:16	52.85	1577.4
8/22/01	16:08:31	52.27	1550.76
8/22/01	16:08:46	51.81	1557.8
8/22/01	16:09:01	51.61	1564.31
8/22/01	16:09:16	51.1	1561.96
8/22/01	16:09:31	50.55	1551.08
8/22/01	16:09:46	49.98	1584.09
8/22/01	16:10:01	49.35	1578.61
8/22/01	16:10:16	48.92	1563.53
8/22/01	16:10:31	48.37	1588.43
8/22/01	16:10:46	48.05	1573.49
8/22/01	16:11:01	47.78	1569.51
8/22/01	16:11:16	47.93	1550.69
8/22/01	16:11:31	48.08	1558.25
8/22/01	16:11:46	48.13	1550.73
8/22/01	16:12:01	48.67	1558.19
8/22/01	16:12:16	49.21	1552.08
8/22/01	16:12:31	49.48	1570.27
8/22/01	16:12:46	49.3	1569.4
8/22/01	16:13:01	49.38	1569.51
8/22/01	16:13:16	49.54	1560.7
8/22/01	16:13:31	49.9	1550.75
8/22/01	16:13:46	50.35	1558.46
8/22/01	16:14:01	51.3	1587.95
8/22/01	16:14:16	52.37	1596.71
8/22/01	16:14:31	53.38	1608.2
8/22/01	16:14:46	53.75	1602.43
8/22/01	16:15:01	54.09	1599.42
8/22/01	16:15:16	54.24	1603.42
8/22/01	16:15:31	54.43	1602.13
8/22/01	16:15:46	54.87	1598.21
8/22/01	16:16:01	54.91	1577.44
8/22/01	16:16:16	55.04	1569.46
8/22/01	16:16:31	55.02	1553.21
8/22/01	16:16:46	54.63	1560.77
8/22/01	16:17:01	54.07	1572.21
8/22/01	16:17:16	53.36	1571.79
8/22/01	16:17:31	52.62	1575.08
8/22/01	16:17:46	52.19	1589.01
8/22/01	16:18:01	51.82	1575.94
8/22/01	16:18:16	50.96	1570.63

8/22/01	16:18:31	49.62	1564.38
8/22/01	16:18:46	48.89	1582.45
8/22/01	16:19:01	47.67	1583.7
8/22/01	16:19:16	46.96	1575.94
8/22/01	16:19:31	46.54	1607.23
8/22/01	16:19:46	46.35	1599.49
8/22/01	16:20:01	46.28	1573.2
8/22/01	16:20:16	46.84	1583.98
8/22/01	16:20:31	47.95	1581.13
8/22/01	16:20:46	49.58	1602.03
8/22/01	16:21:01	51.61	1608.63
8/22/01	16:21:16	52.71	1608.66
8/22/01	16:21:31	53.01	1578.21
8/22/01	16:21:46	53.09	1570.28
8/22/01	16:22:01	52.53	1573.71
8/22/01	16:22:16	52.11	1579.62
8/22/01	16:22:31	51.7	1607.18
8/22/01	16:22:46	51.55	1608.38
8/22/01	16:23:01	51.37	1623.37
8/22/01	16:23:16	51.47	1608.53
8/22/01	16:23:31	51.96	1608.6
8/22/01	16:23:46	52.55	1608.62
8/22/01	16:24:01	53.05	1608.65
8/22/01	16:24:16	53.26	1608.63
8/22/01	16:24:31	53.61	1599.86
8/22/01	16:24:46	54.11	1588.94
8/22/01	16:25:01	54.01	1572.36
8/22/01	16:25:16	53.58	1582.36
8/22/01	16:25:31	53.26	1575.74
8/22/01	16:25:46	53.17	1575.77
8/22/01	16:26:01	53.24	1569.2
8/22/01	16:26:16	53.34	1570.41
8/22/01	16:26:31	53.66	1566.23
8/22/01	16:26:46	53.68	1583.59
8/22/01	16:27:01	53.73	1569.07
8/22/01	16:27:16	53.67	962.04
8/22/01	16:27:31	53.14	319.44
8/22/01	16:27:46	52.58	215.02
8/22/01	16:28:01	51.84	171.84
8/22/01	16:28:16	50.84	148.65
8/22/01	16:28:31	49.71	126.17
8/22/01	16:28:46	47.96	124.79
8/22/01	16:29:01	46.42	132.5
8/22/01	16:29:16	44.63	324.36
8/22/01	16:29:31	42.82	1132.57
8/22/01	16:29:46	41.02	1391.97
8/22/01	16:30:01	39.57	1452.35
8/22/01	16:30:16	38.16	1488.56
8/22/01	16:30:31	37.07	1487.97
8/22/01	16:30:46	36.52	1506.52

8/22/01	16:31:01	36.19	1508.52
8/22/01	16:31:16	35.91	1528.25
8/22/01	16:31:31	36.09	1509.93
8/22/01	16:31:46	36.34	1545.45
8/22/01	16:32:01	37.01	1556.19
8/22/01	16:32:16	37.71	1552.72
8/22/01	16:32:31	38.25	1531.16
8/22/01	16:32:46	38.68	1531.15
8/22/01	16:33:01	39.06	1534.11
8/22/01	16:33:16	39.72	1550.73
8/22/01	16:33:31	40.58	1550.73
8/22/01	16:33:46	41.54	1550.76
8/22/01	16:34:01	42.22	1569.23
8/22/01	16:34:16	42.69	1555.41
8/22/01	16:34:31	43	1569.35
8/22/01	16:34:46	43.69	1562.47
8/22/01	16:35:01	44.21	1550.62
8/22/01	16:35:16	44.33	1544.42
8/22/01	16:35:31	44.21	1531.96
8/22/01	16:35:46	43.96	1533.7
8/22/01	16:36:01	43.84	1569.75
8/22/01	16:36:16	43.42	1579.69
8/22/01	16:36:31	43.19	1569.34
8/22/01	16:36:46	43.51	1562.93
8/22/01	16:37:01	44.29	1550.74
8/22/01	16:37:16	44.95	1550.66
8/22/01	16:37:31	45.16	1564.41
8/22/01	16:37:46	45.34	1556.78
8/22/01	16:38:01	45.94	1558.96
8/22/01	16:38:16	46.3	1546.06
8/22/01	16:38:31	46.55	1557.19
8/22/01	16:38:46	46.82	1548.95
8/22/01	16:39:01	46.73	1550.53
8/22/01	16:39:16	46.71	1556.77
8/22/01	16:39:31	46.85	1546.51
8/22/01	16:39:46	46.57	1565.57
8/22/01	16:40:01	46.67	1583.57
8/22/01	16:40:16	47.06	1588.8
8/22/01	16:40:31	47.61	1588.78
8/22/01	16:40:46	48.4	1588.88
8/22/01	16:41:01	49.06	1588.81
8/22/01	16:41:16	49.92	1576.67
8/22/01	16:41:31	51.04	1569.25
8/22/01	16:41:46	51.71	1561.14
8/22/01	16:42:01	51.97	1552.24
8/22/01	16:42:16	51.92	1563.04
8/22/01	16:42:31	51.91	1572.14
8/22/01	16:42:46	51.47	1587.01
8/22/01	16:43:01	50.94	1569.97
8/22/01	16:43:16	50.75	1556.93

8/22/01	16:43:31	50.08	1548.69
8/22/01	16:43:46	49.47	1568.02
8/22/01	16:44:01	49.21	1563.27
8/22/01	16:44:16	48.59	1576.99
8/22/01	16:44:31	48.6	1588.73
8/22/01	16:44:46	48.8	1570.77
8/22/01	16:45:01	48.84	1556.84
8/22/01	16:45:16	49.46	1569.19
8/22/01	16:45:31	49.91	1569.21
8/22/01	16:45:46	50.28	1560.48
8/22/01	16:46:01	51.02	1574.06
8/22/01	16:46:16	51.44	1557.72
8/22/01	16:46:31	51.69	1537.78
8/22/01	16:46:46	51.74	1562.95
8/22/01	16:47:01	51.96	1562.97
8/22/01	16:47:16	51.67	1576.95
8/22/01	16:47:31	51.28	1569.1
8/22/01	16:47:46	50.96	1569.17
8/22/01	16:48:01	51.06	1555.63
8/22/01	16:48:16	51.29	1557.86
8/22/01	16:48:31	51.47	1584.86
8/22/01	16:48:46	52.38	1588.71
8/22/01	16:49:01	53.31	1588.65
8/22/01	16:49:16	54	1596.57
8/22/01	16:49:31	54.42	1590
8/22/01	16:49:46	54.75	1595.23
8/22/01	16:50:01	54.94	1568
8/22/01	16:50:16	55.25	1555.93
8/22/01	16:50:31	56.13	1552.04
8/22/01	16:50:46	56.96	1550.27
8/22/01	16:51:01	57.72	1550.43
8/22/01	16:51:16	58.31	1550.36
8/22/01	16:51:31	58.93	1533.55
8/22/01	16:51:46	59.3	1550.37
8/22/01	16:52:01	59.75	1543.34
8/22/01	16:52:16	59.65	1559.12
8/22/01	16:52:31	59.14	1558.82
8/22/01	16:52:46	58.71	1566.56
8/22/01	16:53:01	57.94	1550.36
8/22/01	16:53:16	57.07	1553.38
8/22/01	16:53:31	56.12	1558.99
8/22/01	16:53:46	55.68	1564.05
8/22/01	16:54:01	55.5	1554.08
8/22/01	16:54:16	55.18	1553.76
8/22/01	16:54:31	54.51	1569.04
8/22/01	16:54:46	53.74	1550.36
8/22/01	16:55:01	53.15	1555.35
8/22/01	16:55:16	52.48	1569.13
8/22/01	16:55:31	51.07	1569.12
8/22/01	16:55:46	50.09	1569.11

8/22/01	16:56:01	49.32	1580.74
8/22/01	16:56:16	49.07	1572.26
8/22/01	16:56:31	49.39	1560.3
8/22/01	16:56:46	49.85	1566.62
8/22/01	16:57:01	50.36	1586.15
8/22/01	16:57:16	50.99	1591.86
8/22/01	16:57:31	51.64	1602.79
8/22/01	16:57:46	51.77	1581.26
8/22/01	16:58:01	51.59	1558.5
8/22/01	16:58:16	51.52	1568.86
8/22/01	16:58:31	51.4	1551.45
8/22/01	16:58:46	51.62	1550.29
8/22/01	16:59:01	51.91	1550.31
8/22/01	16:59:16	52.25	1551.5
8/22/01	16:59:31	52.18	1579.36
8/22/01	16:59:46	51.57	1568.99
8/22/01	17:00:01	51.16	1556
8/22/01	17:00:16	50.97	1556.52
8/22/01	17:00:31	50.95	1556.51
8/22/01	17:00:46	50.54	1537.11
8/22/01	17:01:01	50.39	1550.35
8/22/01	17:01:16	50.01	1563.99
8/22/01	17:01:31	49.5	1569.07
8/22/01	17:01:46	48.58	1566.48
8/22/01	17:02:01	48.18	1564.02
8/22/01	17:02:16	48.11	1564
8/22/01	17:02:31	48.13	1550.28
8/22/01	17:02:46	48.34	1550.3
8/22/01	17:03:01	48.63	1557.72
8/22/01	17:03:16	48.6	1547.28
8/22/01	17:03:31	48.56	1575.92
8/22/01	17:03:46	48.75	1570.32
8/22/01	17:04:01	48.64	1552.56
8/22/01	17:04:16	48.73	1533.43
8/22/01	17:04:31	49.01	1562.05
8/22/01	17:04:46	49.52	1550.5
8/22/01	17:05:01	49.66	1550.24
8/22/01	17:05:16	49.87	1562.72
8/22/01	17:05:31	50.26	1558.96
8/22/01	17:05:46	50.99	1561.68
8/22/01	17:06:01	51.73	1595.3
8/22/01	17:06:16	52.08	1588.39
8/22/01	17:06:31	52.55	1572.78
8/22/01	17:06:46	53.2	1581.69
8/22/01	17:07:01	53.59	1588.5
8/22/01	17:07:16	53.5	1579.61
8/22/01	17:07:31	53.17	1580.18
8/22/01	17:07:46	52.4	1574
8/22/01	17:08:01	52	1571.64
8/22/01	17:08:16	52.16	1571.18

8/22/01	17:08:31	52.46	1552.38
8/22/01	17:08:46	52.61	1580.12
8/22/01	17:09:01	52.57	1594.35
8/22/01	17:09:16	52.24	1559.66
8/22/01	17:09:31	51.91	1550.27
8/22/01	17:09:46	52.14	1566.43
8/22/01	17:10:01	52.22	1571.2
8/22/01	17:10:16	52.56	1564.87
8/22/01	17:10:31	52.94	1550.39
8/22/01	17:10:46	53.37	1550.25
8/22/01	17:11:01	53.27	1550.09
8/22/01	17:11:16	52.5	1566.51
8/22/01	17:11:31	51.89	1576.1
8/22/01	17:11:46	51.34	1560.89
8/22/01	17:12:01	50.36	1560.03
8/22/01	17:12:16	49.95	1560.22
8/22/01	17:12:31	49.58	1568.84
8/22/01	17:12:46	49.46	1562.54
8/22/01	17:13:01	49.39	1560.14
8/22/01	17:13:16	49.81	1585.54
8/22/01	17:13:31	50.19	1568.81
8/22/01	17:13:46	50.96	1583.12
8/22/01	17:14:01	51.89	1614.41
8/22/01	17:14:16	52.64	1588.19
8/22/01	17:14:31	53.43	1573.94
8/22/01	17:14:46	54.17	1576.58
8/22/01	17:15:01	54.93	1588.24
8/22/01	17:15:16	55.3	1579.27
8/22/01	17:15:31	55.19	1553.3
8/22/01	17:15:46	54.66	1549.93
8/22/01	17:16:01	53.9	1568.88
8/22/01	17:16:16	53.22	1581.96
8/22/01	17:16:31	52.32	1604.01
8/22/01	17:16:46	51.58	1596.27
8/22/01	17:17:01	50.75	1588.39
8/22/01	17:17:16	50.38	1588.48
8/22/01	17:17:31	50.11	1596.29
8/22/01	17:17:46	50	1588.46
8/22/01	17:18:01	49.44	1574.99
8/22/01	17:18:16	49.47	1598.88
8/22/01	17:18:31	49.97	1588.51
8/22/01	17:18:46	50.26	1576.78
8/22/01	17:19:01	50.93	1562.6
8/22/01	17:19:16	51.53	1580.45
8/22/01	17:19:31	51.57	1588.41
8/22/01	17:19:46	51.11	1579.33
8/22/01	17:20:01	50.67	1561.61
8/22/01	17:20:16	49.91	1560.15
8/22/01	17:20:31	49.41	1581.9
8/22/01	17:20:46	49.44	1568.83

8/22/01	17:21:01	49.65	1568.87
8/22/01	17:21:16	49.57	1576.65
8/22/01	17:21:31	49.51	1557.02
8/22/01	17:21:46	49.67	1579.41
8/22/01	17:22:01	49.93	1570.14
8/22/01	17:22:16	49.95	1568.88
8/22/01	17:22:31	50.1	1565.01
8/22/01	17:22:46	50.76	1567.68
8/22/01	17:23:01	51.26	1576.64
8/22/01	17:23:16	51.78	1590.98
8/22/01	17:23:31	51.85	1586.66
8/22/01	17:23:46	51.77	1568.94
8/22/01	17:24:01	51.41	1573.22
8/22/01	17:24:16	50.77	1573.71
8/22/01	17:24:31	50.6	1548.53
8/22/01	17:24:46	50.52	1553.44
8/22/01	17:25:01	50.1	1571.1
8/22/01	17:25:16	49.31	1576.84
8/22/01	17:25:31	48.28	1550.18
8/22/01	17:25:46	47.37	1550.11
8/22/01	17:26:01	46.66	1550.19
8/22/01	17:26:16	46.11	1550.12
8/22/01	17:26:31	45.93	1550.23
8/22/01	17:26:46	45.88	1566.35
8/22/01	17:27:01	46.23	1564.46
8/22/01	17:27:16	46.66	1538.16
8/22/01	17:27:31	46.65	1550.2
8/22/01	17:27:46	46.58	1557.56
8/22/01	17:28:01	46.99	1553.98
8/22/01	17:28:16	46.95	1550.15
8/22/01	17:28:31	47.25	1548.22
8/22/01	17:28:46	47.71	1550.22
8/22/01	17:29:01	48.32	1550.14
8/22/01	17:29:16	49.07	1558.9
8/22/01	17:29:31	50.32	1559.47
8/22/01	17:29:46	51.29	1561.55
8/22/01	17:30:01	51.28	1562.47
8/22/01	17:30:16	51.53	1561.28
8/22/01	17:30:31	51.23	1568.77
8/22/01	17:30:46	51.44	1566.34
8/22/01	17:31:01	51.08	1556.38
8/22/01	17:31:16	50.34	1568.83
8/22/01	17:31:31	49.43	1550.04
8/22/01	17:31:46	48.5	1550.08
8/22/01	17:32:01	47.78	1547.74
8/22/01	17:32:16	47	1578.99
8/22/01	17:32:31	46.55	1555.15
8/22/01	17:32:46	46.58	1557.32
8/22/01	17:33:01	46.01	1570.62
8/22/01	17:33:16	45.69	1568.93

8/22/01	17:46:01	49.68	1494.21
8/22/01	17:46:16	49.83	1520.86
8/22/01	17:46:31	49.78	1513.23
8/22/01	17:46:46	49.62	1506.71
8/22/01	17:47:01	49.81	1499.44
8/22/01	17:47:16	50.33	1476.07
8/22/01	17:47:31	51.28	1489.03
8/22/01	17:47:46	51.92	1516.3
8/22/01	17:48:01	52.16	1515.56
8/22/01	17:48:16	51.95	1524.14
8/22/01	17:48:31	51.22	1525.44
8/22/01	17:48:46	50.47	1486.96
8/22/01	17:49:01	50.15	1469.03
8/22/01	17:49:16	49.94	1493.15
8/22/01	17:49:31	49.43	1479.54
8/22/01	17:49:46	48.65	1492.19
8/22/01	17:50:01	48.59	1489.01
8/22/01	17:50:16	49.18	1494.16
8/22/01	17:50:31	49.85	1489.6
8/22/01	17:50:46	50.36	1478.16
8/22/01	17:51:01	51.09	1466.49
8/22/01	17:51:16	51.75	1479.6
8/22/01	17:51:31	52.52	1472.95
8/22/01	17:51:46	53.48	1466.43
8/22/01	17:52:01	54.32	1481.02
8/22/01	17:52:16	54.63	1520.46
8/22/01	17:52:31	55.69	1553.59
8/22/01	17:52:46	56.63	1385.53
8/22/01	17:53:01	57.62	490.89
8/22/01	17:53:16	57.67	256.63
8/22/01	17:53:31	56.41	196.1
8/22/01	17:53:46	54.38	160.96
8/22/01	17:54:01	52.01	138.24
8/22/01	17:54:16	49.76	119.98
8/22/01	17:54:31	47.45	196.03
8/22/01	17:54:46	44.66	846.24
8/22/01	17:55:01	42.39	1241.11
8/22/01	17:55:16	40.21	1370.42
8/22/01	17:55:31	38.25	1392.57
8/22/01	17:55:46	37.04	1399.32
8/22/01	17:56:01	36.18	1420.71
8/22/01	17:56:16	35.41	1448.04
8/22/01	17:56:31	34.68	1446.76
8/22/01	17:56:46	34.41	1440.15
8/22/01	17:57:01	34.28	1451.18
8/22/01	17:57:16	34.31	1476.49
8/22/01	17:57:31	34.48	1456.18
8/22/01	17:57:46	35.35	1453.22
8/22/01	17:58:01	36.69	1446.74
8/22/01	17:58:16	37.98	1449.29

8/22/01	17:58:31	39.63	1484.95
8/22/01	17:58:46	41.32	1486.18
8/22/01	17:59:01	42.61	1486.22
8/22/01	17:59:16	43.93	1480.93
8/22/01	17:59:31	44.83	1466.19
8/22/01	17:59:46	45.22	1466.29
8/22/01	18:00:01	44.9	1477.74
8/22/01	18:00:16	44.32	1482.28
8/22/01	18:00:31	43.84	1456.99
8/22/01	18:00:46	43.27	1452.42
8/22/01	18:01:01	42.29	1464.51
8/22/01	18:01:16	41.38	1474.32
8/22/01	18:01:31	40.64	1466.26
8/22/01	18:01:46	40.19	1467.62
8/22/01	18:02:01	39.99	1467.81
8/22/01	18:02:16	39.9	1446.79
8/22/01	18:02:31	39.95	1456.47
8/22/01	18:02:46	40.35	1472.97
8/22/01	18:03:01	40.46	1486.12
8/22/01	18:03:16	40.76	1467.59
8/22/01	18:03:31	41.41	1483.53
8/22/01	18:03:46	42.72	1474.25
8/22/01	18:04:01	43.84	1480.98
8/22/01	18:04:16	45.13	1469.84
8/22/01	18:04:31	46.04	1480.51
8/22/01	18:04:46	46.49	1516.74
8/22/01	18:05:01	46.19	1472.68
8/22/01	18:05:16	46.07	1474.06
8/22/01	18:05:31	46.12	1505.58
8/22/01	18:05:46	46.19	1492.26
8/22/01	18:06:01	46.48	1466.26
8/22/01	18:06:16	46.6	1466.12
8/22/01	18:06:31	46.84	1463.58
8/22/01	18:06:46	46.96	1441.39
8/22/01	18:07:01	46.53	1447.85
8/22/01	18:07:16	46.68	1480.34
8/22/01	18:07:31	46.4	1466.64
8/22/01	18:07:46	45.96	1483.33
8/22/01	18:08:01	45.69	1486.05
8/22/01	18:08:16	45.49	1464.95
8/22/01	18:08:31	45.44	1446.62
8/22/01	18:08:46	46.06	1467.34
8/22/01	18:09:01	46.75	1466.76
8/22/01	18:09:16	46.21	1441.31
8/22/01	18:09:31	45.29	1462.2
8/22/01	18:09:46	44.53	1486.09
8/22/01	18:10:01	43.31	1453.05
8/22/01	18:10:16	42.39	1446.59
8/22/01	18:10:31	42.09	1455.1
8/22/01	18:10:46	42.38	1447.91

8/22/01	18:11:01	42.84	1466.06		
8/22/01	18:11:16	43.21	1466.4		
8/22/01	18:11:31	43.36	1470.43		
8/22/01	18:11:46	43.37	1485.96		
8/22/01	18:12:01	43.79	1478.05		
8/22/01	18:12:16	44.07	1481.95		
8/22/01	18:12:31	44.89	1486.02		
8/22/01	18:12:46	45.16	1472.72		
8/22/01	18:13:01	45.75	1449.19		
8/22/01	18:13:16	45.75	1466.06		
8/22/01	18:13:31	45.79	1479.39		
8/22/01	18:13:46	45.6	1456.95		
8/22/01	18:14:01	45.49	1466.08		
8/22/01	18:14:16	44.84	1458.2		
8/22/01	18:14:31	44.48	1465.99		
8/22/01	18:14:46	44.65	1477.07		
8/22/01	18:15:01	44.68	1480.67		
8/22/01	18:15:16	44.9	1459.51		
8/22/01	18:15:31	45.23	1484.58		
8/22/01	18:15:46	45.71	1457.54		
8/22/01	18:16:01	45.76	1435.84		
8/22/01	18:16:16	45.54	1446.53		
8/22/01	18:16:31	45.84	1446.4		
8/22/01	18:16:46	46.36	1434.97		
8/22/01	18:17:01	46.36	1434.69		
8/22/01	18:17:16	46.53	1445.49		
8/22/01	18:17:31	46.67	1481.72		
8/22/01	18:17:46	46.09	1497.68		
8/22/01	18:18:01	45.77	1467.3		
8/22/01	18:18:16	44.07	1460.81		
AVERAGES:		49.71	1509.20		
8/22/01	18:18:31	41.34		1438.61	
8/22/01	18:18:46	81.97		1426.86	
8/22/01	18:19:01	14		1366.75	
8/22/01	18:19:16	4.35		121.94	
8/22/01	18:19:31	3.86		113.66	
8/22/01	18:19:46	-0.04		94.81	
8/22/01	18:20:01	-1.92	**ZERO C3H8**	176.76	**861.8 C3H8**
8/22/01	18:20:16	-2.2		842.62	
8/22/01	18:20:31	-1.39		885.24	
8/22/01	18:20:46	**-1.47**		**889.33**	
8/22/01	18:21:01	**-1.55**		**890.2**	
8/22/01	18:21:16	**-1.62**		**890.19**	
8/22/01	18:21:31	**-1.75**		**890.25**	
8/22/01	18:21:46	**-1.82**		**890.21**	**890.04**
8/22/01	18:22:01	**-1.84**		882.12	
8/22/01	18:22:16	**-1.82**	**-1.70**	858.61	

8/22/01	18:22:31	31.35		861.37	
8/22/01	18:22:46	86.38	**84.7 C3H8**	855.33	
8/22/01	18:23:01	86.87		861.41	
8/22/01	18:23:16	**87.26**		861.43	
8/22/01	18:23:31	**87.4**		434.29	
8/22/01	18:23:46	**86.7**		21.89	
8/22/01	18:24:01	**86.73**		13.85	
8/22/01	18:24:16	**86.85**		9.64	
8/22/01	18:24:31	**86.96**	**86.98**	9.65	**ZERO C3H8**
8/22/01	18:24:46	87.91		9.64	
8/22/01	18:25:01	81.16		9.66	
8/22/01	18:25:16	53.77		**5.66**	
8/22/01	18:25:31	0.86		**5.01**	**5.34**

APPENDIX D

WH-3

EPA METHOD 25 LABORATORY AND FIELD DATA SHEETS

EPA Method-25 Laboratory Report

PAL Job No: M25-0118
Client Name and Sample receipt Date:
Sample Recovery and Analysis Dates:

Avg. Oxidation Catalyst Efficiency: 101.3%
ACE/Spiralkote, 8/22/01
August 23-24, 2001 by C.G. Simon

Case Narrative:

This laboratory report is presented in 7 parts. The Introduction is followed by a Summary of Analytical Results, Sample Data, M-25 Analyzer Daily Calibration Data, Sample Analysis Data, Calculations, and Initial M-25 Recovery System Performance data.

The following notes apply to this test series.

1.) Samples were received on 8/22/01 on dry ice, all tanks and traps were sealed and in good condition.

2.) All lab tank pressure/temperatures matched field values to within 2%. Field values were used in all calculations.

3.) All samples traps were recovered at 200°C, then cleaned at 500°C.

4.) All sample trap purges were stopped when the trap effluent contained <5 ppm CO2 at a flow rate of ~100 ml/min.

5.) All trap recoveries were stopped when the oxidation catalyst effluent contained <10 ppm CO2 at a flow rate of ~100 ml/min at 200°C.

6.) Corrections for CO2 and background interference applied to the NMO analyzer values recorded for the sample tanks were calculated using the relationship: $Cf = (5.4\ ppm)(\%CO2\ in\ sample\ tank) + 3.0\ ppm$

7.) Two EPA Method-25 audit samples were submitted with this set of samples. Results were: 113 ppmC and 2,679 ppmC

PRECISION ANALYTICAL LABORATORIES, INC.: US EPA METHOD-25 ANALYSIS RESULTS

PAL Job No: M25-0118
Client Name and Sample receipt Date:
Sample Recovery and Analysis Dates:

Avg. Oxidation Catalyst Efficiency: 101.3%
ACE/Spiralkote, 8/22/01
August 23-24, 2001 by C.G. Simon

TRAPS RECOVERED AT 200°C				TGNMO concentrations as ppmC in the sample gas			
				C_t	C_c	C	m_c
Sample Run and ID	*CO2 ppm	CO ppm	CH4 ppm	Non-condensable @ -78°C, ppmC	Condensable @ -78°C, ppmC	Total VOC ppmC	Total VOC mg/dscm
WH3 Catox Inlet							
M250118-I-1	5,131	65	13	24	5,773	5,797	2,895
M250118-I-2	4,875	67	13	28	6,728	6,757	3,374
M250118-I-3	5,284	72	11	33	7,207	7,241	3,615
Average	**5,096**	**68**	**12**	**29**	**6,570**	**6,598**	**3,294**
%RSD	*3*	*4*	*9*	*13*	*9*	*9*	*9*
WH3 Catox Outlet							
M250118-O-1	12,180	2	15	7	44	51	26
M250118-O-2	13,371	3	15	22	88	110	55
M250118-O-3	12,112	2	13	31	71	103	51
Average	**12,554**	**3**	**14**	**20**	**68**	**88**	**44**
%RSD	*5*	*23*	*5*	*49*	*27*	*30*	*30*
Audit Samples							
M250118-317A	1,034	<1	<1	52	61	113	57
M250118-317B	672	<1	<1	2,116	563	2,679	1,338

*CO2 concentrations in the sample tank may not be directly comparable due to a potential interference of up to ~6000 ppm from the dry ice used to store and process the samples. This does not affect the VOC analysis.

PRECISION ANALYTICAL LABORATORIES, INC.: US EPA METHOD-25 SAMPLE DATA

PAL Job No: M25-0118		Avg. Oxidation Catalyst Efficiency: 101.3%										
Client Name and Sample receipt Date:		ACE/Spiralkote, 8/22/01										
Sample Recovery and Analysis Dates:		August 23-24, 2001 by C.G. Simon										
					For each tank, P_f and Ptf equal the sum of the listed P3 value plus the listed B3 value.							
Sample ID	**Vessel**	**V and V_v ml**	**P_{ti} mbar**	**t_{ti} °F**	**P_f mbar**	**t_f °F**	**P_3 in. Hg**	**B_3 in. Hg**	**T_f, T_{tf} °F**	**Sample Vol. (V_s) ml**	**Analysis Volume ml**	**Anal Vol / Samp Vol**
WH3 Catox Inlet												
M250118-I-1	Tank 123	6,108	4	85	901	98	14.62	30.09	90	5,116	8,762	1.713
trap-1021	ICV-149	3,170					15.10	30.08	90	5,116	4,595	0.898
M250118-I-2	Tank 118	6,105	4	85	858	98	14.54	30.06	91	4,868	8,720	1.791
trap-1015	ICV-154	3,171					14.30	30.05	91	4,868	4,504	0.925
M250118-I-3	Tank 131	6,110	4	85	867	99	14.54	30.05	89	4,915	8,757	1.782
trap-1050	ICV-150	3,172					14.60	30.04	90	4,915	4,543	0.924
WH3 Catox Outlet												
M250118-O-1	Tank 109	6,111	4	85	900	99	14.76	30.10	79	5,104	8,975	1.759
trap-1023	ICV-146	3,172					14.46	30.09	80	5,104	4,618	0.905
M250118-O-2	Tank 114	6,104	3	85	878	98	14.50	30.10	77	4,987	8,946	1.794
trap-1013	ICV-147	3,173					17.38	30.10	79	4,987	4,932	0.989
M250118-O-3	Tank 132	6,120	4	85	890	101	14.64	30.10	79	5,036	8,965	1.780
trap-1011	ICV-148	3,175					15.00	30.12	81	5,036	4,673	0.928
Audit Samples												
M250118-317A	Tank 127	6,108	4	85	946	95	14.85	30.13	83	5,402	8,929	1.653
trap-1007	ICV-152	3,174					17.23	30.13	85	5,402	4,867	0.901
M250118-317B	Tank 128	6,112	4	85	960	96	18.10	30.11	88	5,476	9,489	1.733
trap-1001	ICV-153	3,172					15.28	30.10	89	5,476	4,627	0.845

PRECISION ANALYTICAL LABORATORIES, INC.: US EPA METHOD 25 ANALYZER CALIBRATION

PAL Job No: M25-0118				Avg. Oxidation Catalyst Efficiency: 101.3%					
Client Name and Sample receipt Date:				ACE/Spiralkote, 8/22/01					
Sample Recovery Dates:				August 23-24, 2001 by C.G. Simon					
Calib.	**Species**	**Cal gas conc. ppmC**	**Analyzer ppmC range**	**Response #1**	**Response #2**	**Response #3**	**Average Response**	**Rf**	**% RSD**
AA	CO2	454	500	903	903	903	903	1.006	0.00
BB	CO2	10,200	20,000	485	482	481	483	1.057	0.35
CC	CO2	10,200	20,000	507	506	508	507	1.006	0.16
DD	CO2	20,100	50,000	400	401	399	400	1.005	0.20
EE	CO2	20,100	50,000	391	393	392	392	1.026	0.21
A	NMO	60.6	100	619	640	630	630	0.962	1.36
A	NMO	75.6	200	407	387	385	393	0.962	2.53
B	NMO	60.6	100	625	605	635	622	0.975	2.01
C	NMO	1,434	2,000	715	708	723	715	1.002	0.86
D	NMO	1,434	2,000	740	733	720	731	0.981	1.13
E	NMO	60.6	100	620	590	611	607	0.998	2.07
F	NMO	75.6	200	348	357	378	361	1.047	3.48
A	CH4	48.7	100	488	508	486	494	0.986	2.01
E	CH4	48.7	100	488	489	500	492	0.989	1.10
F	CH4	48.7	100	515	504	526	515	0.946	1.74
A	CO	49.2	100	462	493	492	482	1.020	2.98
E	CO	49.2	100	488	496	480	488	1.008	1.34
F	CO	49.2	100	496	489	485	490	1.004	0.93

Standards and samples are injected three times. Acceptable results have <2.0% RSD, or <2 ppmC SD, whichever is greater. Average responses for standards injected before and after samples are used to calculate results. In some cases, responses for standards injected adjacent to samples are used to calculate results. Analyzer response expressed in "units per ppmC", or $\mathbf{DRF_{CO2}}$ = (average response)(analyzer range)/(CO_2 calibration gas concentration in ppmC).

Similarly, $\mathbf{DRF_{NMO}}$ = (average response)(analyzer range)/(NMO calibration gas concentration in ppmC).

PRECISION ANALYTICAL LABS, INC. US EPA METHOD-25 ANALYSIS DATA

PAL Job No: M25-0118		Avg. Oxidation Catalyst Efficiency: 101.3%						
Client Name and Sample receipt Date:		ACE/Spiralkote, 8/22/01						
Sample Recovery and Analysis Dates:		August 23-24, 2001 by C.G. Simon						
Corrections for CO_2 and background interference applied to the NMO analyzer values recorded for the sample tanks were								
calculated using the relationship: Cf = (5.4 ppm)(%CO2 in sample tank) + 3.0 ppm. This sum is subtracted from the								
NMO analyzer response, C_{tm}. $C_t = (C_{tm}-Cf)(AV/SV)$, and $C_c = (C_{cm})(AV/SV)$, and $C = C_t + C_c$.								
Sample ID	**Vessel**	**Species**	**Individual Responses**	**Average Response**	**Range ppm**	**Response Factor**	**ppm in Sample**	**TGNMO ppmC**
WH3 Catox Inlet								
M250118-I-1	Tank 123	CO_2	585, 595, 590	590	5,000	1.016	5,131	
AV/SV =	1.713	C_t, NMO as C	178, 193, 184	185	100	1.013	24	24
		CH_4	80, 80, 81	80	100	0.968	13	
		CO	376, 380, 375	377	100	1.006	65	
trap-1021	ICV-149	C_c, VOC as CO_2	642, 634,640	639	10,000	1.006	5,768	
AV/SV =	0.898	NMO	113, 115, 114	114	50	0.968	5.0	5,773
M250118-I-2	Tank 118	CO_2	538, 538, 532	536	5,000	1.016	4,875	
AV/SV =	1.791	C_t, NMO as C	198, 201, 198	199	100	1.013	28	28
		CH_4	75, 76, 76	76	100	0.968	13	
		CO	370, 373, 370	371	100	1.006	67	
trap-1015	ICV-154	C_c, VOC as CO_2	716, 713, 719	716	10,000	1.016	6,727	
AV/SV =	0.925	NMO	32, 30, 28	30	50	1.037	1.4	6,728
M250118-I-3	Tank 131	CO_2	586, 582, 584	584	5,000	1.016	5,284	
AV/SV =	1.782	C_t, NMO as C	221, 241, 231	231	100	1.013	33	33
		CH_4	64, 62, 63	63	100	0.968	11	
		CO	392, 408, 406	402	100	1.006	72	
trap-1050	ICV-150	C_c, VOC as CO_2	766, 769, 768	768	10,000	1.016	7,206	
AV/SV =	0.924	NMO	23, 21, 22	22	50	1.037	1.1	7,207

PRECISION ANALYTICAL LABS, INC. US EPA METHOD-25 ANALYSIS DATA

PAL Job No: M25-0118		Avg. Oxidation Catalyst Efficiency: 101.3%						
Client Name and Sample receipt Date:		ACE/Spiralkote, 8/22/01						
Sample Recovery and Analysis Dates:		August 23-24, 2001 by C.G. Simon						
Corrections for CO_2 and background interference applied to the NMO analyzer values recorded for the sample tanks were								
calculated using the relationship: Cf = (5.4 ppm)(%CO2 in sample tank) + 3.0 ppm. This sum is subtracted from the								
NMO analyzer response, C_{tm}. $C_t = (C_{tm}-Cf)(AV/SV)$, and $C_c = (C_{cm})(AV/SV)$, and $C = C_t + C_c$.								
Sample ID	**Vessel**	**Species**	**Individual Responses**	**Average Response**	**Range ppm**	**Response Factor**	**ppm in Sample**	**TGNMO ppmC**
WH3 Catox Outlet								
M250118-O-1	Tank 109	CO_2	680, 678, 688	682	10,000	1.016	12,180	
AV/SV =	1.759	C_t, NMO as C	105, 138, 92	112	100	0.969	7	7
		CH_4	88, 88, 85	86	100	0.988	15	
		CO	14, 13, 15	14	100	1.014	2	
trap-1023	ICV-146	C_c, VOC as CO_2	482, 486, 481	483	100	1.006	44	
AV/SV =	0.905	NMO	<10, <10, <10	<10	50	0.969	<1	44
M250118-O-2	Tank 114	CO_2	732, 740, 730	734	10,000	1.016	13,371	
AV/SV =	1.794	C_t, NMO as C	197, 195, 210	201	100	0.969	22	22
		CH_4	86, 82, 82	83	100	0.988	15	
		CO	18, 22, 17	19	100	1.014	3	
trap-1013	ICV-147	C_c, VOC as CO_2	442, 442, 442	442	200	1.006	88	
AV/SV =	0.989	NMO	<10, <10, <10	<10	50	0.969	<1	88
M250118-O-3	Tank 132	CO_2	672, 664, 674	670	10,000	1.016	12,112	
AV/SV =	1.780	C_t, NMO as C	274, 230, 250	251	100	0.969	31	31
		CH_4	76, 73, 76	75	100	0.988	13	
		CO	12, 11, 10	11	100	1.014	2	
trap-1011	ICV-148	C_c, VOC as CO_2	379, 382, 382	381	200	1.006	71	
AV/SV =	0.928	NMO	<10, <10, <10	<10	50	0.969	<1	71

PRECISION ANALYTICAL LABS, INC. US EPA METHOD-25 ANALYSIS DATA

PAL Job No: M25-0118		Avg. Oxidation Catalyst Efficiency: 101.3%						
Client Name and Sample receipt Date:		ACE/Spiralkote, 8/22/01						
Sample Recovery and Analysis Dates:		August 23-24, 2001 by C.G. Simon						
Corrections for CO_2 and background interference applied to the NMO analyzer values recorded for the sample tanks were								
calculated using the relationship: Cf = (5.4 ppm)(%CO2 in sample tank) + 3.0 ppm. This sum is subtracted from the								
NMO analyzer response, C_{tm}. $C_t = (C_{tm}-Cf)(AV/SV)$, and $C_c = (C_{cm})(AV/SV)$, and $C = C_t + C_c$.								
Sample ID	**Vessel**	**Species**	**Individual Responses**	**Average Response**	**Range ppm**	**Response Factor**	**ppm in Sample**	**TGNMO ppmC**
Audit Samples								
M250118-317A	Tank 127	CO_2	310, 306, 308	308	2,000	1.016	1,034	
AV/SV =	1.653	C_t, NMO as C	374, 353, 351	359	100	0.969	52	52
		CH_4	<5, <5, <5	<5	100	0.988	<1	
		CO	<5, <5, <5	<5	100	1.014	<1	
trap-1007	ICV-152	C_c, VOC as CO_2	346, 336, 335	339	200	1.006	61	
AV/SV =	0.901	NMO	<10, <10, <10	<10	50	0.969	<1	61
M250118-317B	Tank 128	CO_2	190, 190, 193	191	2,000	1.016	672	
AV/SV =	1.733	C_t, NMO as C	618, 610, 605	611	2,000	1.002	2,116	2,116
		CH_4	<5, <5, <5	<5	100	0.988	<1	
		CO	<5, <5, <5	<5	100	1.014	<1	
trap-1001	ICV-153	C_c, VOC as CO_2	660, 660, 663	661	1,000	1.006	562	
AV/SV =	0.845	NMO	24, 26, 25	25	50	1.002	1.1	563

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US EPA Reference Method 25 Sample Calculations

Notes:

(1.) PAL uses calibrated piezoelectric digital absolute pressure gauges as well as open ended mercury (Hg) filled u-tube manometers for field and laboratory pressure measurements. Pressures measured with open ended Hg manometers are corrected to absolute (standard) pressures using the following relation: (absolute P) = (measured P) + (barometric P)

(2.) Temperatures are recorded in °F or °C and converted to Kelvins using the following relations: (°F-32)/1.8 + 273.15 = K, and °C + 273.15 = K Standard temperature = 20°C = 293.15K

(3.) In some cases, the equations listed below are expanded versions of those presented in 40CFR Pt. 60, App. A, Meth. 25, pp. 850-851 (Rev. July 1993).

(4.) The following relations are relevant to the equations below:

293.15K / 760 mm Hg = 0.3857 K/mm Hg 1 atmosphere = 1013 mbar = 760 mm Hg = 29.92" Hg
293.15K/1013 mbar = 0.2894 K/mbar 1" Hg pressure = 33.863 mbar = 25.401 mm Hg
293.15K/29.92" Hg = 9.798 K/in. Hg

The following terms are used in the equations below:

C = TGNMO concentration of the effluent, ppm C equivalent
Cc = Calculated condensible organic (condensate trap) concentration of the effluent, ppm C equivalent
Ccm = Measured concentration (NMO analyzer) for the condensate trap ICV, ppm CO2 + TH.
Ct = Calculated noncondensible organic concentration (sample tank) of the effluent, ppm C equivalent.
Ctm = Measured concentration (NMO Analyzer) for the sample tank, ppm NMO.
mc = TGNMO mass concentrationof the effluent, mg C/dscm
F = sample flow rate, cc/min.
Pf = Final pressure of the ICV, inches of Hg, absolute.
Pb = Barometric pressure, inches of Hg or mbar (29.92" Hg = 1013 mbar)
Pti = Gas sample tank pressure before sampling, mbar absolute.
Pt = Gas sample tank pressure after sampling, mbar absolute.
Ptf = Final gas sample tank pressure after pressurizing, inches Hg absolute.
Tf = Final temperature of ICV, Kelvins.
Tti = Sample tank temperature before sampling, Kelvins.
Tt = Sample tank temperature at completion of sampling, Kelvins.
Ttf = Sample tank temperature after pressurizing, Kelvins.
V = Sample tank volume, (cc).
Vv = ICV volume, cc.
Vs = gas volume sampled, cc.
Vt = Sample train volume, cc. (Dimensional calculations yield Ct = 60 cc for PAL trains.)
n = number of data points
q = total number of analyzer injections of ICV during analysis (where k=injection number, 1, ..., q).
r = total number of analyzer injections of sample tank during analysis (where j=injection number, 1, ..., r).
xi = individual measurements.
x = mean value
ΔP = Allowable pressure change, inches Hg.
Θ = Leak check period, minutes.

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Method-25 Calculations

Tank Volumes

Procedure: Each tank was weighed to the nearest gram while filled with ambient air and while filled with degassed distilled water. The temperature of the water was measured and the volume of the tank calculated.

V = [wt. of tank + water (g)] - [wt. of tank + air (g)] / [density of water at the recorded temp. (g/cc)]

Pre-Sampling Leak Check Allowable Pressure Change

$\Delta P = (0.01)(F)(Pb)(\Theta)/Vt = [(0.01)(100\ cc/min)(Pb)(5\ min)] / [60\ cc]$

ΔP = 2.5" Hg for a barometric pressure (Pb) of 29.92" Hg.

Sample Volume

Vs = (.3857)(V) [(Pt/Tt) - (Pti/Tti)], or *Vs = (0.2894)(V) [(Pt/Tt) - (Pti/Tti)]

*This equation includes a constant for pressure expressed in mbar.

Noncondensible Organics, Ct

Notes: Response factor = (calibration gas concentration, ppm as C) / (instrument response, ppm as C)

The M-25 analyzer has a reproducble interference of 2.3 ppm NM as C per % CO2 in the sample gas stream.

Ct = [(Ptf/Ttf) / (Pt/Tt)-Pti/Tti)][1/r Σ(j=1, ..r)Ctmj] - [CO2 interference]} = (Analysis V / Vs) (Ctm)

where Ctm = {[1/r S(j=1, ..r)Ctmj] - [CO2 interference]} = [(avg NM integrator response) (Integrator range, ppm) (response factor) / (1000 units full scale)]-[(% CO2 in tank at Ptf) (2.3 ppm NM as C interference/%CO2)]

Condensible Organics, Cc

Cc = (0.3857) (Vv/Vs) [1/q Σ(k=1, ..q)Ccmk] (Pf/Tf)

where [1/q S(k=1, ..q)Ccmk]

and Ccm = (average CO2 peak ht.) / (1000 ht. units full scale) (CO2 range, ppm) (response factor)

TGNMO Concentration

C = Ct + Cc

TGNMO Mass Concentration

mc, mg/dscm =(0.4993) (C)

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US EPA Reference Method 25 Sample Recovery System Performance Test, July 9-10, 2001.

Performance Requirements: Average Recovery = 100±10%, triplicate analyses agree within a relative standard deviation (RSD) of 5%.

Analyst: Charles G. Simon, Ph.D.

Hexane carbon content = 83.623% by weight

Decane carbon content = 84.412% by weight

Syringe loads of hexane and decane were weighed to the nearest 0.1 mg before and after injection using a Metler H10 analytical microbalance (Serial # 380526, certified March, 2001)

					Amount Recovered	
Compound Injected	**Nominal microliters**	**mg**	**mg of carbon**		**mg of carbon**	**%**
Hexane	10	7.8	6.52		6.19	94.90
Hexane	10	7.5	6.27		5.66	90.18
Hexane	10	7.7	6.44		6.15	95.51
Average Recovery						**93.53**
						2.38
Hexane	50	33.7	28.18		28.81	102.24
Hexane	50	34.2	28.60		29.02	101.47
Hexane	50	34.1	28.52		29.01	101.73
Average Recovery						**101.81**
%RSD						**0.32**
Decane	10	8.1	6.81		6.59	96.71
Decane	10	8.1	6.81		6.84	100.31
Decane	10	8.6	7.23		7.12	98.49
Average Recovery						**98.50**
%RSD						**1.47**
Decane	50	36.6	30.79		31.04	100.81
Decane	50	36.9	31.04		30.03	96.75
Decane	50	36.5	30.70		31.92	103.97
Average Recovery						**100.51**
%RSD						**2.96**
OVERALL AVERAGE RECOVERY						**98.59**
OVERALL %RSD						**3.97**

Calculations: (ppm as C in ICV)(ICV analysis volume in cubic meters)(0.4993) = mg C recovered

(mg C recovered)(100)/mg C injected) = % recovery

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US EPA Reference Method 25 Sample Recovery System Performance Test, July 9-10, 2001.

Performance Requirements: Average Recovery = 100±10%, triplicate analyses agree within a relative standard deviation (RSD) of 5%.

Analyst: Charles G. Simon, Ph.D.

Hexane carbon content = 83.623% by weight

Decane carbon content = 84.412% by weight

Syringe loads of hexane and decane were weighed to the nearest 0.1 mg before and after injection using a Metler H10 analytical microbalance (Serial # 380526, certified March, 2001)

PAL M-25 Sample Recovery System Performance test, July 9-10, 2001.

Sample ID	mg injected	ICV	Vol. ml	P-3 in. Hg	B-3 in. Hg	T-3 °F	Analysis Vol., ml	ppm CO2	mg C
Run-1 **hexane**	7.8	147	3,173	14.33	29.92	91	4,497	2,757	6.19
Run-2 **hexane**	7.5	148	3,175	13.98	29.92	90	4,472	2,533	5.66
Run-3 **hexane**	7.7	149	3,170	14.20	29.95	90	4,491	2,743	6.15
Run-4 **hexane**	33.7	150	3,172	14.00	29.92	91	4,462	12,933	28.81
Run-5 **hexane**	34.2	151	3,177	16.74	29.90	92	4,737	12,269	29.02
Run-6 **hexane**	34.1	152	3,174	17.20	29.91	91	4,789	12,132	29.01
Run-1 **decane**	8.1	153	3,172	14.08	29.92	90	4,478	2,947	6.59
Run-2 **decane**	8.1	154	3,171	14.06	29.94	83	4,534	3,019	6.84
Run-3 **decane**	8.6	155	3,191	19.90	29.92	84	5,157	2,767	7.12
Run-5 **decane**	36.6	156	3,173	17.86	29.92	84	4,918	12,640	31.04
Run-6 **decane**	36.9	157	3,174	16.78	29.90	86	4,789	12,560	30.03
Run-7 **decane**	36.5	158	3,173	15.47	29.90	87	4,644	13,766	31.92

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT Spiralkote
PLANT LOCATION Orlando
SOURCE Audit 3179
DATE 8/22/01
RUN Audit 317A

OPERATOR: Charles Simon
SAMPLE ID: M25011S-317A
SAMPLE CONTROLLER: PAL-02
TANK NO.(S): 127 TRAP NO.(S): 1007
FILTER ID: STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	~~3~~ 4 mbar	NA	85
POST TEST	946 ~~946~~ mbar	NA	~~99~~ 95

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18/0910	4 mbar	8/21/1218
TRAIN	28.7" Hg Vac	8/22/0856	28.6 "Hg Vac	8/22/0906

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 1010	29.6	110	tank pres = 1020 psi
5	1015	27.5	110	excess flow ~100 ml/min
10	1020	25.5	110	
15	1025	23.1	110	flush reg 3X,
20	1030	20.6	110	purged manifold
25	1035	18.1	110	for ~3 min.
30	1040	15.8	110	
35	1045	13.6	110	
40	1050	11.4	110	
45	1055	~~10~~ 9.2	110	
50	1100	7.0	100 ↑ 110	
55	1105	4.9	110	
60	END: 1110			740 psig in tank

ATTENTION:
E OPENING CONTAINER PERED WITH.

I.D.# M25-0317-01a
DM OCEPD 8-22-01

ATTENTION:
BEFORE OPENING NOTE IF CONTAINER WAS TAMPERED WITH.

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT: Spiralkote
PLANT LOCATION: Orlando
SOURCE: ~~GE~~ Audit 317-B
DATE: 8/22/01
RUN: Audit - 317 - B

OPERATOR: C. Simon
SAMPLE ID: M25C118-317B
SAMPLE CONTROLLER: PAL-06
TANK NO.(S): 128 TRAP NO.(S): 1001
FILTER ID: ~~##~~ STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	4 mbar	NA	85°
POST TEST	960 mbar	NA	96°

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18/0840	4 mbar	8/21/1215
TRAIN	29.5" Hg Vac	8/22/1135	29.4" Hg Vac	8/22/1140

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 1148	30.5"	110	1100 psig in
5	1153	28.2	110	tank
10	1158	25.9	110	excess flow ~100 ml/min
15	1203	23.6	110	
20	1208	21.4	110	purged veg 4X @ manifold ~3 min
25	1213	19.2	110	
30	1218	17.0	110	
35	1223	14.8	100↑110	
40	1228	12.6	100↑110	
45	1233	10.4	100↑110	
50	1238	8.2	110	
55	1243	6.0	100↑110	
60	END: 1248	4.0	100	690 psig in tank

ATTENTION:
BEFORE OPENING NOTE IF CONTAINER WAS TAMPERED WITH.

I.D.# M25-0317-01b

ATTENTION:
BEFORE OPENING NOTE IF CONTAINER WAS TAMPERED WITH

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT Spiralkote
PLANT LOCATION Orlando
SOURCE WH3 Catox
DATE 8/22/01
RUN Inlet-1

OPERATOR: Charles Simon
SAMPLE ID: M250118-I-1
SAMPLE CONTROLLER: PAL-06
TANK NO.(S): 122 TRAP NO.(S): 1021
FILTER ID: In-stack STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	4	NA	85
POST TEST	901 mbr	NA	98°

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18/0857	4 mbar	8/21/1216
TRAIN	30.1" Hg Vac	8/22/0831	29.9" Hg Vac	8/22/0837

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 0936	30.5"	110	In-stack
5	0941	28.8	110	~160°F
10	0946	26.5	110	
15	0951	24.0	110	
20	0956	22.0	110	
25	1001	20.0	110	
30	1006	17.8	105↑110	
35	1011	15.6	110	
40	1016	13.4	110	
45	1021	11.4	100↑110	
50	1026	9.2	110	
55	1031	7.0	90↑110	
60	END: 1036	4.6	90	

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT: Spiral Kote
PLANT LOCATION: Orlando
SOURCE: WH3 Catox
DATE: 8/22/01
RUN: Inlet-2

OPERATOR: C. Simon
SAMPLE ID: M250118-I-2
SAMPLE CONTROLLER: PAL-04
TANK NO.(S): 118 TRAP NO.(S): 1015
FILTER ID: in-stack STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	3 mbar	NA	80°
POST TEST	858 mbar	NA	98° F

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18 / 0945	4 mbar	8/21 / 1220
TRAIN	27.5" Hg Vac	8/22 / 0916	26.5 " Hg Vac	8/22 / 0954

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	mL/m FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 1059	28.4	110	in-stack
5		27.5	75 ↑ 110	~160°F
10		25.5	110	"
15		23.5	110	"
20		21.5	110	"
25		19.5	110	"
30		17.75	110	"
35		15.6	110	"
40		13.6	110	"
45		11.7	110	"
50		9.7	110	"
55		8.1	110	"
60	END: 1159	5.6	110	"

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT: Spiralkote
PLANT LOCATION: Orlando
SOURCE: WH 3 Catox
DATE: 8/22/01
RUN: Inlet - 3

OPERATOR: ~~E. Simon~~ S. Bell
SAMPLE ID: M2 50115-I-3
SAMPLE CONTROLLER: PAL-07
TANK NO.(S): 131 TRAP NO.(S): 1050
#
FILTER ID: In-stack STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	4 mbar	NA	85°
POST TEST	867	NA	99°

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18 / 0820	4 mbar	8/21 / 1214
TRAIN	27.0 "Hg Vac	8/22 / 1156	26.3" Hg	8/22 / 1203

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	mL/m FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 12:14	~~HOB~~ 27.2	110	In STACK ≈160°F
5		26.1	110	"
10		24.2	110	"
15		22.2	110	"
20		20.1	110	"
25		18.4	110	"
30		16.1	110	"
35		14.2	110	"
40		12.0	110	"
45		9.8	110	"
50		7.9	110	"
55		5.8	110	"
60	END:	3.4	110	"
	OUTLET Time	6 min FAST		
	with Ref. to ~~Outlet~~ Time			
		INLET		

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT: SPIRALKOTE
PLANT LOCATION: ORLANDO
SOURCE: WH3 CATOX
DATE: 8/22/01
RUN: Outlet -1

OPERATOR: JOHN SIMON
SAMPLE ID: M25011S-O-1
SAMPLE CONTROLLER: PAL-06
TANK NO.(S): [redacted] 109 TRAP NO.(S): 1023
FILTER ID: IN-STACK STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	4 mbar	NA	85
POST TEST	900 mbar	NA	99

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18/0921	4 mbar	8/21/1219
TRAIN	27.7" Hg Vac	8/22/0852	27.6 HG VAC	08/22/0857

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 0936	28.0	110	
5	0944	26.5	110	
10	0946	25.0	110	
15	0951	23.5	110	
20	0956	22.0	110	
25	1001	20.0	110	
30	1006	17.0	110	
35	1011	14.5	110	
40	1016	12.0	110	
45	1021	9.7	110	
50	1026	7.5	110	
55	1031	5.1	110	
60	END: 1036	2.6	110	

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT SPIRALKOTE
PLANT LOCATION ORLANDO
SOURCE OUTLET
DATE 8/22/01
RUN #2

OPERATOR: JOHN SIMON
SAMPLE ID: M250118-O-2
SAMPLE CONTROLLER: PAL-01
TANK NO.(S): 114 TRAP NO.(S): 1013
FILTER ID: IN STACK STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	3 mbar	NA	85
POST TEST	978 mbar	NA	98

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18 / 1040	3 mbar	8/21 / 1222
TRAIN	27.0 "Hg Vac	8/22 / 0917	26.2 "Hg Vac	8/22/ 1023

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 11:00	27.7	110	
5	11:05	25.0	110	
10	1110	23.0	110	
15	1115	20.5	110	
20	1120	18.0	110	
25	1125	16.0	110	
30	1130	13.5	110	
35	1135	11.0	110	
40	1140	8.6	110	
45	1145	6.5	110	
50	1150	4.6	110	
55	1155	2.5	110	
60	END: 12:00	1.0	100	

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VOLATILE ORGANIC CARBON BY METHOD 25

PLANT Spiralkote
PLANT LOCATION Orlando
SOURCE WH3 Catox
DATE 6/22/01
RUN Outlet-3

OPERATOR: J. Simon
SAMPLE ID: M250118-O-3
SAMPLE CONTROLLER: PAL-02
TANK NO.(S): 132 TRAP NO.(S): 1011
FILTER ID: in-stack STACK TEMP. (F):
WET BULB (F): DRY BULB (F): %M:

TEMP. & PRES. MEASUREMENTS	TANK VACUUM (mbar/in.Hg)	BAROMETRIC PRESSURE (mbar /in. Hg)	AMBIENT TEMPERATURE (F)
PRE TEST	4 mbar.	NA	85°F
POST TEST	890 mbar	NA	101°F

LEAK CHECKS	INITIAL PRESSURE (mbar/in.Hg)	DATE/TIME	FINAL PRESSURE (mbar/in.Hg)	DATE/TIME
TANK	3 mbar	8/18 / 0800	4 mbar.	8/21 / 1212
TRAIN	28.2" Vac	8/22 / 1154	28.0" Hg Vac.	8/23 / 1200

MINUTES ELAPSED	CLOCK TIME	GAUGE READING (in.Hg)	FLOW METER SETTING	FILTER TEMP (F)/ COMMENTS
0	START: 1220	29.5	110	in Stack
5	1225	28.0	110	405°F
10	1230	26.4	110	
15	1235	24.5	110	
20	1240	22.0	110	
25	1245	20.0	110	
30	1250	17.8	110	
35	1255	15.6	110	
40	1300	13.5	110	
45	1305	11.2	110	
50	1310	8.6	110	
55	1315	6.5	110	
60	END: 1320	4.4	110	

APPENDIX E

WH-3

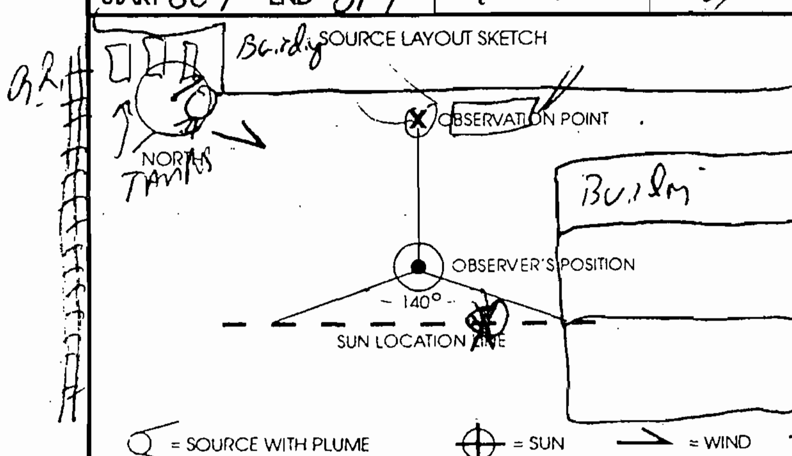
VISIBLE EMISSION DATA

AIR CONSULTING & ENGINEERING, INC

VISIBLE EMISSION OBSERVATION FORM

COMPANY NAME	Spiral Kote, Inc.
SOURCE	WH3, Catalytic Oxidizer
ADDRESS	1200 Central Florida Parkway
CITY	Orlando
STATE	Florida
ZIP	32837
PHONE	407-859-7860
SOURCE ID NO.	[struck through] E-011
PROCESS	Printing Press
OPERATING MODE	90% → 100%
CONTROL EQUIPMENT	Catalytic oxidizer
OPERATING MODE	90% → 100%
DESCRIBE EMISSION POINT	Round silver stack on south side of T.O.
HEIGHT OF EMISSION POINT	START ~40 FT END ~40 FT
HEIGHT RELATIVE TO OBSERVER	START ~37 FT END ~37 FT
DISTANCE TO EMISSION POINT	START ~150 FT END ~150 FT
DIRECTION TO EM. PT. (DEGREES)	START 325° m END 325° m
VERTICAL ANGLE TO OBS. PT.	START ~20° END ~20°
DIRECTION TO OBS. PT. (DEGREES)	START 325° m END 325° m
DISTANCE AND DIRECTION TO OBS. PT. FROM EM. PT.	START ~150 FT, 325° m END Same
DESCRIBE EMISSIONS	START Clear END Same
EMISSION COLOR	START Clear END Same
WATER DROPLET PLUME	(NONE) ATTACHED DETACHED
DESCRIBE PLUME BACKGROUND	START Sky END Sky
BACKGROUND COLOR	START Blue END Blue
SKY CONDITIONS	START Clear END Clear
WIND SPEED	START 1-3 mph END 1-3 mph
WIND DIRECTION	START 45° m END 45° m
AMBIENT TEMPERATURE	START 80°F END 81°F
WET BULB TEMP.	77°F
%RH	88%

SOURCE LAYOUT SKETCH



START TIME: 09:00 END TIME: 10:00

OBSERVATION DATE: 8/22/01 TIME ZONE: ET PAGE 1 OF 1

MIN \ SEC	0	15	30	45	MIN \ SEC	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	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
30	0	0	0	0	60	0	0	0	0

OBSERVER'S NAME (PRINT) STEPHEN S. BELL

OBSERVER'S SIGNATURE [signature] DATE 8/22/01

ORGANIZATION ACE

CERTIFIED BY E.T.A. DATE 12/6/01

COMMENTS Title 5 permit no. 0950115-003-AV

Visible Emissions Evaluation

This certifies that...

Stephen S. Bell

...successfully completed a course in the methods of measurement of visible emissions from sources as specified by Federal Reference Methods 9 and 22 conducted by Eastern Technical Associates of Raleigh, North Carolina.

Jacksonville, Florida		June 6, 2000
Course Location		Date
Thomas Roe	Michael W. Lunsford	Evan Wainright
President	Director of Training	Instructor

t card signifying your successful certification at the recent Florida Department of Environmental Protection
n Technical Associates.

ELL

ons evaluation training and is a
EPA Reference Method 9.

JAXS03

URE EXPIRATION DATE

EARER'S SIGNATURE

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

If FIELD CERTIFICATION is not continuous, CLASSROOM CERTIFICATION must be obtained prior to your next field certification

If you have any questions about your certification, please contact Eastern Technical Associates, 919-878-3188.

Dotty Diltz, Florida Department of Environmental Protection

W&H 1 EPA Air Test

2001

Best Available Copy

Time	Deck 2 Lbs of Extender	Deck 5 Lbs of Extender	Coater Lbs of Varn	Press Speed FPM	Press Web Temp	BCD Set Point	BCD % Sol LEL	BCD High Limit	Coater Set Point	Coater % Sol LEL	Coater High Limit	Inlet INC TEMP BCD (Ace Values)	Inlet INC TEMP Coater (Ace Values)	Outlet INC TEMP BCD	Outlet INC TEMP Coater	% Destruction BCD	% Destruction Coater
Test #1	Date:6/21/01																
10:00 AM	838	838	825	682								850		735			
10:10 AM	824	818	804	682								850		735			
10:20 AM	814	807	782	682								850		735			
10:25 AM	810	804	776	682		Roll Change						850		735			
10:30 AM	809	802	774	676								850		735			
10:40 AM	797	792	756	676								850		735			
10:50 AM	784	781	733	676								850		735			
11:00 AM	778	772	717	676								850		735			
11:10 AM	768	762	696	676								850		735			
11:20 AM	757	752	678	676								850		735			
11:30 AM	747	742	659	676								850		735			
11:40 AM	737	732	640	676								850		735			
11:50 AM	726	722	622	676		Roll Change						850		735			
11:53 AM	725	721	628	676								850		770			
12:03 PM	716	711	682	676								850		770			
12:13 PM	705	701	683	676								850		770			
12:23 PM	695	691	665	676								850		770			
12:33 PM	684	681	647	676								850		770			
12:43 PM	674	671	628	676								850		770			
12:53 PM	664	661	609	676								850		770			
1:03 PM	654	651	491	676		End of test 1						850		770			
	184	179	334														
							# Per Hour										
	44.129836	42.938656	88.185245				167.16574										
Test #2																	
01:10 PM	648	645	788	676								850		770			
01:20 PM	638	635	769	676								850		770			
01:30 PM	627	625	750	676								850		770			
01:40 PM	617	614	733	676								850		770			
01:50 PM	606	604	716	676								850		810			
02:00 PM	596	594	699	676								850		810			
02:10 PM	586	584	681	676								850		810			
02:20 PM	574	573	661	685								850		810			
02:30 PM	563	560	641	685		Roll Change						850		810			
02:33 PM	563	560	640	676								850		810			
02:43 PM	552	552	621	676								850		810			
02:53 PM	535	543	604	676								850		810			
03:03 PM	525	536	584	676								850		810			
03:13 PM	517	528	566	676								850		810			
03:23 PM	507	518	547	676								850		810			
03:33 PM	497	508	529	676								850		810			
03:43 PM	487	499	510	676								850		810			
03:53 PM	476	479	491	676		Roll Change						850		810			
03:56 PM	476	479	490	676								850		810			
04:05 PM	466	470	471	676								850		810			
04:15 PM	455	458	453	676		End of test 2						850		810			
	193	185	336														
							# Per Hour										
	45.787946	43.89	79.71373				168.39168										
Test #3																	
04:23 PM	447	451	733	676								850		810			
04:33 PM	437	441	714	676								850		810			
04:43 PM	426	431	695	676								850		810			
04:53 PM	416	422	677	676								850		810			
05:03 PM	406	411	657	676								850		810			
05:13 PM	395	401	638	676								850		810			
05:18 PM	390	395	628	676		Roll Change						850		810			
05:28 PM	380	385	627	676								850		810			
05:38 PM	370	385	608	676								850		810			
05:48 PM	360	376	588	676								850		810			
05:58 PM	350	366	569	676								850		810			
06:08 PM	340	356	551	676								850		810			
06:18 PM	330	346	532	676								850		810			
06:28 PM	320	336	513	676								850		810			
06:38 PM	310	326	494	676								850		810			
06:48 PM	300	316	476	676		Roll Change						850		810			
06:43 PM	307	316	474	676								850		810			
06:53 PM	297	306	455	676								850		810			
07:03 PM	286	295	437	676								850		810			
07:13 PM	276	285	419	676								850		810			
07:28 PM	266	277	402	676								850		810			
	191	174	331														
							# Per Hour										
	44.801864	43.146182	82.87678				178.18475										

Anilox Cylinder	Line	Volume	Solvent mixtures (lbs) Extender	90/10	Pigment	Tint	Solvent %	Test 1	Test 2	Test 3
BCD No 2	200	9.7	200	130	2	Red		73.15%	73.75%	72.94%
BCD No 6	180	9.2	200	130	2	Blue		73.18%	73.22%	72.44%
Coater 1	130	17.9	200	100	2	Yellow		70.17%	69.47%	69.04%

W&H 3 EPA Air Test

2001

Time	Deck 3 Lbs of Extender	Deck 6 Lbs of Extender	Cooler Lbs of Varn	Press Speed FPM	Press Web Temp	BCD Set Point	BCD % Sol LEL	BCD High Limit	Cooler Set Point	Cooler % Sol LEL	Cooler High Limit	Inlet INC TEMP BCD (Ace Values)	Inlet INC TEMP Cooler (Ace Values)	Outlet INC TEMP BCD	Outlet INC TEMP Cooler	% Destruction BCD	% Destruction Cooler
Test #1	Date 8.22.01																
08:52 AM	772	758	678	574								667		844			
09:02 AM	759	726	681	574								667		844			
09:12 AM	747	723	646	574								667		844			
09:22 AM	735	718	628	574								667		844			
09:32 AM	723	697	612	558								667		844			
09:39 AM	715	687	599	558		Roll Change						667		844			
09:41 AM	714	706	599	458		Pan full of link (fix drain)						667		844			
09:51 AM	716	762	595	458								667		844			
10:01 AM	684	695	572	458								667		844			
10:11 AM	685	699	557	558								667		844			
10:21 AM	668	679	546	558								667		844			
10:31 AM	665	671	524	558								667		844			
10:41 AM	643	651	500	558								667		844			
10:51 AM	631	651	481	558								667		844			
11:01 AM	628	642	475	558		Roll Change						667		844			
11:03 AM	626	642	473	558								667		844			
11:13 AM	598	632	459	558								667		844			
11:23 AM	595	622	448	558								667		844			
11:33 AM	583	613	423	575								667		844			
11:43 AM	578	583	484	575								667		844			
11:53 AM	558	593	386	575		End Test#1						667					
	214	157	283					# Per Hour									
	62.84358	37.796822	66.541757					153.33136									

Test #2																	
12:00 PM	648	686	668	575		Change Barrel on cooler						667		858			
12:07 PM	639	679	656	575		Roll Change						667		858			
12:10 PM	638	678	655	575								667		858			
12:20 PM	627	668	643	575								667		858			
12:30 PM	614	658	628	575								667		858			
12:40 PM	601	648	616	575								667		858			
12:50 PM	589	639	591	575								667		858			
01:00 PM	476	529	571	575								667		858			
01:10 PM	463	519	553	575								667		858			
01:20 PM	458	518	535	575								667		858			
01:30 PM	450	508	522	575								667		858			
01:33 PM	434	487	517	575		Roll Change						667		858			
01:35 PM	433	486	516	574								667		858			
01:45 PM	428	485	499	574								667		858			
01:55 PM	407	476	481	574								667		858			
02:05 PM	395	457	463	574								667		858			
02:15 PM	381	456	443	574								667		858			
02:25 PM	378	447	425	574								667		858			
02:35 PM	367	437	406	574								667		858			
02:45 PM	345	427	388	574								667		858			
02:55 PM	332	416	369	574		Roll Change						667		858			
02:58 PM	327	414	362	574								667		858			
03:00 PM	327	414	361	574								667		858			
03:05 PM	318	407	358	574		End Test#2						667		858			
	258	179	318					# Per Hour									
	53.946811	41.368802	74.58733					170.51883									

Test #3																	
03:20 PM	418	384	583	574								667		858			
03:30 PM	408	384	566	574								667		858			
03:40 PM	394	374	548	574								667		858			
03:50 PM	381	364	531	574								667		858			
04:00 PM	368	355	513	574								667		858			
04:10 PM	355	344	496	574								667		858			
04:20 PM	343	335	479	574								667		858			
04:26 PM	336	329	467	574		Roll Change						667		858			
04:28 PM	335	328	446	574								667		858			
04:38 PM	322	319	446	574								667		858			
04:48 PM	309	309	431	574								667		858			
04:58 PM	297	299	415	574								667		858			
05:08 PM	283	289	397	574								667		858			
05:18 PM	270	279	378	574								667		858			
05:28 PM	256	269	361	574								667		858			
05:38 PM	246	259	343	574								667		858			
05:48 PM	233	249	325	574								667		858			
05:51 PM	229	246	319	574		Roll Change						667		858			
05:53 PM	261	318	318	574		Add link to #3 and #6						667		858			
06:03 PM	248	308	301	574								667		858			
06:13 PM	236	298	284	574								667		858			
06:18 PM	229	288	274	574		End Test#3						667		858			
	221	173	309					# Per Hour									
	53.874337	42.175124	75.326582					171.37492									

Solvent mixtures (lbs)

Anilox Cylinders	Line	Volume	Extender	90/10	Pigment	Tint	Solvent %	Test 1	Test 2	Test 3
BCD No 3	200	9	200	130	2	Red		73.42%	72.32%	69.77%
BCD No 6	280	7.8	200	130	2	Blue		72.45%	73.19%	69.51%
Cooler 1	100	17	200	100	2	Yellow		68.51%	68.03%	67.99%

SPIRALKOTE AIR TESTS August 21-22 2001 **24 HOUR TEST**

METHOD 24 A % SOLVENTS

PRESS W&H No. 1

TEST RUN # 1

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#2 RED	25.93%	26.15%	25.76%	25.95%	74.06%
BCD#5 BLUE	26.28%	26.56%	26.43%	26.42%	73.58%
GRAV-1 barrYEL	29.22%	28.94%	29.12%	29.09%	70.91%

End of Tests:

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#2 RED	27.41%	27.77%	28.10%	27.76%	72.24%	73.15%
BCD#5 BLUE	27.13%	27.23%	27.29%	27.21%	72.79%	73.18%
GRAV-1 barrYEL	30.43%	30.53%	30.72%	30.56%	69.44%	70.17%

PRESS W&H No. 1

TEST RUN # 2

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#2 RED	27.41%	27.77%	28.10%	27.76%	72.24%
BCD#5 BLUE	27.13%	27.23%	27.29%	27.21%	72.79%
GRAV-1 barrYEL	30.43%	30.53%	30.72%	30.56%	69.44%
GRAV-2 barrYEL	28.64%	28.63%	28.79%	28.69%	71.31%

End of Tests:

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#2 RED	24.71%	24.72%	24.81%	24.75%	75.25%	73.75%
BCD#5 BLUE	26.17%	26.36%	26.49%	26.34%	73.66%	73.22%
GRAV-1 barrYEL	30.34%	30.54%	30.62%	30.50%	69.50%	69.47%

PRESS W&H No. 1

TEST RUN # 3

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#2 RED	24.71%	24.72%	24.81%	24.75%	75.25%
BCD#5 BLUE	26.17%	26.36%	26.49%	26.34%	73.66%
COATER YELLOW	30.34%	30.54%	30.62%	30.50%	69.50%

End of Tests:

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#2 RED	27.98%	30.58%	29.56%	29.38%	70.63%	72.94%
BCD#5 BLUE	29.94%	28.84%	27.58%	28.79%	71.21%	72.44%
COATER YELLOW	31.23%	31.83%	31.19%	31.42%	68.58%	69.04%

SPIRALKOTE AIR TESTS August 21-22 2001 24 HOUR TEST

METHOD 24 A % SOLVENTS

PRESS W&H No. 3

TEST RUN # 1

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#3 RED	26.65%	26.59%	26.49%	26.57%	73.43%
BCD#6 BLUE	27.73%	28.35%	28.69%	28.26%	71.74%
GRAV-1 barrYEL	30.80%	30.99%	31.00%	30.93%	69.07%

End of Tests:

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#2 RED	26.60%	26.57%	26.58%	26.58%	73.42%	73.42%
BCD#5 BLUE	26.79%	26.86%	26.86%	26.83%	73.17%	72.45%
GRAV-1 barrYEL	31.92%	31.99%	32.21%	32.04%	67.96%	68.51%

PRESS W&H No. 3

TEST RUN # 2

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#3 RED	26.60%	26.57%	26.58%	26.58%	73.42%
BCD#6 BLUE	26.79%	26.86%	26.86%	26.83%	73.17%
GRAV-1 barrYEL	31.92%	31.99%	32.21%	32.04%	67.96%

End of Tests:

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#3 RED	28.51%	28.92%	28.90%	28.78%	71.22%	72.32%
BCD#6 BLUE	26.73%	26.83%	26.81%	26.79%	73.21%	73.19%
GRAV-1 barrYEL	31.64%	31.89%	32.14%	31.89%	68.11%	68.03%

PRESS W&H No. 3

TEST RUN # 3

SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent
BDC#3 RED	28.51%	28.92%	28.90%	28.78%	71.22%
BCD#6 BLUE	26.73%	26.83%	26.81%	26.79%	73.21%
COATER YELLOW	31.64%	31.89%	32.14%	31.89%	68.11%

End of Tests:

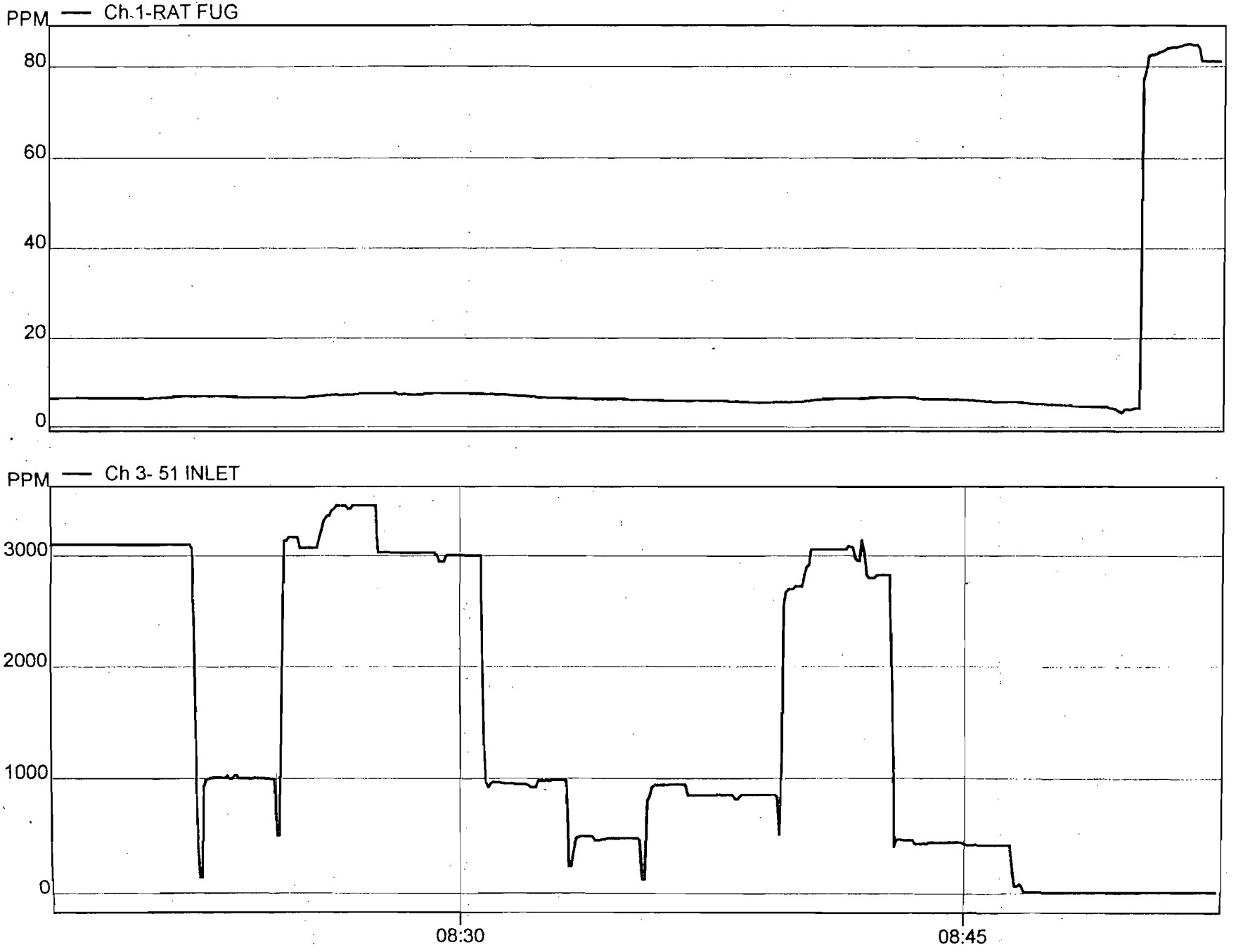
SAMPLE	% Solids Sample A	% Solids Sample B	% Solids Sample C	% Solids	% Solvent	% Avg
BDC#3 RED	30.83%	30.84%	33.40%	31.69%	68.31%	69.77%
BCD#6 BLUE	33.23%	35.26%	34.08%	34.19%	65.81%	69.51%
COATER YELLOW	30.73%	32.84%	32.83%	32.13%	67.87%	67.99%

APPENDIX G

QUALITY ASSURANCE

WH-1

8-21-01 CAL



C:\PICO\821CAL3.PLW 8/21/01 08:17:54

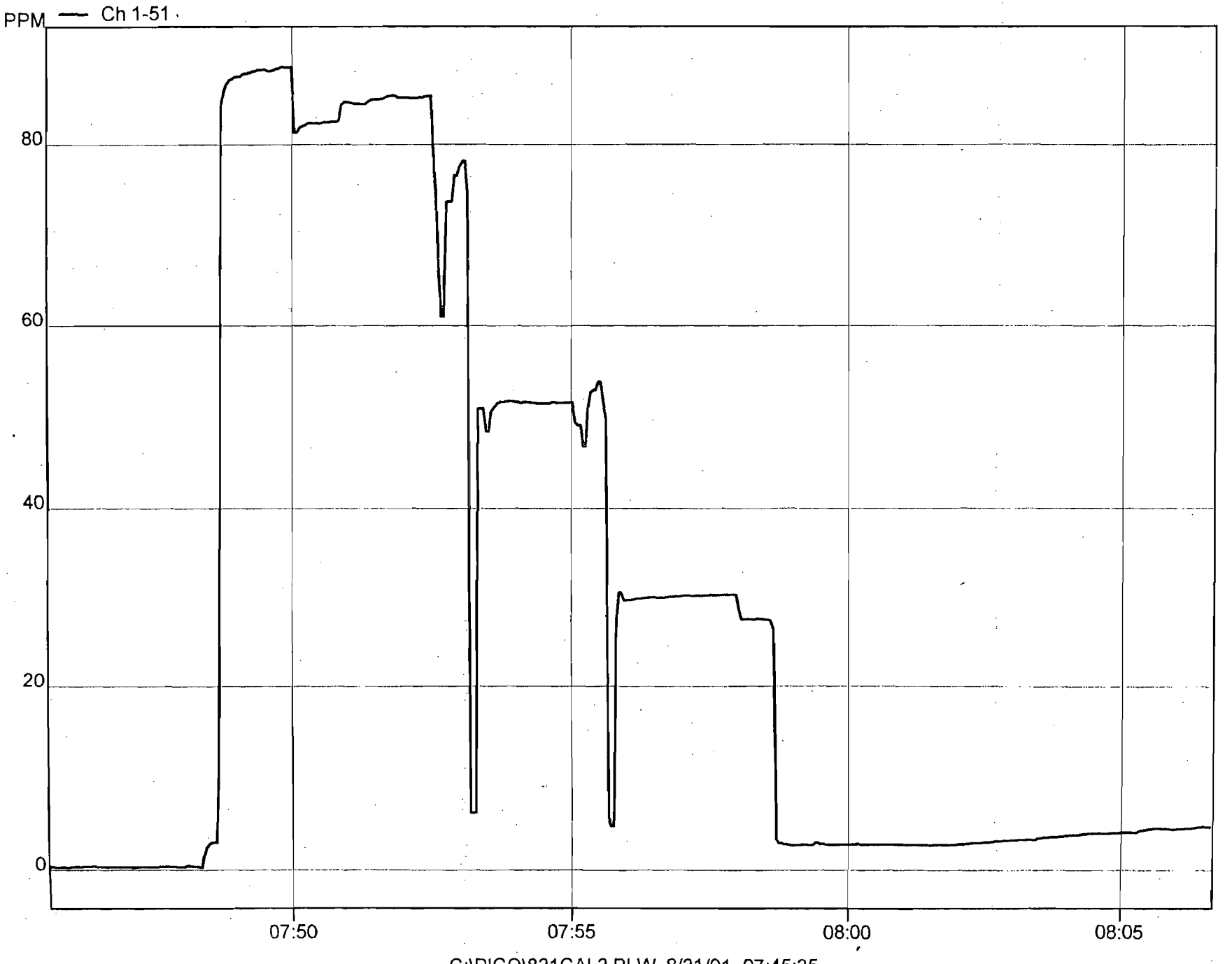
VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA INITIAL CALS CONTINUED
08/21/01

Date	Time	Ch 1-RAT FUG PPM Average	Ch 3- 51 INLET PPM Average
8/21/01	8:17:54	6.23	3097.4
8/21/01	8:18:09	6.24	3097.55
8/21/01	8:18:24	6.28	3097.49
8/21/01	8:18:39	6.33	3097.55
8/21/01	8:18:54	6.35	3097.54
8/21/01	8:19:09	6.35	3097.67
8/21/01	8:19:24	6.36	3097.48
8/21/01	8:19:39	6.3	3097.63
8/21/01	8:19:54	6.26	3097.59
8/21/01	8:20:09	6.26	3097.71
8/21/01	8:20:24	6.24	3097.59
8/21/01	8:20:39	6.19	3097.62
8/21/01	8:20:54	6.33	3097.58
8/21/01	8:21:09	6.38	3097.54
8/21/01	8:21:24	6.5	3097.68
8/21/01	8:21:39	6.66	3097.48
8/21/01	8:21:54	6.74	3097.5
8/21/01	8:22:09	6.71	1247.36
8/21/01	8:22:24	6.73	717.3
8/21/01	8:22:39	6.79	1008.03
8/21/01	8:22:54	6.76	1008.05
8/21/01	8:23:09	6.66	1016.64
8/21/01	8:23:24	6.57	1014.91
8/21/01	8:23:39	6.53	1002.23
8/21/01	8:23:54	6.49	1002.8
8/21/01	8:24:09	6.48	1002.29
8/21/01	8:24:24	6.48	981.04
8/21/01	8:24:39	6.48	1613.78
8/21/01	8:24:54	6.48	3150.38
8/21/01	8:25:09	6.44	3124.33
8/21/01	8:25:24	6.48	3067.62
8/21/01	8:25:39	6.62	3073.36
8/21/01	8:25:54	6.81	3257.51
8/21/01	8:26:09	6.99	3385.61
8/21/01	8:26:24	7.04	3438.56
8/21/01	8:26:39	7.07	3425.96
8/21/01	8:26:54	7.15	3439.28
8/21/01	8:27:09	7.26	3438.7
8/21/01	8:27:24	7.33	3383.57
8/21/01	8:27:39	7.3	3025.27

8/21/01	8:27:54	7.32	3024.78	
8/21/01	8:28:09	7.23	3024.11	
8/21/01	8:28:24	7.2	3024.01	
8/21/01	8:28:39	7.12	3023.97	
8/21/01	8:28:54	7.21	3024	
8/21/01	8:29:09	7.31	3021.16	
8/21/01	8:29:24	7.38	2955.75	
8/21/01	8:29:39	7.33	2995.79	
8/21/01	8:29:54	7.31	2999.66	
8/21/01	8:30:09	7.32	2999.64	
8/21/01	8:30:24	7.27	2999.66	
8/21/01	8:30:39	7.23	2188.24	
8/21/01	8:30:54	7.21	954.68	
8/21/01	8:31:09	7.12	962.96	
8/21/01	8:31:24	7.02	956.02	
8/21/01	8:31:39	6.87	952.28	
8/21/01	8:31:54	6.73	948.96	
8/21/01	8:32:09	6.64	935.75	
8/21/01	8:32:24	6.47	979.77	
8/21/01	8:32:39	6.42	981.56	
8/21/01	8:32:54	6.38	983.69	
8/21/01	8:33:09	6.3	674.7	
8/21/01	8:33:24	6.22	449.27	
8/21/01	8:33:39	6.16	500.2	
8/21/01	8:33:54	6.13	489.34	
8/21/01	8:34:09	6.09	473.46	
8/21/01	8:34:24	6.08	486.09	
8/21/01	8:34:39	6.06	484	
8/21/01	8:34:54	6.02	485.98	
8/21/01	8:35:09	5.93	483.04	
8/21/01	8:35:24	5.91	405.98	
8/21/01	8:35:39	5.83	906.61	
8/21/01	8:35:54	5.8	944.69	
8/21/01	8:36:09	5.74	947.99	
8/21/01	8:36:24	5.72	949.49	
8/21/01	8:36:39	5.7	913.17	**861 C3H8**
8/21/01	8:36:54	5.73	**858.43**	
8/21/01	8:37:09	5.72	**858.38**	
8/21/01	8:37:24	5.66	**858.7**	
8/21/01	8:37:39	5.69	**863.24**	
8/21/01	8:37:54	5.63	**863.17**	
8/21/01	8:38:09	5.55	**843.91**	
8/21/01	8:38:24	5.47	**863.85**	
8/21/01	8:38:39	5.42	**863.06**	
8/21/01	8:38:54	5.33	**863.03**	
8/21/01	8:39:09	5.34	**863.06**	**859.9**
8/21/01	8:39:24	5.4	909.64	
8/21/01	8:39:39	5.45	2668.86	
8/21/01	8:39:54	5.49	2727.85	
8/21/01	8:40:09	5.6	2801.14	**3080 C3H8**

8/21/01	8:40:24	5.82	3007.37	
8/21/01	8:40:39	5.95	**3053.29**	
8/21/01	8:40:54	6.06	**3053.34**	
8/21/01	8:41:09	6.15	**3053.3**	
8/21/01	8:41:24	6.14	**3058.44**	**3054.6**
8/21/01	8:41:39	6.16	3029.68	
8/21/01	8:41:54	6.24	3032.2	
8/21/01	8:42:09	6.31	2810.03	
8/21/01	8:42:24	6.46	2824.62	
8/21/01	8:42:39	6.45	2813.61	
8/21/01	8:42:54	6.48	1024.99	
8/21/01	8:43:09	6.51	472.55	
8/21/01	8:43:24	6.4	464.04	**452 C3H8**
8/21/01	8:43:39	6.24	438.51	
8/21/01	8:43:54	6.13	442.89	
8/21/01	8:44:09	6.1	**450.9**	
8/21/01	8:44:24	6.06	**449.85**	
8/21/01	8:44:39	5.99	**452.79**	
8/21/01	8:44:54	5.93	**449.84**	**450.85**
8/21/01	8:45:09	5.85	430.46	
8/21/01	8:45:24	5.69	430.41	
8/21/01	8:45:39	5.63	428.51	
8/21/01	8:45:54	5.53	428.5	
8/21/01	8:46:09	5.49	428.46	
8/21/01	8:46:24	5.5	332.47	
8/21/01	8:46:39	5.39	66.89	
8/21/01	8:46:54	5.18	12.32	
8/21/01	8:47:09	5.04	9.57	
8/21/01	8:47:24	4.96	5.38	
8/21/01	8:47:39	4.89	5.1	**ZERO C3H8**
8/21/01	8:47:54	4.78	**5.06**	
8/21/01	8:48:09	4.68	**5.05**	
8/21/01	8:48:24	4.56	**5.08**	
8/21/01	8:48:39	4.51	**5.07**	**5.07**
8/21/01	8:48:54	4.42	5.06	
8/21/01	8:49:09	4.33	5.04	
8/21/01	8:49:24	4.08	5.08	
8/21/01	8:49:39	3.45	5.04	
8/21/01	8:49:54	3.92	5.06	
8/21/01	8:50:09	4.48	5.09	
8/21/01	8:50:24	80.51	10.73	
8/21/01	8:50:39	82.83	10	
8/21/01	8:50:54	83.61	9.73	
8/21/01	8:51:09	84.18	9.72	
8/21/01	8:51:24	84.58	9.68	
8/21/01	8:51:39	84.88	9.72	
8/21/01	8:51:54	84.5	9.71	
8/21/01	8:52:09	81.22	9.71	
8/21/01	8:52:24	81.14	9.74	
8/21/01	8:52:39	81.13	9.71	

8-21-01 CAL FUGITIVE



VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA INITIAL CALS
08/21/01

Date	Time	Ch 1-51 PPM Average		Ch 3- RAT PPM Average
8/21/01	7:45:35	**0.3**	**ZERO C3H8**	0
8/21/01	7:45:50	**0.3**		0
8/21/01	7:46:05	**0.35**		0
8/21/01	7:46:20	**0.36**		0
8/21/01	7:46:35	**0.33**		0
8/21/01	7:46:50	**0.29**		0
8/21/01	7:47:05	**0.3**		0
8/21/01	7:47:20	**0.3**		0
8/21/01	7:47:35	**0.32**		0
8/21/01	7:47:50	**0.3**		0
8/21/01	7:48:05	**0.34**	**0.32**	0
8/21/01	7:48:20	1.49		0
8/21/01	7:48:35	31.94		0
8/21/01	7:48:50	86.94		0
8/21/01	7:49:05	87.65		0
8/21/01	7:49:20	88.08		0
8/21/01	7:49:35	88.11		0
8/21/01	7:49:50	88.38		0
8/21/01	7:50:05	81.72		0.01
8/21/01	7:50:20	82.32		-0.01
8/21/01	7:50:35	82.44		0.01
8/21/01	7:50:50	83.89		0
8/21/01	7:51:05	84.49	**84.7 C3H8**	0
8/21/01	7:51:20	**84.7**		0
8/21/01	7:51:35	**85.09**		0
8/21/01	7:51:50	**85.24**		0
8/21/01	7:52:05	**85.09**		0
8/21/01	7:52:20	**84.75**	**84.97**	0
8/21/01	7:52:35	67.69		-0.01
8/21/01	7:52:50	75.64		0.01
8/21/01	7:53:05	48.64		-0.01
8/21/01	7:53:20	41.1	**50.9 C3H8**	0
8/21/01	7:53:35	**51**		-0.01
8/21/01	7:53:50	**51.58**		0
8/21/01	7:54:05	**51.52**		0.01
8/21/01	7:54:20	**51.44**		-0.02
8/21/01	7:54:35	**51.44**		0
8/21/01	7:54:50	**51.47**	**51.41**	0.01
8/21/01	7:55:05	48.84		0.01
8/21/01	7:55:20	51.85		-0.02
8/21/01	7:55:35	33.11		0

8/21/01	7:55:50	24.54		0
8/21/01	7:56:05	29.85	**30.5 C3H8**	0
8/21/01	7:56:20	**30.02**		0
8/21/01	7:56:35	**30.09**		0
8/21/01	7:56:50	**30.18**		0
8/21/01	7:57:05	**30.26**		0
8/21/01	7:57:20	**30.29**		0
8/21/01	7:57:35	**30.34**		0
8/21/01	7:57:50	**30.41**	**30.23**	0
8/21/01	7:58:05	27.81		0
8/21/01	7:58:20	27.58		0
8/21/01	7:58:35	19.2		0
8/21/01	7:58:50	2.83		0
8/21/01	7:59:05	2.75		0
8/21/01	7:59:20	2.86		0
8/21/01	7:59:35	2.81		0
8/21/01	7:59:50	2.79		0
8/21/01	8:00:05	2.8		0
8/21/01	8:00:20	2.8		0
8/21/01	8:00:35	2.79		0
8/21/01	8:00:50	2.78		0
8/21/01	8:01:05	2.74		0
8/21/01	8:01:20	2.71		0
8/21/01	8:01:35	2.73		0
8/21/01	8:01:50	2.77		0
8/21/01	8:02:05	2.87		0
8/21/01	8:02:20	3		0
8/21/01	8:02:35	3.1		-0.02
8/21/01	8:02:50	3.24		0
8/21/01	8:03:05	3.31		0
8/21/01	8:03:20	3.37		-0.02
8/21/01	8:03:35	3.57		0.01
8/21/01	8:03:50	3.66		0
8/21/01	8:04:05	3.81		-0.02
8/21/01	8:04:20	3.92		0.01
8/21/01	8:04:35	3.99		0
8/21/01	8:04:50	4.06		-26.41
8/21/01	8:05:05	4.1		-61.95
8/21/01	8:05:20	4.32		-61.95
8/21/01	8:05:35	4.51		-61.95
8/21/01	8:05:50	4.5		-61.95
8/21/01	8:06:05	4.53		-61.95
8/21/01	8:06:20	4.62		-61.94
8/21/01	8:06:35	4.72		-61.93

FUGITIVE EXHAUST
LINEARITY and DRIFT DATA
VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/21/01

RELATIVE ACCURACY

GAS I.D. C3H8
CEM: RATFISCH RS-55
RANGE: 100 PPM

GAS VALUE	CEM	DIFF.	% of CAL. VALUE
84.7	84.97	0.27	0.32
50.9	51.41	0.51	1.00
30.5	30.23	-0.27	-0.89
0	0.32	0.32	NA

SPAN DRIFTS

84.7 C3H8

RUN NO.	BEGIN	END	BEGIN % RANGE	END % RANGE
1	84.97	84.51	0.27	-0.19
2	84.51	81.62	-0.19	-3.08
3	81.62	81.78	-3.08	-2.92

ZERO DRIFTS

0 C3H8

			BEGIN % RANGE	END % RANGE
1	0.3	-2.1	0.3	-2.1
2	-2.1	-1.49	-2.1	-1.49
3	-1.49	-1.25	-1.49	-1.25

INCINERATOE INLET
LINEARITY and DRIFT DATA
VOC CAPTURE EFFFICIENCY TESTS
WH-1 PRESS and MAGNUM CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/21/01

RELATIVE ACCURACY

GAS I.D. C3H8
CEM: THERMOENVIRONMENTAL MODEL 51
RANGE: 10000 PPM

GAS VALUE	CEM	DIFF.	% of CAL. VALUE
3080	3055	-25	-0.81
861.8	860	-1.8	-0.21
452	451	-1	-0.22
0	5	5	NA

SPAN DRIFTS

861.8 C3H8

RUN NO.	BEGIN	END	BEGIN % RANGE	END % RANGE
1	860	859.18	-0.02	-0.03
2	859.18	833.23	-0.03	-0.29
3	833.23	833.09	-0.29	-0.29

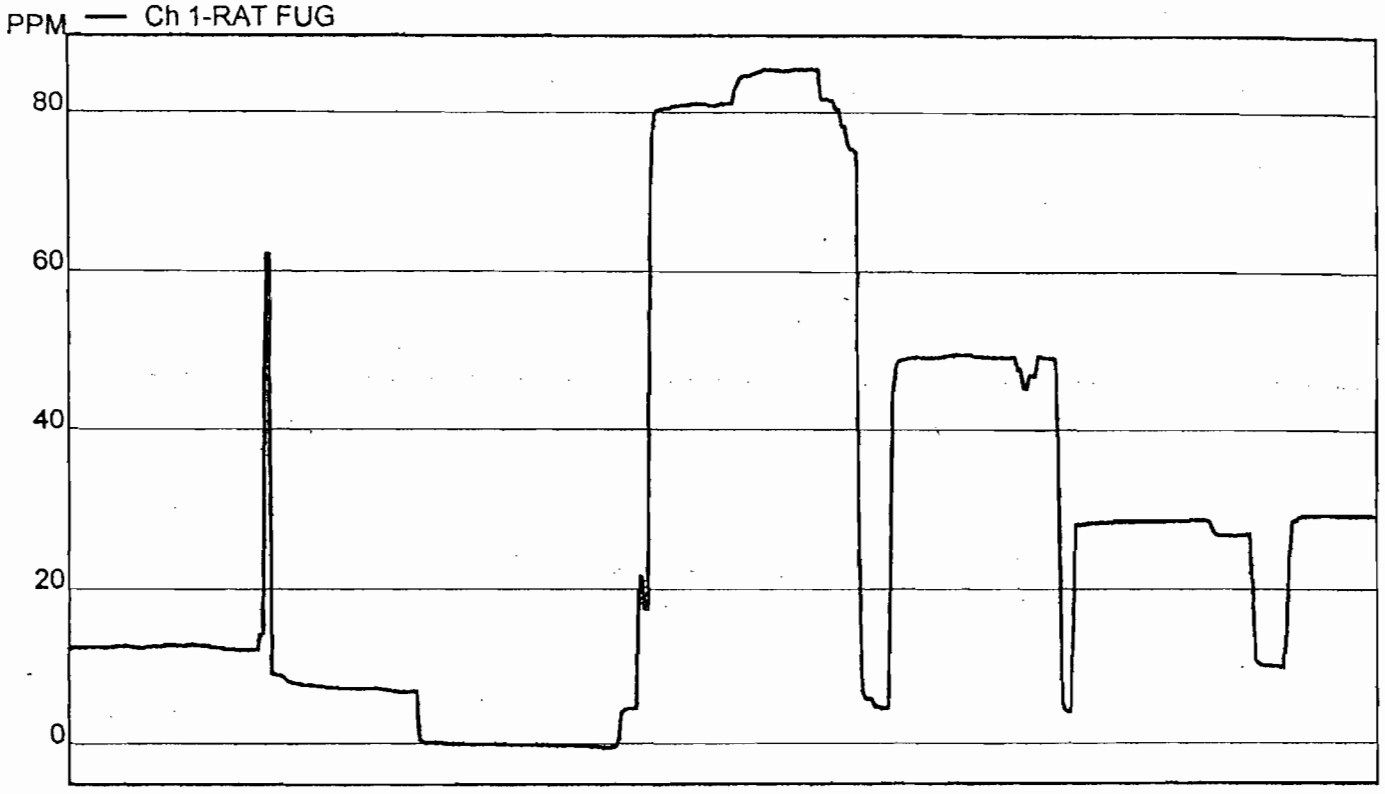
ZERO DRIFTS

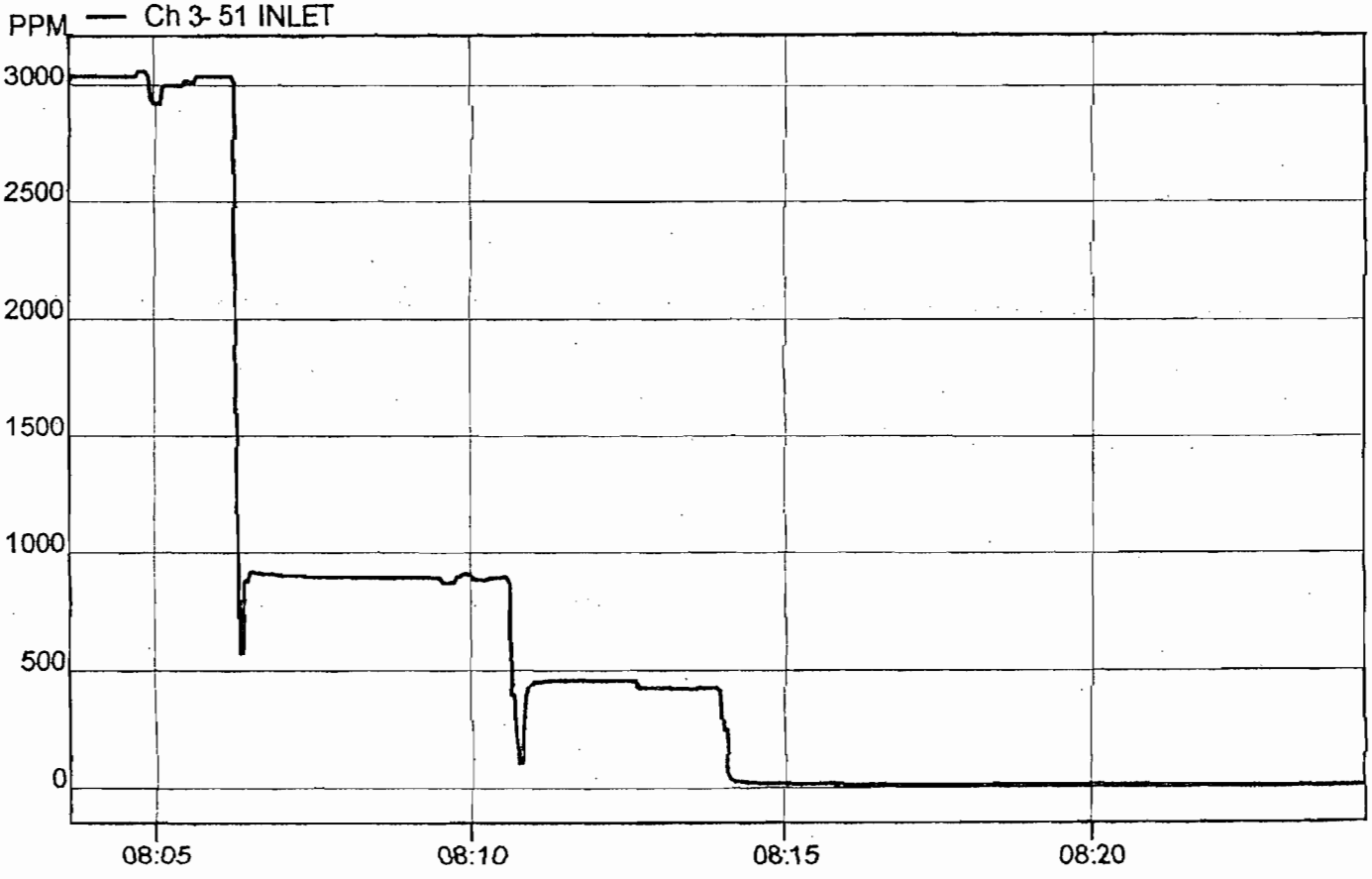
0 C3H8

			BEGIN % RANGE	END % RANGE
1	5.1	5.09	0.051	0.0509
2	5.09	5.18	0.0509	0.0518
3	5.18	5.14	0.0518	0.0514

WH-3

WH-3 CAL





C:\PICO\WH3CAL.PLW 8/22/01 08:03:37

PicoLog for Windows R5.06.3 Pico Technology Ltd UK Tel:+44-1480-396395 www.picotech.com

VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/22/01

DATA LOGGER RECORDS
INITIAL CALS

Date	Time	Ch 1-RAT FUG PPM Average		Ch 3- 51 INLET PPM Average	
8/22/01	8:03:37	12.32		3031.93	**3080 C3H8**
8/22/01	8:03:52	12.41		**3034.47**	
8/22/01	8:04:07	12.4		**3034.59**	
8/22/01	8:04:22	12.51		**3034.71**	**3034.59**
8/22/01	8:04:37	12.41		3048.36	**-1.47 % of CAL**
8/22/01	8:04:52	12.48		2991.76	
8/22/01	8:05:07	12.61		2979.52	
8/22/01	8:05:22	12.64		3005	
8/22/01	8:05:37	12.65		3027.34	
8/22/01	8:05:52	12.38		3034.66	
8/22/01	8:06:07	12.1		2812.62	
8/22/01	8:06:22	12.09		840.74	
8/22/01	8:06:37	26.42		908.87	
8/22/01	8:06:52	15.79		902.92	
8/22/01	8:07:07	7.8		900.29	
8/22/01	8:07:22	7.42		895.71	
8/22/01	8:07:37	7.18		894.89	
8/22/01	8:07:52	7.04		894.91	**861.8 C3H8**
8/22/01	8:08:07	7.01		891.37	
8/22/01	8:08:22	6.98		**890.07**	
8/22/01	8:08:37	6.77		**890.1**	
8/22/01	8:08:52	6.61		**890.1**	
8/22/01	8:09:07	2.35	**ZERO C3H8**	**890.06**	**890.08**
8/22/01	8:09:22	-0.03		885.16	**3.28 % of CAL**
8/22/01	8:09:37	-0.07		871.83	
8/22/01	8:09:52	-0.14		902.18	
8/22/01	8:10:07	-0.14		883.69	
8/22/01	8:10:22	-0.15		891.31	
8/22/01	8:10:37	-0.18		405.26	
8/22/01	8:10:52	**-0.21**		387.46	**452 C3H8**
8/22/01	8:11:07	**-0.26**		453.7	
8/22/01	8:11:22	**-0.29**		**454.4**	
8/22/01	8:11:37	**-0.34**		**454.41**	
8/22/01	8:11:52	**-0.52**	**-0.32**	**454.36**	
8/22/01	8:12:07	0.04		**454.36**	**454.38**
8/22/01	8:12:22	4.33		453.01	**0.53 % of CAL**
8/22/01	8:12:37	29.93		430.14	
8/22/01	8:12:52	80.24		424.68	
8/22/01	8:13:07	80.75		422.06	
8/22/01	8:13:22	81		419.82	

8/22/01	8:13:37	80.91		424.01	
8/22/01	8:13:52	81.06	**84.7 C3H8**	386.32	
8/22/01	8:14:07	83.84		49.72	
8/22/01	8:14:22	84.95		21.4	
8/22/01	8:14:37	**85.37**		15.57	
8/22/01	8:14:52	**85.27**		14.53	
8/22/01	8:15:07	**85.4**	**85.35**	14.52	
8/22/01	8:15:22	83.94	**0.76**	14.52	
8/22/01	8:15:37	81.11	**% of CAL**	14.5	
8/22/01	8:15:52	76.26		12.9	
8/22/01	8:16:07	14.26		9.6	
8/22/01	8:16:22	4.65		9.55	
8/22/01	8:16:37	39.78	**50.9 C3H8**	9.6	
8/22/01	8:16:52	49.02		9.61	
8/22/01	8:17:07	49.1		9.6	
8/22/01	8:17:22	**49.23**		9.65	
8/22/01	8:17:37	**49.43**		9.66	
8/22/01	8:17:52	**49.41**		9.62	
8/22/01	8:18:07	**49.26**		9.66	
8/22/01	8:18:22	**49.16**	**49.30**	9.62	
8/22/01	8:18:37	47.82	**-3.15**	9.63	
8/22/01	8:18:52	47.33	**% of CAL**	9.65	
8/22/01	8:19:07	49.13		9.64	
8/22/01	8:19:22	9.78		9.56	
8/22/01	8:19:37	25.81		9.58	
8/22/01	8:19:52	28.29		9.58	
8/22/01	8:20:07	28.39		9.61	
8/22/01	8:20:22	28.44		9.59	
8/22/01	8:20:37	28.47		9.6	
8/22/01	8:20:52	28.49		9.63	
8/22/01	8:21:07	28.54		9.63	
8/22/01	8:21:22	28.65		9.58	
8/22/01	8:21:37	28.37		5.96	
8/22/01	8:21:52	26.75		5.05	
8/22/01	8:22:07	26.79		5.07	
8/22/01	8:22:22	16.86		5.05	
8/22/01	8:22:37	10.02	**30.5 C3H8**	5.03	**ZERO C3H8**
8/22/01	8:22:52	15.09		5.07	
8/22/01	8:23:07	29.06		5.06	
8/22/01	8:23:22	**29.25**		**5.07**	
8/22/01	8:23:37	**29.24**		**5.06**	
8/22/01	8:23:52	**29.26**		**5.07**	
8/22/01	8:24:07	**29.2**	**29.24**	**5.07**	**5.07**
			-4.14		
			% of CAL		

FUGITIVE EXHAUST
LINEARITY and DRIFT DATA
VOC CAPTURE EFFFICIENCY TESTS-EPA 25A
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/22/01

RELATIVE ACCURACY

GAS I.D. C3H8
CEM: RATFISCH RS-55
RANGE: 100 PPM

GAS VALUE	CEM	DIFF.	% of CAL. VALUE
84.7	85.35	0.65	0.77
50.9	49.3	-1.6	-3.14
30.5	29.24	-1.26	-4.13
0	-0.32	-0.32	NA

SPAN DRIFTS

84.7 C3H8

RUN NO.	BEGIN	END	BEGIN % RANGE	END % RANGE
1	85.35	86.25	0.65	1.55
2	86.25	87.67	1.55	2.97
3	87.67	86.98	2.97	2.28

ZERO DRIFTS

0 C3H8

			BEGIN % RANGE	END % RANGE
1	-0.32	-1.59	-0.32	-1.59
2	-1.59	-1.6	-1.59	-1.6
3	-1.6	-1.7	-1.6	-1.7

INCINERATOE INLET
LINEARITY and DRIFT DATA
VOC CAPTURE EFFFICIENCY TESTS
WH-3 PRESS and TEC CATALYTIC INCINERATOR
SPIRALKOTE, INC.
ORLANDO, FLORIDA
08/22/01

RELATIVE ACCURACY

GAS I.D. C3H8
CEM: THERMOENVIRONMENTAL MODEL 51
RANGE: 5000 PPM

GAS VALUE	CEM	DIFF.	% of CAL. VALUE
3080	3034.6	-45.4	-1.47
861.8	890.08	28.28	3.28
452	454.4	2.4	0.53
0	5.07	5.07	NA

SPAN DRIFTS

861.8 C3H8

RUN NO.	BEGIN	END	BEGIN % RANGE	END % RANGE
1	890.08	876.55	0.57	0.30
2	876.55	876.49	0.30	0.29
3	876.49	890.04	0.29	0.56

ZERO DRIFTS

0 C3H8

			BEGIN % RANGE	END % RANGE
1	5.07	5.09	0.10	0.10
2	5.09	5.09	0.10	0.10
3	5.09	5.34	0.10	0.11

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 2127
Project No.: 12-36342-018

Customer

AIR CONSULTING & ENGRING
STEVE NECK
SUITE #4
2106 NW 67TH PLACE
GAINESVILLE FL 32606

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: ALM019254 **Certification Date:** 10/29/99 Exp. Date: 10/28/2002
Cylinder Pressure***: 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	30.5	PPM	+/- 1%	Direct NIST and NMi
AIR		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedure G1, September 1997.
Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1667	8/01/01	ALM012782	49.70 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3400/16804-C3H8	10/08/99	GC / TCD

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | Second Triad Analysis | Calibration Curve

PROPANE

First Triad Analysis		
Date:10/29/99	Response Unit:ACR	
Z1 = 0.00000	R1 = 54417.00	T1 = 33436.00
R2 = 54547.00	Z2 = 0.00000	T2 = 33453.00
Z3 = 0.00000	T3 = 33488.00	R3 = 54465.00
Avg. Concentration:	30.50	PPM

Second Triad Analysis

Calibration Curve	
Concentration = A + Bx + Cx2 + Dx3 + Ex4	
r = 0.999990	
Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY: _____

B M BECTON

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 2127
Project No.: 12-36342-017

Customer

AIR CONSULTING & ENGRING
STEVE NECK
SUITE #4
2106 NW 67TH PLACE
GAINESVILLE FL 32606

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: AAL13826 Certification Date: 10/29/99 Exp. Date: 10/28/2002
Cylinder Pressure***: 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	50.9	PPM	+/- 1%	Direct NIST and NMi
AIR		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocal procedure G1, September 1997.
Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1667	8/01/01	ALM012782	49.70 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3400/16804-C3H8	10/08/99	GC / TCD

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | Second Triad Analysis | Calibration Curve

PROPANE

Date:10/29/99	Response Unit:ACR	
Z1 = 0.00000	R1 = 54417.00	T1 = 55791.00
R2 = 54547.00	Z2 = 0.00000	T2 = 55844.00
Z3 = 0.00000	T3 = 55779.00	R3 = 54465.00
Avg. Concentration:	50.90	PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990

Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY: _____
B M BECTON

Airgas
Specialty Gases
5480 Hamilton Blvd.
Theodore, AL 36582
P.O. Box 190969
Mobile, AL 36619.
Phone: (334) 653-2500
FAX. (334) 653-2530

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

Cylinder No :	CC21635	Order No.	431496
Cylinder Pressure:	2000 PSI	Expiration Date:	2/12/04
Certification Date	2/12/01	Laboratory:	ASG-MOBILE

Reference Standard Information:

Type	Component	Cyl. Number	Concentration
GMIS	PROPANE	CC49497	48.447PPM

Instrumentation:

Instrument/Model/Serial No.	Analytical Principle
SIEMENS FIDAMAT 5E-P K4-391	FID

Analytical Methodology does not require correction for analytical interferences.

Certified Concentrations:

Component	Concentration	Accuracy	Procedure
PROPANE	84.74 PPM	+/-1%	G2
AIR	Balance		

Analytical Results:

1st Component: PROPANE

1st Analysis Date: 2/12/01

R	48.45	S	84.75	Z	0.00	Conc	84.74
S	84.75	Z	0.00	R	48.45	Conc	84.74
Z	0.00	R	48.45	S	84.75	Conc	84.74
						AVG:	84.74

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

Do not use cylinder below 150 psig.

Approved for Release

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. * 12722 S. Wentworth Avenue, Chicago, IL 60628

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCTS & CHEMICALS, INC.
5837 W. 5TH STREET
JACKSONVILLE FL 32254-1509

Order No: CSS-064780-01
Batch No: 861-50907
PO:
Release:

Cylinder No: SG9170316BAL
Bar Code No: DDH980
Cylinder Pressure*: 2000 psig
Certification Date: 11/06/1998
Expiration Date: 11/06/2001

CERTIFIED CONCENTRATION		REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION			
Component	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
PROPANE	452 ±8.5 PPM	SG9128533BAL	GMIS	1026 PPM	Gow-Mac 750	59405U	11/04/98	GC-FID
AIR	Balance Gas							
Oxygen Concentration	20.4 %							

*** STANDARD SHOULD NOT BE USED BELOW 150 PSIG**

Analyst: _____ Chris Basile

Approved By: _____ James Laas

Pub No 320 0702

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

1750 EAST CLUB BLVD,DURHAM,NC 27704 Phone: 919-220-0803 Fax: 919-220-0808

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1750 EAST CLUB BLVD
DURHAM,NC 27704

P.O. No.: 2127
Project No.: 12-36342-016

Customer

AIR CONSULTING & ENGRING
STEVE NECK
SUITE #4
2106 NW 67TH PLACE
GAINESVILLE FL 32606

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure #G1; September, 1997.

Cylinder Number: AAL7689 **Certification Date:** 10/29/99 **Exp. Date:** 10/28/2002
Cylinder Pressure*:** 2000 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	861.8	PPM	+/- 1%	Direct NIST and NMi
AIR		BALANCE		

* Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedure G1, September 1997.
Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1200	8/01/01	ALM001021	1193. PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3400/16804-C3H8	10/08/99	GC / TCD

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | Second Triad Analysis | Calibration Curve

PROPANE

Date:10/29/99	Response Unit:ACR	
Z1 = 0.00000	R1 = 12718.00	T1 = 92057.00
R2 = 12738.00	Z2 = 0.00000	T2 = 91588.00
Z3 = 0.00000	T3 = 92225.00	R3 = 12731.00
Avg. Concentration:	861.8	PPM

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999990

Constants:	A = 0.000000
B = 1.000000	C = 0.000000
D = 0.000000	E = 0.000000

APPROVED BY: _____
B M BECTON

For Technical Information Call
1-800-752-1597

AIR PRODUCTS

Air Products and Chemicals, Inc. * 12722 S. Wentworth Avenue, Chicago, IL 60628

ISO CERTIFICATION: 9002

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS STANDARD

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCTS & CHEMICALS, INC.
5837 W. 5TH STREET
JACKSONVILLE FL 32254-1509

Order No: CSS-024612-01
Batch No: 861-49379
PO:
Release:

Cylinder No: SG9133167BAL
Bar Code No: BXH393
Cylinder Pressure*: 2000 psig
Certification Date: 09/11/1998
Expiration Date: 09/11/2001

CERTIFIED CONCENTRATION		REFERENCE STANDARDS			ANALYTICAL INSTRUMENTATION			
Component	Certified Concentration	Cylinder Number	Standard Type	Standard Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
PROPANE	3080 ±31 PPM	SG9164860BAL	GMIS	4723 PPM	Gow-Mac 750	59405U	09/04/98	GC-FID
AIR	Balance Gas							
Contaminant								
Oxygen Concentration	20.2 %							

*** STANDARD SHOULD NOT BE USED BELOW 150 PSIG**

Analyst: Julian K. Segbawu
JULIAN K. SEGBAWU

Approved By: James Laas 7/15
James Laas

(160211)

Pub. No. 320-9702

APPENDIX H

TEST METHODS

METHOD 204
(PROCEDURE T)

METHOD 204

CRITERIA FOR AND VERIFICATION OF A PERMANENT OR TEMPORARY TOTAL ENCLOSURE

1. Introduction

1.1 Applicability. This procedure is used to determine whether a permanent or temporary enclosure meets the criteria of a total enclosure. An existing building may be used as a temporary or permanent enclosure as long as it meets the appropriate criteria described in this method.

1.2 Principle. An enclosure is evaluated against a set of criteria. If the criteria are met and if all the exhaust gases are ducted to a control device, then the volatile organic compounds (VOC) capture efficiency (CE) is assumed to be 100 percent and CE need not be measured. However, if part of the exhaust gas stream is not ducted to a control device, CE must be determined.

1.3 NOTE: An evaluation of the proposed building materials is recommended to minimize potential hazards.

2. Definitions

2.1 Natural Draft Opening (NDO) -- Any permanent opening in the enclosure that remains open during operation of the facility and is not connected to a duct in which a fan is installed.

2.2 Permanent Total Enclosure (PE). A permanently installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge to a control device.

2.3 Temporary Total Enclosure (TTE). A temporarily installed enclosure that completely surrounds a source of emissions such that all fugitive VOC emissions are captured and contained for discharge through ducts that allow for the accurate measurement of fugitive VOC emissions.

3. Criteria of a Temporary Total Enclosure

3.1 Any NDO shall be at least four equivalent opening diameters from each VOC emitting point unless otherwise specified by the Director.

3.2 Any exhaust point from the enclosure shall be at least four equivalent duct or hood diameters from each NDO.

3.3 The total area of all NDO's shall not exceed 5 percent of the surface area of the enclosure's four walls, floor, and ceiling.

3.4 The average facial velocity (FV) of air through all NDO's shall be at least 3,600 m/hr (200 fpm). The direction of air through all NDO's shall be into the enclosure.

3.5 All access doors and windows whose areas are not included in Section 3.3 and are not included in the calculation in Section 3.4 shall be closed during routine operation of the process.

4. Criteria of a Permanent Total Enclosure

4.1 Same as Sections 3.1 and 3.3 through 3.5.

4.2 All VOC emissions must be captured and contained for discharge through a control device.

5. Procedure

5.1 Determine the equivalent diameters of the NDO's and determine the distances from each VOC emitting point to all NDO's. Determine the equivalent diameter of each exhaust duct or hood and its distance to all NDO's. Calculate the distances in terms of equivalent diameters. The number of equivalent diameters shall be at least four.

5.2 Measure the total area (A_t) of the enclosure and the total area (A_N) of all NDO's of the enclosure. Calculate the NDO to enclosure area ratio (NEAR) as follows:

$$NEAR = A_N / A_t \qquad \text{(Equation 204-1)}$$

The NEAR must be ≤ 0.05.

5.3 Measure the volumetric flow rate, corrected to standard conditions, of each gas stream exiting the enclosure through an exhaust duct or hood using EPA Method 2. In some cases (e.g., when the building is the enclosure), it may be necessary to measure the volumetric flow rate, corrected to standard conditions, of each gas stream entering the enclosure through a forced makeup air duct using Method 2. Calculate FV using the following equation:

$$FV = [Q_o - Q_I]/A_N \qquad \text{(Equation 204-2)}$$

where:

Q_o = the sum of the volumetric flow from all gas streams exiting the enclosure through an exhaust duct or hood

Q_i = the sum of the volumetric flow from all gas streams into the enclosure through a forced makeup air duct; zero, if there is no forced makeup air into the enclosure

A_N = total area of all NDO's in enclosure

The FV shall be at least 3,600 m/hr (200 fpm). Alternatively, measure the pressure differential across the enclosure. A pressure drop of 0.0075 mm Hg (0.004 in. H_2O) corresponds to an FV of 3,600 m/hr (200 fpm).

5.4 Verify that the direction of air flow through all NDO's is inward. Streamers, smoke tubes, tracer gases may be used. Strips of plastic wrapping film have been found to be effective. Monitor the direction of air flow for at least 1 hour, with checks made no more than 10 minutes apart.

6. Quality Assurance

6.1 The success of this protocol lies in designing the TTE to simulate the conditions that exist without the TTE (i.e., the effect of the TTE on the normal flow patterns around the effected facility or the amount of fugitive VOC emissions should be minimal.) The TTE must enclose the application station, coating reservoirs, and all areas from the application station to the oven. The oven does not have to be enclosed if it is under negative pressure. The NDO's of the temporary enclosure and a fugitive exhaust fan must be properly sized and placed.

6.2 Estimate the ventilation rate of the TTE that best simulates the conditions that exist without the TTE (i.e., the effect of the TTE on the normal flow patterns around the affected facility or the amount of fugitive VOC emissions should be minimal.) Figure 204-1 may be used as an aid. Measure the concentration (C_a) and flow rate (Q_a) of the captured gas stream, specify a safe concentration (C_f) for the fugitive gas stream, estimate the CE, and then use the plot in Figure 204-1 to determine the volumetric flowrate of the fugitive gas stream (Q_f). A fugitive VOC emission exhaust fan that has a variable flow control is desirable.

6.3 Monitor the concentration of VOC into the capture device without the TTE. To minimize the effect of temporal variation on the captured emissions, the baseline measurement should be made over as long a time period as practical. However, the process conditions must be the same for the measurement in Section 6.5 as they are for this baseline measurement. This may require short measuring times for this quality control check before and after the construction of the TTE.

6.4 After the TTE is constructed, monitor the VOC concentration inside the TTE. This concentration shall not continue to increase and must not exceed the safe level according to Occupational Safety and Health Administration requirements for permissible exposure limits. An increase in VOC concentration indicates poor TTE design or poor capture efficiency.

6.5 Monitor the concentration of VOC into the capture device with the TTE. To limit the effect of the TTE on the process, the VOC concentration with and without the TTE must be within 10 percent. If the measurements do not agree, adjust the ventilation rate from the TTE until they agree within 10 percent.

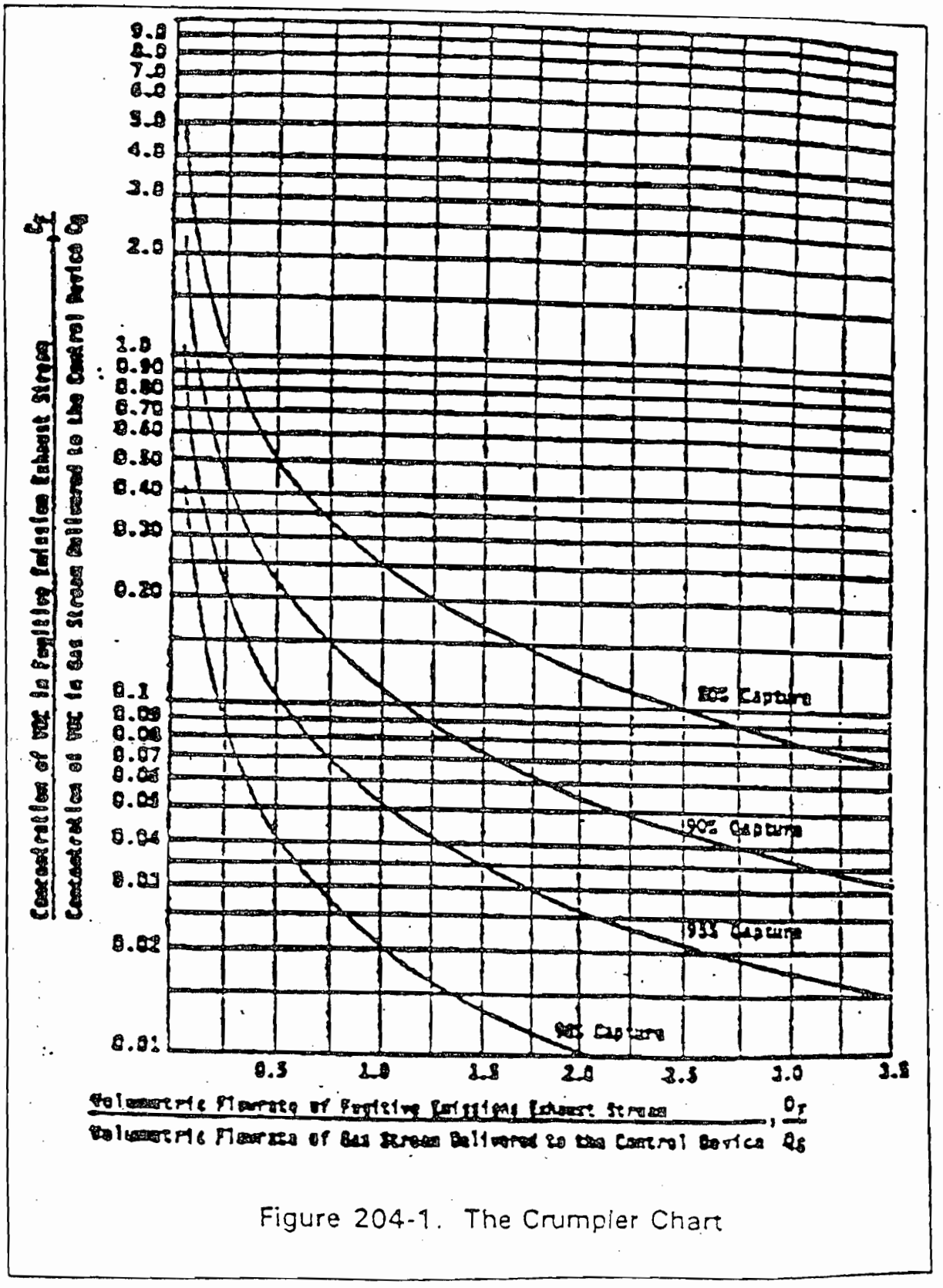


Figure 204-1. The Crumpler Chart

METHOD 204B
(PROCEDURE G.1)

METHOD 2048

VOLATILE ORGANIC COMPOUNDS EMISSIONS IN CAPTURED STREAM

1. Introduction

1.1 Applicability. This procedure is applicable for determining the VOC content of captured gas streams. It is intended to be used in the development of liquid/gas or gas/gas protocols for determining VOC CE for surface coating and printing operations. The procedure may not be acceptable in certain site-specific situations, [e.g., when: (1) direct fired heaters or other circumstances affect the quantity of VOC at the control device inlet; and (2) particulate organic aerosols are formed in the process and are present in the captured emissions.]

1.2 Principle. The amount of VOC captured (G) is calculated as the sum of the products of the VOC content (C_{cj}), the flow rate (Q_{cj}), and the sample time (θ_c) from each captured emissions point.

1.3 Estimated Measurement Uncertainty. The measurement uncertainties are estimated for each captured or fugitive emissions point as follows: Q_{cj} = ±5.5 percent and C_{cj} = ±5.0 percent. Based on these numbers, the probable uncertainty for G is estimated at about ±7.4 percent.

1.4 Sampling Requirements. A CE test shall consist of at least three sampling runs. Each run shall cover at least one complete production cycle, but shall be at least 3 hours long. The sampling time for each run need not exceed 8 hours, even if the production cycle has not been completed. Alternative sampling times may be used with the approval of the Director.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing, installing, and using the appropriate equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. Apparatus and Reagents

2.1 Gas VOC Concentration. A schematic of the measurement system is shown in Figure 204B-1. The main components are as follows:

2.1.1 Sample Probe. Stainless steel, or equivalent. The probe shall be heated to prevent VOC condensation.

2.1.2 Calibration Valve Assembly. Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer. Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 Sample Line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

2.1.4 Sample Pump. A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sample rate within 10 percent. The flow rate control valve and rotameter must

be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated to the Director's satisfaction that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.6.1 Zero Drift. Less than ±3.0 percent of the span value.

2.1.6.2 Calibration Drift. Less than ±3.0 percent of the span value.

2.1.6.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.1.6.4 Response Time. Less than 30 seconds.

2.1.7 Integrator/Data Acquisition System. An analog or digital device, or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.8 Calibration and Other Gases. Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to National Institute of Standards and Technology standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with the approval of the Director.

2.1.8.1 Fuel. The FIA manufacturer's recommended fuel should be used. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.8.2 Carrier Gas. High purity air with less than 1 ppm of organic material (as propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.8.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown to the Director's satisfaction that more accurate measurements would be achieved.

2.1.9 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Captured Emissions Volumetric Flow Rate.

2.2.1 Method 2 or 2A Apparatus. For determining volumetric flow rate.

2.2.2 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if approved by the Director.

2.2.3 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

3. Determination of Volumetric Flow Rate of Captured Emissions

3.1 Locate all points where emissions are captured from the affected facility. Using Method 1, determine the sampling points. Be sure to check each site for cyclonic or swirling flow.

3.2 Measure the velocity at each sampling site at least once every hour during each sampling run using Method 2 or 2A.

4. Determination of VOC Content of Captured Emissions

4.1 Analysis Duration. Measure the VOC responses at each captured emissions point during the entire test run or, if applicable, while the process is operating. If there are multiple captured emission locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 204B-1. Calibrate the FIA according to the procedure in Section 5.1.

4.2.2 Conduct a system check according to the procedure in Section 5.3.

4.2.3 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.4 Inject zero gas at the calibration valve assembly. Allow the measurement system response to reach zero. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.5 Conduct a system check before and a system drift check after each sampling run according to the procedures in Sections 5.2 and 5.3. If the drift check following a run indicates unacceptable performance, the run is not valid. The tester may elect to perform system drift checks during the run not to exceed one drift check per hour.

4.2.6 Verify that the sample lines, filter, and pump temperatures are 120 ± 5°C.

4.2.7 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information as appropriate. If multiple captured emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least four separate measurements from each sample point during each hour of testing. Disregard the measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Background Concentration. NOTE: Not applicable when the building is used as the TTE.

4.3.1 Locate all NDO's of the TTE. A sampling point shall be at the center of the NDO, unless otherwise specified by the Director. If there are more than six NDO's, choose six sampling points evenly spaced among the NDO's.

4.3.2 Assemble the sample train as shown in Figure 204B-2. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3. NOTE: This sample train shall be a separate sampling train from the one to measure the captured emissions.

4.3.3 Position the probe at the sampling location.

4.3.4 Determine the response time, conduct the system check and sample according to the procedures described in Sections 4.2.4 to 4.2.7.

4.4 Alternative Procedure. The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. Calibration and Quality Assurance

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas that most closely approximates the concentration of the captured emissions for conducting the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct the system drift checks at the end of each run.

5.3 System Check. Inject the high range calibration gas at the inlet of the sampling probe and record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high range calibration gas. Conduct a system check before and after each test run.

5.4 Audits

5.4.1 Analysis Audit Procedure. Immediately before each test, analyze an audit cylinder as described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

5.4.2 Audit Samples and Audit Sample Availability. Audit samples will be supplied only to enforcement agencies for compliance tests. The availability of audit samples may be obtained by writing:

Source Test Audit Coordinator (STAC) (MD-77B)
Quality Assurance Division
Atmospheric Research and Exposure Assessment Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

or by calling the STAC at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

5.4.3 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA Regional Office or the appropriate enforcement agency, and a second copy to the STAC. The EPA Regional Office or the appropriate enforcement agency will report the results of the audit to the laboratory being audited. Include this response with the results of the compliance samples in relevant reports to the EPA Regional Office or the appropriate enforcement agency.

6. Nomenclature

A_i = area of NDO i, ft^2

A_N = total area of all NDO's in the enclosure, ft^2

C_B = average background concentration, ppm propane

C_{Bi} = corrected average VOC concentration of background emissions at point i, ppm propane

C_{Cj} = corrected average VOC concentration of captured emissions at point j, ppm propane

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane

C_H = actual concentration of the drift check calibration gas, ppm propane

C_i = uncorrected average background VOC concentration measured at point i, ppm propane

C_j = uncorrected average VOC concentration measured at point j, ppm propane

G = total VOC content of captured emissions, kg

K_1 = 1.830×10^{-6} kg/(m^3-ppm)

n = number of measurement points

Q_{Cj} = average effluent volumetric flow rate corrected to standard conditions at captured emissions point j, m^3/min.

θ_C = total duration of captured emissions sampling run, min.

7. Calculations

7.1 Total VOC Captured Emissions.

$$G = \sum_{j=1}^{n} (C_{Cj} - C_B)\, Q_{Cj}\, \theta_C\, K_1 \qquad \text{(Equation 2048-}$$

7.2 VOC Concentration of the Captured Emissions at Point j.

$$C_{oj} = (C_j - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}}$$ (Equation 204B-2)

7.3 Background VOC Concentration at Point i.

$$C_{Bi} = (C_i - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}}$$ (Equation 204B-3)

7.4 Average Background Concentration.

$$C_B = \frac{\sum_{i=1}^{n} C_{Bi} A_i}{A_H}$$ (Equation 204B-4)

NOTE: If the concentration at each point is within 20 percent of the average concentration of all points, then use the arithmetic average.

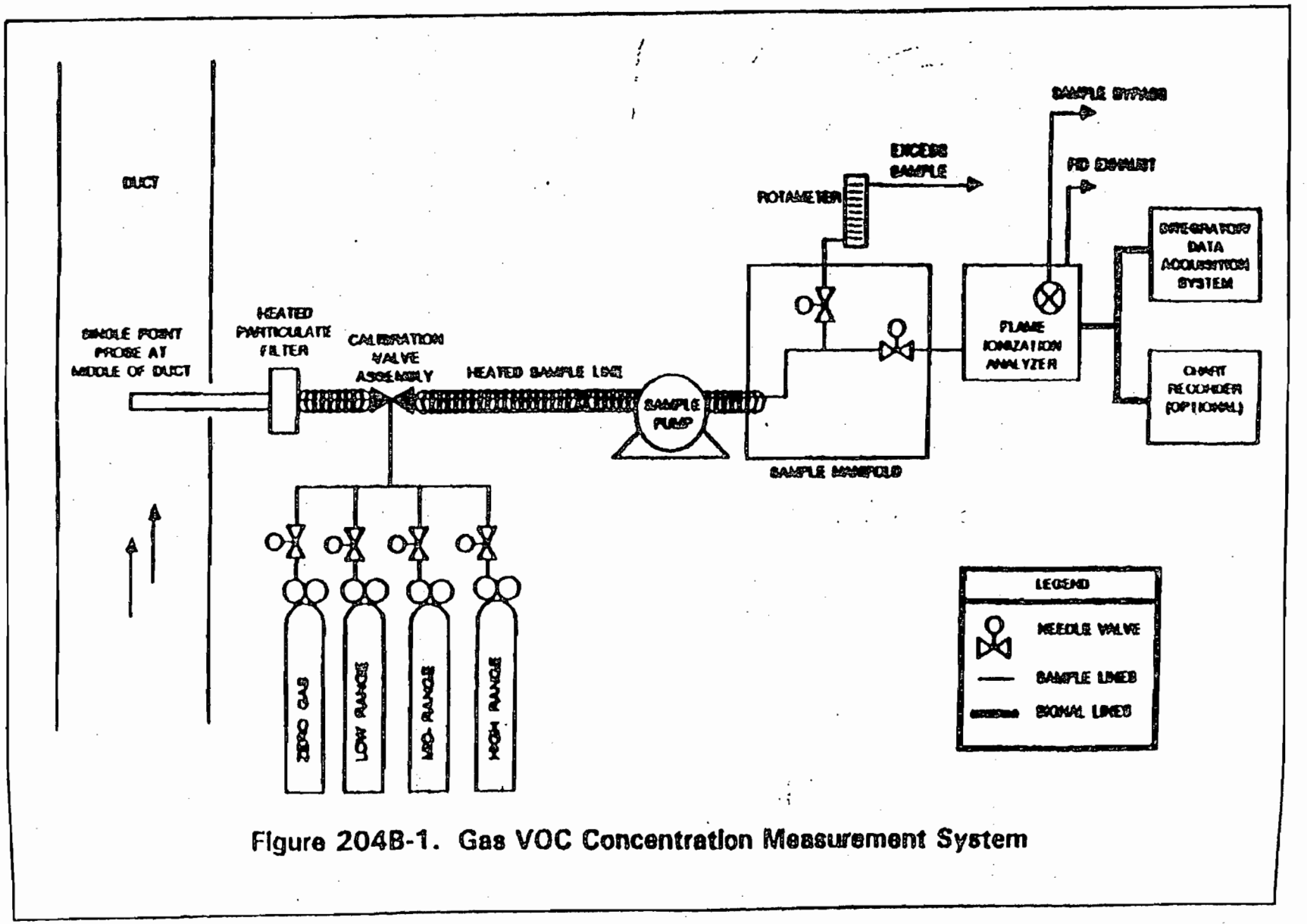


Figure 204B-1. Gas VOC Concentration Measurement System

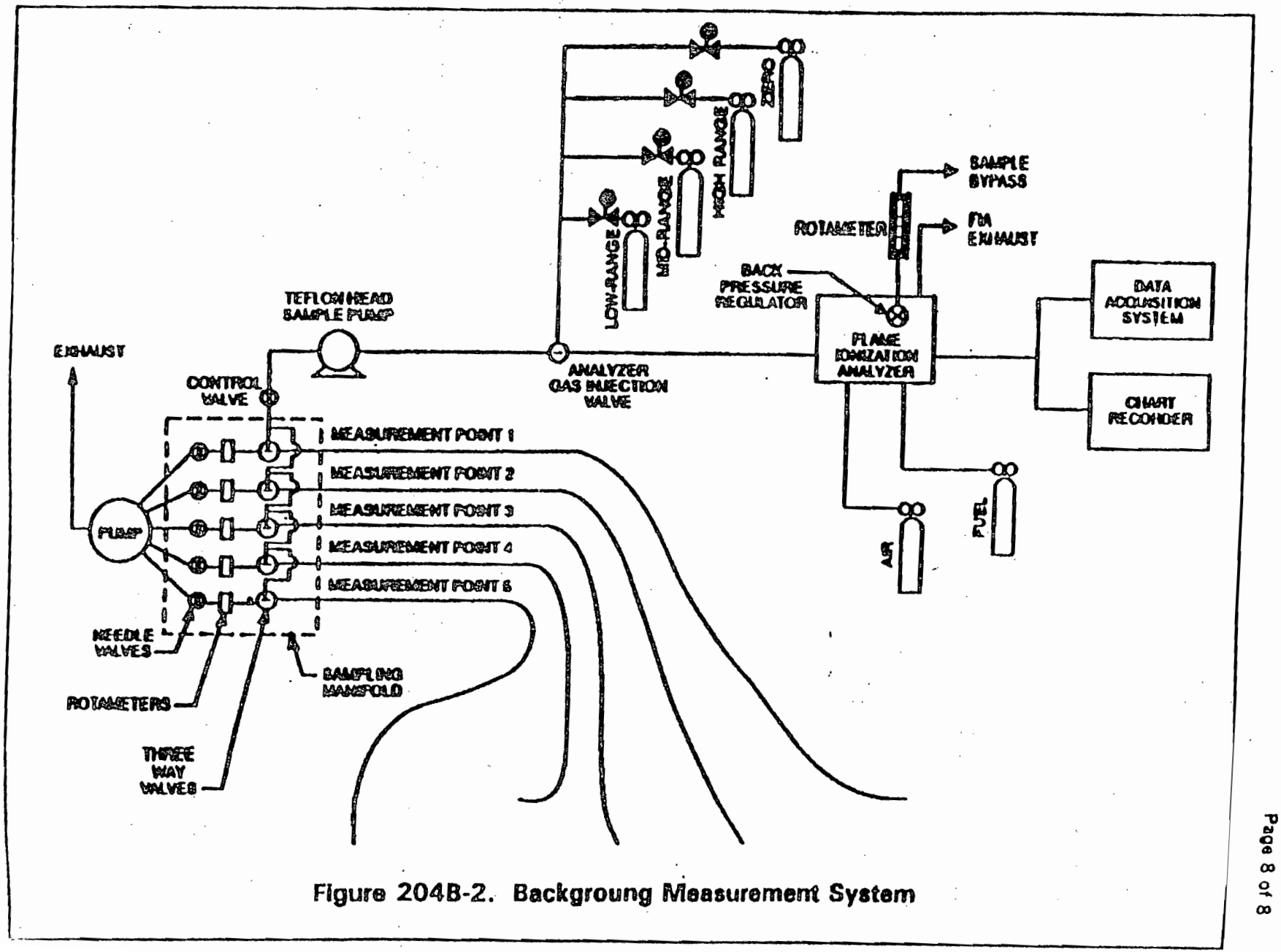


Figure 204B-2. Backgroung Measurement System

METHOD 204E
(PROCEDURE F.2)

METHOD 204E

VOLATILE ORGANIC COMPOUNDS EMISSIONS IN FUGITIVE

STREAM FROM BUILDING ENCLOSURE

1. Introduction

1.1 Applicability. This procedure is applicable for determining the fugitive VOC emissions from a building enclosure (BE). It is intended to be used in the development of liquid/gas or gas/gas protocols for determining VOC CE for surface coating and printing operations.

1.2 Principle. The total amount of fugitive VOC emissions (F_e) from the BE is calculated as the sum of the products of the VOC content (C_{Fi}) of each fugitive emissions point, the flow rate (Q_{Fi}) at each fugitive emissions point, and time (θ_i).

1.3 Measurement Uncertainty. The measurement uncertainties are estimated for each fugitive emissions point as follows: Q_{Fi} = ±10.0 percent and C_{Fi} = ±5.0 percent. Based on these numbers, the probable uncertainty for F_e is estimated at about ±11.2 percent.

1.4 Sampling Requirements. A capture efficiency test shall consist of at least three sampling runs. Each run shall cover at least one complete production cycle but shall be at least 3 hours long. The sampling time for each run need not exceed 8 hours, even if the production cycle has not been completed. Alternative sampling times may be used with the approval of the Director.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing, installing, and using the appropriate equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. Apparatus and Reagents

2.1 Gas VOC Concentration. A schematic of the measurement system is shown in Figure 204E-1. The main components are as follows:

2.1.1 Sample Probe. Stainless steel or equivalent. The probe shall be heated to prevent VOC condensation.

2.1.2 Calibration Valve Assembly. Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer. Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 Sample Line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

2.1.4 Sample Pump. A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent. The flow rate control valve and rotameter must

be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 Sample Gas Manifold. Capable of diverting a portion of the sample gas stream to the FIA, and the remainder to the bypass discharge vent. The manifold components shall be constructed of stainless steel or Teflon. If emissions are to be measured at multiple locations, the measurement system shall be designed to use separate sampling probes, lines, and pumps for each measurement location, and a common sample gas manifold and FIA. The sample gas manifold must be heated to prevent condensation.

2.1.7 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated to the Director's satisfaction that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.7.1 Zero Drift. Less than ±3.0 percent of the span value.

2.1.7.2 Calibration Drift. Less than ±3.0 percent of the span value.

2.1.7.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.1.7.4 Response Time. Less than 30 seconds.

2.1.8 Integrator/Data Acquisition System. An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.9 Calibration and Other Gases. Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to National Institute of Standards Technology standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with the approval of the Director.

2.1.9.1 Fuel. The FIA manufacturer's recommended fuel should be used. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.9.2 Carrier Gas. High purity air with less than 1 ppm of organic material (propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.9.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown to the Director's satisfaction that more accurate measurements would be achieved.

2.1.10 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Fugitive Emissions Volumetric Flow Rate.

2.2.1 Flow Direction Indicators. Any means of indicating inward or outward flow, such as light plastic film or paper streamers, smoke tubes, filaments, and sensory perception.

2.2.2 Method 2 or 2A Apparatus. For determining volumetric flow rate. Anemometers or similar devices calibrated according to the manufacturer's instructions may be used when low velocities are present. Vane anemometers (Young-maximum response propeller), specialized pitots with electronic manometers (e.g., Shortridge Instruments Inc., Airdata Multimeter 860) are commercially available with measurement thresholds of 15 and 8 mpm (50 and 25 fpm), respectively.

2.2.3 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if approved by the Director.

2.2.4 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

2.3 Building Enclosure. The criteria for an acceptable BE are specified in Method 204.

3. Determination of Volumetric Flow Rate of Fugitive Emissions

3.1 Preliminary Determinations. The following points are considered exhaust points and should be measured for volumetric flow rates and VOC concentrations.

3.1.1 Forced Draft Openings. Any opening in the facility with an exhaust fan. Determine the volumetric flow rate according to Method 2.

3.1.2 Roof Openings. Any openings in the roof of a facility which does not contain fans are considered to be exhaust points. Determine volumetric flow rate from these openings. Use the appropriate velocity measurement devices, (e.g., propeller anemometers.)

3.2 Determination of Flow Rates.

3.2.1 Measure the volumetric flow rate at all locations identified as exhaust points in Section 3.1. Divide each exhaust opening into nine equal areas for rectangular openings and eight equal areas for circular openings.

3.2.2 Measure the velocity at each site at least once every hour during each sampling run using Method 2 or 2A, if applicable, or using the low velocity instruments in Section 2.2.2.

4. Determination of VOC Content of Fugitive Emissions

4.1 Analysis Duration. Measure the VOC responses at each fugitive emission point during the entire test run, or if applicable, while the process is operating. If there are multiple emissions locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 204E-1. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3, respectively.

4.2.2 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.3 Inject zero gas at the calibration valve assembly. Allow the measurement system response to reach zero. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.4 Conduct a system check before, and a system drift check after, each sampling run according to the procedures in Sections 5.2 and 5.3. If the drift check following a run indicates unacceptable performance (see Section 5.3), the run is not valid. The tester may elect to perform drift checks during the run, not to exceed one drift check per hour.

4.2.5 Verify that the sample lines, filter, and pump temperatures are 120 ± 5 °C.

4.2.6 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information, as appropriate. If multiple emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least four separate measurements from each sample point during each hour of testing. Disregard the response measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Alternative Procedure. The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. Calibration and Quality Assurance

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases, and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas that most closely approximates the concentration of the captured emissions for conducting the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct a system drift check at the end of each run.

5.3 System Check. Inject the high-range calibration gas at the inlet of the sampling probe and record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high-range calibration gas. Conduct a system check before each test run.

5.4 Audits

5.4.1 Analysis Audit Procedure. Immediately before each test, analyze an audit cylinder a

described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

5.4.2 Audit Samples and Audit Sample Availability. Audit samples will be supplied only to enforcement agencies for compliance tests. The availability of audit samples may be obtained by writing:

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Quality Assurance Division
Atmospheric Research and Exposure Assessment Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

or by calling the STAC at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

5.4.3 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA Regional Office or the appropriate enforcement agency, and a second copy to the STAC. The EPA Regional Office or the appropriate enforcement agency will report the results of the audit to the laboratory being audited. Include this response with the results of the compliance samples in relevant reports to the EPA Regional Office or the appropriate enforcement agency.

6. Nomenclature

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane

C_{Fj} = corrected average VOC concentration of fugitive emissions at point j, ppm propane

C_H = actual concentration of the drift check calibration gas, ppm propane.

C_j = uncorrected average VOC concentration measured at point j, ppm propane

F_B = total VOC content of fugitive emissions from the building, kg

K_1 = 1.830×10^{-6} kg/(m^3-ppm)

n = number of measurement points

Q_{Fj} = average effluent volumetric flow rate corrected to standard conditions at fugitive emissions point j, m^3/min.

θ_F = total duration of capture efficiency sampling run, min.

7. Calculations

7.1 Total VOC Fugitive Emissions from the Building.

$$F_B = \sum_{j=1}^{n} C_{Fj}\, Q_{Fj}\, \theta_F\, K_1 \qquad \text{(Equation 204E-1)}$$

7.2 VOC Concentration of the Fugitive Emissions at Point j.

$$C_{Fj} = (C_j - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}}$$ (Equation 204E-2)

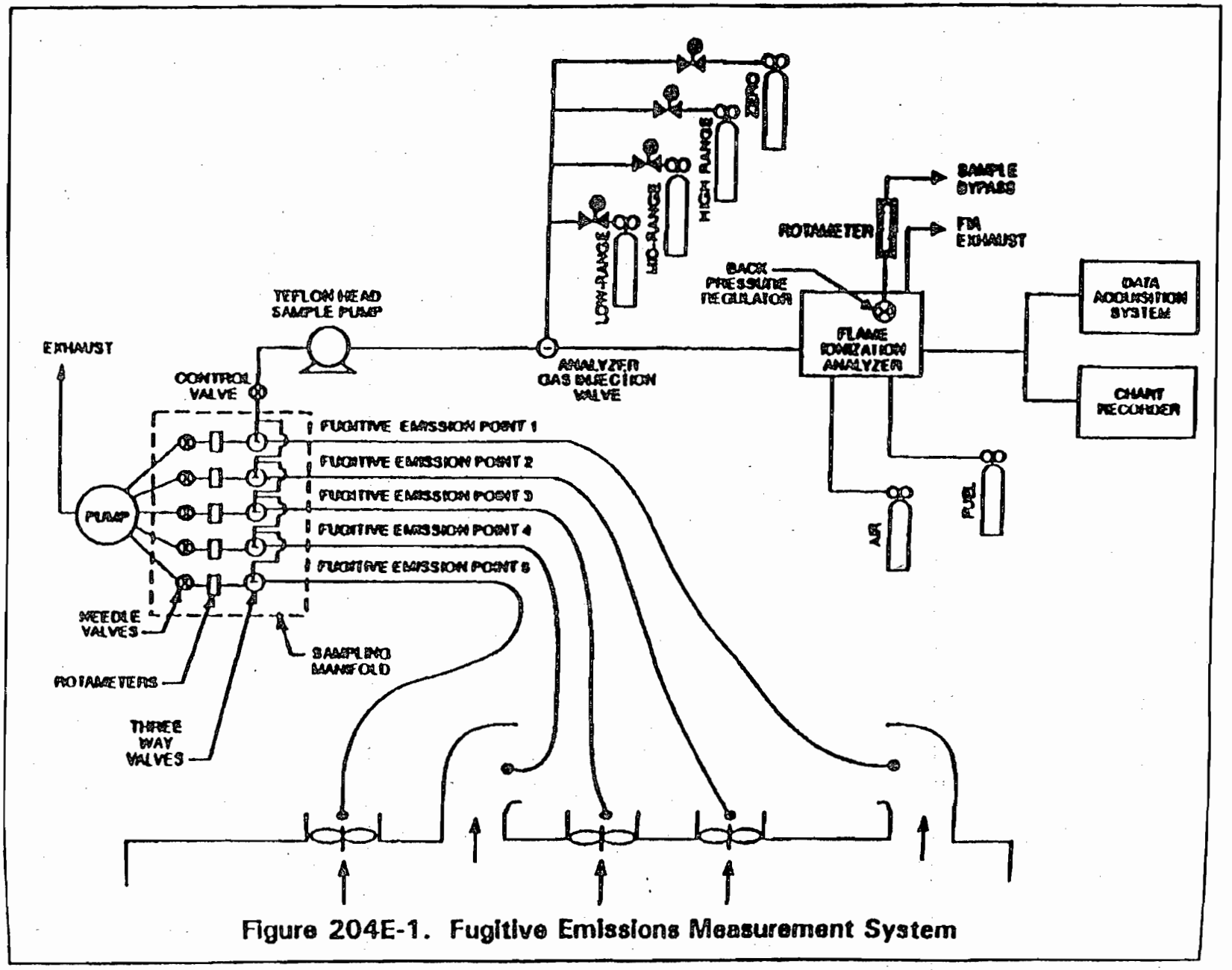

Figure 204E-1. Fugitive Emissions Measurement System

APPENDIX I

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

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J. R. Wilson
Test Coordinator
Production Data

Orange County Environmental Protection Department

Dale McLarity
Test Observer

0950125-003 (1)

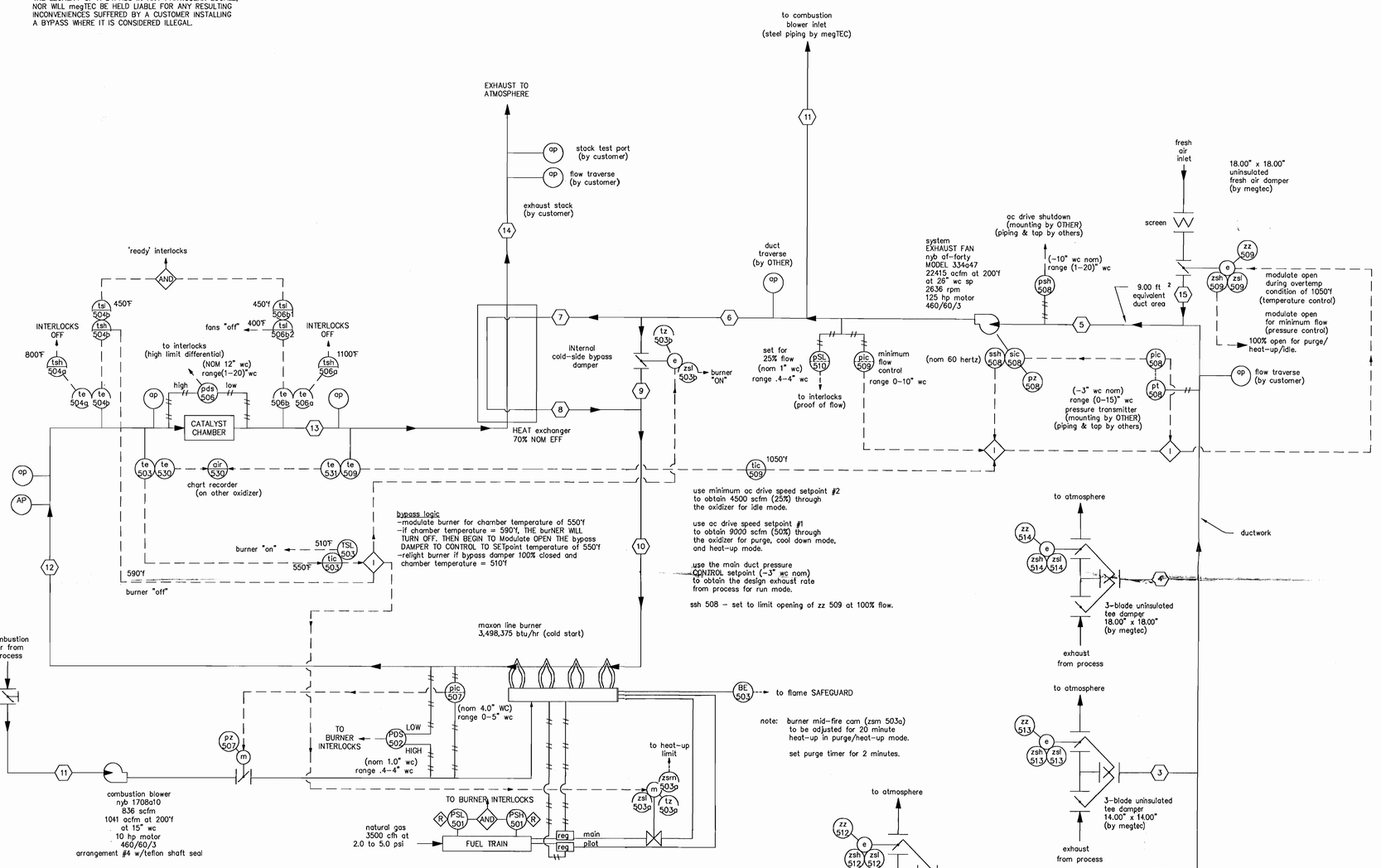
INSTRUMENTATION KEY

AE – ANALYSIS ELEMENT
AI – ANALYSIS INDICATOR
AIC – ANALYSIS INDICATING CONTROLLER
AIT – ANALYSIS INDICATING TRANSMITTER
AP – ANALYSIS POINT
AIR – ANALYSIS indicating RECORDER
AZ – ANALYSIS FINAL CONTROL
BE – BURNER ELEMENT
e – ELECTRIC MOTOR
FS – FLOW SWITCH
FT – FLOW transmitter
FZ – FLOW FINAL CONTROL
I/P – CURRENT TO PRESSURE TRANSMITTER
LS – LEVEL SWITCH
PDS – PRESSURE DIFFERENTIAL SWITCH
PE – PRESSURE ELEMENT
PI – PRESSURE INDICATOR
PIC – PRESSURE INDICATING CONTROLLER
PIS – PRESSURE INDICATING SWITCH
PSH – PRESSURE SWITCH, HIGH
PSL – PRESSURE SWITCH, LOW
PT – PRESSURE TRANSMITTER
PZ – PRESSURE FINAL CONTROL
R – MANUAL RESET
SI – SPEED INDICATOR
SIC – SPEED INDICATING CONTROLLER
SS – SELECTOR SWITCH
SSh – Speed switch high
ST – SPEED TRANSMITTER
TE – TEMPERATURE ELEMENT
TI – TEMPERATURE INDICATOR
TIC – TEMPERATURE INDICATING CONTROLLER
TIT – TEMPERATURE INDICATING TRANSMITTER
TSH – TEMPERATURE SWITCH, HIGH
TSL – TEMPERATURE SWITCH, LOW
TT – TEMPERATURE TRANSMITTER
TZ – TEMPERATURE FINAL CONTROL
ZI – POSITION INDICATOR
ZSH – POSITION SWITCH, HIGH
ZSL – POSITION SWITCH, LOW
ZSM – POSITION SWITCH, MID
Zz – final positioner

NOTE:
THE CUSTOMER SHOULD CHECK WITH LOCAL AUTHORITIES TO ENSURE THE LEGALITY OF A POLLUTION CONTROL BYPASS AS SUGGESTED BY THIS DRAWING, PRIOR TO INSTALLATION OF SAME.
megTEC SYSTEMS WILL NOT ACCEPT resPONSIBILITY FOR THE LEGALITY OF A BYPASS IN ANY PARTICULAR LOCALE, NOR WILL megTEC BE HELD LIABLE FOR ANY RESULTING INCONVENIENCES SUFFERED BY A CUSTOMER INSTALLING A BYPASS WHERE IT IS CONSIDERED ILLEGAL.

instrument line identification	
------	electrical signal
//—//—	pneumatic signal

instrumentation legend	
———	process
———	instrument air supply or connection to supply
———	electrical signal
//—//—	pneumatic signal
○	FIELD MOUNTED
◻	displayed on mmi
⊟	controlled through plc
◔	FAN
◁	burner
⧸	DAMPER



this information is provided for the safe operation of the oxidizer. solvents entering the oxidizer at greater quantities or greater heat rates than those stated and/or without sufficient volume of air may cause sudden overheating of the oxidizer. this inadvertent misapplication of such solutions in amounts harmful to the oxidizer system will void the warranty.

FIGURES SHOWN ARE FOR DESIGN ONLY AND ARE NOT TO BE CONSIDERED AS GUARANTEED PERFORMANCE.

for customer installed pressure taps and flow traverses see megtec systems pcl

solvent assumed to have heat release value of 13400 btu/lb

LOCATION	idle mode 25% volume no solvents			maximum flow w/360 lb/hr solvent (10% lfl)			PROCESS flow w/180 lb/hr solvent (5.7% lfl)			PROCESS flow w/320 lb/hr solvent (10% lfl)		
	SCFM	ACFM	°F	SCFM	ACFM	°F	SCFM	ACFM	°F	SCFM	ACFM	°F
1	0	0	–	3800	4159	120	3200	3502	120	3200	3502	120
2	0	0	–	4000	4377	120	3400	3721	120	3400	3721	120
3	0	0	–	4000	4377	120	3400	3721	120	3400	3721	120
4	0	0	–	6200	6785	120	5600	6128	120	5600	6128	120
5	4500	4500	70	18000	19698	120	15600	17072	120	15600	17072	120
6	4384	4446	77	17958	19923	128	15500	17201	128	15558	17260	128
7	4384	4446	77	15668	17388	128	15500	17201	128	13018	14447	128
8	4384	7621	461	15668	31814	616	15500	28731	522	13018	26954	637
9	0	0	77	2290	2541	128	0	0	128	2540	2819	128
10	4384	7621	77	17958	34323	553	15500	28731	522	15558	29765	554
11	116	118	77	42	46	128	100	111	128	42	46	120
12	4500	8576	550	18000	34502	550	15600	29728	550	15600	29728	550
13	4500	8576	550	18000	42252	784	15600	33563	680	15600	36792	790
14	4500	5424	179	18000	28135	368	15600	22212	295	15600	24548	374
15	4500	4500	70	0	0	70	0	0	70	0	0	70
burner load	522,000 btu/hr			0 btu/hr			448,200 btu/hr			0 btu/hr		
allowable maximum solvent heat release = 5,994,000 btu/hr												

mode	zz 509 fresh air damper	tz 503b coldside bypass damper	airflow	pz 508 oc drive
purge	100% open	100% CLOSED	50% flow (9000 scfm)	SET FOR 50% flow speed setpoint #1
heat–up	100% open	100% CLOSED	50% flow (9000 scfm)	SET FOR 50% flow speed setpoint #1
idle	100% open	100% CLOSED	25% flow (4500 scfm)	SET FOR 25% flow speed setpoint #2
normal run	100% CLOSED	temperature control	main duct pressure control	main duct pressure control
run w/ 1050°f overtemp	modulate open temperature control	temperature control	main duct pressure control	main duct pressure control
run w/ <25% flow	modulate open pressure control	temperature control	main duct pressure control	main duct pressure control
shutdown cat outlet temp > 400°f	100% open	100% CLOSED	50% flow (9000 scfm)	SET FOR 50% flow speed setpoint #1

process tee damper control logic
if the oxidizer is "not" in operation, the process will not be allowed to run unless the tee damper keyed bypass switch is switched to atmosphere.

a process tee damper will be in the "to atmosphere" position when the process is "off" regardless of the keyed bypass switch position.

a process tee damper will operate to the "to oxidizer" position provided the keyed bypass switch is in the "to oxidizer" position, the process is "on" and the oxidizer has achieved "ready" status.

DN	M
DNR 01/13/00	1
DNR 01/20/00	2 4 2 1 1
flow diagram,flexo, magnum 18000,w/ ac drive, spiralkote	3
112076– 0502	
none	1 1 1

Xref I: \ACAD\BDRS\EBDR.DWG