Steven Piper

From: Steven Piper
Sent: Monday, June 9, 2025 11:46 AM
To: OCC-NSR; R6AirPermitsTX@epa.gov; CREZNICEK@LIVEOAKLUBBOCK.NET
Cc: RFCAIR2
Subject: INITIAL, Live Oak Crematorium, LLC, Project: 393983, Permit(s): 180424,
Attachments: LIVE OAK PN.docx

Please see Public Notice attached.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 9, 2025

MR CHRIS REZNICEK
OWNER
LIVE OAK CREMATORIUM LLC
5214 98TH ST STE 100
LUBBOCK TX 79424-4647

Re: Declaration of Administrative Completeness
Animal Carcass Incinerator Registration for an Air Quality Standard Permit
Air Quality Registration Number: 180424
Animal Carcass Incinerator
Lubbock, Lubbock County
Customer Reference Number: CN606394104
Regulated Entity Number: RN112226774

Dear Mr. Reznicek:

The Texas Commission on Environmental Quality (TCEQ) has declared the above-referenced application, received on June 6, 2025, administratively complete on June 9, 2025.

You are now required to publish notice of your proposed activity no later than the 30th day after the executive director received the application, which is July 6, 2025. As part of the expedited permitting process, it is recommended that you publish immediately. To help you meet the regulatory requirements associated with this notice, we have included the following items:

- Notice for Newspaper Publication
- Instructions for Public Notice
- Affidavits of Publication
- Notification List

Please note that it is very important that you follow all directions in the enclosed instructions. If you do not, you may be required to republish the notice. Some common errors are the unauthorized changing of notice wording or font, omission of air contaminants, and inaccurate plant site location information represented in the application. Additional information can be found at www.tceq.texas.gov/permitting/air/bilingual/how1_2_pn.html or **if you have any questions, please contact us before you proceed with publication.**

The following items and time limitations are also described in the enclosed instructions. However, due to their importance we want to highlight them for you. **The processing of your application may be delayed if these time limitations are not met.**

1. Publish the enclosed notice no later than the 30th day after the date the executive director received the application, which is July 6, 2025 (see this letter's first paragraph for the application received date).

2. You may also be required to publish notice in an alternate language (refer to the enclosed *Instructions for Public Notice*). The Spanish notice templates are available at:

www.tceq.texas.gov/permitting/air/nav/air_publicnotice.html

3. Ensure a copy of your application is provided to the TCEQ Regional Office that has oversight for the county in which you intend to operate your plant. This copy must be in place at the TCEQ Regional Office for the entire public comment period and be accessible to the public for review and copying.

4. Mail or email proof of publication of the notices, which show publication date and newspaper name, to the TCEQ Office of the Chief Clerk and mail copies to those on the enclosed *Notification List* within **10 business days** after the notice is published.

5. Return the *Affidavit of Publication for Air Permitting* (enclosed) and, if applicable, *Alternative Language Affidavit of Publication for Air Permitting* (enclosed) and the ***Public Notice Verification (Form TCEQ-20546)*** to the Office of the Chief Clerk and copies to those on the enclosed *Notification List* within **10 business days** after the notice is published in the newspaper. **The public notice verification form is available at www.tceq.texas.gov/permitting/air/nav/air_publicnotice.html.**

If you do not comply with **all** requirements described in the instructions, the TCEQ cannot continue processing the application and may take other actions.

If you have any questions regarding publication requirements, please contact the Office of the Chief Clerk at (512) 239-3300. If you have any other questions, please contact Mr. Steven Piper at (512) 239-1589.

Sincerely,

Nancy Birdsong, Team Leader
Air Permits Initial Review Team
Air Permits Division
Texas Commission on Environmental Quality

Enclosure

cc: Air Section Manager, Region 2 - Lubbock

Project Number: 393983

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION FOR AN AIR QUALITY STANDARD PERMIT FOR AN ANIMAL CARCASS INCINERATOR

PROPOSED AIR QUALITY REGISTRATION NUMBER 180424

APPLICATION. Live Oak Crematorium LLC, 5214 98th Street Suite 100, Lubbock, Texas 79424-4647 has applied to the Texas Commission on Environmental Quality (TCEQ) for an Air Quality Standard Permit, Registration Number 180424, which would authorize construction of an animal carcass incinerator. The facility is proposed to be located at 1224 East County Road 7275, Lubbock, Lubbock County, Texas 79404. This application is being processed in an expedited manner, as allowed by the commission's rules in 30 Texas Administrative Code, Chapter 101, Subchapter J. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For exact location, refer to application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.820628,33.49204&level=13. This application was submitted to the TCEQ on June 6, 2025. The primary function of this facility is to properly dispose of animal carcasses through incineration. The executive director has determined the application was administratively complete on June 6, 2025.

PUBLIC COMMENT. Public written comments about this application may be submitted at any time during the public comment period. The public comment period begins on the first date notice is published and extends to 30 days from the publication date. Public comments may be submitted either in writing to Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087, or electronically at www14.tceq.texas.gov/epic/eComment/. Please be aware that any contact information you provide, including your name, phone number, email address and physical address will become part of the agency's public record.

RESPONSE TO COMMENTS. A written response to all relevant comments will be prepared by the executive director after the comment period closes. The response, along with the executive director's decision on the application, will be mailed to everyone who submitted public comments and requested to be added to the mailing list. The response to comments will be posted in the permit file for viewing.

The executive director shall approve or deny the application not later than 30 days after the end of the public comment period, considering all comments received within the comment period, and base this decision on whether the application meets the requirements of the standard permit.

CENTRAL/REGIONAL OFFICE. The application will be available for viewing and copying at the TCEQ Central Office and the TCEQ Lubbock Regional Office, located at 5012 50th Street, Suite 100, Lubbock, Texas 79414-3426, during the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, beginning the first day of publication of this notice. The application, including any updates, is available electronically at the following webpage: https://www.tceq.texas.gov/permitting/air/airpermit-applications-notices.

INFORMATION. For more information about the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040. You can also view our website for public participation opportunities at www.tceq.texas.gov/goto/participation**.**

Further information may also be obtained from Live Oak Crematorium LLC, 5214 98th Street Suite 100, Lubbock, Texas 79424-4647, or by calling Mr. Chris Reznicek, Owner at (806) 794-9000.

Notice Issuance Date: June 9, 2025

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Instructions for Public Notice
For Air Quality Standard Permit for Animal Carcass Incinerators

Notice of Application

Your application has been declared administratively complete and now you must comply with the following instructions:

Please Review Notice

We have included in the notice all of the information which we believe is necessary. Please read it carefully and notify us immediately if it contains any errors or omissions. You are responsible for ensuring the accuracy of all information published. You may not change the text of the notice without prior approval from the TCEQ.

Newspaper Notice

- You must publish the enclosed Notice of Application no later than the 30th day after the date the executive director received the application, which is July 6, 2025 (see this letter's first paragraph for the application received date). As part of the expedited permitting process, it is recommended that you publish immediately.

- You must publish the enclosed Notice of Application at your expense, in a newspaper of general circulation in the municipality in which the facility is proposed to be located or in the municipality nearest to the proposed location of the facility.

- You must publish this notice in one issue of any applicable newspaper.

- You will find an example notice enclosed in this package. This example must be published in the "public notice" section of the newspaper.

Alternate Language Notice

In certain circumstances, applicants for air permits must complete notice in alternate languages.

- Public notice rules require the applicant to determine whether a bilingual program is required at either the elementary or middle school nearest to the proposed facility location. Bilingual education programs are determined on a district-wide basis. When students who are required to attend either school are eligible to be enrolled in a bilingual education program, some alternative language notice is required (newspaper notice).

- Since the school district, and not the schools, must provide the bilingual education program, these programs do not have to be located at the above-mentioned schools to trigger the alternative language notice requirement. If there are students who would normally attend the nearest schools, but are eligible to be taught in a bilingual education program at a different location, alternative language notice is required.

- If triggered, publication of alternative language notices must be made in a newspaper or publication printed primarily in each language taught in the bilingual education program. This

notice is required if such a newspaper or publication exists in the municipality or the county where the facility is or will be located.

- The applicant must demonstrate a good faith effort to identify a newspaper or publication in the required language. If a general circulation newspaper or publication printed in such language cannot be found, publishing in that language is not required. Publication in an alternative language section or insertion within a large publication which is not printed primarily in that alternative language does not satisfy these requirements.

- It is suggested the applicant work with the local school district for the following:

  (a) Determine if a bilingual program is required in the district;
  (b) Determine which language is required by the bilingual program;
  (c) Locate the nearest elementary and middle schools; and
  (d) Determine if any students attending either school are eligible to be enrolled in a bilingual educational program.

Proof of Publication

- You must submit proof of publication that shows the notice, the date of publication, and the name of the newspaper to the Office of the Chief Clerk within **10 business days** after the date of publication. Acceptable proofs of publication are 1) copies of the published notice or 2) the newspaper clippings of the published notice. If you choose to submit copies of the published notice to the Office of the Chief Clerk, copies must be on standard-size 8½'' x 11'' paper and must show the actual size of the published notice (do not reduce the image when making copies). Published notices longer than 11'' must be copied onto multiple 8½'' x 11'' pages. Please note, submitting a copy of your published notice could result in faster processing of your application. It is recommended that you maintain newspaper clippings or tear sheets of the notice for your records.

- You must submit the **affidavits of publication** and the **Public Notice Verification Form (Form TCEQ-20546)** with the proof of publication described above to the Office of the Chief Clerk. **You must use the enclosed affidavit.** The affidavit must clearly identify the applicant's name and TCEQ Registration Number. **The public notice verification form is available at http://www.tceq.texas.gov/permitting/air/nav/air_publicnotice.html.**

- The **affidavits of publication and acceptable proof of publication of the published notices** should be emailed to PROOFS@tceq.texas.gov or mailed to:

  Texas Commission on Environmental Quality
  Office of the Chief Clerk, MC-105
  Attn: Notice Team / AIR Expedited Permitting
  P.O. Box 13087
  Austin, Texas 78711-3087

  Please ensure that the affidavits you send to the Chief Clerk have all blanks filled in correctly.

- **Photocopies of newspaper clippings, affidavits, and verification form must also** be sent to those listed on the enclosed *Notification List* within the deadlines specified above.

Failure to Publish and Submit Proof of Publication

You must meet all publication requirements. **If you fail to publish the notice or submit proof of publication,** *on time,* **the TCEQ may suspend further processing on your application or take other actions.**

Application at the Regional Office

- You must provide a copy of the administratively complete application to the appropriate regional office that has jurisdiction over the county in which the plant is to be located. The application must be available for review and copying by the public.

- The administratively complete application must be available beginning the first day of newspaper publication and remain available until the end of the public hearing, which is the length of the public comment period.

- If the application is submitted to the TCEQ with information marked as confidential, you are required to indicate which specific portions of the application are not being made available to the public. These portions of the application must be accompanied with the following statement: "Any request for portions of this application that are marked as confidential must be submitted in writing, pursuant to the Public Information Act, to Texas Commission on Environmental Quality, Public Information Coordinator, MC-197, P.O. Box 13087, Austin, Texas 78711-3087."

General Information

When contacting the Commission regarding this application, please refer to the Registration Number at the top of the Notice of Application.

If you wish to obtain an electronic copy, please contact the technical reviewer who assisted in the preparation of this public notice package. The electronic copy will consist of the example notice, the equivalent in Spanish (if applicable), and the instructions. The electronic version is available in Microsoft Word format only and can be requested once your application has been declared administratively complete.

If you have questions or need assistance regarding publication requirements, please contact the Office of the Chief Clerk at (512) 239-3300 or the technical reviewer listed in the cover letter.

TCEQ-Office of the Chief Clerk
MC-105 Attn: Notice Team
P.O. Box 13087
Austin, Texas 78711-3087

Applicant Name: Live Oak Crematorium, LLC
Permit No.: 180424
Application Received Date: June 6, 2025

AFFIDAVIT OF PUBLICATION FOR AIR PERMITTING

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared

_____, who being by me duly sworn, deposes and says that (s)he is *(Name of Person Representing Newspaper)*

the _____ of the _____
(Title of Person Representing Newspaper) *(Name of the Newspaper)*

that said newspaper is generally circulated in _____, Texas;
(The municipality or nearest municipality to the location of the facility or the proposed facility)

that the enclosed notice was published in said newspaper on the following date(s):

_____

_____
(Newspaper Representative's Signature)

Subscribed and sworn to before me this the _____ day of _____, 20_____
to certify which witness my hand and seal of office.

_____
Notary Public in and for the State of Texas

[Affix Seal]

_____
Print or Type Name of Notary Public

_____
My Commission Expires

TCEQ-Office of the Chief Clerk
MC-105 Attn: Notice Team
P.O. Box 13087
Austin, Texas 78711-3087

Applicant Name: Live Oak Crematorium, LLC
Permit No.: 180424
Application Received Date: June 6, 2025

ALTERNATIVE LANGUAGE AFFIDAVIT OF PUBLICATION FOR AIR PERMITTING

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, on this day personally appeared

_____, who being by me duly sworn, deposes and says that (s)he is (*Name of Person Representing Newspaper)*

the _____ of the _____;
(Title of Person Representing Newspaper) *(Name of the Newspaper)*

that said newspaper is generally circulated in _____, Texas;
*(The **municipality or county** in which the facility or proposed facility is located)*

that the enclosed notice was published in said newspaper on the following date(s):

_____

_____
(Newspaper Representative's Signature)

Subscribe and sworn to before me this the _____ day of _____, 20_____
to certify which witness my hand and seal of office.

_____
Notary Public in and for the State of Texas

[Affix Seal]

_____
Print or Type Name of Notary Public

_____
My Commission Expires

Notification List

It is the responsibility of the applicant to furnish the following offices with copies of the notices published, the *Affidavit of Publication for Air Permitting, the Alternative Language Affidavit of Publication for Air Permitting (if applicable)*, and a completed copy of the *Public Notice Verification Form (Form TCEQ-20546)*. Acceptable proof of publication and any affidavits and Form TCEQ-*20546* should be emailed to PROOFS@tceq.texas.gov or mailed to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, AIR Expedited Permitting, P.O. Box 13087, Austin, Texas 78711-3087.

Electronic copies should be submitted via email to the U.S. Environmental Protection Agency (EPA), **Region 6** at R6AirPermitsTX@EPA.gov. Please contact Ms. Aimee Wilson (wilson.aimee@epa.gov) at (214) 665-7596 if you have any questions pertaining to electronic submittals to the EPA.

Email copies to Ms. Trishia McDonald at Trishia.McDonald@tceq.texas.gov

Hard copies should be sent to the following:

Texas Commission on Environmental Quality
Lubbock Regional Office
5012 50th Street, Suite 100
Lubbock, Texas 79414-3426

For TCEQ Use Only

Permit Application Routing and Summary Sheet
Air Permits

This sheet should accompany all notices to be processed by the office of the chief clerk on the left side of the file folder.

Name of applicant: ..... Live Oak Crematorium, LLC	
Facility/ Site name: ..... Forever Loved Pets Crematorium	
TCEQ permit number: 180424	
Application received date: ..... June 6, 2025	
Customer reference number: CN606394104	
Regulated entity number: RN112226774	
County: ..... Lubbock	**Region:** 2
Local program 1:	**Local program 2:**
Permit type: Standard Permit Application	
Internal program routing	
Tech. team leader: Ms. Trishia McDonald	**Phone no.** (512) 239-2250
APIRT team leader: Nancy Birdsong	**Date:** June 9, 2025
Administratively reviewed by: Steve Piper	**Phone no.** (512) 239-1589
Administratively complete date: June 9, 2025	
Public viewing location must have internet access: ☐ **Yes** ☒ **No**	
Is 2nd public notice required: ☐ **Yes** ☒ **No**	
*Other	

For TCEQ Use Only

Applicant and Contact Information

This sheet should accompany all notices to be processed by the office of the chief clerk on the right side of the file folder.

Applicant's main contact and address to be shown on permit:	
Name/Title: Chris Reznicek, Owner	
Company: Live Oak Crematorium Llc	
Street/Road: 5214 98th St Ste 100	
City/State/Zip: Lubbock, TX 79424-4647	
Telephone: (806) 794-9000	**Fax:** (806) 794-9001
Applicant's technical representative/ consultant:	
Name/Title: Chris Reznicek, Owner	
Company: Live Oak Crematorium Llc	
Street/Road: 5214 98th St Ste 100	
City/State/Zip: Lubbock, TX 79424-4647	
Phone: (806) 794-9000	**Fax:** (806) 794-9001
Person responsible for publishing notice:	
Name/Title: Chris Reznicek, Owner	
Company: Live Oak Crematorium Llc	
Street/Road: 5214 98th St Ste 100	
City/State/Zip: Lubbock, TX 79424-4647	
Telephone: (806) 794-9000	**Fax:** (806) 794-9001

ATTACHMENT G

Process Description

Pet Crematory:

An animal is loaded in the primary chamber.

The Timer is turned ON.

The afterburner starts and heats the upper chamber.

Once achieving preheat temperature in the upper chamber the lower burner starts.

The cremation process begins.

The Timer automatically stops the burners.

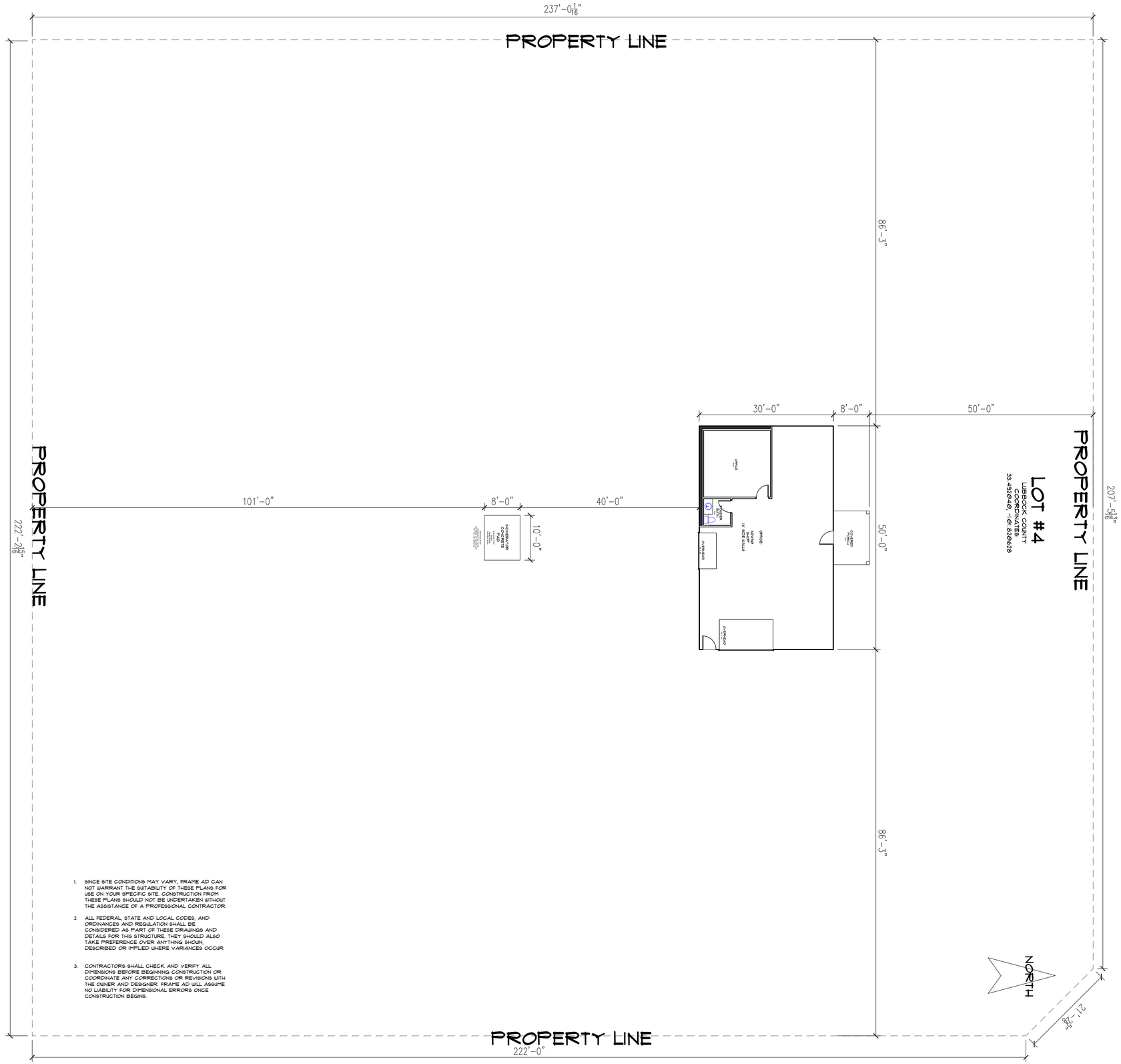
The chambers cool.

Remains are removed.

We are applying for a permit and will be using 2 animal incinerators

DISCLAIMER:
MATTIE L REAGOR (DESIGNER) IS NOT LIABLE FOR ERRORS ONCE CONSTRUCTION HAS BEGUN. EFFORTS ARE MADE IN PREPARATION OF THIS PLAN TO AVOID MISTAKES, THE MAKER CAN NOT GUARANTEE AGAINST HUMAN ERROR. THE CONTRACTOR, SUB-CONTRACTORS, OWNER, OF THE JOB MUST CHECK ALL DIMENSIONS, ERRORS, OMISSIONS OR DISCREPANCIES PRIOR TO BEGINNING OR FABRICATING ANY WORK AND ARE SOLELY RESPONSIBLE THEREAFTER.

APPLICABLE CODES (2015)
INTERNATIONAL RESIDENTIAL CODE (IRC)
INTERNATIONAL ENERGY CONSERVATION CODE (IEC)
INTERNATIONAL FIRE CODE (IFC)
INTERNATIONAL FUEL GAS CODE (IFG)
INTERNATIONAL MECHANICAL CODE (IMC)
INTERNATIONAL PLUMBING CODE (IPC)
2011 NATIONAL ELECTRIC CODE (NEC)
ALL STATE AND COUNTY REGULATIONS.



1. SINCE SITE CONDITIONS MAY VARY, FRAME AD CAN NOT WARRANT THE SUITABILITY OF THESE PLANS FOR USE ON YOUR SPECIFIC SITE. CONSTRUCTION FROM THESE PLANS SHOULD NOT BE UNDERTAKEN WITHOUT THE ASSISTANCE OF A PROFESSIONAL CONTRACTOR.
2. ALL FEDERAL, STATE AND LOCAL CODES, AND ORDINANCES AND REGULATION SHALL BE CONSIDERED AS PART OF THESE DRAWINGS AND DETAILS FOR THIS STRUCTURE. THEY SHOULD ALSO TAKE PREFERENCE OVER ANYTHING SHOWN, DESCRIBED OR IMPLIED WHERE VARIANCES OCCUR.
3. CONTRACTORS SHALL CHECK AND VERIFY ALL DIMENSIONS BEFORE BEGINNING CONSTRUCTION OR COORDINATE ANY CORRECTIONS OR REVISIONS WITH THE OWNER AND DESIGNER. FRAME AD WILL ASSUME NO LIABILITY FOR DIMENSIONAL ERRORS ONCE CONSTRUCTION BEGINS.

CONTACT INFO:
CONTRACTOR :
CODY BAKER
806-401-2932
CBAKER@EDGECONCEPTS.NET

DESIGNER :
MATTIE REAGOR
MATTIE@FRAMEAD.NET
512-771-8187

SQUARE FOOTAGES

SHOP:	1,500
PORCHES:	96

COORDINATES:

LUBBOCK COUNTY COORDINATES:	
LATITUDE	33.492640
LONGITUDE	-101.820628
UTM EASTING	237939.23
UTM NORTHING	3709397.98
UTM ZONE	14S

EDGE HOMES COMMERCIAL

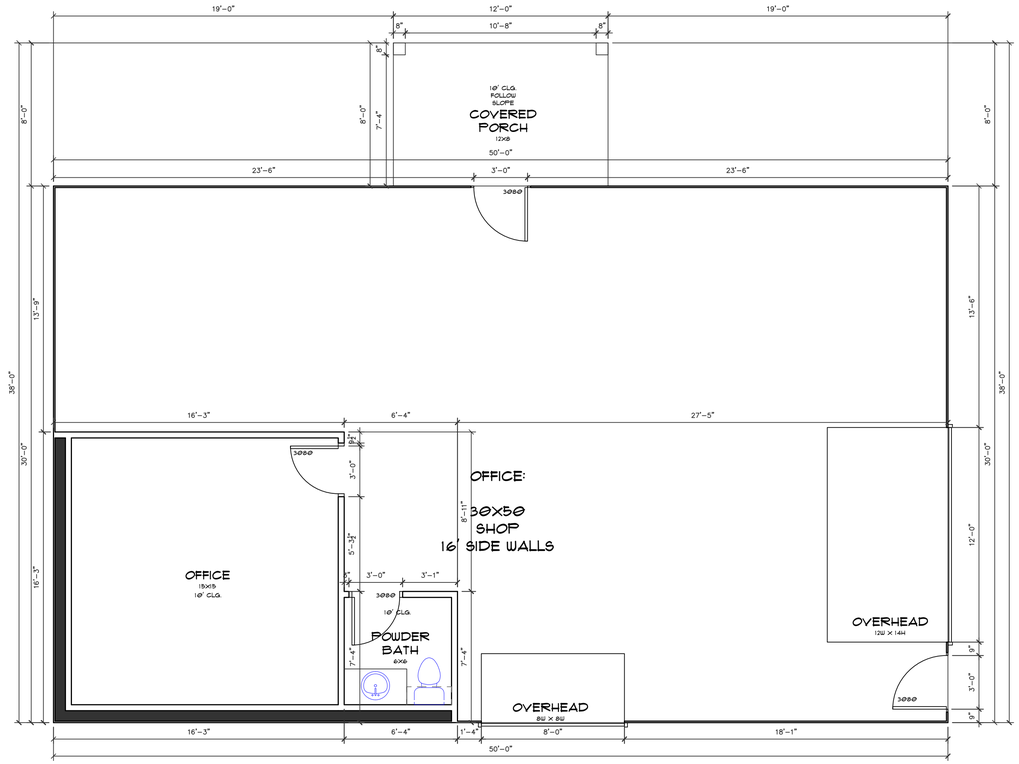
ADDRESS:
1224 E CR 7275 LOT #4
MLK AND 114TH STREET DEVELOPEMENT
LIVE OAK VET CLINIC

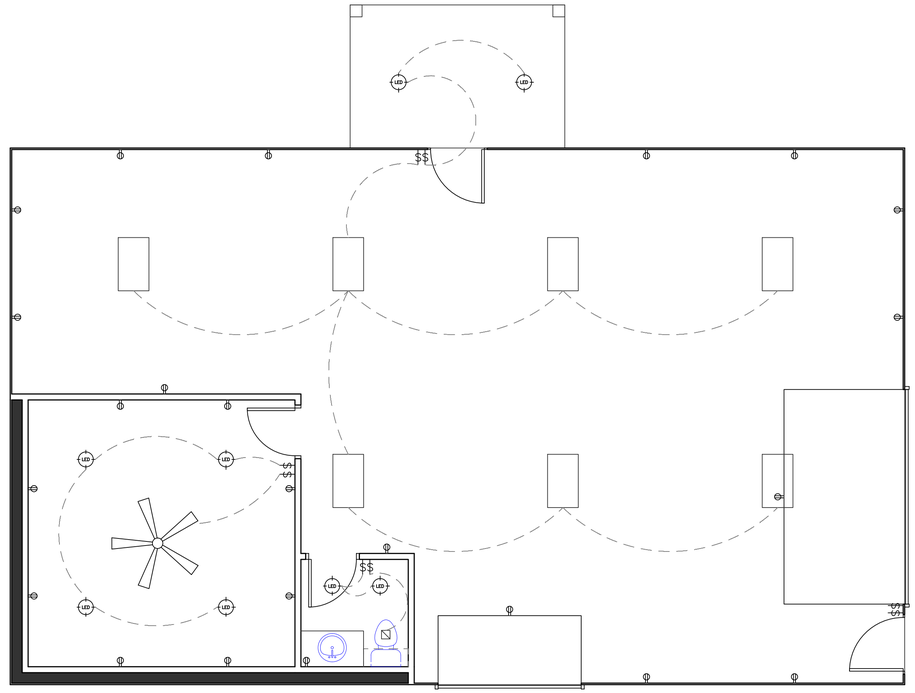
DATE ISSUED : 4.23.2025

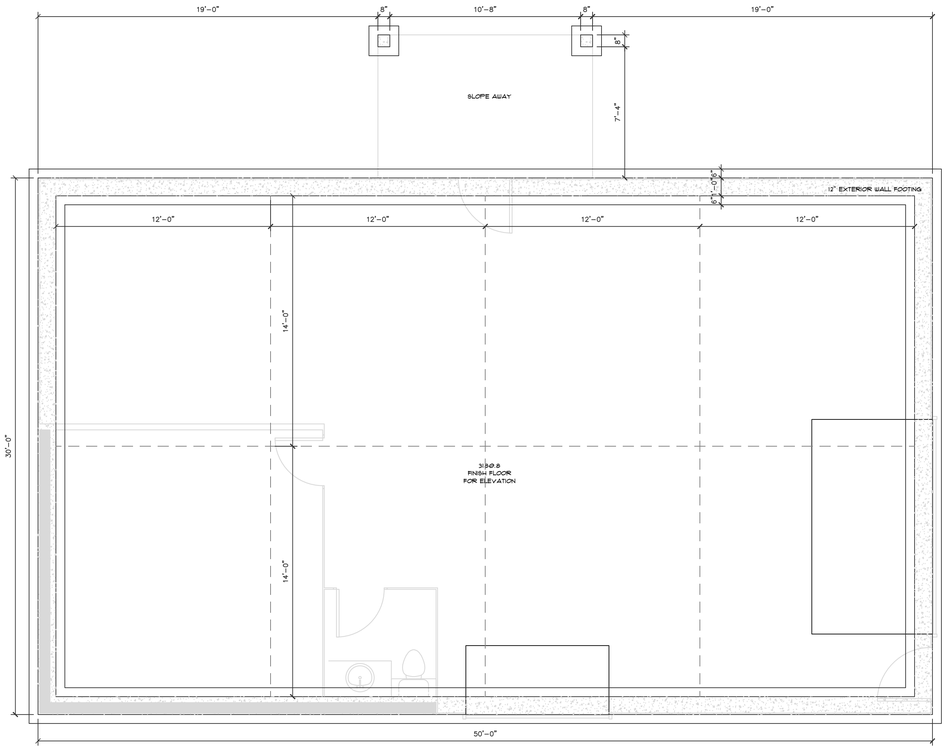
REVISED: 3.26.2025
4.2.2025
4.9.2025
4.23.2025

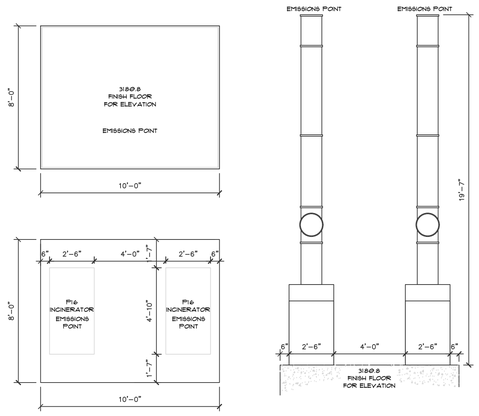
SCALE: 3/32" = 1'

CS-1









LUBBOCK COUNTY COORDINATES:

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LONGITUDE	-101.820628
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SQUARE FOOTAGES

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PORCHES:	96

COORDINATES:

LUBBOCK COUNTY COORDINATES:

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EDGE HOMES COMMERCIAL

ADDRESS:
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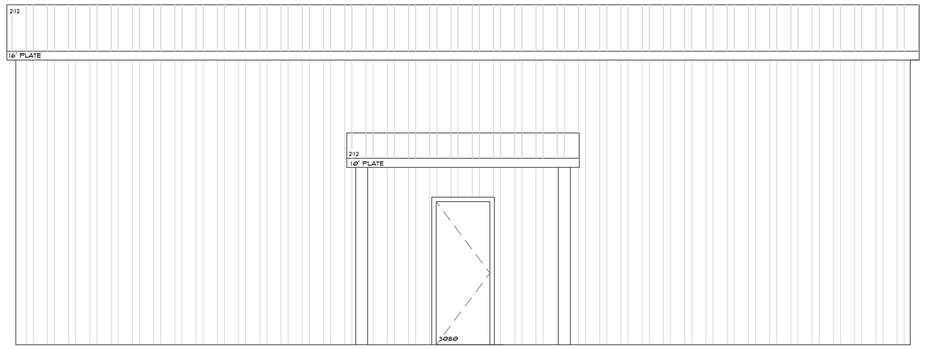
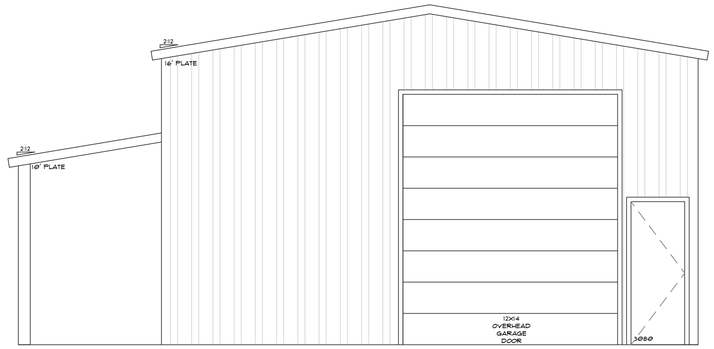
MLK AND 114TH STREET DEVELOPEMENT
LIVE OAK VET CLINIC

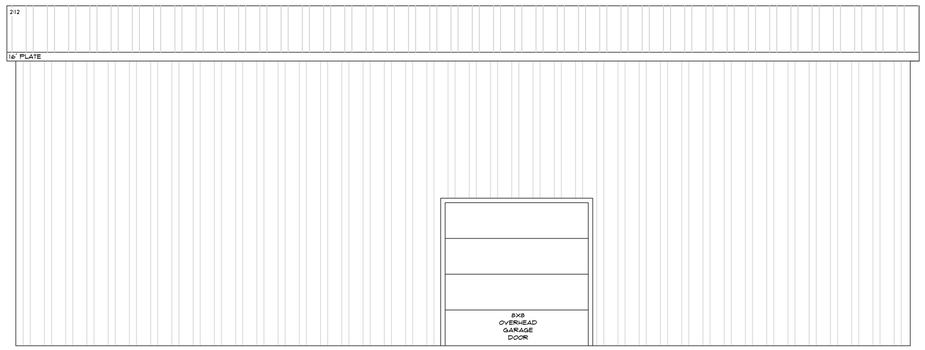
DATE ISSUED :	4.23.2025
REVISED:	3.26.2025
	4.2.2025
	4.9.2025
	4.23.2025

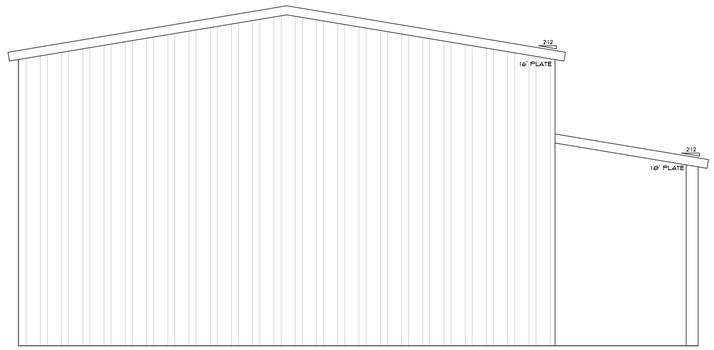
SCALE: $\frac{1}{4}$" = 1'

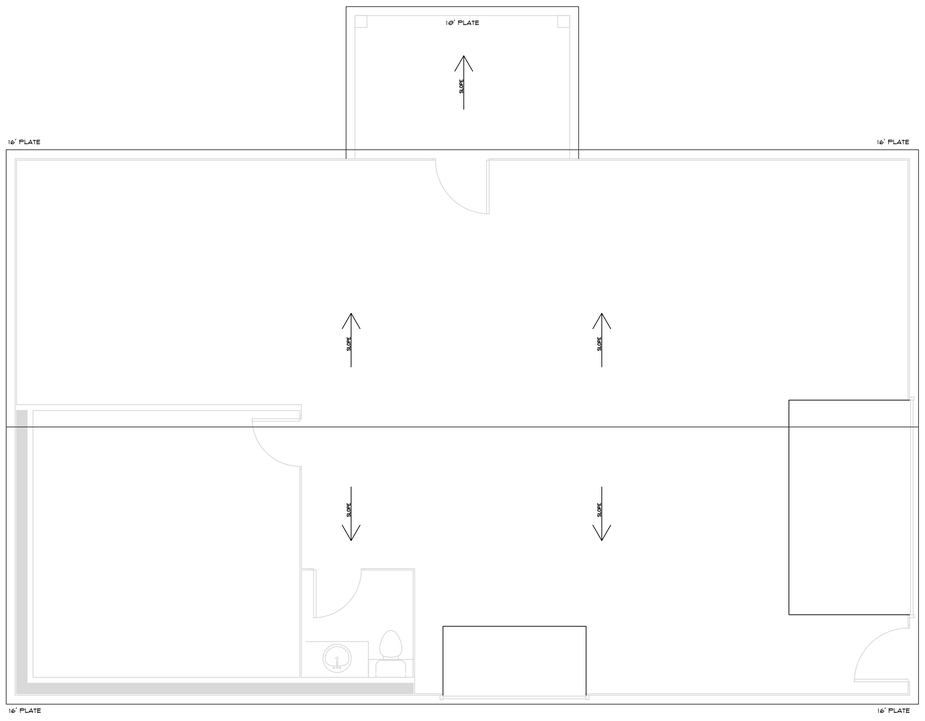
A-1











CONTACT INFO:

CONTRACTOR :
CODY BAKER
806-401-2932
CBAKER@EDGECONCEPTS.NET

DESIGNER :
MATTIE REAGOR
MATTIE@FRAMEAD.NET
512-771-8187

SQUARE FOOTAGES

SHOP:	1,500
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UTM ZONE	14S

EDGE HOMES COMMERCIAL

ADDRESS:
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LIVE OAK VET CLINIC

DATE ISSUED : 4.23.2025

REVISED:
3.26.2025
4.2.2025
4.9.2025
4.23.2025

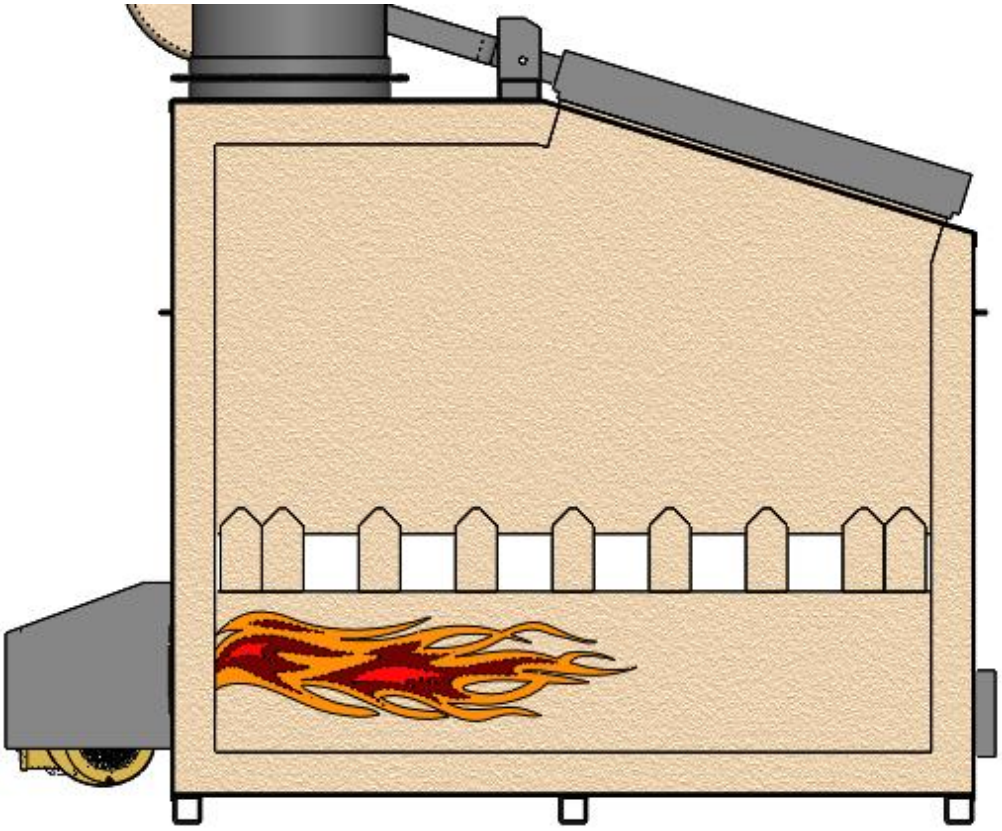
SCALE: $\frac{1}{4}$" = 1'

A-2

P16 Incinerator

Technical Specifications Manual

120V AND 220V

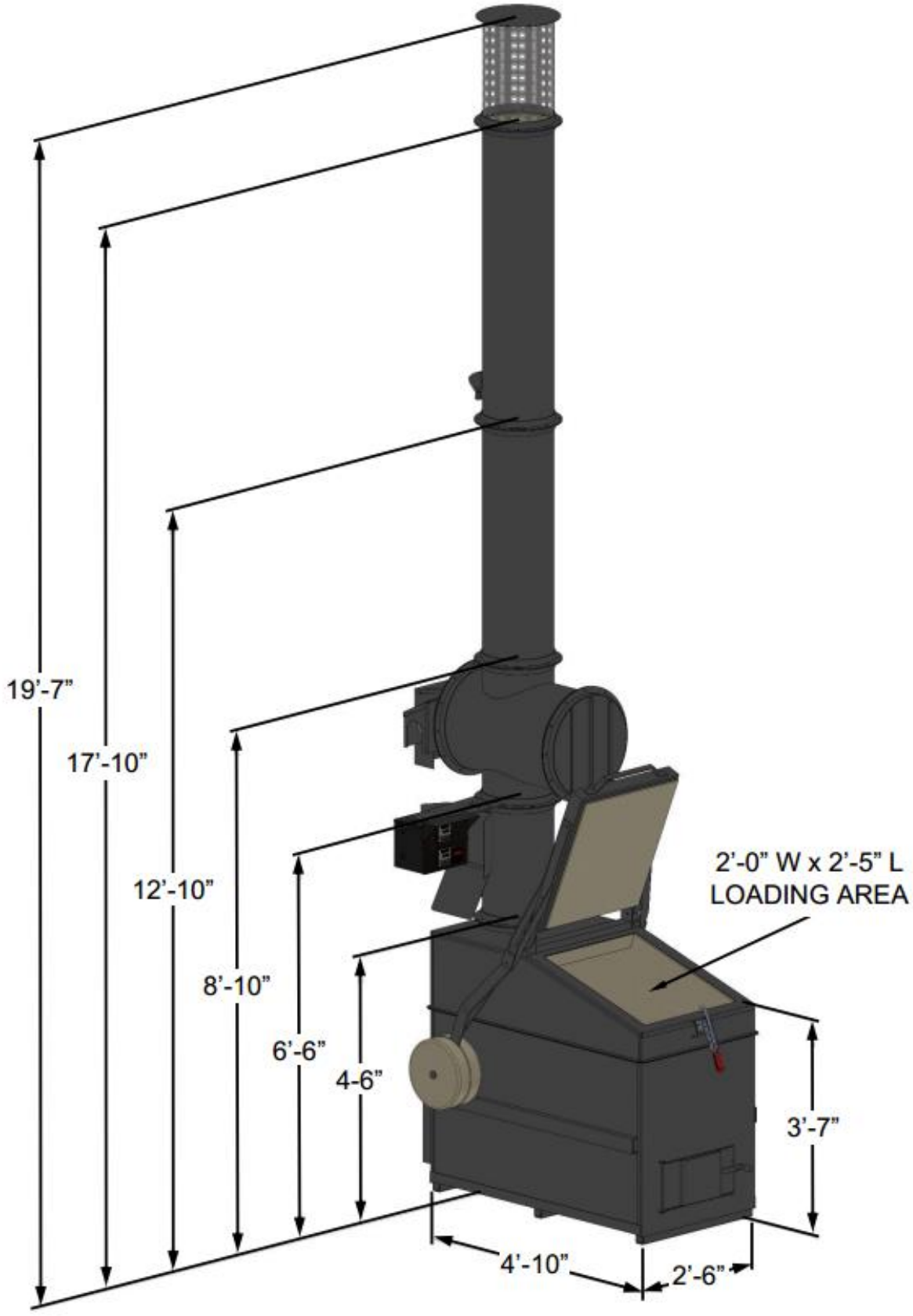


Your model and serial number are located on the lower burner cover.

www.firelakemfg.com

FIRELAKE MFG., LLC
373 Hwy MN-7 East
Hutchinson, MN 55350
(Tel.) 320-275-3391, (Fax) 320-275-2779

P16-SC4



Standard Configuration shown.
Locations of control components and stacks may vary per setup ordered.

P16-SC4

TYPICAL FINISHED SITE, SEE INSTRUCTIONS
Locations of control components may vary per setup ordered

P16-SC4 SPECIFICATIONS

PRIMARY CHAMBER

CHAMBER CAPACITY	480 LBS WASTE AT 30 LB/FT^3
CHAMBER VOLUME	16.5 FT^3 ABOVE GRATES
DOOR DIMENSION	24” X 28”
REFRACTORY	3”, 2,800°F, 126 LB/FT^3
JACKET MATERIAL	PAINTED STEEL
HEIGHT TO DOOR	48”
HEIGHT TO TOP OF CHAMBER	52”

SECONDARY CHAMBER

CHAMBER VOLUME	4 FT^3
HEIGHT TO TOP OF AFTERBURNER	8’ 10”
REFRACTORY	3”, 2,800°F, 126 LB/FT^3
JACKET MATERIAL	PAINTED STEEL
RETENTION AND TEMPERATURE LIMITS	UP TO ½ SECOND UP TO 1600°F (CONSULT FACTORY WITH APPLICATION DETAILS. DATA/DESIGN MAY CHANGE PER OPERATING NEEDS)

STACKS

STACK	(1) 14” DIA. 2’ LONG STEEL CAST LINED (1) 14” DIA. 4’ LONG STEEL CAST LINED (1) 14” DIA. 5’ LONG STEEL CAST LINED
STACK CAP	(1) 14” DIA. STAINLESS STEEL

BURNERS

MODEL: GAS	(2) J83 W/ SAFETY CONTROLS (1 UPPER, 1 LOWER)
MODEL: OIL	(2) AF BECKETT BURNERS (1 UPPER, 1 LOWER)
OPERATION	DIGITAL TIMER AND TEMPERATURE CONTROLLED. CYCLES PRIMARY BURNER AS NEEDED.

GENERAL

EXTERNAL PRIMARY DIMENSIONS	2’ 6” W X 4’ 10” L X 4’ 6” H
EXTERNAL OVERALL DIMENSIONS (STANDARD)	2’ 6” W X 4’ 10” L X 19’ 7” H
ELECTRICAL SERVICE	STANDARD: 115 V, 60 HZ, 20 AMP EXPORT MODELS: 220 V, 50 HZ, 10 AMP
GAS SERVICE BASED ON MAXIMUM RATING OF BOTH BURNERS	1,600,000 BTU/HR NATURAL GAS 7” W.C. LIQUID PROPANE 11” W.C.
GAS/FUEL CONSUMPTION (IF CONSTANT OPERATION AND NO BURNER CYCLING ON AND OFF)	NATURAL GAS 684 CFH LIQUID PROPANE 7.19GPH FUEL OIL 5.50 GPH
TOTAL WEIGHT	5,600 LBS (APPROXIMATELY)
PAD REQUIREMENTS (MINIMUM SUGGESTED OR CONSULT FACTORY)	12’ W X 14’ L X 4” THICK IF SHELTERED 6’ W X 8’ L X 4” THICK IF NOT SHELTERED
PAINT	1,200° PRIMER, 1,200° PAINT

CHARGING RATE

PATHOLOGICAL	VARIES BY WASTE PROPERTIES AND OPERATING METHODS. TYPICAL BURN RATE OF 45-75 LBS/HR

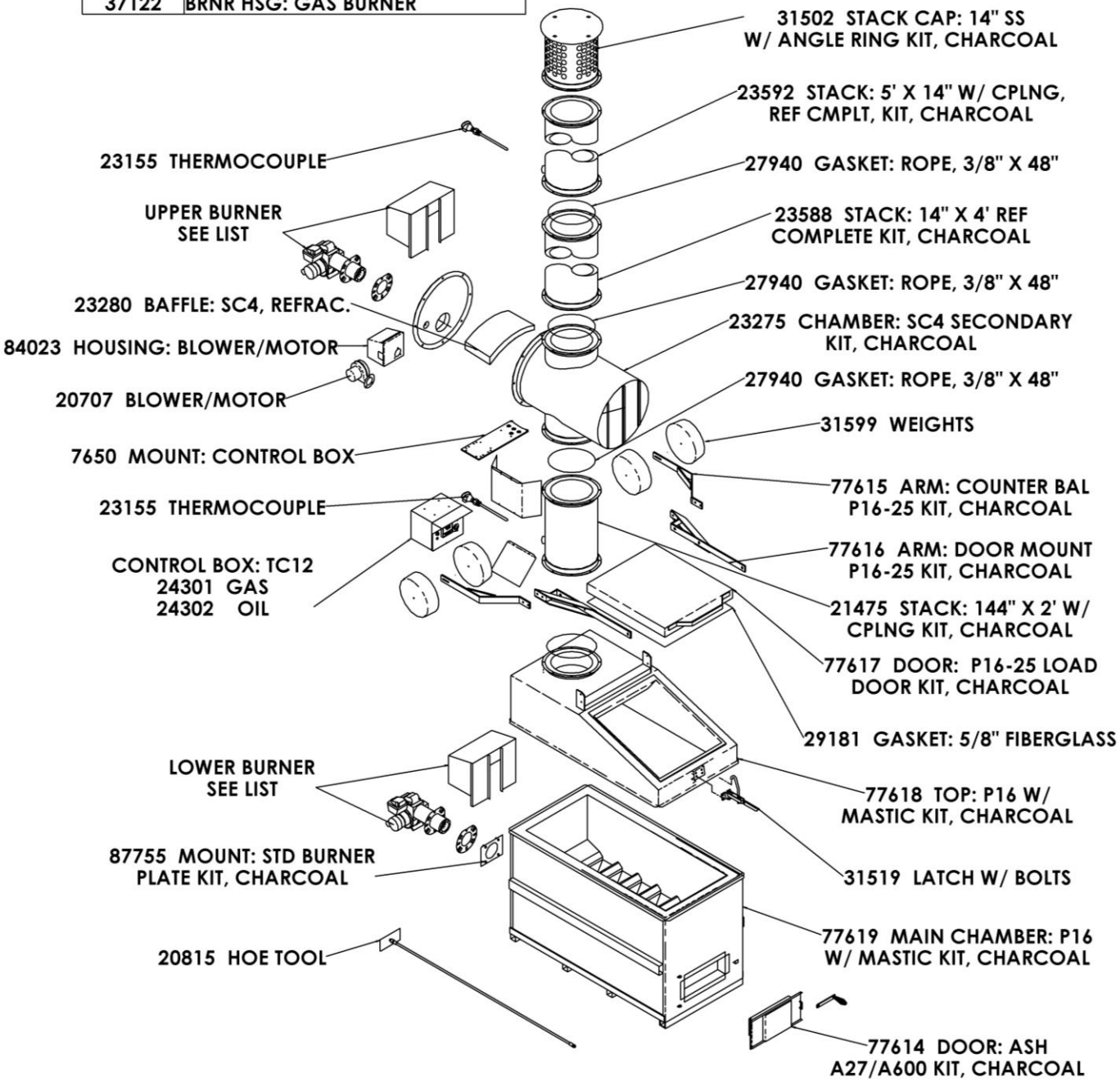
AIR FLOW

MINIMUM REQUIRED OPENING IN ENCLOSED BUILDING FOR AIR FLOW	22 FT^2

P16-SC4 PARTS LIST

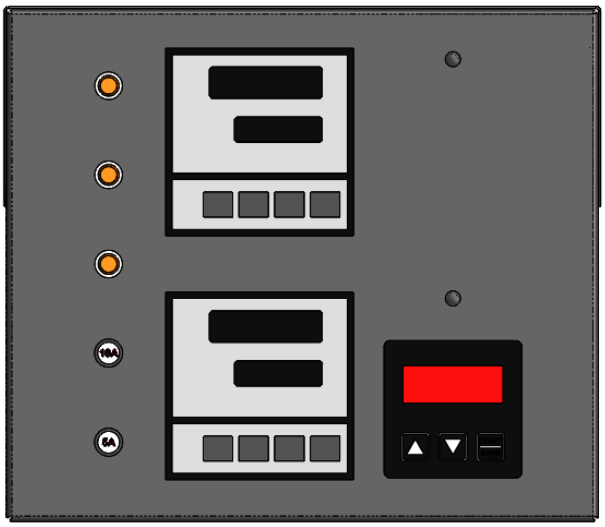
	OPTIONAL BURNERS	
LOWER	23187	BURNER: P16 LP 120V J83
	23180	BURNER: P16 NAT 120V J83
	23071	BURNER: P16 OIL 120V AF
UPPER	23192	BURNER: P16 LP 120V J83
	23193	BURNER: P16 NAT 120V J83
	23070	BURNER: P16 OIL 120V AF
	37121	BRNR HSG: OIL BURNER
	37122	BRNR HSG: GAS BURNER

MISCELLANEOUS PARTS	
24092	GRATE BAR KIT W/ MASTIC - 5 BARS
32314	PAINT: CHARCOAL 251H, SPRAY CAN
34034	REFRACTORY: MASTIC, 1 PT - 2-1/2#
35024	GAS PRESSURE GAUGE: AG & PROF 1
102665	REFRACTORY: MASTIC, 1 GAL - 20#
101428	REFRACTORY: HIGH MOD IMPCT, 2800 DEG
42200190	ARTISAN TIMER: W/ GASKET



TC 12 CONTROL BOX

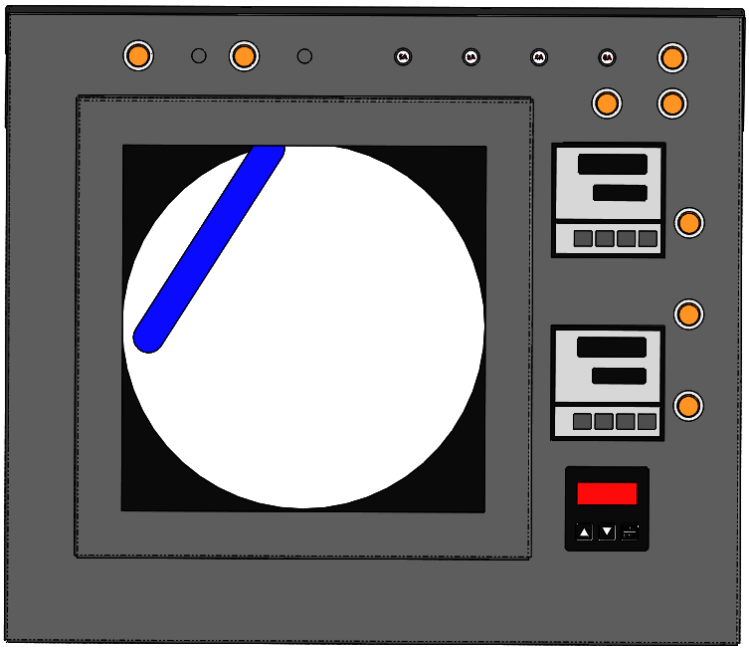
CONTAINS (2) 4100 FDC CONTROLLERS



- Bottom digital controller determines the lower/primary chamber settings.
- Top digital controller determines the upper/secondary chamber settings.

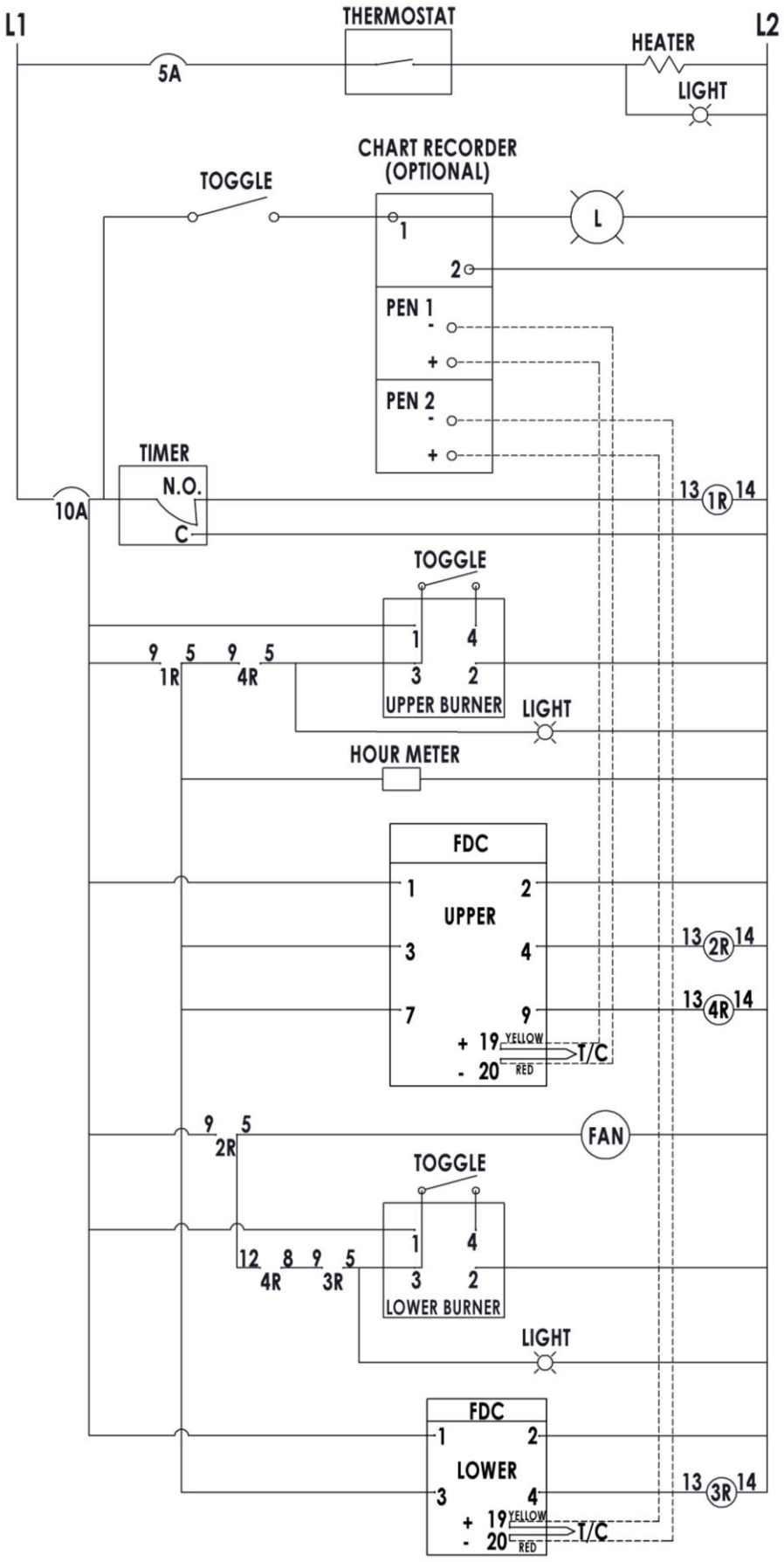
TC 21 CONTROL BOX

CONTAINS (2) 4100 FDC CONTROLLERS WITH A 2-PEN DATA CHART RECORDER

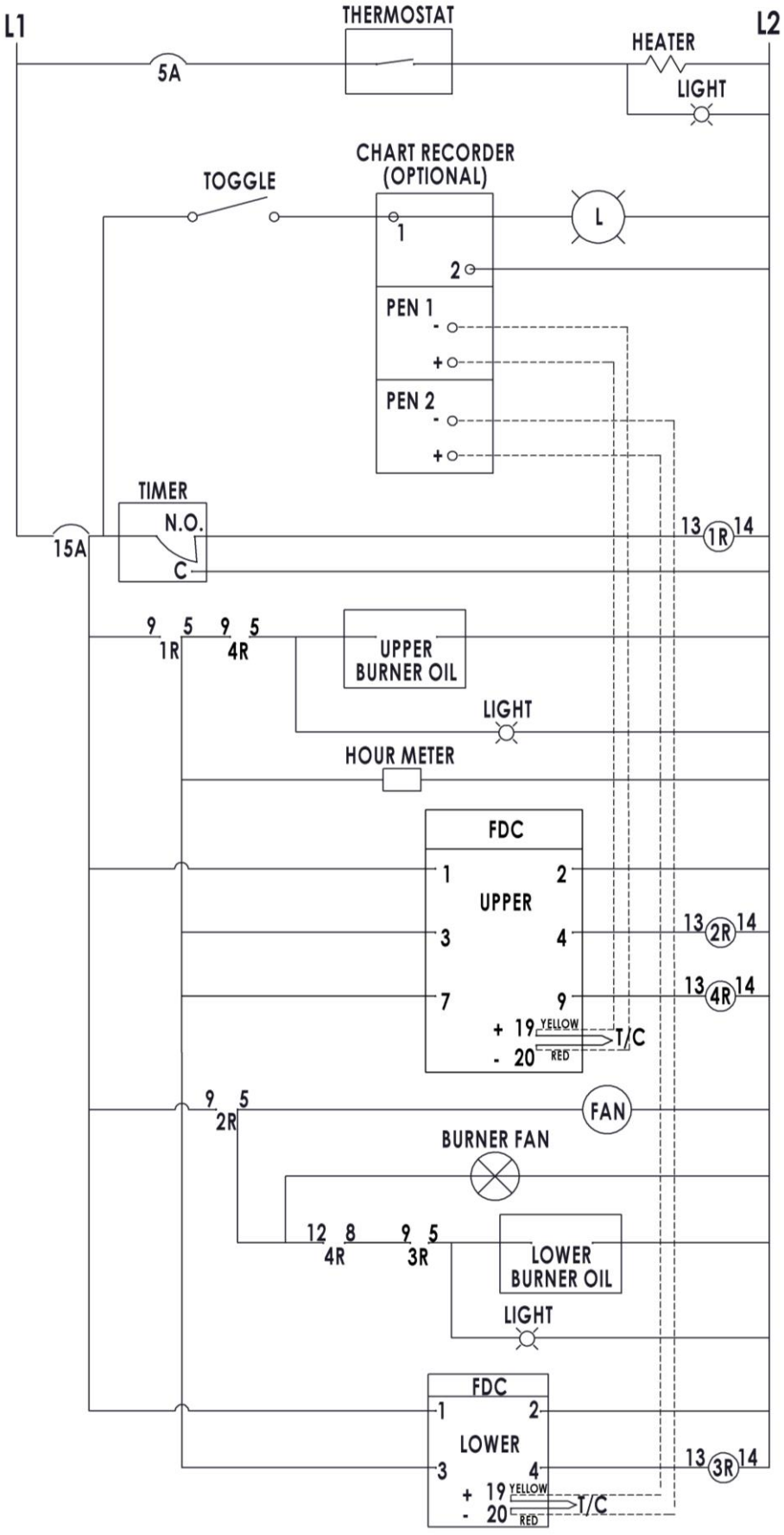


- Bottom digital controller determines the lower/primary chamber settings.
- Top digital controller determines the upper/secondary chamber settings.
    - The chart recoder records the temperatures during operation.

P16-SC4 4100 FDC GAS WIRING DIAGRAM



P16-SC4 4100 FDC OIL WIRING DIAGRAM



P16-SC4 PROGRAMMING
UPPER 4100 FDC W/ PREHEAT

NOTE: SP VALUES ARE FACTORY SET AND MAY BE ADJUSTED FOR YOUR APPLICATION WITH QUALIFIED TECHNICAL HELP.

	SP1	SP2	SP3
Factory Setting	600	N/A	2000
User Setting 1			
User Setting 2			

Set	_ _ _ _	<Scroll>
Lock	nonE	<Scroll>
inPt	y_tC	<Scroll>
Unit	0F	<Scroll>
dP	no.dP	<Scroll>
SP1L	0	<Scroll>
SP1H	2498	<Scroll>
SHiF	0	<Scroll>
FiLt	0.5	<Scroll>
Pb	0	<Scroll>
out1	Dirt	<Scroll>
o1.tY	rELY	<Scroll>
o1.Ft	Off	<Scroll>
o1HY	90.0	GREATER VALUE LESSENS PREHEAT CYCLING <Scroll>
rAmP	nonE	<Scroll>
out2	nonE	<Scroll>
AL.Fn	PY.Hi	<Scroll>
AL.md	norm	<Scroll>
AL.HY	90	GREATER VALUE LESSENS HI LIMIT CYCLING <Scroll>
AL.Ft	oFF	<Scroll>
Comm	nonE	<Scroll>
SEL1	nonE	<Scroll>
SEL2	nonE	<Scroll>
SEL3	nonE	<Scroll>
SEL4	nonE	<Scroll>
SEL5	nonE	<Scroll>
SEL6	nonE	<Scroll>
SEL7	nonE	<Scroll>
SEL8	nonE	<Scroll>

P16-SC4 PROGRAMMING
LOWER 4100 FDC – LOWER BURNERS OFF

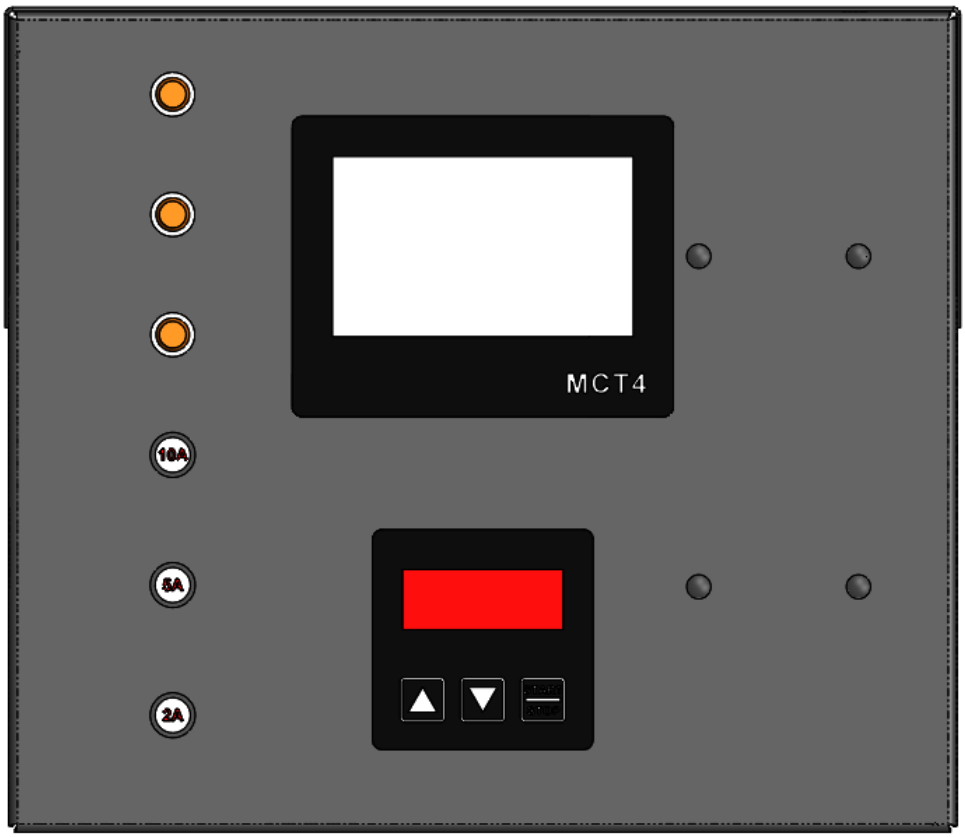
NOTE: SP VALUES ARE FACTORY SET AND MAY BE ADJUSTED FOR YOUR APPLICATION WITH QUALIFIED TECHNICAL HELP.

	SP1	SP2	SP3
Factory Setting	1250	N/A	N/A
User Setting 1			
User Setting 2			

Set	_ _ _ _	<Scroll>
Lock	nonE	<Scroll>
inPt	y_tC	<Scroll>
Unit	0F	<Scroll>
dP	no.dP	<Scroll>
SP1L	0	<Scroll>
SP1H	2498	<Scroll>
SHiF	0	<Scroll>
FiLt	0.5	<Scroll>
Pb	0	<Scroll>
out1	rEyr	<Scroll>
o1.tY	rELY	<Scroll>
o1.Ft	oFF	<Scroll>
o1HY	90.0	<Scroll>
rAmP	nonE	<Scroll>
out2	nonE	<Scroll>
AL.Fn	nonE	<Scroll>
Comm	nonE	<Scroll>
SEL1	nonE	<Scroll>
SEL2	nonE	<Scroll>
SEL3	nonE	<Scroll>
SEL4	nonE	<Scroll>
SEL5	nonE	<Scroll>
SEL6	nonE	<Scroll>
SEL7	nonE	<Scroll>
SEL8	nonE	<Scroll>

TCDR CONTROL BOX

CONTAINS (1) MCT4 CONTROLLER

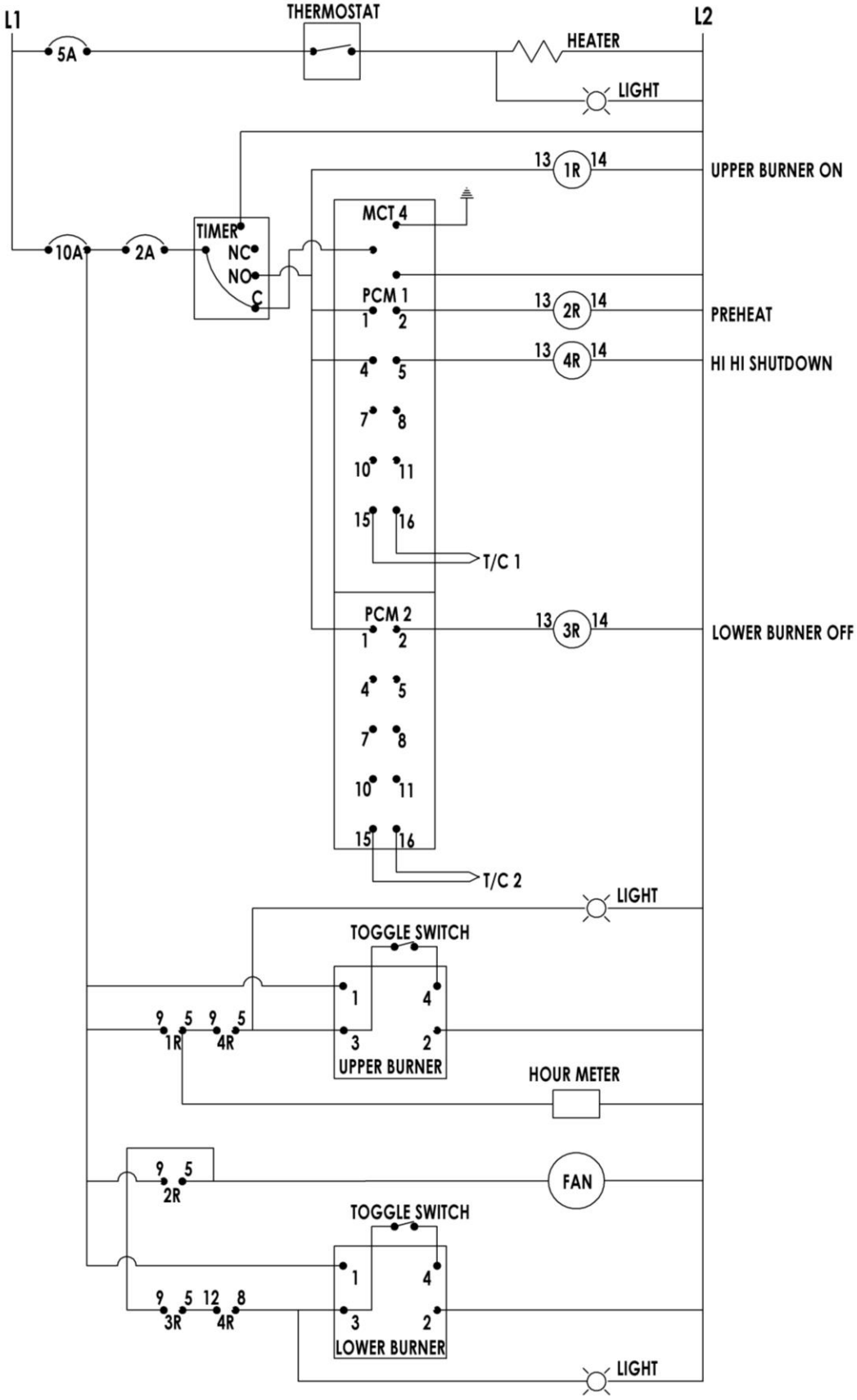


- The single digital controller determines both the lower/primary and the upper/secondary chamber settings.
- The controller can record both the set points temperatures as well as actual operating temperatures.
- The recorded data can be viewed on the controller screen, through a computer using a flash drive, or through a computer with a direct ethernet connection.

	UPPER	LOWER	ALARM
Factory Setting	600	1250	2000
User Setting 1			
User Setting 2			

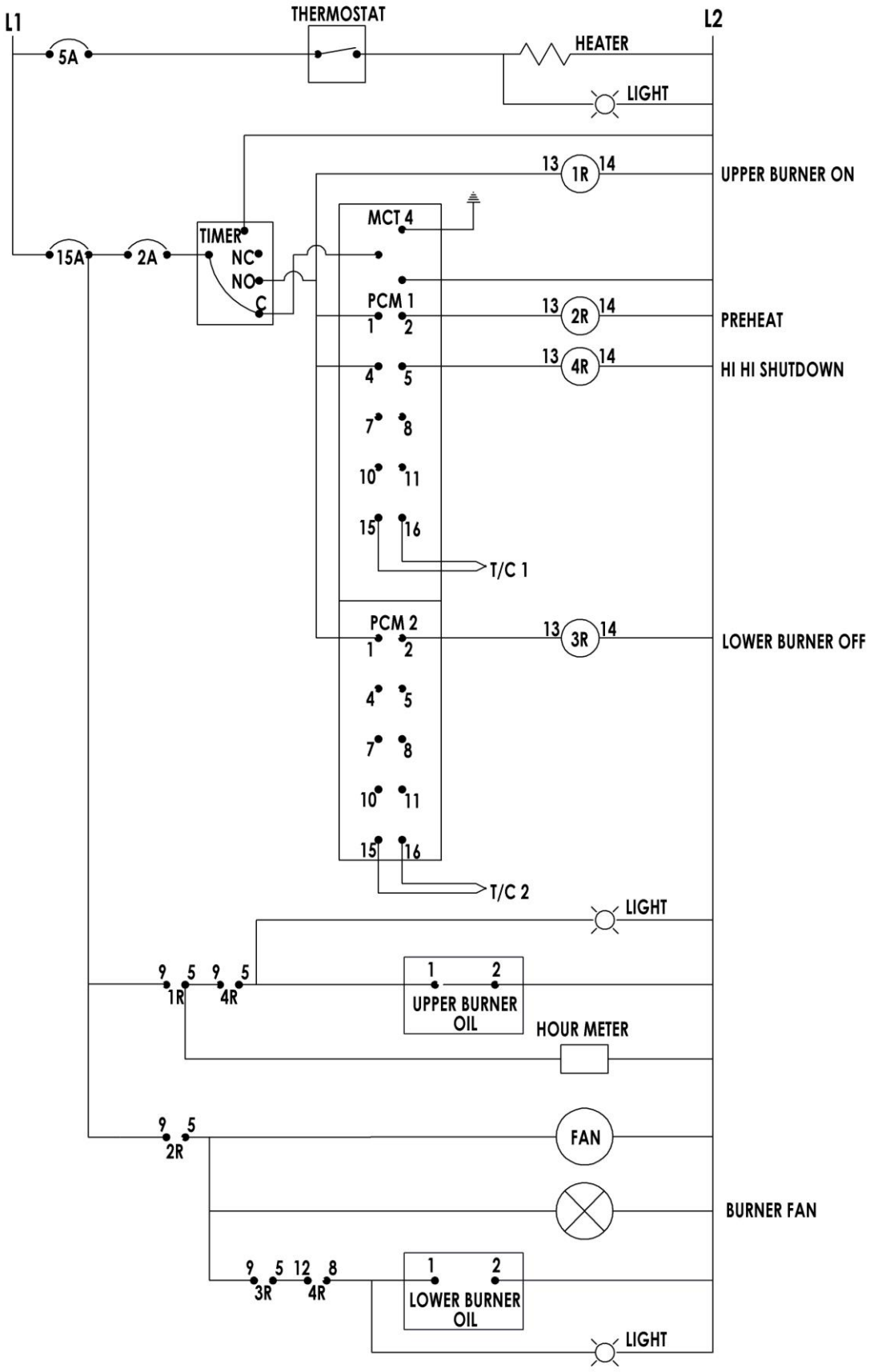
Contact Factory for MCT4 Programming Instructions.

P16-SC4 MCT4 GAS WIRING DIAGRAM



Contact Factory for MCT4 Programming Instructions.

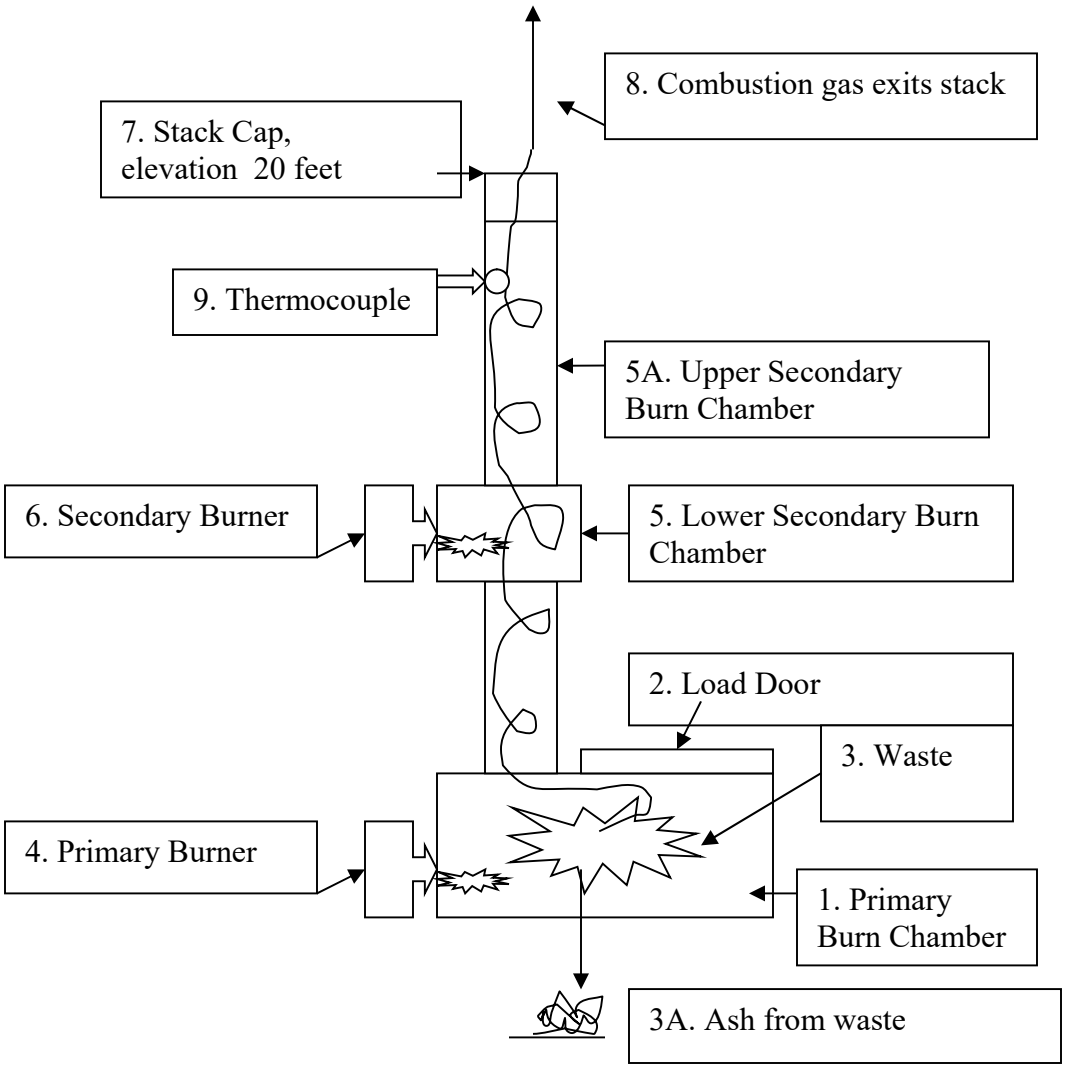
P16-SC4 MCT4 OIL WIRING DIAGRAM



Contact Factory for MCT4 Programming Instructions.

373 Hwy MN-7 East Hutchinson, MN 55350
Phone 320-275-3391
Fax 320-275-2779
www.firelakemfg.com

Typical Flow Diagram for Firelake Manufacturing P16 Incineration Models



The Air Compliance Group, LLC

5075 Hollins Road
Roanoke, VA 24019
Phone: (540) 265-1987
Fax: (540) 265-0082

Air Emissions Compliance Test Report for PM, CO, and Visible Emissions Conducted on a Small Animal Crematory at Feathercrest Farm, Inc. in Broadway, VA

DEQ Registration No. 81323

Ref. No. Unit 1

Prepared for

Robert J. Winterbottom, Inc.
Laurel, MD

Test Date: August 7, 2012
Report Date: August 30, 2012

ACG Contract Number V12966

The Air Compliance Group, LLC

TEST REPORT CERTIFICATION

Test Report for Air Emissions Compliance Testing
Conducted at Feathercrest Farm, Inc.

Prepared by The Air Compliance Group, LLC
Located in Roanoke, VA,
For Robert J. Winterbottom, Inc.
Located in Laurel, MD

Date of Test Program: August 7, 2012
ACG Contract Number: V12966

We certify that, to the best of our knowledge, this source test report has been checked for completeness, and that the results presented herein are accurate, error-free, legible, and representative of the actual emissions measured during testing.

Signature . . *Date* .8/30/2012. . . . . .

Kenley Houtz, QSTI (electronic signature)
Project Manager
The Air Compliance Group, LLC

Signature . . . . . *Date* . .8/30/2012. . . . . .

David Vecellio, QSTI (electronic signature)
Project Manager - Reporting
The Air Compliance Group, LLC

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1.0 Introduction

1.1 Background

An air emissions compliance test program was conducted for Robert J. Winterbottom, Inc. at the Feathercrest Farm, Inc. facility in Broadway, Virginia. One small animal crematory (designated as Unit 1) exhaust stack was tested for total filterable particulate matter (PM), carbon monoxide (CO), and visible emissions (VE). Triplicate one-hour tests were performed for each pollutant at the stack. The Air Compliance Group, LLC (ACG) of Roanoke, VA conducted the testing on August 7, 2012. The following personnel participated in the test program:

Name	Affiliation	Position
Bob Winterbottom	Robert J. Winterbottom, Inc.	Owner
Ken Reeves	Feathercrest Farms, Inc.	Operator
Kenley Houtz	ACG	Project Manager
James Stultz	ACG	Visible Emissions Observer
Michael Wilson	ACG	Field Technician

1.2 Objective

Testing was performed for the purpose of demonstrating compliance with the requirements of the permit (Registration No. 81323) issued for this facility on May 9, 2012 by the Virginia Department of Environmental Quality (VDEQ).

1.3 Test Program

Triplicate, 60-minute tests were performed for each parameter at the stack. Each measurement included determination of the given pollutant emissions, as well as, average gas temperature, moisture content, molecular weight, and volumetric flow rate. Testing for VEs was conducted concurrently with the PM and CO tests at the stack. Additionally, operating data was recorded by the facility during the tests and has been included in Appendix H. Table 1 below summarizes the test program. Appendix B contains a test log that provides the date and time of each test.

Table 1 - Outline of Testing Program

Measurement	Test Location	Test Method	No. and Duration of Test Runs
Flow Rate	Exhaust Stack	EPA Methods 1 - 4	Three, 60-minute runs
Oxygen and Carbon Dioxide		EPA Method 3A	
Filterable Particulate		EPA Method 5	
Carbon Monoxide		EPA Method 10	
Opacity		EPA Method 9	

2.0 Summary of Results

Table 2 summarizes the overall results and evaluation criteria of the compliance test program performed on the exhaust stack. Table 3 presents a summary of the individual test results for the stack. Additional data is contained in Appendices C through E.

Table 2 - Summary of Test Results

Test Parameter	Emission Limit[(1)]	Average Test Result
Particulate Matter/ PM_{10} Emissions	0.10 gr/dscf @ 7% O_2 (and 0.56 tons/year)	0.022 gr/dscf @ 7% O_2
Carbon Monoxide Emissions	100 ppmvd (1-hr avg) @ 7% O_2	0.22 ppmvd @ 7% O_2
Visible Emissions	Max. 5% at any time during operation, except during unit malfunction	0.0 % opacity (max. 6-min. average)

(1) Emission limits taken from Permit No. 81323, dated May 9, 2012, issued by the VDEQ.

TABLE 3

SUMMARY OF PARTICULATE MATTER, CARBON MONOXIDE AND VISIBLE EMISSIONS

FEATHERCREST FARM, INC.

INCINERATOR OUTLET

PARTICULATE MATTER AND CARBON MONOXIDE EMISSIONS

RUN I.D.	**IO-M5-R1**	**IO-M5-R2**	**IO-M5-R3**	AVERAGE
DATE	08/07/12	08/07/12	08/07/12	
TIME STARTED	9:57	11:30	12:56	
TIME ENDED	11:04	12:33	13:59	
SAMPLING PARAMETERS				
Metered Volume (dcf)	43.941	39.715	38.878	40.845
Corrected Volume (dscf)	41.416	37.142	36.113	38.224
Total Test Time (min)	60	60	60	60
Isokinetics (%)	101.1	103.4	97.8	100.8
GAS PARAMETERS				
Gas Temperature (°F)	1561	1593	1575	1576
Oxygen (%)	8.19	8.47	8.75	8.47
Carbon Dioxide (%)	8.31	8.42	8.35	8.36
Moisture (%)	13.78	16.50	16.69	15.66
GAS FLOW RATE				
Velocity (ft/sec)	23.30	21.45	21.94	22.23
Actual Volume (acfm)	1098	1011	1034	1048
Standard Volume (dscfm)	237	208	214	220
PARTICULATE EMISSIONS				
Concentration (gr/dscf)	0.015	0.023	0.021	0.019
Concentration @ 7%O2 (gr/dscf)	0.017	0.025	0.024	0.022
Mass Rate (lb/hr)	0.0307	0.0405	0.0377	0.0363
CO EMISSIONS				
Concentration (ppmdv)	0.00	0.00	0.59	0.20
Concentration @ 7%O2 (ppmdv)	0.00	0.00	0.67	0.22
Mass Rate (lb/hr)	0.0000	0.0000	0.0005	0.0002

VISIBLE EMISSIONS

RUN I.D.	**IO-M9-R1**	**IO-M9-R2**	**IO-M9-R2**	AVERAGE
DATE	08/07/12	08/07/12	08/07/12	
TIME STARTED	9:57	11:30	12:56	
TIME ENDED	10:57	12:30	13:56	
All values are percent opacity				
Maximum 6-Minute Average	0.00	0.00	0.00	0.00

3.0 Discussion of Results

No significant problems were encountered during the execution of this test program and there were no deviations from the pretest protocol, dated June 8, 2012 and submitted to the VDEQ.

4.0 Process Description and Operation

The Feathercrest Farm, Inc. facility installed and operated a Firelake Manufacturing, LLC animal crematory unit. This Model C12-400 unit has a rated capacity of 400 pounds-per batch (50 lbs/hr), and operates with a secondary chamber to insure complete combustion. No additional emission control equipment is associated with this unit. The unit is permitted to operate on liquefied petroleum gas (LPG). Facility operating data recorded during the testing can be found in Appendix H.

5.0 Sampling and Analytical Procedures

All sampling and analytical procedures followed those recommended by the U.S. Environmental Protection Agency (EPA), Title 40, Part 60, Appendix A of the *Code of Federal Regulations* (40 CFR 60), or other methods approved by the Virginia Department of Environmental Quality. The following specific methods were used:

- EPA Method 1 for determination of traverse point locations;
- EPA Method 2 for determining volumetric flow rate;
- EPA Method 3A for determining oxygen and carbon dioxide concentrations;
- EPA Method 4 for determining stack gas moisture content;
- EPA Method 5 for determining filterable particulate;
- EPA Method 9 for determining visual emissions; and
- EPA Method 10 for determining carbon monoxide emissions.

5.1 Sampling Point Determination

All gaseous, particulate, and velocity measurements were conducted in accordance with EPA Method 1. The unit exhausts through a vertical, round stack. A total of 12 points (6 in each of 2 ports, which were the maximum number of required points) were sampled. Figure 1 (see Appendix A) presents a diagram of the stack with dimensions and sample/traverse point locations. The absence of cyclonic flow was verified on site.

5.2 Volumetric Flow Rate Measurements - EPA Method 2

EPA Reference Method 2 was used to determine the velocity and volumetric flow rates of the stack gases. Stainless steel type-S pitot tubes were used with an assigned baseline coefficient of 0.84 in accordance with EPA Method 2 to measure the gas velocity heads. Calibrated type-K thermocouples were used to determine gas temperatures. Velocity and temperature measurements were made at the traverse points identified in Figure 1 (see Appendix A). These measurements were made in conjunction with the EPA Method 5 testing described below.

5.3 Molecular Weight Determination - EPA Method 3A

Gas compositional measurements (O_2 and CO_2) for determining the average molecular weight of the stack gases were done instrumentally in accordance with EPA Reference Method 3A, as presented below in Section 5.6.

5.4 Flue Gas Moisture Content - EPA Method 4

The flue gas moisture was measured according to the sampling and analytical procedures outlined in EPA Method 4. The flue gas moisture for each test was determined by gravimetric analyses of the water collected in the impinger condensers of the pollutant sampling train. All impingers were contained in an ice bath throughout the testing in order to assure complete condensation of the moisture in the flue gas stream. Any moisture, which was not condensed in the impingers was captured in the silica gel

contained in the final impinger. This methodology was performed utilizing the EPA Method 5 sampling train discussed in Section 5.5 for particulate matter.

5.5 Filterable Particulates - EPA Method 5

Filterable particulate matter emissions were measured at the stack in accordance with EPA Method 5. Sampling was performed isokinetically at the stack, using the 12 traverse points presented above in Section 5.1.1.

5.5.1 Sampling Train Description

Figure 2 (see Appendix A) shows the major components of the Method 5 sampling train. The sample probe consisted of a stainless steel outer sheath with a quartz liner equipped with a quartz nozzle. The probe assembly was equipped with a type "S" pitot tube for measuring gas velocity and a type "K" thermocouple for determining flue gas temperature. The pitot tubes were examined prior to conducting the tests to verify proper alignment of the face openings and conformance with the dimensional criteria specified under EPA Method 2. Only pitot tubes meeting the specified criteria were used and assigned a pitot tube coefficient of 0.84.

From the nozzle and probe, sample gas was pulled through a heated glass filter holder containing a glass fiber filter supported on a Teflon frit. The filter was maintained at a temperature of 248 $\pm$ 25°F. Sample gas subsequently passed through an impinger train consisting of four glass impingers immersed in an ice bath. The first and second impingers initially contained 100 ml of water, the third impinger was initially be empty, and the last impinger initially contained approximately 250 grams of silica gel.

5.5.2 Sampling Train Operation

Sampling was done in accordance with EPA Method 5 procedures and specifications, including leak checking, isokinetic sampling rate and stack traversing. Sampling was

conducted for 5 minutes at each of the 12 traverse points (see Figure 1). Each test run had a duration of 60 minutes, excluding the time required to change ports.

5.5.3 Sample Recovery and Clean-Up

Recovery of the Method 5 sampling probe was accomplished using a Teflon bristle probe brush. The probe and front-half glassware were rinsed with acetone at least three times each and brushed between rinses. These rinses were recovered for particulate analysis. Exposed filters were placed into petri dishes, which were sealed with Teflon tape. The impinger contents were quantified to determine the stack gas moisture content in accordance with EPA Method 4.

5.5.4 Field Blanks

One blank was collected during the test program for EPA Method 5 test. The field blank consisted of acetone taken from the same stock used in recovery of the sampling trains.

5.6 Continuous Monitoring for CO_2, O_2 and CO

Instrumental monitoring of the stack gases was performed as follows:

Gas	Reference Method	Span	Instrument type
O_2	EPA 3A	21.01 %dv	CAI Model 600 Series Paramagnetic O_2 Analyzer
CO_2	EPA 3A	18.74 %dv	CAI Model 600 Series NDIR CO_2
CO	EPA 10	99.74 ppmdv	CAI Model 600 Series NDIR CO Analyzer
Note: All of the analyzers measured gas concentrations on a dry volume basis.			

5.6.1 Sampling System Description

An integrated, remote instrumental system housing the pollutant gas analyzers as well as the diluent gas (CO_2 and O_2) monitors was used. The design incorporated an extractive system. Figure 3 (See Appendix A) provides a schematic of the sampling system. All of the instruments were housed in a mobile laboratory located at ground level. Calibration gases used were EPA Protocol 1 certified. Gas certification data is located in Appendix G.

The sampling system consisted of a heated stainless steel probe located at the test port location. An in-stack sintered filter was attached to the probe for particulate removal. A short section of heated Teflon sample line delivered the sample to an ice-cooled condenser designed to remove the flue gas moisture. An unheated Teflon sample line transported the dry gas sample from the condenser to the instrumental system. The sample gas stream exiting the Teflon sample line was pumped to the various monitors.

5.6.2 Data Acquisition System

The response outputs of the monitors were recorded digitally by a Campbell Scientific Model CR10WP multichannel data- acquisition system, which sampled at 60 Hz, and stored one-minute average values.

5.6.3 System Calibration

At the beginning of each test day, or as needed, the analyzers were zeroed using zero nitrogen. Each analyzer was then calibrated using a calibration gas (high-range gas) with a concentration equal to the instrument span.

Following calibration, a calibration gas with a concentration of 40-60% (mid-range gas) of the instrument calibration span value was introduced into the analyzer to verify the linearity of the instrument over the analysis range. The response error for the gas standards did not exceed two percent of the calibration span for all valid calibrations.

After calibrating the monitors, and after each test run, calibration gas was introduced remotely through the probe to verify the absence of sampling system bias. The bias error did not exceed five percent of the calibration span for all valid tests.

Before and after each test run, zero nitrogen and an up-scale calibration gas was introduced remotely through the sampling system to each monitor to check for calibration drift error. The calibration drift did not exceed three percent of the calibration span for all valid test runs.

5.7 Visible Emissions - EPA Method 9

5.7.1 Visible Emissions Observer Certification

The visible emissions measurements were made by an observer who was certified in accordance with EPA Method 9. The observer's certification is provided in Appendix G.

5.7.2 Observer Position

The observer was positioned such that he had a clear view of the emissions with the sun oriented in the 140^{o} sector to his back. In addition, the observer made observations from a position at which his line of vision was approximately perpendicular to the plume direction. If multiple stacks were present, the observer's line of sight did not include more than one plume at a time.

5.7.3 Opacity Observations

Opacity observations were made at the point of greatest opacity in the portion of the plume where condensed water vapor was not present. A clearly visible background, which gave the highest degree of contrast, was used when the readings were made. Opacity was read at 15-second intervals for a period of one hour per test. Readings were recorded to the nearest 5 percent opacity. The data was reduced to six-minute block averages, each consisting of 24 observations. As all reading were zero, no further data reduction has taken place.

5.8 Analytical Procedures

5.8.1 Moisture Content - EPA Method 4

Moisture contents were determined gravimetrically/volumetrically in accordance with Method 4 by measuring the volume or mass gain of each impinger in the pollutant or Method 4 sampling trains.

5.8.2 Particulate Matter Analyses - EPA Method 5

Particulate matter was determined in accordance with EPA Method 5 procedures. The filter was desiccated and analyzed gravimetrically to a constant weight. The front-half acetone rinse was evaporated and analyzed gravimetrically to a constant weight. The total particulate catch was equal to the sum of the front-half acetone rinse and the filter. The EPA Method 5 laboratory data are contained in Appendix E. A copy of the laboratory's Virginia Environmental Laboratory Accreditation Program (VELAP) certification is also contained in Appendix E.

5.9 Data Analysis

Sample calculations related to the pollutant sampling, including analyzer bias and drift corrections and calculation of emission rates, are shown in Appendix F. For the purpose of determining compliance with emission limits, the arithmetic mean of the results from the three runs shall apply.

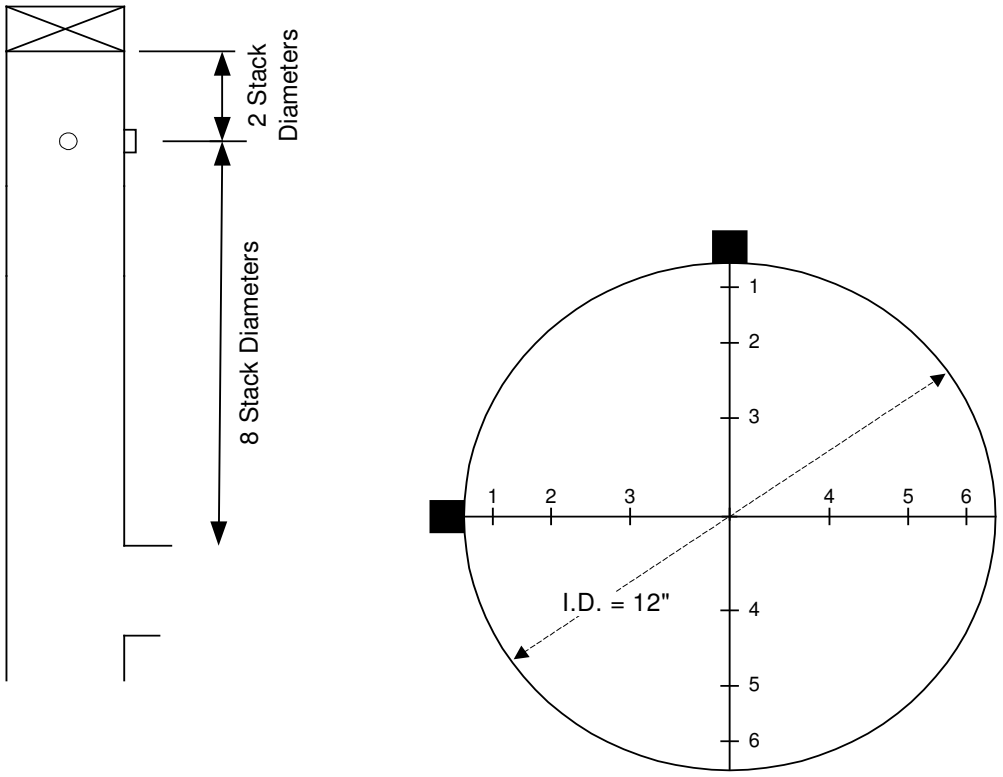
5.10 Equipment Calibration

Field equipment was calibrated in accordance with the requirements of the applicable EPA Methods with additional consideration given to those recommended within the *Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III* (EPA/600/R-94/038c, September 1994). Calibration data are found in Appendix G.

Appendix A

Figures

LIST OF FIGURES



Port depth is 3 inches.

Point	% of ID	DISTANCE FROM INSIDE OF PORT (inches)
1	4.4	0.5
2	14.6	1.8
3	29.6	3.6
4	70.4	8.4
5	85.4	10.2
6	95.6	11.5

INSIDE DIAMETER	12.0 in.	1.0 ft.
DISTANCE UPSTREAM FROM DISTURBANCE	96 in.	8.0 dia.
DISTANCE DOWNSTREAM FROM DISTURBANCE	24 in.	2.0 dia.

Figure 1 - Sampling and Traverse Points at the Crematory Stack

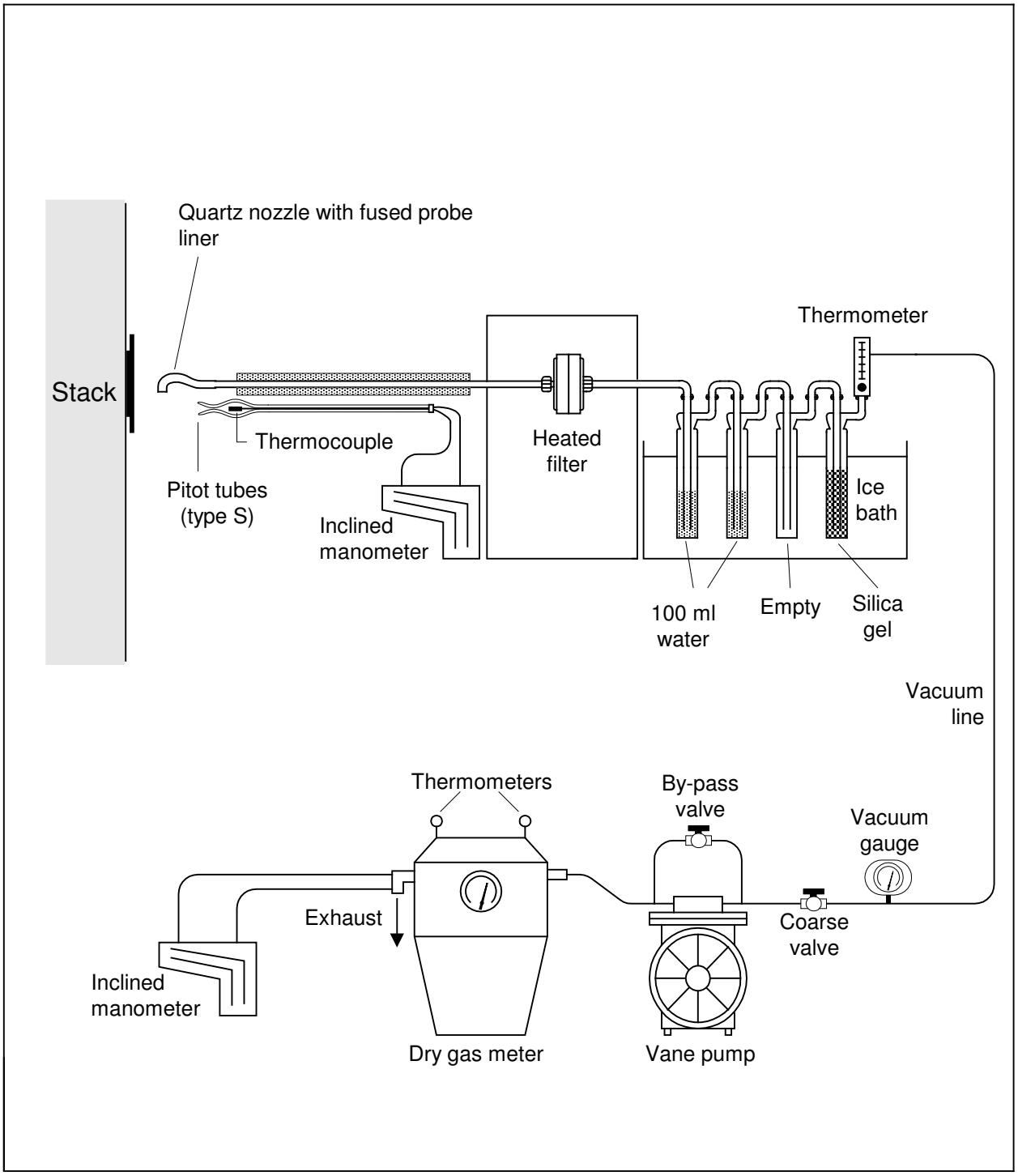


Figure 2 - EPA Method 5 Sampling Train

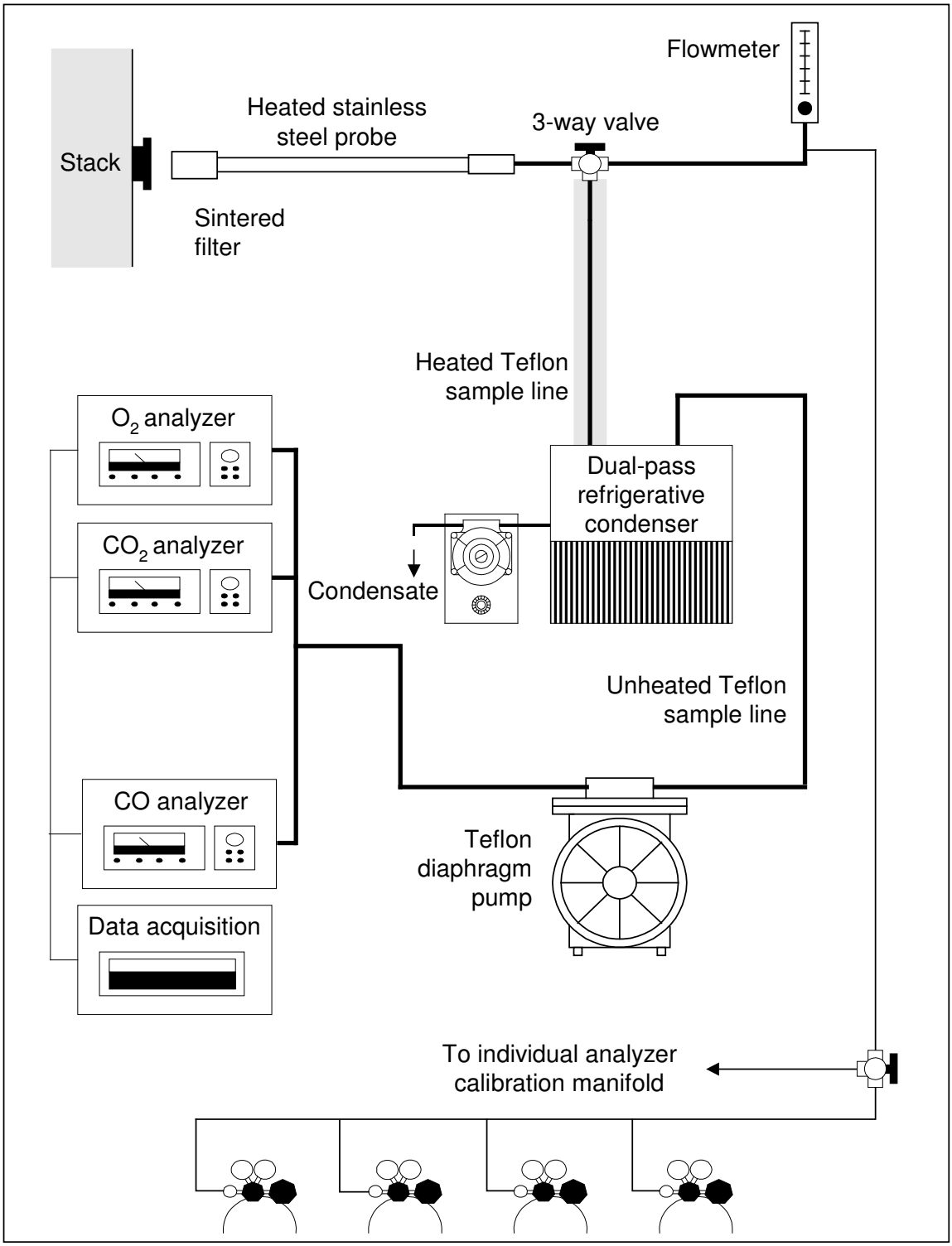


Figure 3 - Sampling and Analytical System for EPA Methods 3A and 10

Appendix B

Test Log

Test Log

Feathercrest Farms, Inc.

Broadway, Va

Run I.D.	Test Parameter	Test Date	Start Time	End Time
IO-CEMS-R1	Oxygen, Carbon Dioxide, and Carbon Monoxide EPA Methods 3A and 10	August 7, 2012	9:57	11:04
IO-CEMS-R2			11:30	12:33
IO-CEMS-R3			12:56	13:59
IO-M5-R1	Filterable Particulate (including flow rate) EPA Methods 1-5		9:57	11:04
IO-M5-R2			11:30	12:33
IO-M5-R3			12:56	13:59
IO-M9-R1	Visible Emissions (Opacity) EPA Method 9		9:57	10:57
IO-M9-R2			11:30	12:30
IO-M9-R3			12:56	13:56

Appendix C

Data and Results

Appendix C.1

Data and Results for EPA Methods 3A and 10

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 1 (1057-1104)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
09:58	9.00	8.03	-0.18
09:59	10.23	7.15	0.14
10:00	6.89	9.47	0.26
10:01	10.44	7.07	-0.06
10:02	7.53	9.00	-0.01
10:03	11.27	6.60	-0.04
10:04	9.13	7.87	-0.14
10:05	10.71	6.95	-0.20
10:06	8.89	8.01	-0.28
10:07	8.58	8.42	-0.14
10:08	9.63	7.49	-0.39
10:09	7.91	8.90	0.03
10:10	7.12	6.52	-0.41
10:11	5.46	5.29	0.00
10:12	7.01	6.63	-0.39
10:13	10.53	8.81	0.03
10:14	7.53	8.33	-0.42
10:15	5.36	7.25	-0.31
10:16	6.71	6.29	-0.34
10:17	8.60	6.36	-0.31
10:18	10.81	6.99	-0.43
10:19	5.99	10.19	0.47
10:20	9.28	7.76	-0.64
10:21	6.36	9.98	0.31
10:22	9.16	7.86	-0.64
10:23	6.17	10.14	0.63
10:24	9.21	7.84	-0.64
10:25	6.12	10.17	0.60
10:26	9.49	7.71	-0.39
10:27	5.84	10.32	3.26
10:28	9.08P	8.03P	-0.39P
10:29	6.56P	9.77P	2.55P
10:30	11.01P	3.82P	2.51P
10:31	19.37P	0.78P	-0.48P
10:32	15.87P	3.29P	0.63P
10:33	9.12P	7.97P	-0.37P
10:34	6.96P	9.44P	1.66P
10:35	8.00	8.83	1.92
10:36	8.86	8.09	-0.60
10:37	6.21	10.11	1.88
10:38	9.18	7.94	-0.38

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 1 (1057-1104)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
10:39	6.43	9.88	0.43
10:40	8.60	8.38	-0.12
10:41	8.92	8.07	-0.45
10:42	6.76	9.76	1.21
10:43	10.58	7.02	-0.34
10:44	7.14	9.41	1.62
10:45	9.15	8.01	-0.26
10:46	8.60	8.28	-0.52
10:47	6.83	9.70	2.55
10:48	9.39	7.78	-0.48
10:49	5.89	10.29	1.07
10:50	9.13	7.99	-0.42
10:51	7.00	9.42	-0.30
10:52	8.30	8.66	-0.14
10:53	8.85	8.13	-0.69
10:54	7.01	9.60	-0.13
10:55	10.18	7.23	-0.88
10:56	5.82	10.36	-0.31
10:57	9.75	7.55	-0.94
10:58	5.94	10.20	-0.47
10:59	9.31	7.90	-0.94
11:00	7.72	8.91	-0.84
11:01	7.62	9.14	-0.61
11:02	8.82	8.13	-0.93
11:03	6.63	9.83	-0.47
11:04	10.19	7.20	-1.12
67 MinAvg	8.16	8.35	-0.04
Data Corrected for Calibrations			
67 MinAvg	8.19	8.31	-0.07

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 2 (1130-1233)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
11:31	9.35	7.87	-1.11
11:32	7.35	9.10	-0.96
11:33	7.02	9.48	-0.90
11:34	9.20	7.85	-1.20
11:35	5.54	10.45	-0.75
11:36	9.13	8.02	-1.16
11:37	7.08	9.30	-0.97
11:38	7.06	9.45	-0.87
11:39	9.48	7.66	-1.14
11:40	5.75	10.28	-0.79
11:41	8.78	8.25	-1.07
11:42	6.21	9.91	-0.81
11:43	8.06	8.76	-1.02
11:44	8.30	8.45	-1.09
11:45	6.09	10.10	-0.76
11:46	12.04	6.01	-1.27
11:47	6.85	9.50	-0.16
11:48	8.58	8.38	0.05
11:49	8.83	8.07	0.12
11:50	6.12	10.01	0.34
11:51	7.69	9.02	0.24
11:52	8.79	8.12	0.12
11:53	6.17	9.98	0.35
11:54	7.56	9.09	0.17
11:55	8.03	8.64	0.05
11:56	5.88	10.19	0.28
11:57	9.78	7.58	-0.13
11:58	7.20	9.21	0.03
11:59	6.26	9.93	0.18
12:00	10.05	7.41	-0.22
12:01	7.88P	8.73P	-0.06P
12:02	16.25P	1.93P	0.13P
12:03	11.15P	6.70P	-0.19P
12:04	12.04	5.98	-0.15
12:05	9.18	7.92	-0.01
12:06	12.90	5.53	-0.15
12:07	10.84	6.70	-0.12
12:08	7.71	8.91	0.16
12:09	10.34	7.22	-0.03
12:10	8.96	7.98	0.04
12:11	7.99	8.76	0.20

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 2 (1130-1233)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
12:12	10.77	6.93	-0.07
12:13	9.65	7.59	-0.09
12:14	7.99	8.81	0.13
12:15	11.50	6.33	-0.30
12:16	7.58	9.00	0.02
12:17	10.34	7.23	-0.08
12:18	11.52	6.29	-0.12
12:19	7.42	9.09	0.18
12:20	9.97	7.46	0.06
12:21	9.81	7.41	-0.03
12:22	6.80	9.54	0.21
12:23	9.94	7.48	0.05
12:24	7.94	8.68	-0.01
12:25	6.12	10.06	0.17
12:26	11.16	6.59	-0.07
12:27	8.48	8.30	-0.01
12:28	5.81	10.22	0.24
12:29	9.84	7.55	-0.11
12:30	7.28	9.14	0.12
12:31	6.54	9.77	0.26
12:32	9.35	7.74	-0.00
12:33	5.99	10.04	0.29
63 MinAvg	8.43	8.44	-0.23
Data Corrected for Calibrations			
63 MinAvg	8.47	8.42	-0.05

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 3 (1256-1359)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
12:57	10.64	6.97	0.22
12:58	7.92	8.90	0.95
12:59	10.50	7.12	1.34
13:00	8.46	8.50	0.51
13:01	11.26	6.65	0.52
13:02	8.49	8.42	0.77
13:03	9.44	7.93	0.77
13:04	10.59	6.97	0.86
13:05	7.82	8.94	0.18
13:06	11.50	6.43	0.02
13:07	8.18	8.60	0.23
13:08	7.93	8.94	0.19
13:09	11.76	6.19	0.01
13:10	8.42	8.47	0.32
13:11	8.71	8.39	0.65
13:12	11.67	6.28	3.56
13:13	7.28	9.27	0.76
13:14	10.09	7.44	0.68
13:15	9.54	7.70	0.40
13:16	7.83	9.01	0.47
13:17	10.89	6.83	0.44
13:18	6.86	9.60	0.50
13:19	9.87	7.61	1.19
13:20	8.44	8.45	0.88
13:21	6.36	10.00	0.32
13:22	9.78	7.59	0.11
13:23	6.31	9.93	0.31
13:24	8.18	8.78	0.41
13:25	9.29	7.86	0.06
13:26	5.71	10.39	0.23
13:27	9.28P	8.02P	0.27P
13:28	14.50P	2.72P	-0.17P
13:29	5.86P	10.34P	0.23P
13:30	9.70	7.71	-0.04
13:31	8.60	8.30	-0.14
13:32	5.77	10.34	0.12
13:33	9.46	7.89	-0.14
13:34	9.51	7.69	-0.22
13:35	6.25	9.98	0.04
13:36	7.49	9.23	0.28
13:37	9.47	7.76	-0.17

FEATHERCREST FARM
INCINERATOR OUTLET
RUN 3 (1256-1359)
AUGUST 7, 2012

Starting
08-07-12

Time	O2 %dv	CO2 %dv	CO ppmdv
13:38	6.59	9.72	0.05
13:39	7.31	9.35	0.28
13:40	9.90	7.52	-0.02
13:41	7.77	8.88	-0.02
13:42	5.81	10.33	0.12
13:43	8.73	8.37	0.48
13:44	8.92	8.09	-0.20
13:45	6.34	9.90	0.04
13:46	6.30	10.00	0.10
13:47	9.52	7.76	0.07
13:48	6.60	9.70	0.01
13:49	7.50	9.25	0.13
13:50	12.96	5.39	-0.26
13:51	8.69	8.22	-0.15
13:52	6.13	10.04	0.07
13:53	7.48	9.21	0.42
13:54	11.14	6.65	-0.27
13:55	8.07	8.63	-0.02
13:56	7.07	9.47	0.14
13:57	13.94	4.82	-0.21
13:58	12.43	5.70	-0.26
13:59	8.03	8.71	0.00
63 MinAvg	8.72	8.31	0.30

Data Corrected for Calibrations

63 MinAvg	8.75	8.35	0.59

Appendix C.2

Data and Results for EPA Method 5

Run Number IO-M5-R1

Date	08/07/12	
Start Time	9:57	
End Time	11:04	
Stack Diameter	12	inches
Nozzle I.D.	0.644	inches
Meter Box Gamma	1.0049	
Meter Box dH@	2.0390	
Barometric	28.68	in.Hg
Cp	0.84	
Test Duration	60	minutes

METHOD 4 DATA

	Impinger Volume (mL)		
	Initial	Final	Net
Impinger 1	100.0	190.0	90.0
Impinger 2	100.0	130.0	30.0
Impinger 3	0.0	6.0	6.0
Impinger 4			0.0
Impinger 5			0.0
Impinger 6			0.0
Impinger 7			0.0
Total	200.0	326.0	126.0
Silica gel (g)	250.0	264.6	14.6

METHOD 1-4 RESULTS

Metered Volume	43.941	dcf
Volume @ Std.Cond.	41.416	dscf
% Water	13.78	%
% Isokinetics	101.1	%
Velocity	23.30	ft/sec
Actual Flow	1098	acfm
Std. Flow	275	scfm
Dry Std. Flow	237	dscfm

METHOD 3 DATA

%O2	8.19	Md	29.66
%CO2	8.31	Ms	28.05
%CO	0.0	Ps	28.68
%N2	83.5	Fo	1.529
O2+CO2	16.5	%EA	59

Point	Stack Temp. (DegF)	Static Pressure (in.WC)	Delta P (in.WC)	Delta H (in.WC)	Meter Volume (dcf)	Meter Temp. (Deg. F) Inlet	Outlet
1	1575	-0.03	0.06	2.75	898.246	78	76
2	1595	-0.03	0.06	2.80	942.187	83	77
3	1498		0.05	2.30		88	79
4	1654		0.05	2.30		88	79
5	1685		0.04	1.80		88	80
6	1570		0.04	1.80		88	80
7	1536		0.04	1.80		82	80
8	1570		0.04	1.80		84	80
9	1545		0.04	1.80		85	80
10	1475		0.03	1.40		85	80
11	1547		0.03	1.40		86	81
12	1480		0.03	1.40		87	81
AVG.	1561	-0.03	0.04	1.95	43.941	82	

EPA Method 5: Gravimetric Data and Results

FEATHERCREST FARM
INCINERATOR OUTLET

SAMPLING DATA

Run number	**IO-M5-R1**	
Corrected sample volume	41.416	dscf
Corrected flow rate	237	dscfm
O2 Content	8.19	%
CO2 Content	8.31	%

ANALYTICAL DATA

		Weights (grams)			
Component	Sample I.D.	Tare	Final	Net	Volume (mL)
Probe wash	101	10.8488	10.8534	0.00460	156
Corrected for blank				0.00430	
Filter	100	0.3590	0.3953	0.03630	
Total				0.04060	

Acetone Blank

Actual residue	0.00030	grams
Applicable blank correction	0.00030	grams
Maximum allowable residue	0.00122	grams
Blank used	0.00030	grams
Volume	156	ml

PARTICULATE EMISSIONS

Actual grain loading	0.0151	gr/dscf
Corrected to 7% O2	0.0165	gr/dscf @ 7% O2
Corrected to 12% CO2	0.0218	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.0160	gr/dscf @ 50% EA
Mass rate	0.0307	lb/hr

Run Number IO-M5-R2

Date	08/07/12	
Start Time	11:30	
End Time	12:33	
Stack Diameter	12	inches
Nozzle I.D.	0.644	inches
Meter Box Gamma	1.0049	
Meter Box dH@	2.0390	
Barometric	28.65	in.Hg
Cp	0.84	
Test Duration	60	minutes

METHOD 4 DATA

	Impinger Volume (mL)		
	Initial	Final	Net
Impinger 1	100.0	220.0	120.0
Impinger 2	100.0	120.0	20.0
Impinger 3	0.0	4.0	4.0
Impinger 4			0.0
Impinger 5			0.0
Impinger 6			0.0
Impinger 7			0.0
Total	200.0	344.0	144.0
Silica gel (g)	250.0	261.9	11.9

METHOD 1-4 RESULTS

Metered Volume	39.715	dcf
Volume @ Std.Cond.	37.142	dscf
% Water	16.50	%
% Isokinetics	103.4	%
Velocity	21.45	ft/sec
Actual Flow	1011	acfm
Std. Flow	249	scfm
Dry Std. Flow	208	dscfm

METHOD 3 DATA

%O2	8.47	Md	29.69
%CO2	8.42	Ms	27.76
%CO	0.0	Ps	28.65
%N2	83.1	Fo	1.476
O2+CO2	16.9	%EA	63

Point	Stack Temp. (DegF)	Static Pressure (in.WC)	Delta P (in.WC)	Delta H (in.WC)	Meter Volume (dcf)	Meter Temp. (Deg. F) Inlet	Meter Temp. (Deg. F) Outlet
1	1567	-0.03	0.04	1.80	942.823	83	82
2	1675	-0.03	0.04	1.80	982.538	86	82
3	1581		0.03	1.40		87	82
4	1635		0.03	1.40		87	82
5	1622		0.04	1.80		87	82
6	1580		0.03	1.40		89	83
7	1551		0.04	1.80		86	83
8	1621		0.04	1.80		88	83
9	1643		0.05	2.30		90	84
10	1577		0.03	1.40		91	84
11	1581		0.03	1.40		91	85
12	1478		0.02	0.92		90	85
AVG.	1593	-0.03	0.04	1.60	39.715	86	

EPA Method 5: Gravimetric Data and Results

FEATHERCREST FARM
INCINERATOR OUTLET

SAMPLING DATA

Run number	**IO-M5-R2**	
Corrected sample volume	37.142	dscf
Corrected flow rate	208	dscfm
O2 Content	8.47	%
CO2 Content	8.42	%

ANALYTICAL DATA

		Weights (grams)			
Component	Sample I.D.	Tare	Final	Net	Volume (mL)
Probe wash	106	10.3872	10.3889	0.00170	140
Corrected for blank				0.00143	
Filter	105	0.3588	0.4121	0.05330	
Total				0.05473	

Acetone Blank

Actual residue	0.00030	grams
Applicable blank correction	0.00027	grams
Maximum allowable residue	0.00110	grams
Blank used	0.00027	grams
Volume	156	ml

PARTICULATE EMISSIONS

Actual grain loading	0.0227	gr/dscf
Corrected to 7% O2	0.0254	gr/dscf @ 7% O2
Corrected to 12% CO2	0.0324	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.0247	gr/dscf @ 50% EA
Mass rate	0.0405	lb/hr

Run Number IO-M5-R3

Date	08/07/12	
Start Time	12:56	
End Time	13:59	
Stack Diameter	12	inches
Nozzle I.D.	0.644	inches
Meter Box Gamma	1.0049	
Meter Box dH@	2.0390	
Barometric	28.61	in.Hg
Cp	0.84	
Test Duration	60	minutes

METHOD 4 DATA

	Impinger Volume (mL)		
	Initial	Final	Net
Impinger 1	100.0	212.0	112.0
Impinger 2	100.0	122.0	22.0
Impinger 3	0.0	6.0	6.0
Impinger 4			0.0
Impinger 5			0.0
Impinger 6			0.0
Impinger 7			0.0
Total	200.0	340.0	140.0
Silica gel (g)	250.0	263.7	13.7

METHOD 1-4 RESULTS

Metered Volume	38.878	dcf
Volume @ Std.Cond.	36.113	dscf
% Water	16.69	%
% Isokinetics	97.8	%
Velocity	21.94	ft/sec
Actual Flow	1034	acfm
Std. Flow	257	scfm
Dry Std. Flow	214	dscfm

METHOD 3 DATA

%O2	8.75	Md	29.69
%CO2	8.35	Ms	27.74
%CO	0.0	Ps	28.61
%N2	82.9	Fo	1.455
O2+CO2	17.1	%EA	67

Point	Stack Temp. (DegF)	Static Pressure (in.WC)	Delta P (in.WC)	Delta H (in.WC)	Meter Volume (dcf)	Meter Temp. (Deg. F) Inlet	Meter Temp. (Deg. F) Outlet
1	1539	-0.03	0.04	1.70	982.719	86	85
2	1618	-0.03	0.04	1.70	1021.597	89	86
3	1562		0.04	1.70		90	85
4	1579		0.03	1.30		90	86
5	1582		0.03	1.30		91	87
6	1561		0.03	1.30		91	87
7	1600		0.04	1.70		88	87
8	1593		0.05	2.20		92	87
9	1583		0.04	1.70		92	87
10	1600		0.04	1.70		92	87
11	1587		0.03	1.30		92	87
12	1499		0.03	1.30		91	87
AVG.	1575	-0.03	0.04	1.58	38.878	88	

EPA Method 5: Gravimetric Data and Results

FEATHERCREST FARM
INCINERATOR OUTLET

SAMPLING DATA

Run number	**IO-M5-R3**	
Corrected sample volume	36.113	dscf
Corrected flow rate	214	dscfm
O2 Content	8.75	%
CO2 Content	8.35	%

ANALYTICAL DATA

		Weights (grams)			
Component	Sample I.D.	Tare	Final	Net	Volume (mL)
Probe wash	111	10.5826	10.5842	0.00160	146
Corrected for blank				0.00132	
Filter	110	0.3565	0.4034	0.04690	
Total				0.04822	

Acetone Blank

Actual residue	0.00030	grams
Applicable blank correction	0.00028	grams
Maximum allowable residue	0.00115	grams
Blank used	0.00028	grams
Volume	156	ml

PARTICULATE EMISSIONS

Actual grain loading	0.0206	gr/dscf
Corrected to 7% O2	0.0236	gr/dscf @ 7% O2
Corrected to 12% CO2	0.0296	gr/dscf @ 12% CO2
Corrected to 50% Excess Air	0.0229	gr/dscf @ 50% EA
Mass rate	0.0377	lb/hr

Appendix D

Raw Field Data

Appendix D.1

Raw Field Data for EPA Method 5

ISOKINETIC SAMPLING DATA SHEET

PAGE 1 OF 1

45-98 FACILITY: Feathercrest Farm TEST LOCATION: Incinerator Outlet DATE: 8/7/12

TECHNICIAN Kmith P_{BAR} 28.68 POLLUTANT: PM RUN I.D.: IO -M 5 -R 1

POINT	RUN TIME	TIME	STATIC	STACK TEMP.	STACK ∈P	METER ∈H	DGM VOLUME F^3	DGM TEMP. INLET	DGM TEMP. OUTLET	EXIT TEMP	FILTER TEMP.	METER VAC.
B 6	0	957		1575	.08	2.75	898.246	78	76	65	249	5
5	5			1595	.06	2.8	902.6	83	77	61	246	5
4	10		-.03	1498	.05	2.3	907.2	88	79	60	247	4
3	15			1654	.05	2.3	912.0	88	79	59	249	4
2	20			1685	.04	~~2.3~~ 1.8	915.4	88	80	58	249	3
1	25			1570	.04	1.8	918.9	88	80	58	243	3
A 6	30	1027/1034		1536	.04	1.8	922.346	82	80	64	240	3
5	35			1570	.04	1.8	925.8	84	80	59	237	3
4	40		-.03	1545	.04	1.8	929.2	85	80	57	242	3
3	45			1475	.03	1.4	932.7	85	80	57	246	2
2	50			1547	.03	1.4	936.3	86	81	56	248	2
1	55			1480	.03	1.4	938.8	87	81	57	251	2
	60	1104		—	—	—	942.187	—	—	—	—	—

CHAIN OF CUSTODY:

CONTAINER	SAMPLE I.D.	DESCRIPTION
1	100	Filter
2	101	FH Acetone

LEAK CHECK:

						PITOT
VACUUM	12	6				PRE: ✓
RATE	.002	.002				POST: ✓

IMPINGER CONTENTS:

IMPINGER	INITIAL	FINAL
#1	100	190
#2	100	130
#3	0	6
#4	250	264.6
#5		
#6		
#7		

NOZZLE M	0644
PITOT #	335
BOX ID	19
GAMMA (	1.0049
∈H@	5.039
PROBE ID	N/A
SYSTEM ID	PM-100-2, NHB-15 VA-10
FILTER ID	E36-33

ISOKINETIC SAMPLING DATA SHEET

PAGE 1 OF 1

FACILITY: Feathercrest Farm TEST LOCATION: Incinerator Outlet DATE: 8/7/12

43.32 TECHNICIAN KmH P_{BAR} 28.65 POLLUTANT: PM RUN I.D.: ID-M 5 -R 2

POINT	RUN TIME	TIME	STATIC	STACK TEMP.	STACK ∈P	METER ∈H	DGM VOLUME F't^3	DGM TEMP. INLET	DGM TEMP. OUTLET	EXIT TEMP	FILTER TEMP.	METER VAC.
A 6	0	1130		1567	.04	1.8	942.823	83	82	62	250	4
5	5			1675	.04	1.8	946.4	86	82	58	250	4
4	10		-.03	1581	.03	1.4	950.3	87	82	57	252	4
3	15			1635	.03	1.4	953.2	87	82	57	252	4
2	20			1622	.04	1.8	956.1	87	82	56	253	4
1	25			1580	.03	1.4	959.5	89	83	55	252	4
B 6	30	1200 / 1203		1551	.04	1.8	963.027	86	83	56	251	5
5	35			1621	.04	1.8	966.4	88	83	56	251	5
4	40		-.03	1643	.05	2.3	970.1	90	84	56	250	6
3	45			1577	.03	1.4	973.6	91	84	58	250	5
2	50			1581	.03	1.4	976.9	91	85	58	251	5
1	55			1478	.02	.92	980.0	90	85	61	251	4
	60	1233		—	—	—	982.538	—	—	—	—	—

CHAIN OF CUSTODY:

CONTAINER	SAMPLE I.D.	DESCRIPTION
1	105	Filter
2	106	FH Acetone

LEAK CHECK:

						PITOT
VACUUM	10	9				PRE: ✓
RATE	.006	.005				POST: ✓

IMPINGER CONTENTS:

IMPINGER	INITIAL	FINAL
#1	100	220
#2	100	120
#3	0	4
#4	250	261.9
#5		
#6		
#7		

NOZZLE M	.644
PITOT #	335
BOX ID	19
GAMMA (	1.0049
∈H@	2.039
PROBE ID	N/A
SYSTEM ID	PV-100-2, NHB-15, VA-10
FILTER ID	e36-36

ISOKINETIC SAMPLING DATA SHEET

FACILITY: Feathercrest Farm TEST LOCATION: Incinerator Outlet DATE: 8/7/12

TECHNICIAN Kmill P_{BAR} 28.61 POLLUTANT: PM RUN I.D.: IO-M 5 -R 3

43.32

POINT	RUN TIME	TIME	STATIC	STACK TEMP.	STACK ∈P	METER ∈H	DGM VOLUME F't^3	DGM TEMP. INLET	DGM TEMP. OUTLET	EXIT TEMP	FILTER TEMP.	METER VAC.
B 6	0	1256		1539	.04	1.7	982.719	86	85	60	255	4
5	5			1618	.04	1.7	985.6	89	86	57	254	4
4	10		-.03	1562	.04	1.7	989.3	90	85	55	255	5
3	15			1579	.03	1.3	992.5	90	86	55	251	5
2	20			1582	.03	1.3	995.4	91	87	57	250	5
1	25			1561	.03	1.3	998.9	91	87	58	257	5
A 6	30	1326/1329		1600	.04	1.7	1001.948	88	87	62	248	5
5	35			1593	.05	2.2	1005.8	92	87	59	249	6
4	40		-.03	1583	.04	1.7	1008.7	92	87	58	251	5
3	45			1600	.04	1.7	1012.2	92	87	59	249	5
2	50			1587	.03	1.3	1015.7	92	87	60	250	4
1	55			1499	.03	1.3	1018.8	91	87	61	251	4
	60	1359		—	—	—	1021.597	—	—	—	—	—

CHAIN OF CUSTODY:

CONTAINER	SAMPLE I.D.	DESCRIPTION
1	100	Filter
2	111	Fit Acetone

LEAK CHECK:

						PITOT
VACUUM	10	8				PRE: ✓
RATE	.004	.003				POST: ✓

IMPINGER CONTENTS:

IMPINGER	INITIAL	FINAL
#1	100	212
#2	100	122
#3	0	6
#4	250	263.7
#5		
#6		
#7		

NOZZLE M	.644
PITOT #	335
BOX ID	19
GAMMA (	1.0049
∈H@	2.039
PROBE ID	N/A
SYSTEM ID	PU-100-2, UA-10, NHB-15
FILTER ID	e36-34

Appendix D.2

Raw Field Data for EPA Method 9

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Form Number | Page 1 Of 1

Continued on VEO Form Number: EO-M9-B1

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

Company Name: FEATHERCREST FARM

Facility Name:

Street Address:

City: HARRISONBURG | State: VA | Zip:

Process: INCINERATOR | Unit #: N/A | Operating Mode: NORMAL

Control Equipment: N/A | Operating Mode: N/A

Describe Emission Point: BLACK STACK EMITTING FROM THE SHED.

Height of Emiss. Pt. Start: 15 End: SAME | Height of Emiss. Pt. Rel. to Observer Start: 15 End: SAME

Distance to Emiss. Pt. Start: 40 End: SAME | Direction to Emiss. Pt. (Degrees) Start: 238 End: SAME

Vertical Angle to Obs. Pt. Start: 0 End: SAME | Direction to Obs. Pt. (Degrees) Start: SAME 238 End: SAME

Distance and Direction to Observation Point from Emission Point: Start: SAME End: SAME

Describe Emissions: Start: NONE End: SAME

Emission Color: Start: N/A End: SAME | Water Droplet Plume: Attached ☐ Detached ☐ None ☒

Describe Plume Background: Start: SKY End: SAME

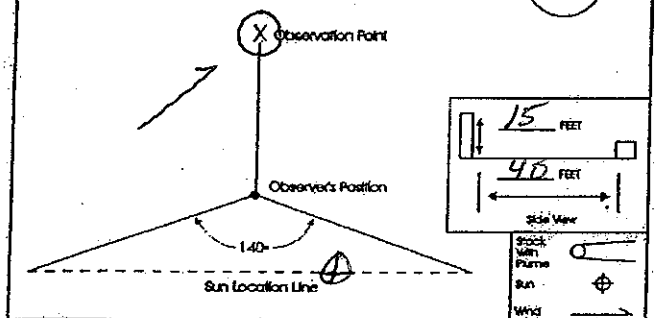
Background Color: Start: BLUE End: SAME | Sky Conditions: Start: SCATTERED End: SAME

Wind Speed: Start: 5 MPH End: SAME | Wind Direction: Start: E End: SAME

Ambient Temp.: Start: 75 End: 76 | Wet Bulb Temp.: 69 | RH Percent: 72

Source Layout Sketch

Draw North Arrow: ☐ TN ☒ MN



Longitude | Latitude | Declination

Additional Information: NONE

Observation Date	Time Zone	Start Time	End Time
8-7-12	EST	957	1057

Sec / Min	0	15	30	45	Sec / Min	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): JAMES STULTZ

Observer's Signature: [signature] | Date: 8-7-12

Organization: ACG

Certified By: ETA | Date:

VEOF1.1

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Form Number | Page 1 Of 1

Continued on VEO Form Number: ID-M9-R2

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

Company Name: FEATHERCREST FARM

Facility Name:

Street Address:

City: HARRISONBURG | State: VA | Zip:

Process: INCINERATOR | Unit #: N/A | Operating Mode: NORMAL

Control Equipment: N/A | Operating Mode: N/A

Describe Emission Point: BLACK STACK EMITTING FROM THE SHED

Height of Emiss. Pt.: Start 15' End SAME | Height of Emiss. Pt. Rel. to Observer: Start 15' End SAME

Distance to Emiss. Pt.: Start 40' End SAME | Direction to Emiss. Pt. (Degrees): Start 238 End SAME

Vertical Angle to Obs. Pt.: Start 6° End SAME | Direction to Obs. Pt. (Degrees): Start 58 238 End SAME

Distance and Direction to Observation Point from Emission Point: Start SAME End SAME

Describe Emissions: Start NONE End SAME

Emission Color: Start N/A End SAME | Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background: Start SKY End SAME

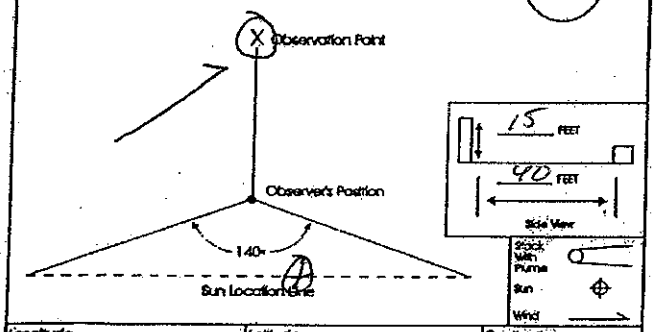
Background Color: Start BLUE End SAME | Sky Conditions: Start SCATTERED End SAME

Wind Speed: Start 5 MPH End 7MPH | Wind Direction: Start EAST End SSW

Ambient Temp.: Start 79 End 82 | Wet Bulb Temp.: 71 | RH Percent: 65%

Source Layout Sketch

Draw North Arrow: ☐ TN ☒ MN



Longitude | Latitude | Declination

Additional Information: SAME

Observation Date	Time Zone	Start Time	End Time
8-7-12	EST	1130	1230

Sec / Min	0	15	30	45	Sec / Min	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): JAMES STUTZ

Observer's Signature: [signature] | Date: 8-7-12

Organization: ACG

Certified By: EPA | Date:

VEOF1.1

EPA
VISIBLE EMISSION OBSERVATION FORM 1

Form Number | Page 1 Of 1

Continued on VEO Form Number: EO-MG-RS

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

Company Name: FEATHERCREST FARM

Facility Name:

Street Address:

City: HARRISONBURG | State: VA | Zip:

Process: INCINERATOR | Unit #: N/A | Operating Mode: NORMAL

Control Equipment: N/A | Operating Mode: N/A

Describe Emission Point: BLACK STACK EMITTING FROM THE SHED

Height of Emiss. Pt. Start: 15 End: SAME | Height of Emiss. Pt. Rel. to Observer Start: 15 End: SAME

Distance to Emiss. Pt. Start: 40 End: SAME | Direction to Emiss. Pt. (Degrees) Start: 238 End: SAME

Vertical Angle to Obs. Pt. Start: 1 End: SAME | Direction to Obs. Pt. (Degrees) Start: 238 End:

Distance and Direction to Observation Point from Emission Point Start: SAME End: SAME

Describe Emissions Start: NONE End:

Emission Color Start: N/A End: | Water Droplet Plume: Attached ☐ Detached ☐ None ☒

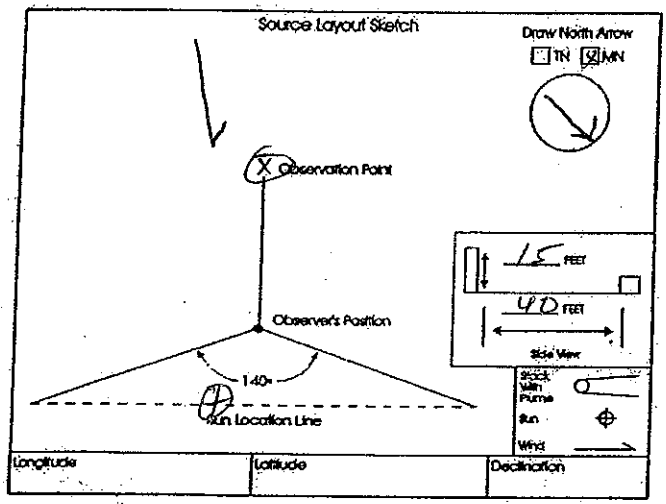
Describe Plume Background Start: SKY End: SAME

Background Color Start: BLUE End: SAME | Sky Conditions Start: SCATTERED End: SAME

Wind Speed Start: 7 MPH End: 11 MPH | Wind Direction Start: SSW End: WEST

Ambient Temp. Start: 82 End: SAME | Wet Bulb Temp. | RH Percent: 56

Source Layout Sketch



Longitude | Latitude | Declination

Additional Information: NONE

Observation Date	Time Zone	Start Time	End Time
8-7-17	EST	1256	1356

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): JAMES SMITH

Observer's Signature: [signature] | Date: 8-7-17

Organization: ACG

Certified By: EPA | Date:

VEOF1.1

Appendix D.3

Raw Field Data for Cyclonic Flow Check

CYCLONIC FLOW CHECK
40 CFR 60, APPENDIX A, METHOD 1, SECTION 2.4

Facility: Feathercrest Farm
Location: Incinerator Outlet
Date: 8/6/12

Load Condition:
Start Time: 916
End Time: 928

Point No.	Angle Degree
A 6	1
5	3
4	0
3	0
2	3
1	3

Point No.	Angle Degree
B 6	0
5	0
4	2
3	0
2	3
1	3

Sum of the Absolute Value of the Rotation Angles ($\Sigma|\alpha|_{i=1,n}$): 18
where: α = rotation angle for point i, and
n = number of sampling points.

Average Rotation Angle ($\frac{\Sigma|\alpha|_{i=1,n}}{n}$): 1.5
where: α □ = rotation angle for point i, and
n = number of sampling points.

Note: the flow is determined to be cyclonic if the Average Rotation Angle is greater than 20°.

Flow Check Done by: Kurt MRW

Appendix E

Analytical Laboratory Data for Particulate Analysis

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF GENERAL SERVICES
DIVISION OF CONSOLIDATED LABORATORY SERVICES

Certifies that

VA Laboratory ID#: 460207
ELEMENT ONE, INC
5022-C WRIGHTSVILLE AVE
WILMINGTON, NC 28403

Owner: KEN SMITH
Responsible Official: KEN SMITH

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **May 10, 2012**
Expiration Date: **December 14, 2012**
Certificate # 1538

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

VELAP Certificate No.: 1538

ELEMENT ONE, INC
5022-C WRIGHTSVILLE AVE
WILMINGTON, NC 28403

Virginia Laboratory ID: 460207
Effective Date: May 10, 2012
Expiration Date: December 14, 2012

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

AIR

METHOD	ANALYTE	PRIMARY
EPA 0061 1996	CHROMIUM VI	NJ
EPA 104	BERYLLIUM	NJ
EPA 108 A	ARSENIC	NJ
EPA 12	LEAD	NJ
EPA 16 A	TOTAL REDUCED SULFUR	NJ
EPA 202	PARTICULATES	NJ
EPA 26	CHLORINE	NJ
EPA 26	HYDROGEN CHLORIDE (HYDROCHLORIC ACID)	NJ
EPA 26 A	BROMINE	NJ
EPA 26 A	HYDROGEN BROMIDE	NJ
EPA 26 A	HYDROGEN FLUORIDE (HYDDROFLUORIC ACID)	NJ
EPA 29 (ICP-MS)	ANTIMONY	NJ
EPA 29 (ICP-MS)	BARIUM	NJ
EPA 29 (ICP-MS)	CADMIUM	NJ
EPA 29 (ICP-MS)	COBALT	NJ
EPA 29 (ICP-MS)	LEAD	NJ
EPA 29 (ICP-MS)	NICKEL	NJ
EPA 29 (ICP-MS)	SELENIUM	NJ
EPA 29 (ICP-MS)	THALLIUM	NJ
EPA 29 (ICP-MS) -EXTENDED 2000	MOLYBDENUM	NJ
EPA 29 (ICP-MS) -EXTENDED 2000	VANADIUM	NJ
EPA 306 A	CHROMIUM	NJ
EPA 5	PARTICULATE MATTER	NJ
EPA 5 D	PARTICULATE MATTER, BAGHOUSES	NJ
EPA 8	SULFUR TRIOXIDE	NJ
EPA 101 A	MERCURY	NJ
EPA 108	ARSENIC	NJ
EPA 108 B	ARSENIC	NJ
EPA 13 B 2000	FLUORIDE	NJ
EPA 201 A 1997	PARTICULATE MATTER	NJ
EPA 26	BROMINE	NJ
EPA 26	HYDROGEN BROMIDE	NJ
EPA 26	HYDROGEN FLUORIDE (HYDDROFLUORIC ACID)	NJ
EPA 26 A	CHLORINE	NJ
EPA 26 A	HYDROGEN CHLORIDE (HYDROCHLORIC ACID)	NJ
EPA 29 (CVAAS)	MERCURY	NJ
EPA 29 (ICP-MS)	ARSENIC	NJ
EPA 29 (ICP-MS)	BERYLLIUM	NJ
EPA 29 (ICP-MS)	CHROMIUM	NJ
EPA 29 (ICP-MS)	COPPER	NJ
EPA 29 (ICP-MS)	MANGANESE	NJ
EPA 29 (ICP-MS)	PHOSPHORUS	NJ
EPA 29 (ICP-MS)	SILVER	NJ
EPA 29 (ICP-MS)	ZINC	NJ
EPA 29 (ICP-MS) -EXTENDED 2000	TIN	NJ
EPA 30 2008 B	MERCURY	NJ
EPA 306 A	CHROMIUM VI	NJ
EPA 5 B	PARTICULATE MATTER, NONSULFURIC ACID	NJ
EPA 8	SULFUR DIOXIDE	NJ
EPA 8	SULFURIC ACID MIST	NJ

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY
EPA 1311 1992	PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE	NJ
EPA 200.8 1994 5.4	ANTIMONY	NJ
EPA 200.8 1994 5.4	BARIUM	NJ
EPA 200.8 1994 5.4	ALUMINUM	NJ
EPA 200.8 1994 5.4	ARSENIC	NJ
EPA 200.8 1994 5.4	BERYLLIUM	NJ

This Scope of Accreditation must accompany the Certificate issued by Virginia DCLS with the same Certificate Number indicated above.

The Air Compliance Group, LLC

5075 Hollins Rd.
Roanoke, VA 24019

V12966

Particulate Matter

EPA Method 5

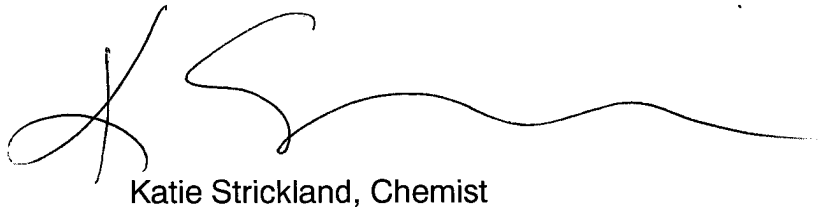
Analytical Report
19163

el1

Element One, Inc.
5022-C Wrightsville Av., Wilmington, NC 28403
910-793-0128 FAX: 910-792-6853 e1lab@e1lab.com

The following data for Analytical Report 19163
has been reviewed for completeness, accuracy,
adherence to method protocol,
and compliance with quality assurance guidelines.

Review by:



Katie Strickland, Chemist
August 15, 2012

Report Reviewed and Finalized By:

Ken Smith, Laboratory Director
August 15, 2012

SUMMARY OF RESULTS

Summary of Analysis

Summary of Method 5 Analysis

Fraction	U00-R1 e19163-1 Catch, mg	U00-R2 e19163-2 Catch, mg	U00-R3 e19163-3 Catch, mg
Filter	36.3	53.3	46.9
Rinse	4.6	1.7	1.6
Total PM	40.9	55.0	48.5

Fraction	Reagent Blank e19163-4 Catch, mg
Filter	----
Rinse	0.3
Total PM	0.3

ANALYTICAL NARRATIVE

Element One Analytical Narrative

Client:	The Air Compliance Group, LLC	Element One #:	19163
Client ID:	V12966/Feathercrest Farm	Analyst:	LAL
Method:	EPA Method 5	Dates Received:	08.09.12
Analytes:	Particulate Matter	Dates Analyzed:	08.10-15.12

Summary of Analysis

The Method 5 particulate samples were analyzed in accordance with EPA Method 5 guidelines. Particulate samples were weighed to a constant weight of ±0.5mg and reported to the nearest 0.1mg.

Analysis QA/QC

All laboratory QA/QC guidelines were followed in the analysis of the samples.

Additional Comments

The Method 5 blank correction factor has not been implemented.

SAMPLE CUSTODY

19163

CHAIN OF CUSTODY

CONTRACT ID: Feathercrest Farm

CONTRACT NUMBER: V12966

ANALYSIS WANTED: Filterable PM

SAMPLE ID	CONTAINER NUMBER	TEST LOCATION	RUN ID	CONTENTS	VOLUME	INITIALS	DATE		COMMENTS
100	1	Unit 00 Outlet	U00-M5-R1	Filter		KMH	8/7/2012	X	
101	2	Unit 00 Outlet	U00-M5-R1	FH Acetone Rinse		KMH	8/7/2012	X	
105	1	Unit 00 Outlet	U00-M5-R2	Filter		KMH	8/7/2012	X	
106	2	Unit 00 Outlet	U00-M5-R2	FH Acetone Rinse		KMH	8/7/2012	X	
110	1	Unit 00 Outlet	U00-M5-R3	Filter		KMH	8/7/2012	X	
111	2	Unit 00 Outlet	U00-M5-R3	FH Acetone Rinse		KMH	8/7/2012	X	
201	2	BLANK	BLANK - M5	FH Acetone Rinse		KMH	8/7/2012	X	

COLLECTED BY:	DATE	RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
Kenley M. Hall	8/7/12	Kenley M. Hall	8/8/12	Lisa Bratton	8/8/12
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE	RELINQUISHED BY:	DATE
RECEIVED BY:	DATE	RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

933 Air Compliance Group, LLC
5075 Hollins Rd
ROANOKE, VA 24019

Samples received in good condition.

THE AIR COMPLIANCE GROUP, LLC

August 8, 2012

ElementOne Inc.
5022-C Wrightsville Ave.
Wilmington, NC 28403
(910) 793-0128

Subject: **FPM Analysis for Feathercrest Farm**
ACG Inc. P.O. # **V12966-01**

ATTN Sample Custodian:

Accompanying this letter are samples from three (3) EPA Method 5 sampling runs, there is also one blank included for analysis. The samples are to be analyzed in accordance with EPA Method 5 procedures for the appropriate particulate matter. I need standard lab turnaround on these analyses.

Please note the following:

- ☐ Chain-of-Custody sheets accompany the samples and should be checked to ensure that any holding time requirements are met.
- ☐ Include a narrative stating any problems, or lack thereof, with the sample processing or analyses.
- ☐ Include tare weights and volumes for final weight determination.

The analyses are covered under ACG purchase order #V12966-01. If you have any questions, please contact me at ACG (540-265-1987 ext. 219) or on my cell (540-556-6212).

Sincerely,

ACG, LLC.

Kenley Houtz, QSTI
Project Manager

Enclosure

The Air Compliance Group, LLC
5075 Hollins Road
Roanoke, VA 24019

Phone: (540) 265-1987
Fax: (540) 265-0082

ANALYTICAL DATA

elementOne **AIR TESTING SAMPLE SUBMISSION FORM** **Lab ID 19163**

Analysis Due Date 08.17.12
QA/QC/Report Due Date 08.21.12

Client	The Air Compliance Group, LLC
Project No	V12966

Date Rec	08.09.12
Time Rec	0933

Acetone Lot 50102	Volume Marked Y / (N)		**Ref. Method: 5**
	Volume Loss Y / N / (?)		

Sample Identification

1	U00-M5-R1	4	Reagent Blank		
2	U00-M5-R2				
3	U00-M5-R3				
Analyses Requested	Samples 1-4	PM			

Runs / RB	Quartz Filter	Quartz Filter	FH Acetone Rinse	NOTE
Lab ID.	ID	Tare Weight, g	BV, ml	
1	36-33	0.3590	156	
2	36-36	0.3588	140	
3	36-34	0.3565	146	
4			156	

Lab Communications

Filter 1 looks like it had gotten wet, it was stained, puffy & frayed at sides (LAL 8.10.12

SS Page 1 of 1
SS by LAB
8/10/2012 12:29:19 PM

M5 Prep By/Date LAL 8.10.12
M5 Prep By/Date
Labeled By/Date LAB 8.10.12
ID Verification By/Date LAL 8-10-12

elementOne **Method 5 Particulate** Lab # 19163

Client ACG Page 1 of 1

Balance checks Date: 08.14.12 2 g = 2.0000 Acetone Concentration

Date: 08.15.12 2 g = 1.9999 9.75E-06 **mg/mg**

Date:

Filters

Sample ID #	Filter ID	Tin ID	A	B		B		B		
			Filter Tare, g	Date - 08.14.12 Initals - LAL		Date - 08.15.12 Initals - LAL		Date Initals		Catch Description and Loading
				Time	Filter Weight, g	Time	Filter Weight, g	Time	Filter Weight, g	
19163-1	36-33	T-21	0.3590	4:30	0.3953	2:15	0.3953			
19163-2	36-36	T-45	0.3588	4:30	0.4121	2:15	0.4123			
19163-3	36-34	T-18	0.3565	4:30	0.4034	2:15	0.4035			
Client Blk										
E1 Blank										

Acetone Rinses

Sample ID #	Sample Volume, ml	Bag ID	C	D		D		D		
			Bag Tare, g	Date - 08.14.12 Initals - LAL		Date - 08.15.12 Initals - LAL		Date Initals		Catch Description and Loading
				Time	Bag & Sample Weight, g	Time	Bag & Sample Weight, g	Time	Bag & Sample Weight, g	
19163-1	156	510	10.8488	4:30	10.8537	2:15	10.8534			
19163-2	140	678	10.3872	4:30	10.3890	2:15	10.3889			
19163-3	146	X31	10.5826	4:30	10.5844	2:15	10.5842			
Client Ace Blk 19163-4	156	651	9.8703	4:30	9.8706	2:15	9.8707			
E1 Acetone Blank	100	675	10.3057	4:30	10.3055	2:15	10.3056			

Total Catches

Sample ID #	Filter ID	Filter Tare, g	Final Filter + Catch, g	**Filter Catch, mg**		Acetone Bag ID	Bag Tare, g	Final Bag + Ace Catch, g	**Acetone Catch, mg**	**Total Catch, mg**
19163-1	36-33	0.3590	0.3953	36.3		510	10.8488	10.8534	4.6	40.9
19163-2	36-36	0.3588	0.4121	53.3		678	10.3872	10.3889	1.7	55.0
19163-3	36-34	0.3565	0.4034	46.9		X31	10.5826	10.5842	1.6	48.5
Client Blk						651	9.8703	9.8706	0.3	0.3
E1 Blank						675	10.3057	10.3055	< 0.1	< 0.1

Element One, Inc. Form 123 - Revision 2.01.24.12

Appendix F

Calculations

EPA METHODS 2-4 CALCULATIONS

1. Metered Gas Sample Volume at Standard Conditions

$$V_{m(std)} = V_m \times \gamma \times \frac{528}{29.92} \times \left[\frac{P_B + \frac{\Delta H}{13.6}}{T_m + 460} \right]$$

2. Gas Volume of Water Vapor Collected in Impinger Liquid

$$V_{WC(std)} = (v_f - v_i) \times 0.04707$$

3. Gas Volume of Water Vapor Collected in Silica Gel

$$V_{wsg(std)} = (w_f - w_i) \times 0.04715$$

4. Moisture Volume Fraction in Flue Gas

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

5. Moisture Volume Percentage in Flue Gas

$$\%H_2O = B_{ws} \times 100$$

6. Absolute Pressure of Flue Gas

$$P_s = P_B + \frac{P_{static}}{13.6}$$

7. Nitrogen Content of Flue Gas

$$\%N_2 = 100 - (\%CO_2 + \%O_2 + \%CO)$$

8. Dry Molecular Weight of Flue Gas

$$M_d = 0.44 \times \%CO_2 + 0.32 \times \%O_2 + 0.28 \times (\%N_2 + \%CO)$$

9. Wet Molecular Weight of Flue Gas

$$M_s = M_d \times (1 - B_{ws}) + 18 \times B_{ws}$$

10. Fuel Factor Based on Flue Gas Composition

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

EPA METHODS 2-4 CALCULATIONS (continued)

11. Excess Air of Flue Gas

$$\%EA = \frac{\%O_2 - 0.5\%CO}{0.264\%N_2 - (\%O_2 - 0.5\%CO)} \times 100$$

12. Average Gas Velocity, ft/sec

$$v_s = 85.49 \times C_p \times (\Delta P^{1/2})_{avg} \times \frac{(T_s + 460)^{1/2}}{(P_s \times M_s)^{1/2}}$$

13. Area of Round Duct or Stack

$$A_s = \frac{\pi \times D^2}{4 \times 144} \quad (\textit{round ducts})$$

14. Area of Rectangular Duct

$$A_s = \frac{L \times W}{144} \quad (\textit{rectangular ducts})$$

15. Actual Volumetric Flow Rate of Flue Gas

$$Q_a = v_s \times A_s \times 60$$

16. Flow Rate of Flue Gas at Standard Temperature and Pressure

$$Q_s = Q_a \times \left[\frac{P_s \times 528}{(T_s + 460) \times 29.92} \right]$$

17. Dry Flow Rate of Flue Gas at Std. Temperature and Pressure

$$Q_{sd} = Q_s \times (1 - B_{ws})$$

EPA METHODS 2-4 CALCULATIONS (continued)

NOMENCLATURE

A_s	=	Stack area, ft^2
B_{ws}	=	Moisture volume fraction
C_p	=	Pitot tube coefficient ($\approx$0.84)
D_s	=	Stack diameter, inches
F_d	=	dry fuel factor, dscf/MMBtu
ΔH	=	Average meter orifice pressure, in.W.C.
ΔP	=	Pitot tube differential pressure, in.W.C.
F_o	=	Combustion factor
γ	=	Meter calibration factor, gamma
L	=	Length of rectangular stack or duct, inches
M_D	=	Dry molecular weight, lb/lb-mole
M_s	=	Wet molecular weight, lb/lb-mole
P_B	=	Barometric pressure, in.Hg
P_s	=	Absolute stack pressure, in.Hg
P_{static}	=	Average static pressure, in.W.C.
Q_a	=	Actual gas flow rate, acfm
Q_s	=	Standard gas flow rate, scfm
Q_{sd}	=	Dry standard gas flow rate, dscfm
T_m	=	Average meter temperature, ^oF
T_s	=	Average stack temperature, ^oF
v_f	=	Final impinger volume, ml
v_i	=	Initial impinger volume, ml
V_m	=	Uncorrected metered gas volume, dcf
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$V_{wc(std)}$	=	Gas volume of water caught in impingers, scf
$V_{wsg(std)}$	=	Gas volume of water caught in silica gel, scf
W	=	Width of rectangular stack or duct, inches
w_f	=	Final silica gel mass, grams
w_i	=	Initial silica gel mass, grams
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%CO	=	Dry volumetric concentration of CO, %dv
$\%N_2$	=	Dry volumetric concentration of N_2, %dv
%EA	=	Percent excess air

EPA METHOD 5 GRAVIMETRIC CALCULATIONS

1. PM Collected in Probe Wash - M_{pw}

$$M_{pw} = (W_{pw})_{final} - (W_{pw})_{tare}$$

2. Applicable Acetone Blank Correction - B_{apw}

$$B_{apw} = [(W_{ab})_{final} - (W_{ab})_{tare}] \times \frac{v_{pw}}{v_{ab}}$$

3. Maximum Allowable Acetone Blank - B_{amax}

$$B_{amax} = 0.7845 \times 0.00001 \times v_{pw}$$

4. Actual Probe Wash Blank Correction - B_{pw}

$$B_{pw} = MINIMUM\,[B_{apw},\ B_{amax}]$$

5. PM Collected on Filter - M_f

$$M_f = (W_f)_{final} - (W_f)_{tare}$$

6. Total PM Collected for Method 5 Calculations - M_5

$$M_5 = M_{pw} + M_f - B_{pw}$$

NOMENCLATURE

B_{amax}	=	Maximum allowable acetone blank correction, based on weight of acetone in probe wash, grams
B_{apw}	=	Acetone blank correction based on residue of blank, grams
B_{pw}	=	Acetone blank correction actually used, grams
M_5	=	Total mass of particulate in train corrected for acetone blank, grams
M_f	=	Mass gain of filter, grams
M_{pw}	=	Probe wash residue, grams
v_{ab}	=	Liquid volume of acetone blank, ml
v_{pw}	=	Liquid volume of probe wash, ml
$(W_{ab})_{final}$	=	Final weight of beaker containing acetone blank residue, grams
$(W_{ab})_{tare}$	=	Tare weight of beaker containing acetone blank residue, grams
$(W_f)_{final}$	=	Final weight of filter, grams
$(W_f)_{tare}$	=	Tare weight of filter, grams
$(W_{pw})_{final}$	=	Final weight of beaker containing probe wash residue, grams
$(W_{pw})_{tare}$	=	Tare weight of beaker containing probe wash residue, grams

PARTICULATE EMISSIONS CALCULATIONS

1. Particulate Concentration - C_{sd}

$$C_{sd} = \frac{\Sigma(M_i)}{V_{m(std)}} \times \frac{7000}{453.593}$$

2. Particulate Concentration Corrected to 7% O_2 - C_{sd}@7%O_2

$$C_{sd@7\%} = C_{sd} \times \frac{20.9 - 7.0}{20.9 - \%O_2}$$

3. Particulate Concentration Corrected to 12% CO_2 - C_{sd}@12%CO_2

$$C_{sd@12\%} = C_{sd} \times \frac{12}{\%CO_2}$$

4. Particulate Concentration Corrected to 50% Excess Air - C_{sd}@50%EA

$$C_{sd@50\%EA} = C_{sd} \times \frac{100 + \%EA}{150}$$

5. Particulate Mass Rate - M_p

$$M_p = \frac{\Sigma(M_i)}{V_{m(std)}} \times Q_{sd} \times \frac{60}{453.593}$$

6. Isokinetic Variation - %ISO

$$\%Iso = \frac{0.09450 \times (T_s + 460) \times V_{m(std)}}{P_s \times v_s \times A_n \times time \times (1 - B_{ws})}$$

PARTICULATE EMISSIONS CALCULATIONS (continued)

NOMENCLATURE

A_n	=	Nozzle area, ft^2
B_{ws}	=	Moisture volume fraction
C_{sd}	=	Particulate concentration, grains/dscf
D_n	=	Nozzle diameter, inches
ΣM_i	=	Summation of PM collected in sample train, grams
M_p	=	Mass rate of particulate emissions, lb/hr
P_s	=	Absolute stack pressure, in.Hg
Q_{sd}	=	Dry standard gas flow rate, dscfm
time	=	Net sampling time, minutes
T_s	=	Average stack temperature, ^oF
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%EA	=	Percent excess air
%Iso	=	Percent isokinetics

INSTRUMENT ANALYZER CALCULATIONS

1. Analyzer Calibration Error is determined by:

$$ACE = \frac{C_{dir} - C_v}{CS} \; x \; 100$$

2. System Bias is determined by:

$$SB = \frac{C_s - C_{dir}}{CS} \; x \; 100$$

3. Drift Assessment is determined by:

$$D = | SB_f - SB_i |$$

4. The Effluent Gas Concentration is determined by:

$$C_{gas} = (C_{Avg} - C_0) \; x \; \frac{C_{ma}}{C_m - C_0}$$

Nomenclature

ACE	=	Analyzer calibration error, percent of calibration span
C_{Avg}	=	Average unadjusted gas concentration indicated by the data recorder for the test run
C_{Dir}	=	Measured concentration of a calibration gas when introduced in direct calibration mode
C_{Gas}	=	Average effluent gas concentration adjusted for bias
C_M	=	Average of the initial and final system calibration bias check responses for the upscale calibration gas
C_{Ma}	=	Actual concentration of the upscale calibration gas
C_o	=	Average of the initial and final system calibration bias check responses for the zero gas
C_v	=	Manufacturer certified concentration of a calibration gas
C_s	=	Measured concentration of a calibration gas when introduced in system calibration
CS	=	Calibration span
D	=	Drift Assessment, percent of calibration span
SB	=	System bias, percent of calibration span
SB_f	=	Post-run system bias, percent of calibration span
SB_i	=	Pre-run system bias, percent of calibration span

GASEOUS EMISSIONS MONITORING CALCULATIONS

1. Hourly Emissions Rate - M_i

$$M_i = \frac{C_i \, x \, Q_{sd} \, x \, 60 \, x \, MW_i}{10^6 \, x \, 0.84948 \, x \, 453.593}$$

2. Concentration at 7% O_2

$$C_{7_i} = C_i \, x \, \frac{20.9 - 7.0}{20.9 - \%O_2}$$

3. Concentration at 12% CO_2

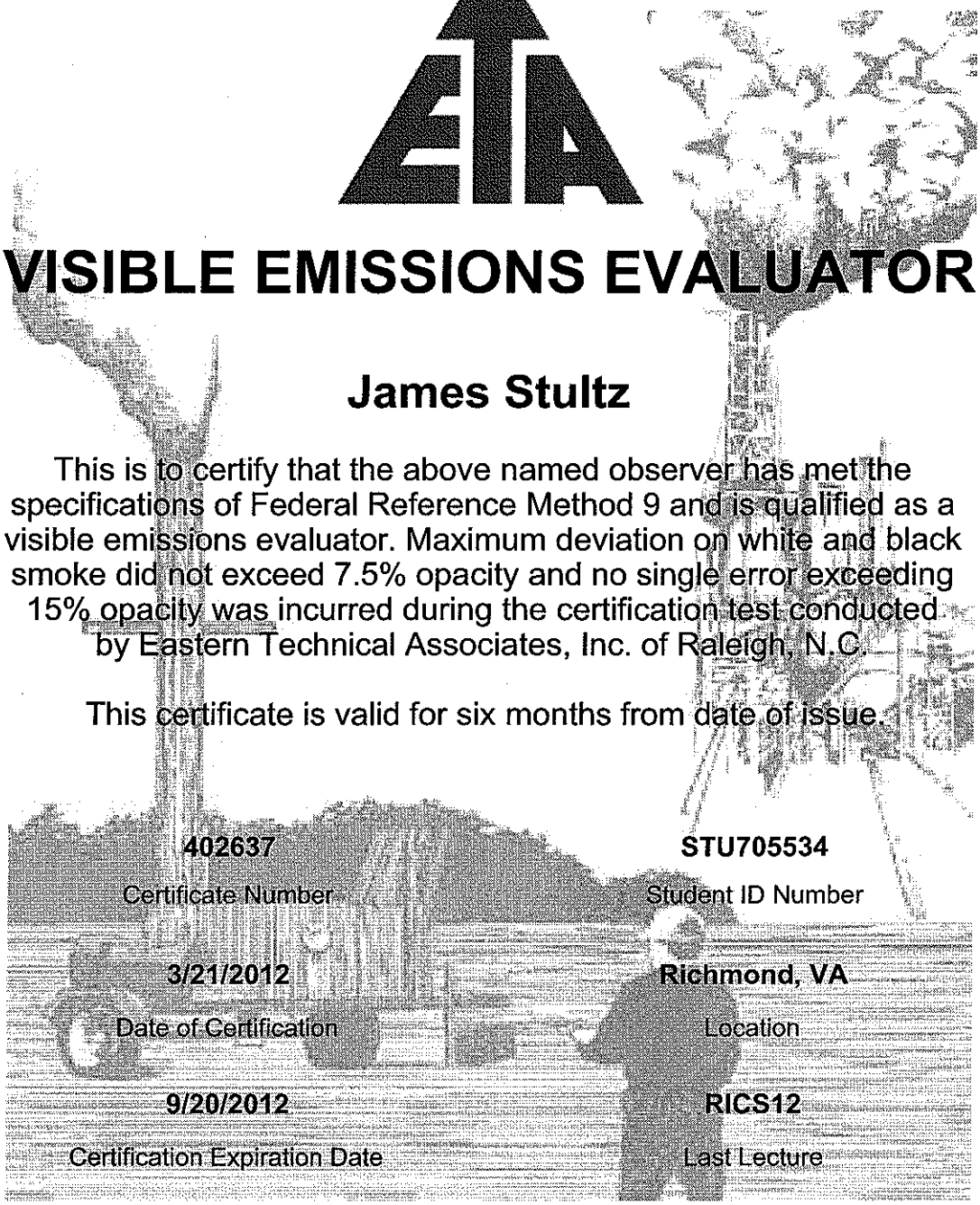
$$C_{12_i} = C_i \, x \, \frac{12}{\%CO_2}$$

Nomenclature

i	=	NO_x, SO_2, CO, or total hydrocarbons (as propane)
M_i	=	Mass emissions rate of i, lb/hr
C_i	=	Concentration of i in stack gas, ppmdv
MW_i	=	Molecular weight of i = 46.01 for NO_2 = 28.01 for CO = 64.06 for SO_2 = 44.10 for propane
Q_{sd}	=	Average flue gas flow rate, dscfm
C_{7i}	=	Concentration of gas i corrected to 7% O_2
C_{12i}	=	Concentration of gas i corrected to 12% CO_2
$\%O_2$	=	Actual gas concentration of O_2, % dry volume
$\%CO_2$	=	Actual gas concentration of CO_2, % dry volume
0.84948	=	Molar volume of ideal gas, ft^3/mole
453.593	=	grams per pound
10^6	=	parts per million
60	=	minutes per hour

Appendix G

Field Equipment Calibration Data



VISIBLE EMISSIONS EVALUATOR

James Stultz

This is to certify that the above named observer has met the specifications of Federal Reference Method 9 and is qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates, Inc. of Raleigh, N.C.

This certificate is valid for six months from date of issue.

402637	**STU705534**
Certificate Number	Student ID Number
3/21/2012	**Richmond, VA**
Date of Certification	Location
9/20/2012	**RICS12**
Certification Expiration Date	Last Lecture

Marty Hughes
Director of Training

The Air Compliance Group, LLC
EPA Method 5
Meter Box Calibration
Pre-Test Orifice Method

Meter Box # 19
Date: 07/02/12

Barometric Pressure: 28.980 (in. Hg)
Theoretical Critical Vacuum: 13.67 (in. Hg)
Calibration Technician: MSH

DRY GAS METER READINGS

ΔH (in H2O)	Time (min)	Volume Initial (ft^3)	Volume Final (ft^3)	Volume Total (ft^3)	Initial Temperature Inlet (deg F)	Initial Temperature Outlet (deg F)	Final Temperature Inlet (deg F)	Final Temperature Outlet (deg F)
0.34	5	294.834	296.426	1.592	91.0	91.0	91.0	91.0
0.34	5	296.426	298.008	1.582	91.0	91.0	91.0	91.0
0.76	5	298.008	300.341	2.333	91.0	91.0	92.0	91.0
0.76	5	300.341	302.670	2.329	92.0	91.0	92.0	91.0
1.2	5	302.670	305.711	3.041	92.0	91.0	93.0	91.0
1.2	5	305.711	308.786	3.075	93.0	91.0	93.0	92.0
2.2	5	308.786	312.816	4.030	93.0	92.0	93.0	92.0
2.2	5	312.816	316.833	4.017	93.0	92.0	94.0	92.0
4.2	5	316.883	322.257	5.374	94.0	92.0	95.0	92.0
4.2	5	322.257	327.690	5.433	95.0	92.0	95.0	92.0

CRITICAL ORIFICE READINGS

Orifice Serial# (number)	K' Orifice Coefficient	Actual Vacuum (in Hg)	Ambient Temperature Initial (deg F)	Ambient Temperature Final (deg F)	Ambient Temperature Average (deg F)	Average Temperature DGM Outlet (deg R)	Average Temperature DGM Overall (deg R)	Average Temperature Ambient Temp (deg R)
KV-40	0.2404	25.0	86.0	86.0	86.0	551.0	551.0	546.0
KV-40	0.2404	25.0	86.0	86.0	86.0	551.0	551.0	546.0
KV-48	0.3504	24.0	86.0	86.0	86.0	551.0	551.3	546.0
KV-48	0.3504	24.0	86.0	86.0	86.0	551.0	551.5	546.0
KV-55	0.4616	22.0	88.0	88.0	88.0	551.0	551.8	548.0
KV-55	0.4616	22.0	88.0	88.0	88.0	551.5	552.3	548.0
KV-63	0.6012	20.0	88.0	88.0	88.0	552.0	552.5	548.0
KV-63	0.6012	20.0	88.0	88.0	88.0	552.0	552.8	548.0
KV-73	0.8227	18.0	88.0	88.0	88.0	552.0	553.3	548.0
KV-73	0.8227	18.0	88.0	88.0	88.0	552.0	553.5	548.0

IMPORTANT:

For valid test results, the Actual Vacuum should be at least 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

The Air Compliance Group, LLC
EPA Method 5
Meter Box Calibration
Pre-Test Orifice Method

Meter Box # 19
Date: 07/02/12

Barometric Pressure: 28.98 (in. Hg)
Theoretical Critical Vacuum: 13.67 (in. Hg)
Calibration Technician: MSH

********** **RESULTS** **********

------ DRY GAS METER ------		---------- ORIFICE ----------		
VOLUME CORR. Vm(std) (ft^3)	VOLUME CORR. Vm(std) (liters)	VOLUME CORR. Vcr(std) (ft^3)	VOLUME CORR. Vcr(std) (liters)	VOLUME NOMINAL Vcr (ft^3)
1.478	41.9	1.491	42.2	1.592
1.469	41.6	1.491	42.2	1.592
2.168	61.4	2.173	61.5	2.321
2.163	61.3	2.173	61.5	2.321
2.826	80.0	2.857	80.9	3.063
2.855	80.9	2.857	80.9	3.063
3.750	106.2	3.721	105.4	3.989
3.736	105.8	3.721	105.4	3.989
5.019	142.1	5.092	144.2	5.459
5.071	143.6	5.092	144.2	5.459

------ DRY GAS METER ------			---------- ORIFICE ----------		
	CALIBRATION FACTOR			CALIBRATION FACTOR	
	"Y" Value (number)	Variation (number) [1]		"ΔH@" Value (in H2O)	Value (mm H2O)	Variation (in H2O) [2]
	1.0084	0.00		1.9968	50.72	0.0
	1.0148	0.01		1.9968	50.72	0.0
	1.0024	0.00		2.1010	53.36	0.1
	1.0046	0.00		2.1010	53.36	0.1
	1.0110	0.01		1.9185	48.73	-0.1
	1.0007	0.00		1.9168	48.69	-0.1
	0.9925	-0.01		2.0697	52.57	0.0
	0.9961	-0.01		2.0697	52.57	0.0
	1.0147	0.01		2.1101	53.60	0.1
	1.0041	0.00		2.1101	53.60	0.1
Average	1.0049	0.00	Average	2.0390	51.79	0.0

Average Y =	**1.0049**
Average ΔH@ =	**2.0390**
Pass/Fail?	**Pass**

Notes:

[1] For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ± 0.02. Variations shown have been rounded to nearest 0.01.

[2] For Orifice Calibration Factor ΔH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 deg F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is ± 0.2. Variations shown have been rounded to nearest 0.1.

QA/QC Performed By: Kiau Vyhaan **Date:** 07/16/12

The Air Compliance Group, LLC
EPA Method 5
Meter Box Calibration
Post-Test Orifice Method

Meter Box # 19
Date: 8/15/2012

Barometric Pressure: 28.900 (in. Hg)
Theoretical Critical Vacuum: 13.63 (in. Hg)
Calibration Technician: MSH

---------- DRY GAS METER READINGS ----------

ΔH	Time	Volume Initial	Volume Final	Volume Total	Initial Temperature		Final Temperature	
					Inlet	Outlet	Inlet	Outlet
(in H2O)	(min)	(ft^3)	(ft^3)	(ft^3)	(deg F)	(deg F)	(deg F)	(deg F)
2.20	5.0	115.520	119.517	3.997	79.0	78.0	79.0	78.0
2.20	5.0	119.517	123.504	3.987	79.0	78.0	80.0	78.0
2.20	5.0	123.504	127.492	3.988	80.0	78.0	81.0	79.0

---------- CRITICAL ORIFICE READINGS ----------

Orifice		Actual	Ambient Temperature			Average Temperature		
						DGM	DGM	Ambient
Serial#	K' Orifice	Vacuum	Initial	Final	Average	Outlet	Overall	Temp
(number)	Coefficient	(in Hg)	(deg F)	(deg F)	(deg F)	(deg R)	(deg R)	(deg R)
KV-63	0.6012	20.0	77.0	77.0	77.0	538.0	538.5	537.0
KV-63	0.6012	20.0	77.0	77.0	77.0	538.0	538.8	537.0
KV-63	0.6012	20.0	77.0	77.0	77.0	538.5	539.5	537.0

IMPORTANT:

For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

The Air Compliance Group, LLC
EPA Method 5
Meter Box Calibration
Post-Test Orifice Method

Meter Box # 19 | Barometric Pressure: 28.90 (in. Hg)

Date: 08/15/12 | Theoretical Critical Vacuum: 13.63 (in. Hg)

Calibration Technician: MSH

********** **RESULTS** **********

------ DRY GAS METER ------		---------- ORIFICE ----------		
VOLUME CORR. Vm(std) (ft^3)	VOLUME CORR. Vm(std) (liters)	VOLUME CORR. Vcr(std) (ft^3)	VOLUME CORR. Vcr(std) (liters)	VOLUME NOMINAL Vcr (ft^3)
3.805	107.8	3.749	106.2	3.949
3.794	107.4	3.749	106.2	3.949
3.790	107.3	3.749	106.2	3.949

------ DRY GAS METER ------		---------- ORIFICE ----------		
CALIBRATION FACTOR		CALIBRATION FACTOR		
"Y" Value (number)	Variation (number)	"ΔH@" Value (in H2O)	Value (mm H2O)	Variation (in H2O)
0.9852	-0.002	2.0867	53.00	0.001
0.9881	0.001	2.0867	53.00	0.001
0.9893	0.002	2.0848	52.95	-0.001

Average $Y_{(post)}$ 0.9875 | Average dH@ $_{(post)}$ 2.0861 | 52.99

Calibration Factor Gamma (Y):	**1.0049**
Post Test Avg. Gamma ($Y_{(post)}$):	**0.9875**
Variation:	**0.0174**
5% of Y:	**0.0502**
Variation ≤ 5% of Y?	**Yes**

Note:

The Variation [absolute value of the Calibration Factor Gamma (Y) minus the Post Test Average Gamma ($Y_{(post)}$)] must be less than or equal to 5% of Calibration Factor Gamma (Y).

QA/QC Performed By: Kevin Vyhanan **Date:** 8/17/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Stack Temp.

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (%)
1	0	0	0.0
2	32	32	0.0
3	100	101	0.2
4	212	213	0.1
5	300	303	0.4
6	400	402	0.2
7	500	503	0.3
8	600	601	0.1
9	700	700	0.0
10	800	803	0.2
11	900	903	0.2

Average[b]	**0.2**
Pass/Fail ?	**Pass**

a Difference, % (Based on degrees Rankin):

$$\text{Absolute Difference} = \frac{|(\text{Ref. Temp.} + 460) - (\text{TC Temp.} + 460)|}{\text{Ref. Temp.} + 460} \times 100$$

b Average Absolute Difference must be ≤ 1.5%.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhnanek Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Aux. (High)

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (%)
1	0	1	0.2
2	32	33	0.2
3	100	100	0.0
4	212	212	0.0
5	300	302	0.3
6	400	403	0.3
7	500	500	0.0
8	600	600	0.0
9	700	701	0.1
10	800	800	0.0
11	900	901	0.1

Average[b]	**0.1**
Pass/Fail ?	**Pass**

a Difference, % (Based on degrees Rankin):

$$\text{Absolute Difference} = \frac{\text{I (Ref. Temp.+ 460) - (TC Temp.+ 460) I}}{\text{Ref. Temp. + 460}} \times 100$$

b Average Absolute Difference must be ≤ 1.5%.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhnanek Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Impinger Exit / XAD Condenser

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (°F)
1	0	0	0
2	10	10	0
3	20	20	0
4	32	32	0
5	40	41	1
6	50	51	1
7	60	60	0
8	68	68	0

Average	**0**
Pass/Fail ?	**Pass**

(a) Absolute Difference must be ≤ 2°F.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Upchurch Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Aux. (Low)

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (°F)
1	0	0	0
2	10	10	0
3	20	20	0
4	32	32	0
5	40	40	0
6	50	50	0
7	60	60	0
8	68	68	0
9	80	80	0
10	90	91	1
11	100	100	0

Average	**0**
Pass/Fail ?	**Pass**

(a) Absolute Difference must be ≤ 2°F.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhnanek Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Meter Inlet

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (°F)
1	0	0	0
2	32	32	0
3	50	50	0
4	68	68	0
5	80	80	0
6	90	90	0
7	100	101	1
8	110	111	1
9	120	120	0
10	130	131	1
11	140	140	0

Average	**0**
Pass/Fail ?	**Pass**

(a) Absolute Difference must be ≤ 5.4°F.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhanan Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Meter Outlet

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (°F)
1	0	2	2
2	32	33	1
3	50	53	3
4	68	69	1
5	80	82	2
6	90	90	0
7	100	100	0
8	110	112	2
9	120	120	0
10	130	132	2
11	140	141	1

Average	**1**
Pass/Fail ?	**Pass**

(a) Absolute Difference must be ≤ 5.4°F.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhanan Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Probe Heat

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (%)
1	0	1	0.2
2	32	33	0.2
3	100	103	0.5
4	212	212	0.0
5	300	305	0.7
6	400	405	0.6
7	500	506	0.6

Average[b]	**0.4**
Pass/Fail ?	**Pass**

a Difference, % (Based on degrees Rankin):

$$\text{Absolute Difference} = \frac{|(\text{Ref. Temp.} + 460) - (\text{TC Temp.} + 460)|}{\text{Ref. Temp.} + 460} \times 100$$

b Average Absolute Difference must be ≤ 1.5%.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhnanek Date: 7/19/2012

THERMOCOUPLE CALIBRATION DATA

Meter Box ID: 19 Date: 7/5/2012

Meter Box Thermocouple: Filter Heat

Reference Calibrator ID: T-259402

Reference Calibrator Model: HH-20-CAL

Reference Calibrator Type: K

Reference Point	Reference Temperature (°F)	Thermocouple Temperature (°F)	Absolute Difference[a] (%)
1	0	2	0.4
2	32	33	0.2
3	100	102	0.4
4	212	215	0.4
5	300	304	0.5
6	400	406	0.7
7	500	506	0.6

Average[b]	**0.5**
Pass/Fail ?	**Pass**

a Difference, % (Based on degrees Rankin):

$$\text{Absolute Difference} = \frac{|(\text{Ref. Temp.} + 460) - (\text{TC Temp.} + 460)|}{\text{Ref. Temp.} + 460} \times 100$$

b Average Absolute Difference must be ≤ 1.5%.

Calibration Performed By: MSH Date: 7/5/2012

QA/QC Check Performed By: Kevin Vyhnanek Date: 7/19/2012

The Air Compliance Group, LLC
Post-Test Thermocouple System Calibration Form

Date: 08.08.12 Job ID: Feathercrest Farm (Winterbottom)

Performed By: MRW Contract No.: V12966

Reference Thermometer ID: ASTM T

Meter Box ID: 19

Probe Stack TC ID: ~~N/A~~ PF 335

Umbilical ID: PV MB-2

Meter Inlet TC ID: DGM IN

Meter Outlet TC ID: DGM OUT

Reference Temp. (°F)[1]	Post-Test Temp. (°F)	Difference (°F)[2]
80	Probe Stack TC 81	1
80	Meter Inlet TC 78	2
80	Meter Outlet TC 80	0

Acceptance Criteria

[1] Must be at ambient temperature, or any other temperature, within the range specified by the manufacturer.

[2] Must meet the following temperature differences:

Probe Stack TC	must be within ± 2°F of the reference temperature.
Meter Inlet TC	must be within ± 2°F of the reference temperature.
Meter Outlet TC	must be within ± 2°F of the reference temperature.

QA/QC Performed By: KV **Date:** 8/8/12

ACG Field Nozzle Calibration Form

Project ID: V12966 Facility ID: Feathercrest Farm

Date: 8/7/2012 Technician: KMH

Nozzle Identification Number	Nozzle Diameter[a]			ΔD,[b] mm (in.)	D_{avg}[c]
	D_1, mm (in.)	D_2, mm (in.)	D_3, mm (in.)		
Fused Liner 1	0.643	0.645	0.643	0.002	0.644

where:

[a] $D_{1, 2, 3,}$ = three different nozzles diameters, mm (in.); measure to the nearest 0.025 mm (0.001 in.)

[b] ΔD = maximum difference between any two diameters, mm (in.), ΔD #(0.10 mm) 0.004 in.

[c] D_{avg} = average of D_1, D_2, and D_3.

TYPE S PITOT TUBE INSPECTION DATA FORM

PITOT TUBE ID	335	DATE	7/9/2012

	yes	no	
PITOT TUBE ASSEMBLY LEVEL?	X		
PITOT TUBE OPENINGS DAMAGED?		X	if yes, see Note A

alpha1	0	< 10º	alpha2	0	< 10º
beta1	1	< 5º	beta2	1	< 5º
z	0	< 0.32 cm	w	0	< 0.08 cm
Pa	1.25	= Pb	Pb	1.25	= Pa
Dt	0.95	0.48 - 0.95 cm	Pa = Pb = [1.05 - 1.50] x Dt		

Note A

Other comments

	yes	no
CALIBRATION REQUIRED?		X

IF NO CALIBRATION REQUIRED, BY DEFAULT PITOT COEFFICIENT (Cp) = 0.84

INSPECTED BY: MSH

QA/QC Performed By: Kim Vyhnan Date: 7/20/2012

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI77E15AC592	Reference Number:	54-124298776-2
Cylinder Number:	CC360819	Cylinder Volume:	152 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12012	Valve Outlet:	590
		Analysis Date:	Jan 17, 2012

Expiration Date: Jan 17, 2015

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	10.60 %	10.34 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	12.01 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO2	06120403	CC185079	19.66% CARBON DIOXIDE/NITROGEN	May 01, 2016
NTRM/O2	06120209	CC195927	20.9% OXYGEN/NITROGEN	Dec 01, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Dec 26, 2011
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Dec 26, 2011

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI60E15A2996	Reference Number:	54-124300985-6
Cylinder Number:	SG9168322BAL	Cylinder Volume:	159 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12012	Valve Outlet:	590
		Analysis Date:	Jan 27, 2012

Expiration Date: Jan 27, 2015

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	19.00 %	18.74 %	G1	+/- 1% NIST Traceable
OXYGEN	21.00 %	21.01 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO2	06120403	CC185079	19.66% CARBON DIOXIDE/NITROGEN	May 01, 2016
NTRM/O2	06120209	CC195927	20.9% OXYGEN/NITROGEN	Dec 01, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO2-1 HORIBA VIA-510 V1E3H7P5	NDIR	Jan 26, 2012
O2-1 HORIBA MPA-510 3VUYL9NR	Paramagnetic	Jan 27, 2012

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0302	Reference Number:	54-124243013-3
Cylinder Number:	SG9150389BAL	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12010	Valve Outlet:	350
		Analysis Date:	Nov 30, 2010

Expiration Date: Nov 30, 2013

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	50.00 PPM	50.29 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO	05120311	CC180115	49.33PPM CARBON MONOXIDE/NITROGEN	Feb 02, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nexus 470 AEP0000428	FTIR	Nov 03, 2010

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0077	Reference Number:	54-124285074-1
Cylinder Number:	CC96169	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12011	Valve Outlet:	350
		Analysis Date:	Oct 13, 2011

Expiration Date: Oct 13, 2014

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	100.0 PPM	99.74 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO	09060522	CC280707	98.88PPM CARBON MONOXIDE/NITROGEN	Feb 01, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
CO-1 HORIBA VIA-510 TKPPF7FG	NDIR	Sep 26, 2011

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

CERTIFICATE OF ANALYSIS

NITROGEN - CEM-CAL ZERO

Part Number:	NI CZ300	Reference Number:	40-111981948-7
Cylinder Analyzed:	T234155	Cylinder Volume:	304 Cubic Feet
Laboratory:	MID - Saint Louis SGL (SAP) - MO	Cylinder Pressure:	2640 PSIG
Analysis Date:	Jan 13, 2012	Valve Outlet:	580
Lot #:	40-111981948-7		

Expiration Date: Jan 13, 2015

ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
NitrogenCEM	99.9995%	99.9995%
CARBON DIOXIDE	<1.0 PPM	<LDL0.12 PPM
Moisture	<1.0 PPM	0.121 PPM
NOx	<0.1 PPM	< 0.1 PPM
SO2	<0.1 PPM	< 0.1 PPM
THC	<0.1 PPM	0.03 PPM
CARBON MONOXIDE	<0.5 PPM	<LDL0.12 PPM
Oxygen	<0.5 PPM	0.49 PPM

Permanent Notes:

Airgas certifies that the contents of this cylinder meet the requirements of 40 CFR 72.

Notes:

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature On File

Approved for Release

GAS ANALYZER CALIBRATION ERROR \ SYSTEM BIAS \ DRIFT DATA

FEATHERCREST FARM
INCINERATOR OUTLET
August 7, 2012

Calibration Error Data
(± 2% of Span Allowable for EPA Methods 3A, 6C, 7E, and 10)
(± 5% of Gas Value Allowable for EPA Method 25A)

Analyzer	Span Value (% or ppm)	Cal Gas Concentration (% or ppm)			Analyzer Response (% or ppm)			Absolute Difference (% or ppm)			Calibration Error (% of span)		
		Zero	Mid	High	Zero	Mid	High	Zero	Mid	High	Zero	Mid	High
O2	21.01	0	12.01	21.01	-0.03	12.12	20.84	0.03	0.11	0.17	-0.14	0.52	-0.81
CO2	18.74	0	10.34	18.74	-0.03	10.39	18.50	0.03	0.05	0.24	-0.16	0.27	-1.28
CO	99.74	0	50.29	99.74	-0.88	50.02	100.30	0.88	0.27	0.56	-0.88	-0.27	0.56

System Bias and Drift Data
(± 5% of Span Allowable for System Bias and ± 3% of Span Allowable for Drift)

Run I.D.: B1-CEMS-R1		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
	O2	0.02	11.97	-0.05	11.99	0.24	-0.71	-0.10	-0.62	0.33	0.10
	CO2	0.14	10.31	0.14	10.42	0.91	-0.43	0.91	0.16	0.00	0.59
	CO	0.25	49.85	-0.18	49.98	1.13	-0.17	0.70	-0.04	0.43	0.13

Run I.D.: B1-CEMS-R2		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
	O2	-0.05	11.99	-0.01	11.97	-0.10	-0.62	0.10	-0.71	0.19	0.10
	CO2	0.14	10.42	0.08	10.24	0.91	0.16	0.59	-0.80	0.32	0.96
	CO	-0.18	49.98	-0.18	49.99	0.70	-0.04	0.70	-0.03	0.00	0.01

Run I.D.: B1-CEMS-R3		System Calibration Response (% or ppm)				System Calibration Bias (% of span)				Drift (% of span)	
		Initial		Final		Initial		Final			
	Analyzer	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale	Zero	Upscale
	O2	-0.01	11.97	-0.04	12.00	0.10	-0.71	-0.05	-0.57	0.14	0.14
	CO2	0.08	10.24	0.07	10.31	0.59	-0.80	0.53	-0.43	0.05	0.37
	CO	-0.18	49.99	-0.38	49.04	0.70	-0.03	0.50	-0.98	0.20	0.95

Model 601
CO Interference Data

Interference Response

Date of Test 6/28/2006

Analyzer Type CO
Model No. 602
Serial No. T06034-M

Calibration Span 3000ppm

Test Gas Type		Concentration (ppm)		Analyzer Response	
				Wet	Dry
H2O		2.5%		-5	0
CO2		5%		-6	-1
CO2		15%		-7	-2
CO		N/A		N/A	N/A
CH4		50		-5	0
SO2		20		0	0
NH3		15		0	0
NO		13		-5	0
N2O		11		-3	2
NO2		9		-4	2

Model 602
CO_2 Interference Data

Interference Response

Date of Test	6/28/2006
Analyzer Type	CO2
Model No.	602
Serial No.	T04050
Calibration Span	10%

Test Gas Type		Concentration		Analyzer Response	
		(ppm)		Wet	Dry
H2O		2.5%		0.01	0
CO		50		0	0
CH4		50		0.01	0
SO2		20		0	0
NH3		15		0	0
NO		13		0.01	0
N2O		11		0.02	0.01
NO2		9		0.01	0

10. MAINTENANCE

Warning

All replacement parts must be as supplied and/or specified by California Analytical Instruments. Failure to used specified parts may reduce the safety features of the instrument or create a hazardous condition.

10.1. Zero and Span Calibration

The zero and span levels should be checked and/or calibrated daily (or as often as required.)

Note: On the 0-25% range of the analyzer ambient air may be used as span gas. While flowing ambient air to the analyzer adjust the span potentiometer to 20.9% O2.

10.2. Routine Maintenance:

Prepare and check the sample system. Adjust the flow of sample gas to about 1 L/min. The instrument should show a meter indication. The paramagnetic oxygen analyzer is designed for extended operation and may be left switched ON continuously.

10.3. Cross sensitivity of gases

The paramagnetic measuring principle is based on the very high magnetic susceptibility of oxygen. In comparison to oxygen, other gases have such a minor susceptibility that most of them are insignificant. Exceptions to this are the nitrogen oxides. However, as these gases are in most cases present in a very low concentration, the error is still negligible.

10.3.1. Example 1

The residual oxygen percentage is measured in a closed carbon dioxide (CO_2) atmosphere. The "zero calibration" is done by means of nitrogen (N_2).-0.1080
According to the list of cross-sensitivities, the error for 100 % CO_2 at 20° C is 0.27%. In order to obtain a higher accuracy, this means that for the zero calibration the reading should be adjusted at +0.27% with N_2, in order to compensate the error of CO_2.
Since the values of cross-sensitivities are based on 100% volume of that particular gas, the error at 50% by volume CO_2 and 50% by volume N_2 is 0.135%.

10.3.2. Example 2
Given the following gas composition at a temperature of 20° C:

5% volume Oxygen (O_2)	$+100.00 \times 10^{-2} \times 5 = +5.0000$
40% volume Carbon Dioxide(CO_2)	$-0.27 \times 10^{-2} \times 40 = -0.1080$
1% volume Ethane(C21-14)	$-0.43 \times 10^{-2} \times 1 = -0.0043$
54% volume Nitrogen (N2)	$0.00 \times 10^{-2} \times 54 = 0.0000$
Gives a reading (% by volume) of:	+4.8877

As this example shows, the total error (5.000 minus 4.8877) is 0.1123.

Note: see Table 4-1 below for cross sensitivity values of typical gases.

Table 4-1 Cross Sensitivity of gases

All values based on nitrogen 0% / oxygen 100%

Gas	Formula	20 °C	50 °C
Argon	Ar	-0.23	-0.25
Acetylene	C_2H_2	-0.26	-0.28
Acetone	C_3H_60	-0.63	-0.69
Acetaidehyde	C_2H_4O	-0.31	-0.34
Ammonia	N_3	-0.17	-0.19
Benzene	C_6H_4	-1.24	-1.34
Bromine	Br_2	-1.78	-1.97
Butadiene	C_4H_6	-0.85	-0.93
Isobutylene	$(CH_3)2CH=CH_2$	-0.94	-1.06
n-Butane	C_4H_{10}	-1.10	-1.22
Chlorine	CL_2	-0.83	-0.91
Hydrogen Chloride	HCL	-0.31	-0.34
Nitrous Oxide	N_2O	-0.20	-0.22
Diacetylene	$(CHCl)_2$	-1.09-	-1.20
Ethane	C_2H_4	-0.43	-0.47
Ethylene Oxide	$C_2H_4O_2$	-0.54	-0.60
Ethylene	C_2H_4	-0.20	-0.22
Ethylene Glycol	CH_2OHCH_2OH	-0.78	-0.88
Ethylbenzene	C_8H_{10}	-1.89	-2.08
Hydrogen Fluoride	HF	+0.12	+0.14
Furan	C_4H_40	-0.90	-0.99
Helium	He	+0.29	+0.32
n-Hexane	C_6H_{14}	-1.78	-1.97
Krypton	Kr	-0.49	-0.54
Carbon Monoxide	CO	-0.06	-0.07
Carbon Dioxide	CO_2	-0.27	-0.29
Methane	CH_4	-0.16	-0.17
Methanol	CH_4O	-0.27	-0.31
Methylene Chloride	CH_2Cl_2	-1.00	-1.10
Neon	Ne	+0.16	+0.17
n-Octane	C_8H_{18}	-2.45	-2.70
Phenol	C_6H_6O	-1.40	-1.54
Propane	C_3H_8	-0.77	-0.85
Propylene	C_3H_6	-0.57	-0.62
Propene	$CH_3CH=CH_{12}$	-0.58	-0.64
Propylene Oxide	C_3H_6O	-0.90	-1.00
Propylene Chloride	C_3H_7Cl	-1.42	-1.44
Silane	SiH_4	-0.24	-0.27
Styrene	$C_7H_6=CH_2$	-1.63	-1.80
Nitrogen	N_2	-0.00	-0.00
Nitrogen Monoxide	NO	+42.70	+43.00
Nitrogen Dioxide	NO_2	+5.00	+16.00
Oxygen	O_2	+100.00	+100.00
Sulfur Dioxide	SO_2	-0.18	-0.20
Sulfur Fluoride	SF_6	-0.98	-1.05
Hydrogen Sulfide	H_2S	-0.41	-0.43
Toluene	C_7H_8	-1.57	-1.73
Trichloroethylene	C_2HCl_3	-1.56	-1.72
Vinyl Chloride	C_2H_3Cl	-0.68	-0.74
Vinyl.Fluoride	CH_3F	-0.49	-0.54
Water	H_2O	-0.03	-0.03
Hydrogen	H_2	+0.23	+0.26
Xenon	Xe	-0.95	-1.02

Appendix H

Facility Operating Data and Manufacturer Specifications

Facility Data

Feathercrest Farms, Inc.

Broadway, Va

Accumulated Run Time (minutes)	Secondary Chamber Temperature (deg. F)	Material Weight Throughput	Test Date
0	1796	272 lbs	August 7, 2012
15	1800		
30	1786		
45	1800		
60	1783		
75	1820		
90	1830		
105	1814		
120	1798		
135	1790		
150	1800		
165	1798		
180	1804		
195	1793		
210	1800		
225	1805		
240	1810		
255	1808		
270	1801		
285	1790		
300	---		
AVG.	1801	54 lb/hr	

Note: The data was recorded over a 5-hour block of total cremation time during pollutant testing.

DEMPSEY STEEL PIPE CO.
511 RT. 17K (COLDENHAM) — WALDEN NY 12586
(845) 564-1230 FAX: (845) 564-1232
www.dempseysteelpipe.com

Aug 7 - Featherones 8 — 2762# lbs

Time	Temp
0:00	1796
15:00	1800
30:00	1786
45:00	1800
60:00	1783
75:00	1820
90:00	1830
1:45	1814
2:00	1798
2:15	1790
2:30	1808
2:45	1798
3:00	1804
3:15	1793
3:30	1800
3:45	1805
4:00	1810

Time	Temp
4:15	1808
4:30	1801
4:45	1790
5:00	

Box Water bottom
Secondary Temp -
Featherones 8/7/2012

FIRELAKE MANUFACTURING

Model C12-400

SMALL ANIMAL CREMATORY

LOW COST!

The next generation...
from a leading maker of Animal Crematories

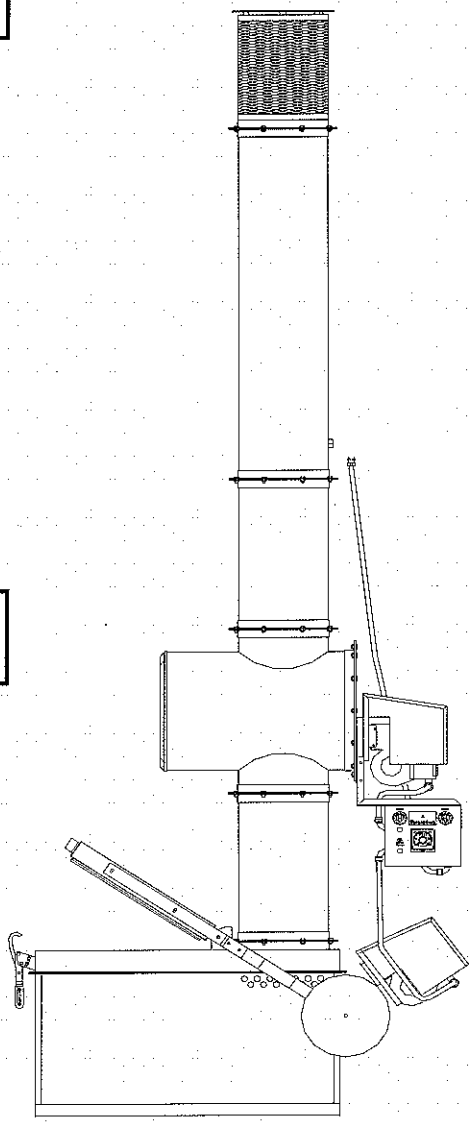
All the features you've been looking for!

- Single batch load capacity up to 400 lbs. of carcass.
- Easy loading 30 in. height for heavy animals.
- No visible emissions or odors; EPA compliance.
- Save fuel... Temperature Controller cycles primary burner on/off.
- Easy to use... Set timers and walk away.
- Thick high temperature refractory lining throughout... Extends equipment life.
- Available with either Natural Gas or LPG burners.

LOWEST EQUIPMENT OPERATING COST IN THE INDUSTRY!

Designed specifically for...
Veterinarians
Humane Societies
Small Animal Control

Distributed By:



C12-400

Firelake Mfg. LLC
919 Cottontail Trail
Mt. Crawford, VA 22841

Phone: 866-252-3757
Fax: 866-252-3877
www.firelakeincinerators.com

Benefits and Features of the C12-400

Fast, complete, efficient waste disposal

- ⇨ Concave refractory bottom specifically designed to insure burnout and total destruction of liquid wastes.
- ⇨ Secondary chamber and insulated, refractory-lined stacks for emissions control.

Minimum installation and start-up time

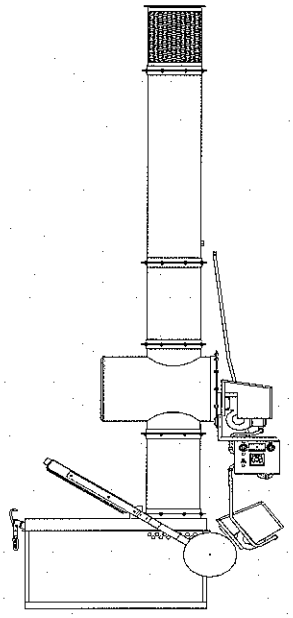
- ⇨ Factory assembled, aluminized steel jacket lined with high-temperature refractory.
- ⇨ Recorders and accessory equipment available.

Easy and safe operation

- ⇨ Counter-balanced fill door.
- ⇨ Timer control system for each burner provides preset burn times and automatic shut off.

Low energy consumption levels

- ⇨ Temperature control maintains temperature, assuring complete combustion while conserving fuel.
- ⇨ Choice of fuels: LP or natural gas.



C12-400

Specifications Summary

C12-400-LP Propane-Fired Cremation System complete with two burners, secondary chamber, stack, timers, and temperature control
C12-400-N Natural Gas-Fired Cremation System complete with two burners, secondary chamber, stack, timers, and temperature control

WASTE CHAMBER			
Chamber capacity (Type 4 waste-pathological)		400 lbs	181 kg
Chamber volume (approximate)		12 cu. ft.	3.7 cu. m.
Chamber size (outside)	Width	36"	91 cm
	Height	34"	86 cm
	Length	48"	122 cm
Door opening		22" x 29"	56 cm x 74 cm
Height to door		30"	76 cm
Height to top of secondary chamber		7'-1"	2.2 m
Overall dimensions (w/stack)		16'H x 53"Wx 61"W	4.9m x 135 cm x 155cm
Suggested slab size (l x w x thick)		10' x 12' x 6"	3.0 m x 3.7m x 15cm
STACK			
Dimensions (OD)		14"	36 cm
Material		14 gauge Aluminized Steel Jacket, refractory lined	
REFRACTORY THICKNESS			
	Primary	3.0"(2800F)	7.6 cm
	Secondary	1.5"(2800F)	3.8 cm
	Stack	1.5"(2800F)	3.8 cm

	C12-400-LP	C12-400-N
APP. FUEL CONSUMPTION	**LP**	**NATURAL GAS**
Upper burner	4.1 GPH	392 CFH
Lower burner	3.0 GPH (1.5 GPH*)	275 CFH (138 CFH*)
APPROXIMATE BTUH		
Upper burner	414,000	415,000
Lower burner	275,000	275,000

INSTALLATION
Must be installed in accordance with local codes and ordinances, subject to regulatory agencies. Outside installation is recommended with a simple metal roof or three-sided metal shelter, providing a minimum of four foot clearance from any combustible roof materials. Minimum of 18" clearance is required for penetration of combustible roof materials. Inside installations may have special insurance requirements. Factory must be advised.

GENERAL
Electrical service
Standard – 115 volt, 60 HZ, 20 amp
Also available – 220 volt, 50 HZ, 10 amp

BURNERS
LP or Natural gas burner with spark ignition and flame safety shut-off.

OPERATION
2 manual timers

TOTAL WEIGHT
3000 lbs. (approximate) 1361 kg

*Approximate reduced fuel consumption of lower burner is a result of burner cycling on & off.

* Fuel consumption approximate. Actual fuel use depends on BTU content of waste. Consult factory for retention times or special requirements

Firelake Mfg. LLC
919 Cottontail Trail
Mt. Crawford, VA 22841

Phone: 866-252-3757
Fax: 866-252-3877
www.firelakeincinerators.com

Appendix I

Copy of Approved Protocol

The Air Compliance Group, LLC

Virginia Office
5075 Hollins Road
Roanoke, VA 24019
Phone: (540) 265-1987
Fax: (540) 265-0082

Test Protocol for Emissions Testing to be Conducted on one Animal Crematory Unit at Fieldcrest Farm, Inc. in Broadway, VA

Prepared for

Robert J. Winterbottom, Inc.
Laurel, MD

Tentative Test Dates: June – July, 2012
Protocol Date: June 8, 2012

ACG Contract Number V12966

The Air Compliance Group, LLC

TEST PROTOCOL CERTIFICATION

Air Emissions Test Protocol for Testing to be Conducted at Feathercrest Farm, Inc.

Prepared by the Virginia Office of The Air Compliance Group, LLC Located in Roanoke, VA,
For: Robert J. Winterbottom, Inc.
Located in Mt. Crawford, VA

Date of Test Protocol: June 08, 2012
Protocol Issued for ACG Contract Number: V12966

I certify that, to the best of my knowledge, the state and federal regulations applicable to each source to be tested have been reviewed, and that all testing requirements therein have been incorporated into the test protocol.

Signature . . . . . *Date* . .06/08/2012. . . . . .

Arthur B. Nunn, III
President
The Air Compliance Group, LLC

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1.0 Introduction

1.1 Source Information

1.1.1 Name: Feathercrest Fram, Inc.

1.1.2 Address: 9670 Harpine Highway
Broadway, VA 22815

1.1.3 Source Contact: Mr. Robert J. Winterbottom
7101 Redmiles Road
Laurel, MD 20707
(410) 792-2590
robertjwinterbottom@gmail.com (e-mail)

1.2 Testing Firm Information

1.2.1 Name: The Air Compliance Group, LLC (ACG)

1.2.2 Address: 5075 Hollins Road
Roanoke, Virginia 24019

1.2.3 Primary Contact: Frank Craighead
Project Manager
(540) 265-1987 ext. 251 (phone)
(540) 265-0082 (fax)
frank.craighead@aircompgroup.com (e-mail)

1.2.4 Secondary Contact: Tony Underwood
Vice President - Operations
(540) 265-1987 ext. 240 (phone)
(540) 265-0082 (fax)

2.0 Process Description

The Feathercrest Farm, Inc. facility plans to install and operate a Firelake Manufacturing, LLC animal crematory unit. This Model C12-400 unit has a rated capacity of 400 pounds-per batch (50 lbs/hr), and operates with a secondary chamber to insure complete combustion. No additional emission control equipment is associated with this unit. Emission limitations associated with this unit are as follows.

Parameter	**Emissions Limit**
Particulate Emissions / PM-10	0.10 gr/dscf @ 7% O_2
	0.56 tons/year
Carbon Monoxide (CO)	100 ppmvd (1-hr avg) @ 7% O_2
Visible Emissions	Max. 5% at any time during operation, except during unit malfunction

3.0 Test Program

An air emissions compliance test program will be conducted at the Feathercrest Farm, Inc. facility in Broadway, VA, on the Firelake Model C-12-400-LP small animal crematory unit. The crematory stack will be tested for total particulate matter, carbon monoxide, oxygen, and visible emissions (% opacity). Testing will be performed for the purpose of demonstrating compliance with the requirements of the permit (Registration No. 81323) issued for this facility on May 9, 2012 Testing is tentatively scheduled for the June or July, 2012..

It is planned that testing for visible emissions at the stack will be conducted concurrently with the particulate tests. Should weather conditions prevent concurrent opacity observations, the Visible Emissions testing will be performed as soon as possible after completion of stack emissions testing.

4.0 Sampling and Analytical Procedures

All sampling and analytical procedures will follow those recommended by the U.S. Environmental Protection Agency (EPA), Title 40, Part 60, Appendix A of the *Code of Federal Regulations* (40 CFR 60), or other methods approved by the Virginia Department of Environmental Quality. Specific methods to be used in sampling are outlined in Table 1.

Table 1 - Outline of Testing Program

Measurement	Test Location	Test Method	No. and Duration of Test Runs
Flowrate[(1)]	Crematory Exhaust Stack	EPA Methods 1 - 4	Three 60-minute runs.
Dry Molecular Weight of Flue Gas (Oxygen and Carbon Dioxide)		EPA Method 3A	
Total Particulate		EPA Method 5	
Carbon Monoxide		EPA Method 10	
Opacity		EPA Method 9	Thirty sets of twenty-four consecutive observations (at fifteen second intervals) to yield a six minute average.

[(1)] Velocity and moisture determinations will be made as part of the EPA Method 5 testing.

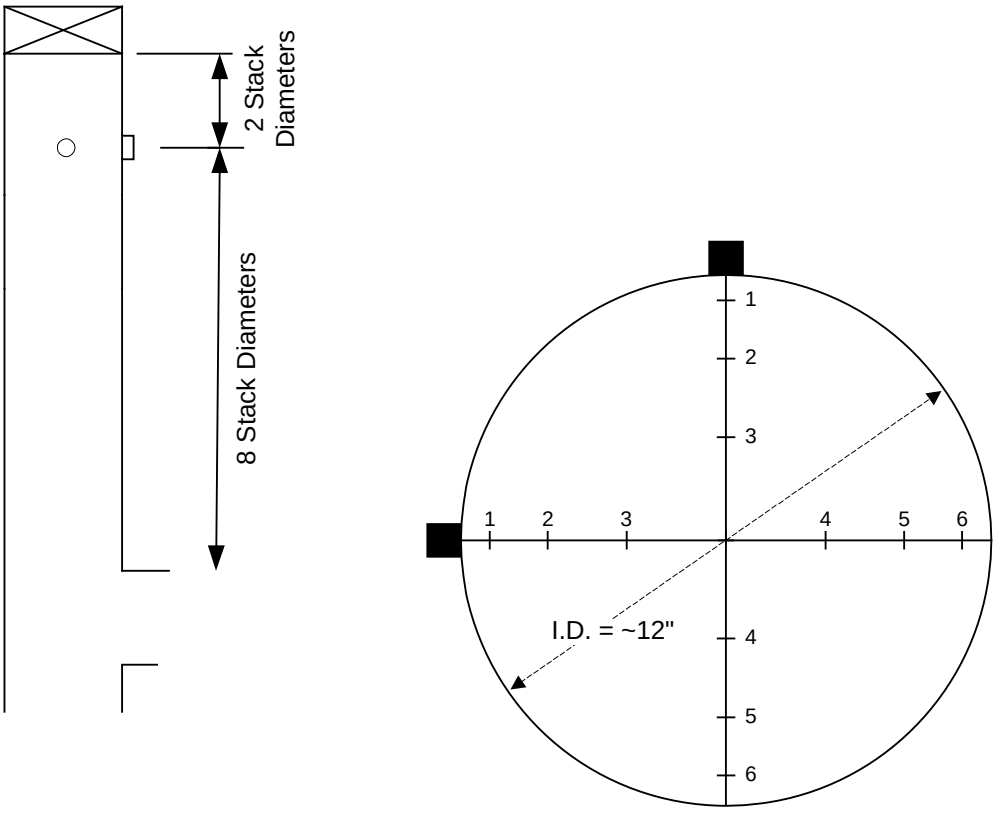
4.1 Sampling Procedures

4.1.1 Particulate and Velocity Sampling Point Determination - EPA Method 1

All particulate and velocity measurements will be conducted in accordance with EPA Method 1. The incinerator exhausts through a vertical round stack following the secondary chamber. Presented in Figure 1 is a diagram of the stack, with preliminary dimensions and sample/traverse point locations. All stack dimensions will be verified on-site, and traverse point locations will be modified, if necessary, in accordance with EPA Method 1 requirements. For Method 5 sampling, a total of 12 points will be sampled.

4.1.2 Sampling Point Determination for Gaseous Pollutant Testing All gaseous pollutant sampling will be conducted in the centroidal area in the exhaust stack, provided that the stack is not stratified. Otherwise, 3 points (located at 16.7, 50.0 and 83.3 percent across the stack) will be used if there is minimal stratification, and 12 points will be used (6 in each of the 2 ports) if the stack is stratified. Sampling will be conducted concurrently with flow-rate determinations for calculation of mass emissions rates. Sampling will be conducted for an equal amount of time at each sampling point.

4.1.3 Volumetric Measurements - EPA Method 2 EPA Reference Method 2 will be used to determine the velocity and volumetric flow rates of the stack gases. Stainless steel type-S pitot tubes will be used. The pitot tubes will be assigned a baseline coefficient of 0.84 in accordance with EPA Method 2.



Port depth is 3 inches.

Point	% of ID	DISTANCE FROM INSIDE OF PORT (inches)
1	4.4	0.5
2	14.6	1.8
3	29.6	3.6
4	70.4	8.4
5	85.4	10.2
6	95.6	11.5

INSIDE DIAMETER	12.0 in.	1.0 ft.
DISTANCE UPSTREAM FROM DISTURBANCE	96 in.	8.0 dia.
DISTANCE DOWNSTREAM FROM DISTURBANCE	24 in.	2.0 dia.

Figure 1 - Sampling and Traverse Points at the Crematory Stack

Calibrated type-K thermocouples will be used to determine gas temperatures. Velocity and temperature measurements will be made at the traverse points identified for each test location in conjunction with the pollutant sampling runs described below.

4.1.4 Molecular Weight Determination - EPA Method 3A It is planned that sampling to determine gas compositional measurements (O_2 and CO_2) for determining the average molecular weight of the stack gases will be performed instrumentally in accordance with EPA Reference Method 3A concurrently with the particulate testing. The Method 3A sampling will be conducted by obtaining integrated gas samples as part of the continuous emissions monitoring discussed in section 4.1.7.

4.1.5 Determination of Flue Gas Moisture Content - EPA Method 4 Flue gas moisture will be measured simultaneously with each of the pollutant tests according to the sampling and analytical procedures outlined in EPA Method 4 The flue gas moisture for each baghouse will be determined by gravimetric analyses of the water collected in the impinger condensers of the EPA Method 5 sampling trains. All impingers in the EPA Method 5 sampling trains will be contained in an ice bath throughout the testing to ensure complete condensation of the moisture in the flue gas.

4.1.6 Total Particulate Matter Sampling - EPA Method 5 Sampling for total particulate will be performed in accordance with EPA Method 5 of 40 CFR 60.

4.1.6.1 Sampling Train Description Figure 2 shows the major components of the Method 5 sampling train. A heated stainless steel probe with a glass liner will be used to withdraw the gas sample. The probe will be heated to 248^{o}F $\pm$ 25^{o}F, to prevent water condensation. The probe will be equipped with an appropriately sized stainless steel, glass or Teflon-lined stainless steel nozzle for isokinetic gas withdrawal.

From the nozzle and probe, sample gas will be pulled through a heated glass fiber filter, maintained at 248^{o}F $\pm$ 25^{o}F, and will subsequently pass through an impinger train consisting of four glass impingers immersed in an ice bath. The first and second impingers will each contain 100 milliliters of water. The third impinger will initially be empty, and the fourth will initially contain approximately 200 grams of silica gel.

4.1.6.2 Sampling Train Operation Sampling will be done in accordance with EPA Method 5 procedures and specifications, including leak checking, isokinetic sampling rate and stack traversing. Sampling will be conducted for 5 minutes at each of the 12 traverse points (see Figure 1). Each test run will have be for a duration of 60 minutes, excluding the time required to change ports, and a minimum sample volume of 31 dry standard cubic feet will be collected.

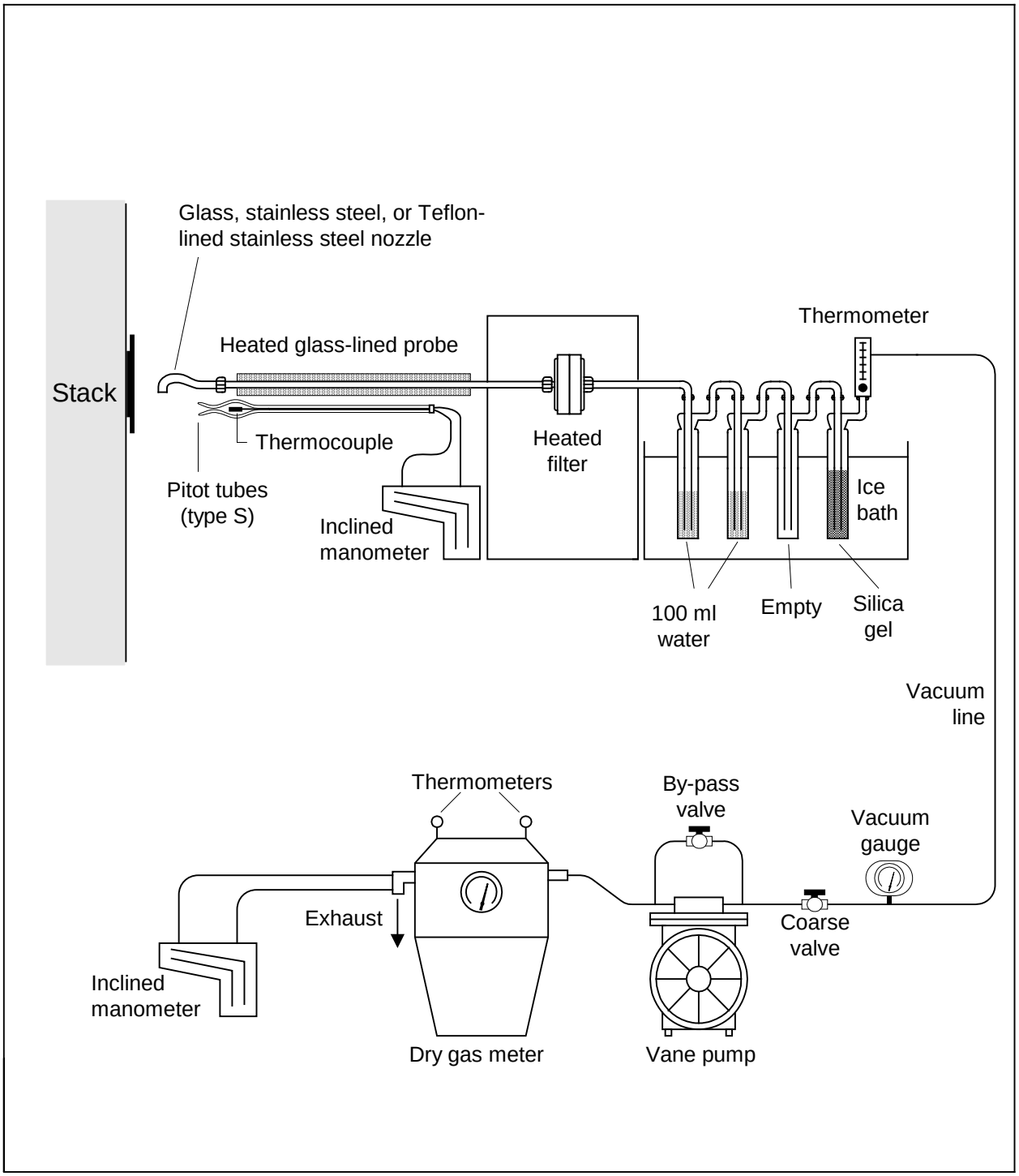


Figure 2 - EPA Method 5 Sampling Train

4.1.6.3 Sample Recovery and Clean-Up Recovery of the Method 5 sampling probe will be accomplished using a Nylon bristle or Teflon-fiber probe brush. The nozzle, probe and front-half filter housing will be rinsed with acetone three times each and brushed between rinses. The impinger contents will be volumetrically analyzed for moisture gain then discarded. Exposed filters will be placed in petri dishes. The silica gel from the fourth impinger will be transferred back to its original Nalgene container. The moisture collected in the sampling train will be quantified to determine the stack gas moisture content in accordance with the procedures specified in EPA Method 4.

4.1.6.4 Blank One blank will be collected during the test program for the particulate tests, consisting of an acetone sample from the reagent stock used for the testing.

4.1.7 Continuous Emissions Monitoring for O_2, CO_2, and CO - EPA Methods 3A, and 10 Instrumental monitoring of the stack gases will be performed as follows:

Gas	Reference Method	Instrument Type (or equivalent)	Approximate Instrument Span
O_2	Method 3A	CAI Model 600 Paramagnetic	21 $\%_{dv}$
CO_2	Method 3A	CAI Model 600 NDIR	20 $\%_{dv}$
CO	Method 10	CAI Model 600 NDIR	200 ppm_{dv}

All of the analyzers measure gas concentrations on a dry volume basis.

4.1.7.1 Sampling System Description An integrated, remote instrumental system housing the pollutant gas analyzers as well as the diluent gas (O_2 and CO_2) monitors

will be used. The design will incorporate an extractive system. The general sampling system description given below will be used. All of the instruments will be housed in a mobile laboratory located at ground level. Figure 3 provides a schematic of the sampling system(s).

Calibration gases used will be EPA Protocol 1 certified. Gas certification data will be available at the time of the tests, and certificates of analysis for all gases used will be included in the final test report.

The dry sampling system will consist of a heated stainless steel probe located at the stack test port. A heated glass fiber filter will be attached to the probe for particulate removal. A heated Teflon sample line will deliver the sample to an ice-cooled condenser designed to remove the flue gas moisture. An unheated Teflon sample line will transport the dry gas sample from the stack port location down to the instrumental system. The sample gas exiting the Teflon sample line will be pumped to the CO, CO_2 and O_2 monitors.

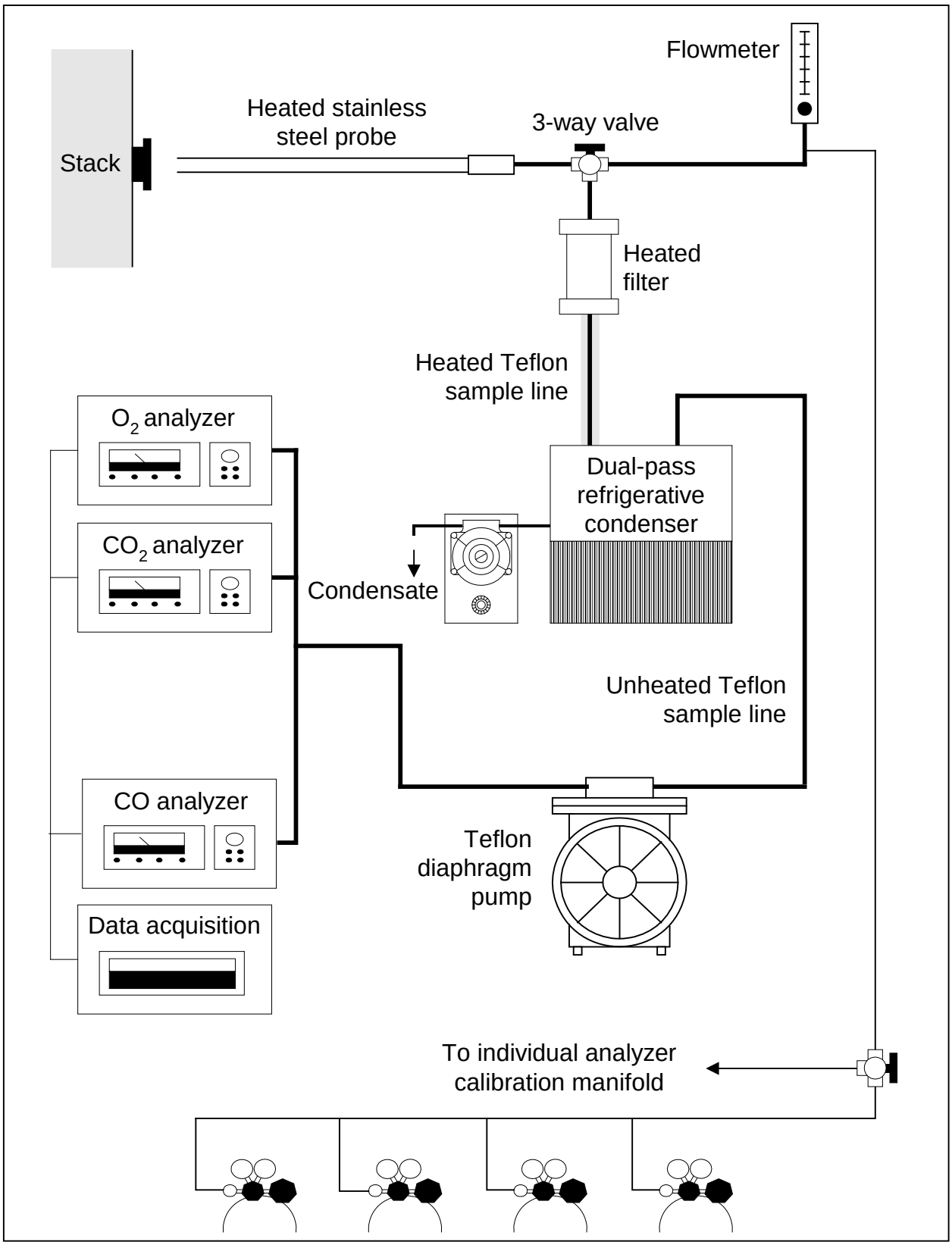


Figure 3 - Sampling and Analytical System for EPA Methods 3A and 10

4.1.7.2 Data Acquisition System The response outputs of the monitors will be recorded digitally by a Campbell Scientific Model CR10WP multichannel data-acquisition system. The system samples at a rate of 60 Hz and stores one-minute average values.

4.1.7.3 Dry System Calibration At the beginning of each test day, or as necessary, the O_2, CO_2, and CO monitors will be zeroed using zero nitrogen, and spanned using a certified calibration gas with a concentration equal to the instrument span. Following calibration, a mid-range gas (40 to 60 percent of the high level calibration gas) will be introduced to each monitor. The mid-range response error must not exceed two percent of the high calibration gas value, as required by the methods.

After calibrating the monitors, calibration gas will be introduced remotely through the probe to verify the absence of sampling system bias. The bias error must not exceed five percent of span, as required by the methods.

After each test run, zero nitrogen and an up-scale calibration gas will be introduced remotely through the sampling system to each monitor to check for calibration drift error. The calibration drift must not exceed three percent of span for all valid test runs.

4.1.8 Opacity Determination - EPA Method 9 The objective of the Method 9 test program will be to determine the opacity of visible emissions from the crematory stack. For each test, the certified observer will make thirty sets of twenty-four consecutive

observations (at fifteen second intervals) to yield a six minute average of the opacity of visible emissions. Testing will be conducted in accordance with the procedures of Appendix A of the U.S. Environmental Protection Agency (EPA) *Code of Federal Regulations*, Title 40, Part 60 (40 CFR 60).

4.1.8.1 Opacity Determination Procedure The visible emissions will be made by an observer who has been certified in accordance with EPA Method 9. The observer's certification documentation will be included in the compliance report.

4.1.8.2 Observer Position The observer will stand at a distance that provides a clear view of the emissions with the sun oriented in the 140^{o} sector to his back. In addition, the observer will make observations from a position at which the line of vision is approximately perpendicular to the plume direction.

4.1.8.3 Opacity Observations - EPA Method 9 Opacity observations will be made at the point of greatest opacity in the portion of the plume where condensed water vapor is not present. Opacity will be read at 15-second intervals. Readings will be made to the nearest 5 percent opacity with a minimum of 24 consecutive observations being recorded. Readings will be taken against a clearly visible background that gives the highest degree of contrast.

4.2 Analytical Procedures

4.2.1 Moisture Content - EPA Method 4 Moisture contents will be determined gravimetrically/volumetrically in accordance with Method 4 by measuring the volume or mass gain of each impinger in the pollutant or Method 4 sampling trains.

4.2.2 Particulate Matter Analyses - EPA Method 5 Particulate matter will be determined in accordance with EPA Method 5 procedures, using a VLAP Certified Laboratory The filter will be desiccated and analyzed gravimetrically to a constant weight. The front-half acetone rinse will be evaporated and analyzed gravimetrically to a constant weight. The total filterable particulate catch will equal the sum of the front-half acetone rinse and the filter.

4.3 Data Analysis Sample calculations related to the pollutant sampling, including gas flow rates, temperatures, percent isokinetics, and moisture content, are shown in Appendix A.

4.4 Equipment Calibration Field equipment will be calibrated in accordance with the requirements of the applicable EPA Methods.

Appendix A

Sample Calculations

EPA METHODS 2-4 CALCULATIONS

1. Metered Gas Sample Volume at Standard Conditions

$$V_{m(std)} = V_m \, x \, \gamma \, x \, \frac{528}{29.92} \, x \left[\frac{P_B + \frac{\Delta H}{13.6}}{T_m + 460} \right]$$

2. Gas Volume of Water Vapor Collected in Impinger Liquid

$$V_{WC(std)} = (v_f - v_i) \, x \, 0.04707$$

3. Gas Volume of Water Vapor Collected in Silica Gel

$$V_{wsg(std)} = (w_f - w_i) \, x \, 0.04715$$

4. Moisture Volume Fraction in Flue Gas

$$B_{ws} = \frac{V_{wc(std)} + V_{wsg(std)}}{V_{wc(std)} + V_{wsg(std)} + V_{m(std)}}$$

5. Moisture Volume Percentage in Flue Gas

$$\% H_2O = B_{ws} \, x \, 100$$

6. Absolute Pressure of Flue Gas

$$P_s = P_B + \frac{P_{static}}{13.6}$$

7. Nitrogen Content of Flue Gas

$$\% N_2 = 100 - (\% CO_2 + \% O_2 + \% CO)$$

8. Dry Molecular Weight of Flue Gas

$$M_d = 0.44 \, x \, \% CO_2 + 0.32 \, x \, \% O_2 + 0.28 \, x \, (\% N_2 + \% CO)$$

9. Wet Molecular Weight of Flue Gas

$$M_s = M_d \, x \, (1 - B_{ws}) + 18 \, x \, B_{ws}$$

EPA METHODS 2-4 CALCULATIONS - continued

10. Fuel Factor Based on Flue Gas Composition

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

11. Excess Air of Flue Gas

$$\%EA = \frac{\%O_2 - 0.5\%CO}{0.264\%N_2 - (\%O_2 - 0.5\%CO)} x100$$

12. Average Gas Velocity, ft/sec

$$v_s = 85.49 \; x \; C_p \; x \; (\Delta P^{1/2})_{avg} \; x \frac{(T_s + 460)^{1/2}}{(P_s \; x \; M_s)^{1/2}}$$

13. Area of Round Duct or Stack

$$A_s = \frac{\pi \; x \; D^2}{4 \; x \; 144} \quad (round \; ducts)$$

14. Area of Rectangular Duct

$$A_s = \frac{L \; x \; W}{144} \quad (rectangular \; ducts)$$

15. Actual Volumetric Flow Rate of Flue Gas

$$Q_a = v_s \; x \; A_s \; x \; 60$$

16. Flow Rate of Flue Gas at Standard Temperature and Pressure

$$Q_s = Q_a \; x \left[\frac{P_s \; x \; 528}{(T_s + 460) \; x \; 29.92} \right]$$

17. Dry Flow Rate of Flue Gas at Std. Temperature and Pressure

$$Q_{sd} = Q_s \; x \; (1 - B_{ws})$$

NOMENCLATURE FOR EPA METHODS 2-4

A_s	=	Stack area, ft^2
B_{ws}	=	Moisture volume fraction
C_p	=	Pitot tube coefficient (S-type 0.84, Std. 0.99)
D_s	=	Stack diameter, inches
ΔH	=	Average meter orifice pressure, in.W.C.
ΔP	=	Pitot tube differential pressure, in.W.C.
F_o	=	Combustion factor
γ	=	Meter calibration factor, gamma
L	=	Length of rectangular stack or duct, inches
M_D	=	Dry molecular weight, lb/lb-mole
M_s	=	Wet molecular weight, lb/lb-mole
P_B	=	Barometric pressure, in.Hg
P_s	=	Absolute stack pressure, in.Hg
P_{static}	=	Average static pressure, in.W.C.
Q_a	=	Actual gas flow rate, acfm
Q_s	=	Standard gas flow rate, scfm
Q_{sd}	=	Dry standard gas flow rate, dscfm
T_m	=	Average meter temperature, ^oF
T_s	=	Average stack temperature, ^oF
v_f	=	Final impinger volume, ml
v_i	=	Initial impinger volume, ml
V_m	=	Uncorrected metered gas volume, dcf
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$V_{wc(std)}$	=	Gas volume of water caught in impingers, scf
$V_{wsg(std)}$	=	Gas volume of water caught in silica gel, scf
W	=	Width of rectangular stack or duct, inches
w_f	=	Final silica gel mass, grams
w_i	=	Initial silica gel mass, grams
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%CO	=	Dry volumetric concentration of CO, %dv
$\%N_2$	=	Dry volumetric concentration of N_2, %dv
%EA	=	Percent excess air

EPA METHOD 5 GRAVIMETRIC CALCULATIONS

1. PM Collected in Probe Wash - M_{pw}

$$M_{pw} = (W_{pw})_{final} - (W_{pw})_{tare}$$

2. Applicable Acetone Blank Correction - B_{apw}

$$B_{apw} = \left[(W_{ab})_{final} - (W_{ab})_{tare}\right] x \frac{v_{pw}}{v_{ab}}$$

3. Maximum Allowable Acetone Blank - B_{amax}

$$B_{amax} = 0.7845 \; x \; 0.00001 \; x \; v_{pw}$$

4. Actual Probe Wash Blank Correction - B_{pw}

$$B_{pw} = MINIMUM \; [B_{apw}, B_{amax}]$$

5. PM Collected on Filter - M_f

$$M_f = (W_f)_{final} - (W_f)_{tare}$$

6. Total PM Collected for Method 5 Calculations - M_5

$$M_5 = M_{pw} + M_f - B_{pw}$$

NOMENCLATURE

B_{amax}	=	Maximum allowable acetone blank correction, based on weight of acetone in probe wash, grams
B_{apw}	=	Acetone blank correction based on residue of blank, grams
B_{pw}	=	Acetone blank correction actually used, grams
M_5	=	Total mass of particulate in train corrected for acetone blank, grams
M_f	=	Mass gain of filter, grams
M_{pw}	=	Probe wash residue, grams
v_{ab}	=	Liquid volume of acetone blank, ml
v_{pw}	=	Liquid volume of probe wash, ml
$(W_{ab})_{final}$	=	Final weight of beaker containing acetone blank residue, grams
$(W_{ab})_{tare}$	=	Tare weight of beaker containing acetone blank residue, grams
$(W_f)_{final}$	=	Final weight of filter, grams
$(W_f)_{tare}$	=	Tare weight of filter, grams
$(W_{pw})_{final}$	=	Final weight of beaker containing probe wash residue, grams
$(W_{pw})_{tare}$	=	Tare weight of beaker containing probe wash residue, grams

PARTICULATE EMISSIONS CALCULATIONS

1. Particulate Concentration - C_{sd}

$$C_{sd} = \frac{\Sigma(M_i)}{V_{m(std)}} x \frac{7000}{453.593}$$

2. Particulate Concentration Corrected to 7% O_2 - C_{sd}@7%O_2

$$C_{sd\,@7\%} = C_{sd}\, x \frac{20.9 - 7.0}{20.9 - \%O_2}$$

3. Particulate Concentration Corrected to 12% CO_2 - C_{sd}@12%CO_2

$$C_{sd\,@\,12\%} = C_{sd}\, x \frac{12}{\%CO_2}$$

4. Particulate Concentration Corrected to 50% Excess Air - C_{sd}@50%EA

$$C_{sd\,@\,50\%\,EA} = C_{sd}\, x \frac{100 + \%EA}{150}$$

5. Particulate Mass Rate - M_p

$$M_p = \frac{\Sigma(M_i)}{V_{m(std)}} x\, Q_{sd}\, x \frac{60}{453.593}$$

6. Isokinetic Variation - %ISO

$$\%Iso = \frac{0.09450\, x\, (T_s + 460)\, x V_{m(std)}}{P_s\, x\, v_s\, x\, A_n\, x\, time\, x\, (1 - B_{ws})}$$

NOMENCLATURE FOR EPA METHOD 5

A_n	=	Nozzle area, ft^2
B_{ws}	=	Moisture volume fraction
C_{sd}	=	Particulate concentration, grains/dscf
D_n	=	Nozzle diameter, inches
ΣM_i	=	Summation of PM collected in sample train, grams
M_p	=	Mass rate of particulate emissions, lb/hr
P_s	=	Absolute stack pressure, in.Hg
Q_{sd}	=	Dry standard gas flow rate, dscfm
time	=	Net sampling time, minutes
T_s	=	Average stack temperature, ^oF
$V_{m(std)}$	=	Corrected gas volume, dscf
v_s	=	Average gas velocity, ft/sec
$\%O_2$	=	Dry volumetric concentration of O_2, %dv
$\%CO_2$	=	Dry volumetric concentration of CO_2, %dv
%EA	=	Percent excess air
%Iso	=	Percent isokinetics

EPA METHODS 7E AND 10 EMISSIONS CALCULATIONS

1. Concentration at 7% O_2

$$C_7 = C_i \ x \ \frac{20.9 - 7.0}{20.9 - \%O_2}$$

2. Mass Rate - lb/MMBtu (O_2 Based)

$$E_{i_{(Fd)}} = C_i \ x \ K \ x \ F_d \ x \frac{20.9}{(20.9 - \%O_2)}$$

3. Hourly Emissions Rate - M_i

$$M_i = E_{i_{(Fd)}} \ x \ HI$$

Nomenclature

C_i	=	Concentration of i in stack gas, ppmdv
C_{15i}	=	Concentration of i in stack gas corrected to 15% oxygen, ppmdv@15%O_2
HI	=	Heat Input taken from facility CEMS, MMBtu/hr
i	=	NO_X (as NO_2) or CO
M_i	=	Mass emissions rate of i, lb/hr
$E_{i(Fd)}$	=	Mass emission rate of i, lb/MMBtu (O_2 Based)
K	=	Conversion factor (ppmdv 🖶 lb/scf)
	=	1.194×10^{-7} for NO_x (as NO_2)
	=	7.269×10^{-8} for CO
F_d	=	Dry oxygen based fuel factor, dscf/MMBtu
	=	8710 for natural gas
	=	9190 for fuel oil
$\%O_2$	=	Oxygen concentration in flue gas, %dv

Appendix B

Laboratory VLAP Documentation

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

Virginia DCLS Certificate No.: 1462

ELEMENT ONE, INC
5022-C WRIGHTSVILLE AVE
WILMINGTON, NC 28403

Virginia Laboratory ID: 460207
Effective Date: March 21, 2012
Expiration Date: December 14, 2012

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories (Acting)

AIR

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 13 B 2000	FLUORIDE	NJ	EPA 16 A	TOTAL REDUCED SULFUR	NJ
EPA 201 A 1997	PARTICULATE MATTER	NJ	EPA 202	PARTICULATES	NJ
EPA 26	BROMINE	NJ	EPA 26	CHLORINE	NJ
EPA 26	HYDROGEN BROMIDE	NJ	EPA 26	HYDROGEN CHLORIDE (HYDROCHLORIC ACID)	NJ
EPA 26	HYDROGEN FLUORIDE (HYDDROFLUORIC ACID)	NJ	EPA 26 A	BROMINE	NJ
EPA 26 A	CHLORINE	NJ	EPA 26 A	HYDROGEN BROMIDE	NJ
EPA 26 A	HYDROGEN CHLORIDE (HYDROCHLORIC ACID)	NJ	EPA 26 A	HYDROGEN FLUORIDE (HYDDROFLUORIC ACID)	NJ
EPA 29 (CVAAS)	MERCURY	NJ	EPA 29 (ICP-MS)	ANTIMONY	NJ
EPA 29 (ICP-MS)	ARSENIC	NJ	EPA 29 (ICP-MS)	BARIUM	NJ
EPA 29 (ICP-MS)	BERYLLIUM	NJ	EPA 29 (ICP-MS)	CADMIUM	NJ
EPA 29 (ICP-MS)	CHROMIUM	NJ	EPA 29 (ICP-MS)	COBALT	NJ
EPA 29 (ICP-MS)	COPPER	NJ	EPA 29 (ICP-MS)	LEAD	NJ
EPA 29 (ICP-MS)	MANGANESE	NJ	EPA 29 (ICP-MS)	NICKEL	NJ
EPA 29 (ICP-MS)	PHOSPHORUS	NJ	EPA 29 (ICP-MS)	SELENIUM	NJ
EPA 29 (ICP-MS)	SILVER	NJ	EPA 29 (ICP-MS)	THALLIUM	NJ
EPA 29 (ICP-MS)	ZINC	NJ	EPA 29 (ICP-MS) -EXTENDED 2000	MOLYBDENUM	NJ
EPA 29 (ICP-MS) -EXTENDED 2000	TIN	NJ	EPA 29 (ICP-MS) -EXTENDED 2000	VANADIUM	NJ
EPA 5	PARTICULATE MATTER	NJ	EPA 5 B	PARTICULATE MATTER, NONSULFURIC ACID	NJ
EPA 5 D	PARTICULATE MATTER, BAGHOUSES	NJ	EPA 8	SULFURIC ACID MIST	NJ

NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1311 1992	PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE	NJ	EPA 200.8 1994 5.4	ALUMINUM	NJ
EPA 200.8 1994 5.4	ANTIMONY	NJ	EPA 200.8 1994 5.4	ARSENIC	NJ
EPA 200.8 1994 5.4	BARIUM	NJ	EPA 200.8 1994 5.4	BERYLLIUM	NJ
EPA 200.8 1994 5.4	CADMIUM	NJ	EPA 200.8 1994 5.4	CALCIUM	NJ
EPA 200.8 1994 5.4	CHROMIUM	NJ	EPA 200.8 1994 5.4	COBALT	NJ
EPA 200.8 1994 5.4	COPPER	NJ	EPA 200.8 1994 5.4	IRON	NJ
EPA 200.8 1994 5.4	LEAD	NJ	EPA 200.8 1994 5.4	MAGNESIUM	NJ
EPA 200.8 1994 5.4	MANGANESE	NJ	EPA 200.8 1994 5.4	MOLYBDENUM	NJ

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NON-POTABLE WATER

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 200.8 1994 5.4	NICKEL	NJ	EPA 200.8 1994 5.4	POTASSIUM	NJ
EPA 200.8 1994 5.4	SELENIUM	NJ	EPA 200.8 1994 5.4	SILVER	NJ
EPA 200.8 1994 5.4	SODIUM	NJ	EPA 200.8 1994 5.4	THALLIUM	NJ
EPA 200.8 1994 5.4	TIN	NJ	EPA 200.8 1994 5.4	TITANIUM	NJ
EPA 200.8 1994 5.4	VANADIUM	NJ	EPA 200.8 1994 5.4	ZINC	NJ
EPA 245.1 1994 3	MERCURY	NJ	EPA 300.0 1993 2.1	BROMIDE	NJ
EPA 300.0 1993 2.1	CHLORIDE	NJ	EPA 300.0 1993 2.1	NITRATE AS N	NJ
EPA 300.0 1993 2.1	NITRITE AS N	NJ	EPA 300.0 1993 2.1	ORTHOPHOSPHATE AS P	NJ
EPA 300.0 1993 2.1	SULFATE	NJ	EPA 3010 1992 A	PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS	NJ
EPA 6020 (9/94)	ALUMINUM	NJ	EPA 6020 (9/94)	ANTIMONY	NJ
EPA 6020 (9/94)	ARSENIC	NJ	EPA 6020 (9/94)	BARIUM	NJ
EPA 6020 (9/94)	BERYLLIUM	NJ	EPA 6020 (9/94)	CADMIUM	NJ
EPA 6020 (9/94)	CHROMIUM	NJ	EPA 6020 (9/94)	COBALT	NJ
EPA 6020 (9/94)	COPPER	NJ	EPA 6020 (9/94)	LEAD	NJ
EPA 6020 (9/94)	MANGANESE	NJ	EPA 6020 (9/94)	NICKEL	NJ
EPA 6020 (9/94)	SILVER	NJ	EPA 6020 (9/94)	THALLIUM	NJ
EPA 6020 (9/94)	ZINC	NJ	EPA 6020 - EXTENDED (9/94)	BORON	NJ
EPA 6020 - EXTENDED (9/94)	CALCIUM	NJ	EPA 6020 - EXTENDED (9/94)	IRON	NJ
EPA 6020 - EXTENDED (9/94)	MAGNESIUM	NJ	EPA 6020 - EXTENDED (9/94)	MOLYBDENUM	NJ
EPA 6020 - EXTENDED (9/94)	POTASSIUM	NJ	EPA 6020 - EXTENDED (9/94)	SELENIUM	NJ
EPA 6020 - EXTENDED (9/94)	SODIUM	NJ	EPA 6020 - EXTENDED (9/94)	STRONTIUM	NJ
EPA 6020 - EXTENDED (9/94)	TIN	NJ	EPA 6020 - EXTENDED (9/94)	TITANIUM	NJ
EPA 6020 - EXTENDED (9/94)	VANADIUM	NJ	EPA 7470 1994 A	MERCURY	NJ
EPA 9040 (1/95) B	PH	NJ	EPA 9060 (9/86)	TOTAL ORGANIC CARBON	NJ
SM 2540 B 1998 20th ED	RESIDUE-TOTAL	NJ	SM 2540 C 1998 20th ED	RESIDUE-FILTERABLE (TDS)	NJ
SM 5310 B 1998 20th ED	TOTAL ORGANIC CARBON	NJ			

SOLID AND CHEMICAL MATERIALS

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 1311 1992	PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE	NJ	EPA 3050 1996 B	PREP: ACID DIGESTION OF SEDIMENTS, SLUDGES, AND SOILS	NJ

This Scope of Accreditation must accompany the Certificate issued by Virginia DCLS with the same Certificate Number indicated above.

Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

Scope of Accreditation

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SOLID AND CHEMICAL MATERIALS

METHOD	ANALYTE	PRIMARY	METHOD	ANALYTE	PRIMARY
EPA 3051 1994	PREP: MICROWAVE ASSISTED ACID DIGESTION OF SEDIMENTS, SLUDGES, SOILS, AND OILS	NJ	EPA 6020 (9/94)	ALUMINUM	NJ
EPA 6020 (9/94)	ANTIMONY	NJ	EPA 6020 (9/94)	ARSENIC	NJ
EPA 6020 (9/94)	BARIUM	NJ	EPA 6020 (9/94)	BERYLLIUM	NJ
EPA 6020 (9/94)	CADMIUM	NJ	EPA 6020 (9/94)	CHROMIUM	NJ
EPA 6020 (9/94)	COBALT	NJ	EPA 6020 (9/94)	COPPER	NJ
EPA 6020 (9/94)	LEAD	NJ	EPA 6020 (9/94)	MANGANESE	NJ
EPA 6020 (9/94)	NICKEL	NJ	EPA 6020 (9/94)	SILVER	NJ
EPA 6020 (9/94)	THALLIUM	NJ	EPA 6020 (9/94)	ZINC	NJ
EPA 6020 - EXTENDED (9/94)	BORON	NJ	EPA 6020 - EXTENDED (9/94)	CALCIUM	NJ
EPA 6020 - EXTENDED (9/94)	IRON	NJ	EPA 6020 - EXTENDED (9/94)	MAGNESIUM	NJ
EPA 6020 - EXTENDED (9/94)	MOLYBDENUM	NJ	EPA 6020 - EXTENDED (9/94)	POTASSIUM	NJ
EPA 6020 - EXTENDED (9/94)	SELENIUM	NJ	EPA 6020 - EXTENDED (9/94)	SODIUM	NJ
EPA 6020 - EXTENDED (9/94)	STRONTIUM	NJ	EPA 6020 - EXTENDED (9/94)	TIN	NJ
EPA 6020 - EXTENDED (9/94)	TITANIUM	NJ	EPA 6020 - EXTENDED (9/94)	VANADIUM	NJ
EPA 9040 (1/95) B	PH	NJ	EPA 9045 1995 C	PH	NJ
EPA 9060 (9/86)	TOTAL ORGANIC CARBON	NJ			

Table 1(a)
Emission Point Summary
Instructions
Texas Commission on Environmental Quality

Beginning June 1, 2019, Table 1(a) is not required for submitted applications with the Form PI-1 General Application workbook. Refer to the New Source Review (NSR) Application Tools webpage for further information.

Table 1(a) can continue to be submitted for other permit actions and types, as needed.

1. Emission Point Number and Name:

- Identify each emission point with a unique number for this plant site. The emission point numbers (EPN) must be consistent with the emission point identification used on the plot plan, any previous permits, and the "Emissions Inventory Questionnaire."
- Associate the EPN with a facility identification number (FIN) to the appropriate facility. These numbers can be alphanumeric and have a maximum of 10 characters.
- Examples of emission point names are "heater," "vent," 'boiler," "tank," "reactor," "separator," "baghouse," or "fugitive." Examples of EPN and/or FIN numbers are, "BOILER1," "100B1," and "BH1." If appropriate, a FIN can be the same as the EPN. Abbreviations are acceptable.

2. Component or Air Contaminant Name:

- List each component or air contaminant name. Examples of component names are "air," "H_2O," "nitrogen," "oxygen," "CO_2," "CO," "NO_x," "SO_2," "hexane," or "particulate matter (PM)." Abbreviations are acceptable.

3. Air Contaminant Emission Rate:

- Pounds per hour is the maximum short-term emission rate expected to occur in anyone-hour period.
- Tons per year (tpy) is the annual (any rolling 12-month period) total maximum emissions expected by the facility, taking the process operating schedule into account.

4. Universal Transverse Mercator (UTM) Coordinates of Emission Points:

The applicant must furnish a facility plot plan drawn to scale showing a plant benchmark. Latitude and longitude must be correct and to the nearest second for the benchmark, and the dimension of all emission points concerning the benchmark as required by Form PI-1 (General Application for Air Preconstruction Permits and Amendments). This information is essential for the calculation of emission point UTM coordinates. Please show emission point UTM coordinates if known. Use the southwest corner as the emission point coordinates for each area source.

5. Building Height:

- Enter the height of the building.

6. Height Above Ground:

- Enter the height of the stacks above the ground.

7. Stack Exit Data:

- Enter the length, width, and equivalent diameter for rectangular stacks. Also, indicate horizontal discharge or covered stacks (raincap).
- Enter the velocity of emissions in actual feet per second.
- Enter the actual temperature if the exit temperature is "room" or "climate controlled." Enter "ambient" to represent exit temperatures that are the same as the outdoor environment. Flare exit temperatures are not required.

8. Fugitives:

- For area fugitive sources, enter the dimensions of a rectangle, which will "enclose" all fugitive sources included in this EPN. Length to width ratio should be 10:1 or less. Subdivide larger areas to meet this requirement.
- Enter the width of the fugitive source area.
- Enter the number of degrees the long axis of the fugitive area is offset from north to south.

Note: The TCEQ standard conditions are 68° F and 14.7 PSIA (Title 30 Texas Administrative Code § 101.1)

Table 1(a) Emission Point Summary
Air Contaminant Data (Page 1)
Texas Commission on Environmental Quality

Date:	Permit No.:	Regulated Entity No.:	Area Name:	Customer Reference No.:

Review of application and issuance of permits will be expedited by supplying all necessary information requested on the Table.

eEPN	FIN	Name	Component or Air Contaminant Name	Air Contaminant Emission Rate lb/hr	Air Contaminant Emission Rate TPY
1	Incinerator	John Doe Site	SO2	0.055	x ?? actual hours /year
			NOx	0.426	repeat for all below
			CO	0.0507	
			Total Hydrocarbons	0.00195	

EPN = Emission Point
FIN = Facility Identification Number

Table 1(a) Emission Point Summary
Air Contaminant Data (Page 2)
Texas Commission on Environmental Quality

Date:	Permit No.:	Regulated Entity No.:	Area Name:	Customer Reference No.:

Review of application and issuance of permits will be expedited by supplying all necessary information requested on the Table.

EPN	FIN	Name	UTM Coordinates of Emission Point Zone	UTM Coordinates of Emission East (Meters)	UTM Coordinates of Emission North (Meters)	Emission Point Discharge Parameters Building Height (ft)	Emission Point Discharge Parameters Height Above Ground (ft)	Stack Exit Data Diameter (ft)	Stack Exit Data Velocity (FPS)	Stack Exit Data Temperature (°F)	Fugitives Length (ft)	Fugitives Width (ft)	Fugitives Axis Degrees
1	Incinerat	John D					19	1	58	1206			

EPN = Emission Point
FIN = Facility Identification Number

Reset Form Print Form

FIRELAKE MFG., LLC
25 MICHIGAN ST SE SUITE B
HUTCHINSON, MN 55350 - USA
PH: (540) 437-1203 FAX: (320) 275-3391

January 31, 2020

Certificate of Stack Air Quality,
Firelake C & P Series Incineration/Cremation Systems

General:

The series offers multiple models which vary by the main burn chamber volume and secondary burn chamber volume. All models of the series use the same LP or Ng gas, or diesel burners and controls. Flow rates of combustion gas are proportional to the model sizes and contents of the exiting flue gas are similar. The following data is typical of the series. The data has been accumulated from various test reports.

Particulate 0.01 to 0.08 grains/dscf
CO 0 to 50 ppm
CO2 7 to 9% by volume dry
O2 9 to 12% by volume dry
Temperature 1200 to 1800F
Flow rate 1000 to 1100 acfm
Flow rate 220 to 280 dscfm
Average velocity 21 to 35 fps
Opacity 0 to 5%

Methods:

Tests incorporated waste comprised of various poultry, swine, or medical waste and followed EPA-CFR Method 2,3,4,5,9,10 and/or Ontario Canada MOE protocol for data collection and calculations.

References:

Test Report Model C6/200 by Entec Inc., test report #97-165 (job180)
Test Report Model C12/400 by ACG, llc., test report #V12966
Test Report Model P16 by AirSource Technologies, tests #P162GT
Test Report Model P25 by Air Monitoring Specialists, tests #P252GM1
Test Report Model P60, by Almega Corporation, test #I6957

Texas Commission on Environmental Quality

Standard Permit New Registration

Site Information (Regulated Entity)

What is the name of the site to be authorized?	Forever Loved Pets Crematorium
Does the site have a physical address?	Yes
Physical Address	
Number and Street	1224 E CR 7275
City	Lubbock
State	TX
ZIP	79404
County	LUBBOCK
Latitude (N) (##.######)	33.49204
Longitude (W) (-###.######)	-101.820628
Primary SIC Code	
Secondary SIC Code	
Primary NAICS Code	
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	
What is the name of the Regulated Entity (RE)?	Live Oak Crematorium
Does the RE site have a physical address?	Yes
Physical Address	
Number and Street	5214 98TH ST STE 100
City	LUBBOCK
State	TX
ZIP	79424
County	LUBBOCK
Latitude (N) (##.######)	
Longitude (W) (-###.######)	
Facility NAICS Code	
What is the primary business of this entity?	

Customer (Applicant) Information

How is this applicant associated with this site?	Owner Operator
What is the applicant's Customer Number (CN)?	
Type of Customer	Corporation
Full legal name of the applicant:	
Legal Name	Live Oak Crematorium, LLC
Texas SOS Filing Number	805912469
Federal Tax ID	333598053
State Franchise Tax ID	32098911491
State Sales Tax ID	
Local Tax ID	
DUNS Number	
Number of Employees	
Independently Owned and Operated?	
I certify that the full legal name of the entity applying for this permit has been provided and is legally authorized to do business in Texas.	Yes
Responsible Authority Contact	
Organization Name	Live Oak Crematorium, LLC
Prefix	
First	Chris
Middle	
Last	Reznicek
Suffix	
Credentials	
Title	Owner
Responsible Authority Mailing Address	
Enter new address or copy one from list:	RE Physical Address
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	5214 98TH ST STE 100
Routing (such as Mail Code, Dept., or Attn:)	
City	LUBBOCK
State	TX
ZIP	79424
Phone (###-###-####)	8067949000
Extension	

Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	creznicek@liveoaklubbock.net

Responsible Official Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	Live Oak Crematorium, LLC
Organization Name	Live Oak Crematorium, LLC
Prefix	MR
First	Chris
Middle	
Last	Reznicek
Suffix	
Credentials	
Title	Owner
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	5214 98TH ST STE 100
Routing (such as Mail Code, Dept., or Attn:)	
City	LUBBOCK
State	TX
ZIP	79424
Phone (###-###-####)	8067949000
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	creznicek@liveoaklubbock.net

Technical Contact

Person TCEQ should contact for questions about this application:	
Same as another contact?	Responsible Official Contact
Organization Name	Live Oak Crematorium, LLC

Prefix	MR
First	Chris
Middle	
Last	Reznicek
Suffix	
Credentials	
Title	Owner
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	5214 98TH ST STE 100
Routing (such as Mail Code, Dept., or Attn:)	
City	LUBBOCK
State	TX
ZIP	79424
Phone (###-###-####)	8067949000
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	
E-mail	creznicek@liveoaklubbock.net

Standard Permit General Information- New Reg Sites

1) Is this facility permanent or temporary?	Permanent
2) Will the proposed facility meet all of the requirements of the standard permit?	Yes
3) Select the type of unit that is being registered:	ANIMAL CARCASS INCINERATORS
3.1. Select the rule associated to the unit specified.	6009
3.2. Is the facility equal to or greater than 50 ft. from the nearest property line?	Yes

Standard Permit Attachments

1) Please attach one PDF with the PI-1S and all required documents to complete the project.	
[File Properties]	
File Name	Attachment G Process Description (2).docx

Hash	9EC221F60C87727457FE81219517528D41954CA8679FD872CA4A113A0A15E854
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document
Confidential	No
[File Properties]	
File Name	Certificate of stack air quality letter C.P (1).pdf
Hash	3273EC5C3602FCEA3CE8252B325486E44C172D9301C2ED11F7214A3139C9BDE7
MIME-Type	application/pdf
Confidential	No
[File Properties]	
File Name	EmissionPointSummaryTable 3.12.2025.pdf
Hash	64D65A896A67E226AA06C7522E69BE40DB94344E351C36C48AD21F0AA5D3EC16
MIME-Type	application/pdf
Confidential	No
[File Properties]	
File Name	FormPI-1S.pdf
Hash	ACAC7B8987CD0CC684EB467E42B23E87323FA54972B3BBEE3B8CFFB770DC2ABC
MIME-Type	application/pdf
Confidential	No
[File Properties]	
File Name	P16 Flow diagram no data.pdf
Hash	3CFDF96C4AFD2724F6837375063C03810799DA4DD639882962B1A8C31A27B18A
MIME-Type	application/pdf
Confidential	No
[File Properties]	
File Name	PlotPlan.pdf
Hash	6CA72D8F0F627A05FAC90BD772E3C6471A9994AA849C8871A3404BD1B2515C9E
MIME-Type	application/pdf
Confidential	No
[File Properties]	
File Name	TCEQCoreDataForm.pdf
Hash	09A9DCDF87C0006BED4E9DF1F222B353669CD97D404CE02E4867232195BBB8CA

MIME-Type	application/pdf
Confidential	No

2) Please attach any other necessary information needed to complete the registration.

[File Properties]

File Name	C12 Final Compliance Report V12966 Rev0.pdf
Hash	FEDC655A367A55178422ACEFB1CA7FEA92A76B5806B48C80775A904DF7C8A4BD
MIME-Type	application/pdf
Confidential	No

Expedite

1) Per Texas Health and Safety Code, Section 382.05155, does the applicant want to expedite the processing of this application?	Yes
1.1. Can the applicant demonstrate that the purpose of this application will benefit the economy of this state or an area of this state?	Yes

Certification

The electronic signature below indicates that the Responsible Official has knowledge of the facts herein set forth and that the same are true, accurate, and complete to the best of my knowledge and belief. By this signature, the maximum emission rates listed on this certification reflect the maximum anticipated emissions due to the operation of this facility and all representations in this certification of emissions are conditions upon which the facilities and sources will operate. It is understood that it is unlawful to vary from these representations unless the certification is first revised. The signature certifies that to the best of the Responsible Officials knowledge and belief, the project will satisfy the conditions and limitations of the indicated exemption or permit by rule and the facility will operated in compliance with all regulations of the Texas Commission on Environmental Quality and with Federal U.S. Environmental Protection Agency regulations governing air pollution. The signature below certifies that, based on information and belief formed after reasonable inquiry, the statements and information above and contained in the attached document(s) are true, accurate, and complete. If you questions on how to fill out this form or about air quality permits. Please call (512) 239-1250. Individuals are entitled to request and review their personal information that the agency gathers on its forms.

1. I am Chris Reznicek, the owner of the STEERS account ER113671.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.

6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing Standard Permit New Registration.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER OPERATOR Signature: Chris Reznicek OWNER OPERATOR

Account Number:	ER113671
Signature IP Address:	65.38.34.41
Signature Date:	2025-06-01
Signature Hash:	599B0528D2FA14886F1EAC26D46EEAA1CEF03A2AACB9BD7281AD36EE311DB1C0
Form Hash Code at time of Signature:	71AEF2C69F972C02C471026DC25139324D31742573E9B4BDE3952FD9276A7EF2

Fee Payment

Transaction by:	The application fee payment transaction was made by ER113671/Chris Reznicek
Paid by:	The application fee was paid by CHRIS REZNICEK
Fee Amount:	$900.00
Paid Date:	The application fee was paid on 2025-06-01
Transaction/Voucher number:	The transaction number is 582EA000670453 and the voucher number is 769010

Fee Payment

Transaction by:	The surcharge fee payment transaction was made by ER113671/Chris Reznicek
Paid by:	The surcharge fee was paid by CHRIS REZNICEK
Fee Amount:	$3000.00
Paid Date:	The surcharge fee was paid on 2025-06-05
Transaction/Voucher number:	The transaction number is 582EA000671218 and the voucher number is 769779

Submission

Reference Number:	The application reference number is 783635
Submitted by:	The application was submitted by ER113671/Chris Reznicek
Submitted Timestamp:	The application was submitted on 2025-06-06 at 07:59:46 CDT

Submitted From:	The application was submitted from IP address 65.38.34.41
Confirmation Number:	The confirmation number is 657409
Steers Version:	The STEERS version is 6.91

Additional Information

Application Creator: This account was created by Chris Reznicek

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	**3. Regulated Entity Reference Number** *(if issued)*
CN		**RN**

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Live Oak Crematorium LLC

7. TX SOS/CPA Filing Number	**8. TX State Tax ID** (11 digits)	**9. Federal Tax ID** (9 digits)	**10. DUNS Number** *(if applicable)*
805912469		33-3598053	

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:

5214 98th St. Suite 100

City	Lubbock	**State**	TX	**ZIP**	79424	**ZIP + 4**	4647

16. Country Mailing Information *(if outside USA)*	**17. E-Mail Address** *(if applicable)*
	creznicek@liveoaksouth.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(806) 794-9000		(806) 794-9001

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Forever Loved Pets Crematorium

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	1224 E CR 7275							
	City	Lubbock	**State**	TX	**ZIP**	79404	**ZIP + 4**	
24. County	Lubbock							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:					
26. Nearest City			**State**		**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:			**28. Longitude (W) In Decimal:**		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4953		562213	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

34. Mailing Address:	**5214 98th St. Suite 100**							
	City	**Lubbock**	**State**	**TX**	**ZIP**	**79424**	**ZIP + 4**	
35. E-Mail Address:	**creznicek@liveoaksouth.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(806) 794-9000		**(806) 794-9001**

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

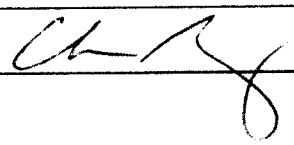
SECTION IV: Preparer Information

40. Name:	Chris Reznicek	**41. Title:**	Owner

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(806) 794-9000		(806) 794-9001	creznicek@liveoaksouth.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Live Oak Crematorium LLC	**Job Title:**	Owner
Name *(In Print)*:	Chris Reznicek	**Phone:**	(806) 794- **9000**
Signature:		**Date:**	5/29/2025

Form PI-1S
Registrations for Air Standard Permit
(Page 1)
Texas Commission on Environmental Quality

I. Registrant Information
A. Company or Other Legal Customer Name:
Live Oak Crematorium LLC
B. Company Official Contact Information:
☒ Mr.
☐ Mrs.
☐ Ms.
☐ Other:_____
Name: Christopher Reznicek
Title: Owner
Mailing Address: 5214 98th St. Suite 100
City: Lubbock
State: Texas
ZIP Code: 79424
Telephone Number: (806) 794-9000
Fax Number: (806) 794-9001
Email Address: creznicek@liveoaklubbock.com
All permit correspondence will be sent via email.
C. Technical Contact Information
☒ Mr.
☐ Mrs.
☐ Ms.
☐ Other:_____
Name: Christopher Reznicek
Title: Owner
Company Name: Live Oak Crematorium LLC.
Mailing Address: 5214 98th St. Suite 100
City: Lubbock
State: Texas
ZIP Code: 79424

Form PI-1S
Registrations for Air Standard Permit
(Page 2)
Texas Commission on Environmental Quality

I.	**Registrant Information *(continued)***
C.	Technical Contact Information *(continued)*
Telephone Number: (806) 794-9000	
Fax Number: (806) 794-9001	
Email Address: creznicek@liveoaklubbock.com	
II.	**Facility and Site Information**
A.	Name and Type of Facility
Facility Name: Forever Loved Pets Crematorium	
Type of Facility: ☒ Permanent ☐ Temporary	
For portable units, please provide the serial number of the equipment being authorized below.	
Serial No(s):	
B.	Facility Location Information
Street Address: 1224 E CR 7275	
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).	
City: Lubbock	
County: Lubbock	
ZIP Code: 79404	
C.	Core Data Form (**required** for Standard Permits 6006, 6007, and 6013).
Is the Core Data Form (TCEQ Form 10400) attached? ☑ Yes ☐ No	
Customer Reference Number (CN):	
Regulated Entity Number (RN):	
D.	TCEQ Account Identification Number (if known):

II. Facility and Site Information *(continued)*
E. Type of Action ☒ Initial Application ☐ Change to Registration ☐ Renewal ☐ Renewal Certification
For Change to Registration, Renewal, or Renewal Certification actions provide the following:
Registration Number:
Expiration Date:
F. Standard Permit Claimed:
G. Previous Standard Exemption or PBR Registration Number:
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR? ☐ Yes ☒ No
If "Yes," enter previous standard exemption number(s) and PBR registration number(s) and associated effective date in the spaces provided below.
Standard Exemption Number(s):
PBR Registration Number(s):
H. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit? ☐ Yes ☒ No
If "Yes," enter standard exemption number(s), PBR registration number(s), Standard Permit Registration Number(s), and associated effective date in the spaces provided below.
Standard Exemption Number(s):
PBR Registration Number(s):
Standard Permit Registration Number(s):

II. Facility and Site Information *(continued)*
I. Other Air Preconstruction Permits
Are there any other air preconstruction permits at this site? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
J. Affected Air Preconstruction Permits
Does the standard permit directly affect any permitted facility? ☐ Yes ☒ No
If "Yes," enter permit number(s) in the spaces provided below.
K. Federal Operating Permit (FOP) Requirements
Is this facility located at a site that is required to obtain a FOP pursuant to 30 TAC Chapter 122? ☐ Yes ☐ No ☒ To Be Determined
Check the requirements of 30 TAC Chapter 122 that will be triggered if this standard permit is approved *(check all that apply).* ☐ Initial Application for a FOP ☐ Significant Revision for a SOP ☐ Minor Revision for a SOP ☐ Operational Flexibility/Off Permit Notification for a SOP ☐ Revision for a GOP ☐ To be Determined ☐ None
Identify the type(s) of FOP issued and/or FOP application(s) submitted/pending for the site. *(check all that apply)* ☐ SOP ☐ SOP application/revision (submitted or under APD review) ☐ GOP ☐ GOP application/revision (submitted or under APD review) ☐ N/A

Form PI-1S
Registrations for Air Standard Permit
(Page 5)
Texas Commission on Environmental Quality

III.	**Fee Information *(go to www.tceq.texas.gov/epay to pay online)***
A.	Fee Amount:
B.	Voucher number from ePay: STEERS
IV.	**Public Notice *(if applicable)***
A.	Responsible Person ☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:_____
Name: Chris Reznicek	
Title: Owner	
Company: Live Oak Crematorium LLC.	
Mailing Address: 5214 98th St. Suite 100	
City: Lubbock	
State: Texas	
ZIP Code: 79424	
Telephone No.: (806) 794-9000	
Fax No.: (806) 794-9001	
Email Address: creznicek@liveoaklubbock.com	
B.	Technical Contact ☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other:_____
Name: Chris Reznicek	
Title: Owner	
Company: Live Oak Crematorium LLC.	
Mailing Address: 5214 98th St. Suite 100	
City: Lubbock	
State: Texas	
ZIP Code: 79424	

Form PI-1S
Registrations for Air Standard Permit
(Page 6)
Texas Commission on Environmental Quality

IV. Public Notice *(if applicable)*
B. Technical Contact
Telephone Number: (806) 794-9000
Fax Number: (806) 794-9001
Email Address: creznicek@liveoaklubbock.com
C. Bilingual Notice
Is a bilingual program required by the Texas Education Code in the School District? ☐ Yes ☒ No
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district? ☐ Yes ☒ No
If "Yes," list which language(s) are required by the bilingual program below? Language(s):_____ Language(s):_____
D. Small Business Classification and Alternate Public Notice
Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than $6 million in annual gross receipts? ☒ Yes ☐ No
Is the site a major source under 30 TAC Chapter 122, Federal Operating Permit Program? ☐ Yes ☒ No
Are the site emissions of any individual regulated air contaminant equal to or greater than 50 tpy? ☐ Yes ☒ No
Are the site emissions of all regulated air contaminant combined equal to or greater than 75 tpy? ☐ Yes ☒ No

Form PI-1S
Registrations for Air Standard Permit
(Page 7)
Texas Commission on Environmental Quality

V.	Renewal Certification Option
A.	Does the permitted facility emit an air contaminant on the Air Pollutant Watch List, and is the permitted facility located in an area on the watch list? ☐ Yes ☒ No
B.	For facilities participating in the Houston/Galveston/Brazoria area (HGB) cap and trade program for highly reactive VOCs (HRVOCs), do the HRVOCs need to be speciated on the maximum allowable emission rates table (MAERT)? ☐ Yes ☐ No
C.	Does the company and/or site have an unsatisfactory compliance history? ☐ Yes ☒ No
D.	Are there any applications currently under review for this standard permit registration? ☐ Yes ☒ No
E.	Are scheduled maintenance, startup, or shutdown emissions required to be included in the standard permit registration at this time? ☐ Yes ☒ No
F.	Are any of the following actions being requested at the time of renewal: ☐ Yes ☒ No
1.	Are there any facilities that have been permanently shut down that are proposed to be removed from the standard permit registration? ☐ Yes ☒ No
2.	Do changes need to be made to the standard permit registration in order to remain in compliance? ☐ Yes ☒ No
3.	Are sources or facilities that have always been present and represented, but never identified in the standard permit registration, proposed to be included with this renewal? ☐ Yes ☒ No
4.	Are there any changes to the current emission rates table being proposed? ☐ Yes ☒ No
*Note: If answers to all of the questions in Section V. Renewal Certification Option are "No," use the certification option and skip to Section VII. of this form. If the answers to any of the questions in Section V. Renewal Certification Option are "Yes," the certification option **cannot** be used.*	
*If notice is applicable and comments are received in response to the public notice, the application does not qualify for the renewal certification option.	

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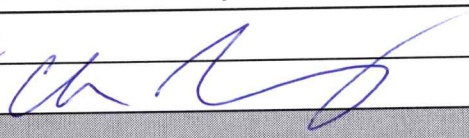
VI. Technical Information Including State and Federal Regulatory Requirements
Place a check next to the appropriate box to indicate what you have included in your submittal. *Note: Any technical or essential information needed to confirm that facilities are meeting the requirements of the standard permit must be provided. Not providing key information could result in an automatic deficiency and voiding of the project.*
A. Standard Permit requirements (Checklists are optional; however, your review will go faster if you provide applicable checklists.)
Did you demonstrate that the general requirements in 30 TAC§§116.610 and 116.615 are met? ☒ Yes ☐ No
Did you demonstrate that the individual requirements of the specific standard permit are met? ☒ Yes ☐ No
B. Confidential Information (All pages properly marked "CONFIDENTIAL"). ☒ Yes ☐ No
C. Process Flow Diagram. ☒ Yes ☐ No
D. Process Description. ☒ Yes ☐ No
E. Maximum Emissions Data and Calculations. ☒ Yes ☐ No
F. Plot Plan. ☒ Yes ☐ No
G. Projected Start of Construction Date, Start of Operation Date, and Length of Time at Site: ☒ Yes ☐ No
Projected Start of Construction (provide date): 08/01/2025
Projected Start of Operation (provide date): 10/01/2025
Length of Time at the Site:

VII. Delinquent Fees and Penalties
This form **will not be processed** until all delinquent fees and/or penalties owed to TCEQ or the Office of the Attorney General on behalf of TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ website at: www.tceq.texas.gov/agency/financial/fees/delin/index.html
VIII. Signature Requirements
The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code (THSC), Chapter 382, the Texas Clean Air Act (TCAA) the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.
Name (printed): Chris Reznicek
Signature (original signature required): 
IX. Copies of the Registration
The Form PI-1S application must be submitted through ePermits. No additional copies need to be sent to the Regional Office or local Air Pollution Control Program(s). The link to ePermits can be found here: www3.tceq.texas.gov/steers/.