VOUCHER #: _____

FDEP 2016 JUN 22 AM10:51

Department of Environmental Protection
Northeast District Office
Attention: Rita Felton-Smith, Air Program
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256-7590

INVOICE

INVOICE #0010062A
DATE: JUNE 6,2016

TO:
Animal Care Services
University of Florida
PO Box 100006
Gainesville, FL 32610
352-392-273-9235

SHIP TO:

COMMENTS OR SPECIAL INSTRUCTIONS:

SALESPERSON	P.O. NUMBER	REQUISITIONER	SHIPPED VIA	F.O.B. POINT	TERMS
		ACS # 22955			Due on receipt

QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
	Incinerator Permit Renewal Application for the BARC Facility, bldg. 1371.	$ 1,500.00	$ 1,500.00
	Contact JoAnne Gordon at 352-273-9235 concerning this invoice.		
		SUBTOTAL	
		SALES TAX	
		SHIPPING & HANDLING	
		TOTAL DUE	$ 1,500.00

OCULUS
Initials_____
Date_____

Receipt # 413448, CK# 0001285348, $1,500.00

Received
JUN 22 2016
FDEP

Operation Permit Renewal Application
Facility ID: 0010121
Site Name: 1371 Building

Prepared for:

University of Florida – Animal Care Services
2292 SW 23rd Street
Gainesville, Florida
Alachua County

Biological Waste Incinerator

Prepared By:

AI Environmental Consulting Services, Inc.
598 Northlake Blvd, Suite 1016
Altamonte Springs, Florida 32701

OCULUS
Initials_____
Date_____

June 2016

598 Northlake Blvd, Ste. 1016, Altamonte Springs, Florida 32701 - Phone: (321) 282-757, FAX: (321) 282-7358
AI@CFL.RR.COM

Application Contents

- DEP 62-210-900(4) APPLICATION FOR NON-TITLE V AIR PERMIT RENEWAL
- ATTACHMENT 1 – COMPLIANCE TEST REPORT

598 Northlake Blvd, Ste. 1016, Altamonte Springs, Florida 32701 - Phone: (321) 282-757, FAX: (321) 282-7358
AI@CFL.RR.COM

Department of Environmental Protection

FDEP 20[illegible]

Division of Air Resources Management

APPLICATION FOR NON-TITLE V AIR PERMIT RENEWAL

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

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **University of Florida**	
2. Site Name: **1371 Building**	
3. Facility Identification Number:**0010121**	4. Facility Status Code: **Active**

Application Contact

1. Name and Title of Application Contact: **Luis Llorens**
2. Application Contact Mailing Address: Organization/Firm: **AI Environmental Consulting Services, Inc.** Street Address: **598 Northlake Blvd, Suite 1016** City: **Altamonte Springs** State: **Florida** Zip Code:**32701**
3. Application Contact Telephone Numbers: Telephone: **(321) 282-7357** Fax: **(321)282-7358**
4. Application Contact E-mail Address:

Application Processing Information (DEP Use)

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

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative: **Matt Johnson**

2. Owner/Authorized Representative Mailing Address:

   Organization/Firm: **University of Florida**
   Street Address: **PO Box 100006**
   City: **Gainesville** State: **Florida** Zip Code: **32610**

3. Owner/Authorized Representative Telephone Numbers:
   Telephone: **(352) 273-9246** Fax: ( ) -

4. Owner/Authorized Representative E-mail Address: **matt986john@mail.ufl.edu**

5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this Application for Air Permit. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. Further, I agree to operate and maintain the air pollutant emissions units and air pollution control equipment described in this application so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Signature

   Date 6/14/2016

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Biological (animal) waste Incinerator Model C1000S with less than 5 TPY of each pollutant	AF2A	

Application Processing Fee - Facility will do Wire transfer

Check one: [ ] Attached - Amount: $_____ [ ] Not Applicable_

Application Comment

The application is for the renewal of the current operating permit.

II. FACILITY INFORMATION

Facility Contact

1. Name and Title of Facility Contact: **Matt Johnson**
2. Facility Contact Mailing Address: Organization/Firm: **University of Florida** Street Address: **PO Box 100006** City: **Gainesville** State: **Florida** Zip Code:**32610**
3. Facility Contact Telephone Numbers: Telephone: **(352)273-9246** Fax: ( ) -
4. Facility Contact E-mail Address: **matt986john@mail.ufl.edu**

Facility Supplemental Requirements

1. Area Map Showing Facility Location: [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested

Facility Comment

III. EMISSIONS UNIT INFORMATION

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

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Biological waste Incinerators with capacity of less than 500 pounds per hour.**	
2. Emissions Unit Status Code:**Active**	3. Long-Term Reserve Shutdown Date: **NA**
4. Control Equipment Method/Description (limit to 200 characters per device or method): **The C-1000S is a multi-chamber biological waste (animal) incineration unit rated at 400 pounds per hour. The primary chamber burner is rated at 500,000 Btu/hr, and the secondary chamber burner is rated at 1,000,000 Btu/hr, for a total of 1,500,000 Btu/hr. Control of air pollution is achieved through the design of the C-1000S biological waste incinerator, including its ability to operate the secondary chamber between 1600 - 1850 degrees Fahrenheit at a residence time in excess of 1.0 second. The design also includes fully automatic PLC based controls, independent fuel/air systems, preheated combustion air, secondary chamber temperature monitor an recorder, primary burner temperature interlock (prevents primary burner from firing prior to the secondary chamber reaching it's set point temperature), UV continuous scanning flame detectors on burners, and an opacity sensor which can temporarily suspends operation of the primary chamber.**	

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:**1.5** mmBtu/hr		
2. Maximum Incineration Rate:	**400** lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	**2000** hours/year

Emissions Unit Supplemental Requirements

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

Emissions Unit Comment

The compliance test report was submitted to Chris Kirts of FDEP on May 31, 2016 by Daniel Beatty of Beatty Environmental Services.

ATTACHMENT 1
COMPLIANCE TEST REPORT

598 Northlake Blvd, Ste. 1016, Altamonte Springs, Florida 32701 - Phone: (321) 282-757, FAX: (321) 282-7358
AI@CFL.RR.COM

BEATTY ENVIRONMENTAL SERVICES, LLC

May 31, 2016

ELECTRONIC CORRESPONDENCE

Christopher Kirts
Air Section
FDEP-Northeast District
7777 Baymeadows Way West, Suite 100
Jacksonville, FL 32256

Re: University of Florida – Animal Care Services
AIRS ID: **0010121**

Dear Mr. Kirts,

On April 28th, 2016, EPA Methods 1-5, 9, 10 and 26a for Particulate Emissions, Visible Emissions, Carbon Monoxide Emissions and Hydrogen Chloride Emissions Testing were conducted on an animal crematory unit located at 2292 SW 23rd Street in Gainesville.

The test was performed in order to comply with the requirements as specified in the Air permit 0010121-005-AO.

The following Emission Units (EU) was tested:

EU-001 Animal Cremation Unit Stack

Please contact me if you have any questions or concerns regarding this report.

Sincerely,

Daniel R. Beatty

Daniel R. Beatty

/db

Electronic Copy to: University of Florida

315 SE 20th Pl
Cape Coral, FL 33990

PHONE (239) 246-3646
E-MAIL beattyenvironmental12@gmail.com

Source Test Report for Particulate, Visible , Carbon Monoxide and Hydrogen Chloride Emissions

Report 16027-ST

Conducted:

April 28th, 2016

Prepared for:

University of FL

FacilityID: 0010121

By

Beatty Environmental Services, LLC
315 SE 20th Pl
Cape Coral, FL 33990
(239) 246-3646

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1.0 Introduction

The University of Florida operates an animal crematory located at 2292 SW 23rd Street in Gainesville. On April 28th, 2016. Tests for particulate (PM), visible emissions (VE), carbon monoxide (CO) and hydrogen chloride emissions (HCL) were performed on the exhaust stack servicing the cremation unit.

The tests were performed in order to comply with the operating permit conditions set forth by The Florida Department of Environmental Protection and to determine compliance with Florida's Biological Waste Incinerator 62-296.401(4), Florida Administrative Code.

During the testing period, records of the crematory processing data were maintained by Fred F. Koerper and are presented in Appendix C.

The results of this test verify compliance with the Florida Department of Environmental Protection Permit ID 0010121-005-AO, and the Code of Federal Regulations, Part 60.92. The purpose of this test is to comply with the fiscal 2016 permit renewal requirement.

2.0 Certification of Test Results

Facility Tested: University of Florida – Animal Care Services
2292 SW 23rd
Gainesville, 32610

Type Process: Animal Crematory

Abatement Device: Afterburner

Report: 16027-ST

Date: April 28th, 2016

Actual Particulate Emissions – **0.017** gr/dscf.
Allowable Particulate Emissions – **0.100** gr/dscf.

Actual Carbon Monoxide Emission Rate – **9.50** ppm @ 7% O2
Allowable Carbon Monoxide Emission Rate – **100** ppm @ 7% O2

Actual Hydrogen Chloride Emission Rate - **.51** lbs/hr
Allowable Hydrogen Chloride Emission Rate – **4.0** lbs/hr

Actual Visible Emission – **0.00%**
Allowable Visible Emissions - **5%**

All testing and analysis was performed in accordance with the 40 CFR Part 60.

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

Daniel Beatty
Project Director

3.0 Allowable Emission Determination

The allowable emissions were determined in accordance with Code of Federal Regulations 40 CFR 60.92 Subpart I.

Substantiating data and calculations are presented in the Appendix D.

4.0 Cyclonic Flow Determination

Due to the configuration of the system, cyclonic flow was considered to be non-existent at the sampling site.

5.0 Summary of Results
University of Florida
FID# 0010121
16027-ST

	Run 1	Run 2	Run 3	Average
Date	4/28/2016	4/28/2016	4/28/2016	
Start Time	8:55	10:23	11:45	
Stop Time	10:00	11:24	12:46	
Process Rate (tons/hr.)	396	396	396	396
Particulate Emission Rate (gr./dscf @ 7% O_2)	0.0110	0.0198	0.0209	0.017
Allowable Particulate Emission Rate (gr./dscf @7% O_2)	0.100	0.100	0.100	0.100
Visible Emission Rate (%) (highest six minute average)				0.00
Allowable Visible Emission Rate (%) (with up to 20% for 3 min. per hour)				5
Carbon Monoxide Emission Rate (ppm @7% O_2)	24.76	0.97	2.78	9.50
Allowable Carbon Monoxide Emission Rate (ppm @7% O_2)	100	100	100	100
Hydrogen Chloride Emission Rate (lbs/hr)	0.27	0.59	0.67	0.51
Allowable Hydrogen Chloride Emission Rate (lbs/hr)	4.0	4.0	4.0	4.0

6.0 Particulate Emission Results
University of Florida
FID# 0010121
16027-ST

	Run 1	Run 2	Run 3
Area (square feet)	2.18	2.18	2.18
Stack Pressure (inches Hg)	29.98	29.98	29.98
Meter Pressure (inches Hg)	30.08	30.08	30.07
Sample Volume (Std. Cu. Ft.)	41.549	40.890	38.410
Water Vapor (Cubic Feet)	5.28	6.81	6.71
Sample Moisture (percent)	11.27	14.28	14.88
Saturation Moisture (percent)	100.00	100.00	100.00
Molecular Weight (lbs/lb Mole wet)	28.09	27.82	27.75
Velocity (fpm)	1770	1792	1837
Volumetric Flow Rate (acfm)	3861	3909	4008
Volumetric Flow Rate (scfm-dry)	1107	1029	998
Concentration (gr/dscf)	0.0065	0.0133	0.0137
Concentration@7% O2 (gr/dscf)	0.0110	0.0198	0.0209
Mass Emission Rate (lbs./hr.)	0.06	0.12	0.12
Percent Isokinetic	100.08	105.95	102.65

6.5 Carbon Monoxide Emission Results
University of Florida
FID# 0010121
16027-ST

	Run1	Run 2	Run 3	Average
Date	4/28/2016	4/28/2016	4/28/2016	
Start Time	8:55	10:23	11:45	
Stop Time	10:00	11:24	12:46	
Percent Oxygen	12.66	11.56	11.81	
Carbon Monoxide (PPM)	14.68	0.65	1.82	
Carbon Monoxide Emissions (PPM @ 7% O_2)	24.76	0.97	2.78	9.50
Carbon Monoxide Allowable (PPM@ 7% O_2)	100	100	100	100

7.0 Visible Emission Results
University of Florida
FID# 0010121
16027-ST

Emission Point	Allowable Emission Rate (highest six minute average)	Emission Rate (highest six minute average)	Average Opacity
Exhaust Stack	5	0.00	0.00

8.0. Overview of Field and Analytical Procedures

8.1. EPA Method 1 – Sample and Velocity Traverses for Stationary Sources

Principle – To aid in the representative measurement of pollutant emissions and/or total volumetric flow rate from a stationary source, a measurement site where the effluent stream is flowing in a known direction is selected and the cross-section of the stack is divided into a number of equal areas. A traverse point is then located within each of these equal areas. See Sampling Point Determination.

Applicability – This method is applicable to flowing gas streams in ducts, stacks and flues. This method cannot be used when: 1) flow is cyclonic or swirling 2) a stack is smaller than about 12 inches in diameter, or 0.071 cross-sectional area or 3) the measurement site is less than two stack or duct diameters downstream or less than a half diameters upstream from a flow disturbance. The procedures in this method were utilized in its entirety according to the procedures outlined in 40 CFR Part 60, Appendix A.

8.2. EPA Method 2 – Determination of Stack Gas Velocity and Volumetric Flow Rate

Principle - Type S Pitot Tube – The average gas velocity in a stack is determined from the gas density and from measurement of the average velocity head with a Type S pitot tube.

Applicability – This method is applicable for measurement of the average velocity of a gas stream and for quantifying gas flow. This procedure is not applicable at measurement sites which fail to meet the criteria of Method 1. This method cannot be used for direct measurement in cyclonic or swirling gas streams. The procedures in this method were utilized in its entirety according to the procedures outlined in 40 CFR Part 60, Appendix A.

8.3. EPA Method 3 – Gas Analysis for the EPA Determination of Dry Molecular Weight

Principle – A gas sample is extracted from a stack by one of the following methods (1) A multi-point grab sampling method using an Orsat analyzer to analyze the individual grab sample obtained at each point; (2) a method for measuring either CO2 or O2 and using stoichiometric calculations to determine dry molecular weight; and (3) assigning a value of 30.0 for dry molecular weight, in lieu of actual measurements, for processes burning natural gas, coal, or oil.

Applicability – This method is applicable for determining carbon dioxide and oxygen concentrations and dry molecular weight of a sample from a gas stream of a fossil fuel combustion process. The method may also be applicable to other processes where it has been determined that compounds other than CO2, O2, CO, and nitrogen are not present in concentrations sufficient to affect the results. The procedures in this method were utilized in its entirety according to the procedures outlined in 40 CFR Part 60, Appendix A.

8.4. EPA Method 4 - Determination of Moisture Content in Stack Gases

Principle – A gas sample is extracted at a constant rate from the source; moisture is removed from the sample stream and determined either volumetrically or gravimetrically.

Applicability – This method is applicable for determining the moisture content of stack gas. There are two procedures given to determine the moisture. The procedure for the reference method to determine the moisture content was used to calculate the emission data. The reference method was conducted simultaneously with the pollutant emission measurement run, pollutant emission rate, etc. for the run is based upon the results of the procedures in this method were utilized in its entirety according to the procedures outlined in 40 CFR Part 60, Appendix A.

8.5 EPA Method 5 – Determination of Particulate Emissions from Stationary Sources

Principle – Particulate matter is withdrawn isokinetically from the source collected on a glass fiber filter maintained at a temperature in the range of 223-273 degrees F or such other temperature as specified by an applicable subpart of the standards or approved by the Administrator, US Environmental Protection Agency for a particular application. The particulate mass which includes any material that condenses at or

above the filtration temperature is determined gravimetrically after removal of uncombined water.

Applicability – This method is applicable for the determination of particulate emissions from stationary sources. The procedures in this method were utilized in its entirety according to the procedures outlined in 40 CFR Part 60, Appendix A.

Diagram of EPA Method 5 Sampling Train

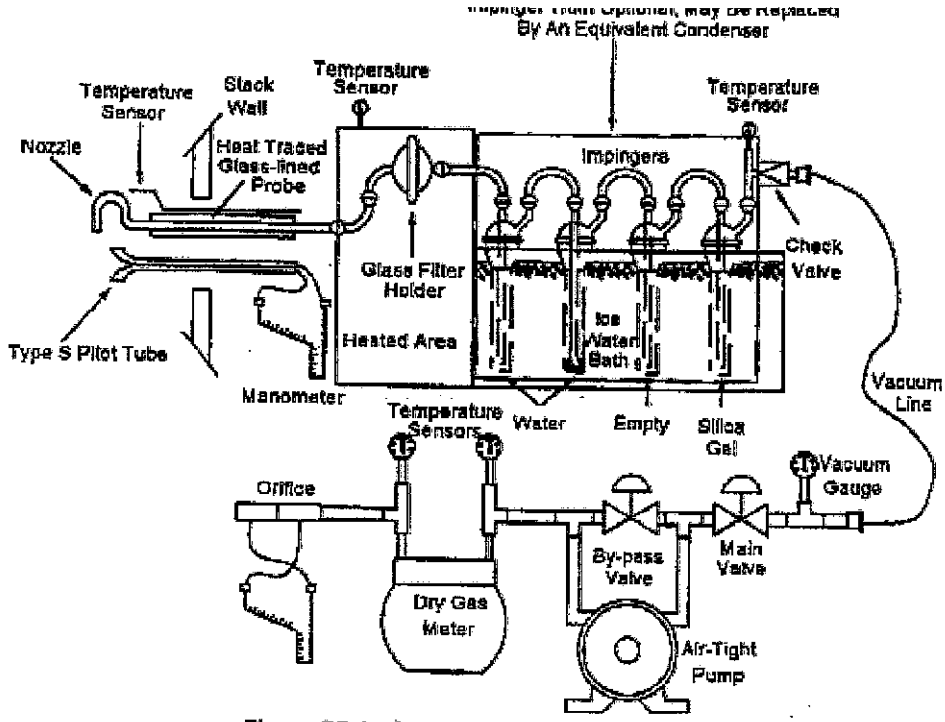


Figure F5-1. Particulate Sampling Train.

[redacted]

8.6 EPA Method 9 – Visual Determination of the Opacity of Emissions from Stationary Sources

Principle - The opacity of emissions from stationary sources is determine visually by a Qualified observer.

Applicability - This method is applicable for the determination of the opacity of emissions from stationary sources pursuant to 60.11(b) and for qualifying observers or visually determining the opacity of emissions.

8.7 EPA Method 10 – Determination of Carbon Monoxide Emissions from Stationary Sources

Principle - An integrated or continuous gas sample is extracted from a sampling point and analyzed for carbon monoxide (CO) content. Performance specifications and test procedures are provided to ensure reliable data.

Applicability - This method is applicable for the determination of carbon monoxide emissions from stationary sources. The process will dictate whether a continuous or an integrated sample is required. If the process produces CO spikes that would exceed the span (as determined from the allowable), then an integrated procedure is required.

8.8 EPA Method 26A – Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method

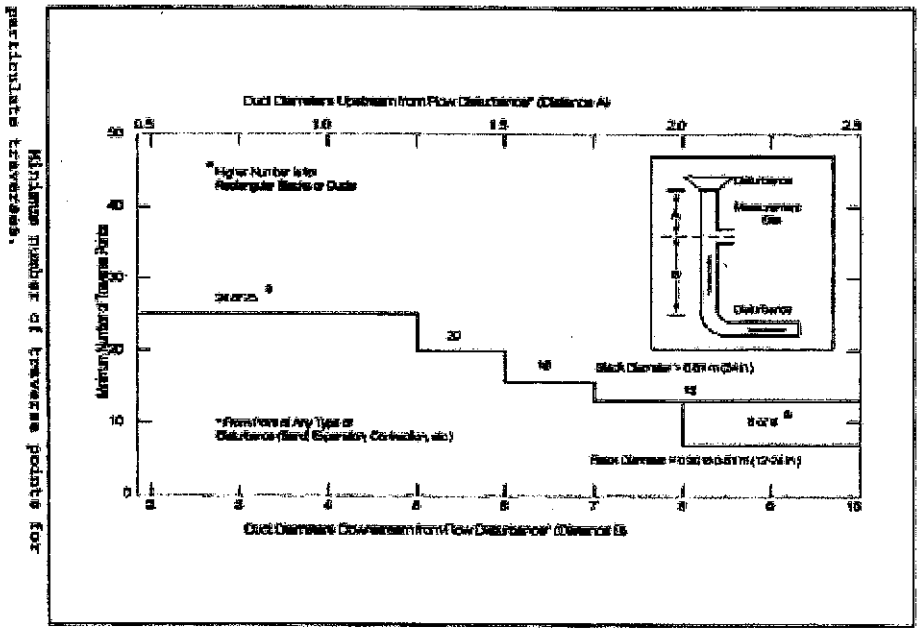
Principle - Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected in an optional cyclone, on a filter, and in absorbing solutions. The cyclone collects any liquid droplets and is not necessary if the source emissions do not contain them; however, it is preferable to include the cyclone in the sampling train to protect the filter from any liquid present. The filter collects particulate matter including halide salts but is not routinely recovered or analyzed. Acidic and alkaline absorbing solutions collect the gaseous hydrogen halides and halogens, respectively. Following sampling of emissions containing liquid droplets, any halides/halogens dissolved in the liquid in the cyclone and on the filter are vaporized to gas and collected in the impingers by pulling conditioned ambient air through the sampling train. The hydrogen halides are solubilized in the acidic solution and form chloride (Cl^-), bromide (Br^-), and fluoride (F^-) ions. The halogens have a very low solubility in the acidic solution and pass through to the alkaline solution where they are hydrolyzed to form a proton (H^+), the halide ion, and the hypohalous acid (HClO or HBrO). Sodium thiosulfate is added to the alkaline solution to assure reaction with the hypohalous acid to form a second halide ion such that 2 halide ions are formed for each molecule of halogen gas. The halide ions in the separate solutions are measured by ion chromatography (IC). If desired, the particulate matter recovered from the filter and the probe is analyzed following the procedures in Method 5.

NOTE: If the tester intends to use this sampling arrangement to sample concurrently for particulate matter, the alternative Teflon probe liner, cyclone, and filter holder should not be used. The Teflon filter support must be used. The tester must also meet the probe and filter temperature requirements of both sampling trains.

Applicability -This method is applicable for determining emissions of hydrogen halides (HX) [HCl, HBr, and HF] and halogens (X2) [Cl2 and Br2] from stationary sources when specified by the applicable subpart. This method collects the emission sample isokinetically and is therefore particularly suited for sampling at sources, such as those controlled by wet scrubbers, emitting acid particulate matter (e.g., hydrogen halides dissolved in water droplets).

9.0 Sampling Point Determination Procedure

Minimum Number of Sampling Points Per Traverse



Circular Stacks

The number of sampling points is selected according to the above diagram, with the number of points equaling the next higher multiple of four.

Rectangular Stacks

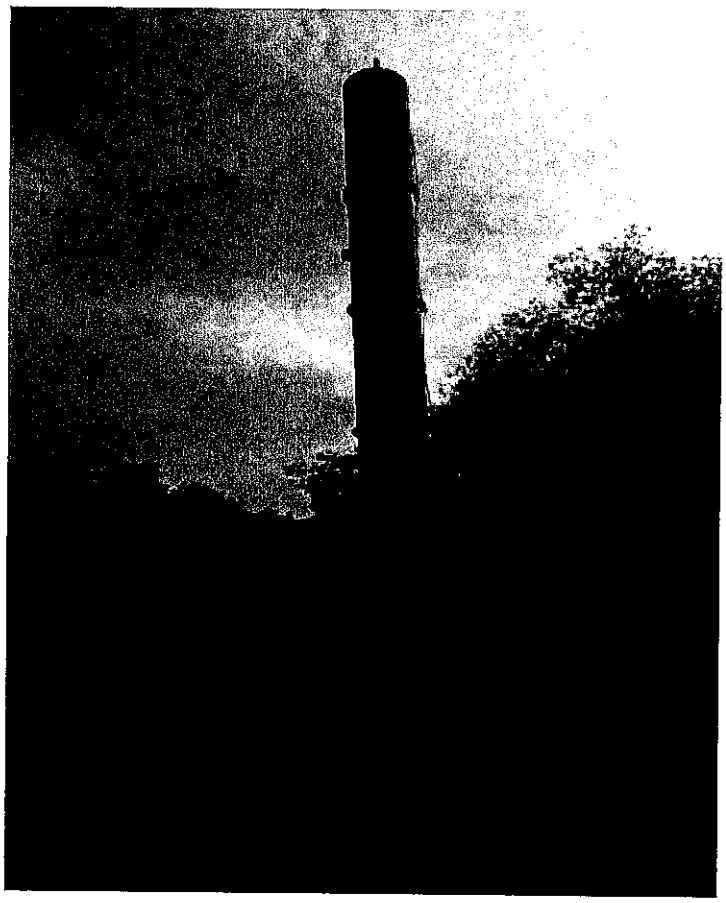
The number of sampling points is determined using the matrix below.

Number of Traverse Points	Subarea Layout Matrix
9	3x3
12	4x3
16	4x4
20	5x4
25	5x5
30	6x5
36	6x6
42	7x6
49	7x7

9.1 Sampling Point Determination
University of Florida
FID# 0010121
16027-ST

Stack Configuration	Circular
Diameter (inches)	20
Distance A - Ports to Downstream Disturbance (inches)	72
Distance A - Ports to Downstream Disturbance (diameters)	3.6
Distance B - Ports to Upstream Disturbance (inches)	110
Distance B - Ports to Upstream Disturbance (diameters)	5.5
Number of Test Ports	2
Wall or Port length	0
Number of Sampling Points per Traverse	10
Number of Points Sampled	20

Photograph of Stack



Traverse Point Location	
Traverse Point No.	Inches to Sample Point offset
1	0.5
2	1.6
3	2.9
4	4.5
5	6.8
6	13.2
7	15.5
8	17.1
9	18.4
10	19.5

10.0 Summary of Field and Laboratory Data
University of Florida
FID# 0010121
16027-ST

	Run 1	Run 2	Run 3
Date	4/28/2016	4/28/2016	4/28/2016
Start Time	8:55	10:23	11:45
Stop Time	10:00	11:24	12:46
CP	0.84	0.84	0.84
Y	1.0073	1.0073	1.0073
^Ha (inches H2O)	1.6588	1.6588	1.6588
Diameter of Nozzle (inches)	0.5000	0.5000	0.5000
Stack Diameter or Equivalent (inches)	20.00	20.00	20.00
Static Pressure (inches H2O)	-0.05	-0.05	-0.05
Barometric Pressure (inches Hg)	29.98	29.98	29.98
Test Time (minutes)	60	60	60
Meter Volume (cubic feet)	41.324	40.898	38.697
Square Root ^P (inches H2O)	0.295	0.289	0.289
Orifice Pressure ^H (inches H2O)	1.372	1.341	1.190
Average Meter Temperature (Deg. F)	71.6	74.6	78.3
Average Stack Temperature (Deg. F)	1175.8	1261.2	1347.8
Particulate Sample Weight (grms)	0.0175	0.0352	0.0340
Water Collected (grms)	111.9	144.5	142.4
Percent CO2	5.4	6.2	6.1
Percent O2	12.7	11.6	11.8
Molecular Weight (lbs/lb Mole)	29.37	29.46	29.45
Nozzle Area (square feet)	0.00136	0.00136	0.00136

Attachment A - Field Data

UNIVERSITY OF FLORIDA ANIMAL CARE SERVICES

DATE: 4/28/2016
RUN: 1
UNIT: 1

AVG. ADJUSTED CO ppmvd @ 7% O2	24.75
CORRECTED O2 %	12.66
CORRECTED CO2 %	5.41
CORRECTED CO ppmvd	14.68

ANALYZER RESPONSE, SYSTEM BIAS AND SYSTEM DRIFT DATA

RANGE SETTING	CAL GASES	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFFERENCE PPM	% SPAN	ANALYZER PRETEST VALUE	% SPAN	ANALYZER POSTTEST VALUE	% SPAN	% DRIFT	ANALYZER SERIAL #
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	% O2	12.07	12.10	0.03	0.13	12.10	0.00	12.10	0.00	0.00	01420B153
		22.55	22.60	0.05	0.22						
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	% CO2	8.70	8.70	0.00	0.00	8.70	0.00	8.60	-0.60	-0.60	01410/B139
		16.74	16.70	-0.04	-0.24						
		0.00	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.0	
50	PPM CO	19.3	19.4	0.10	0.2	19.30	-0.2	19.10	-0.6	-0.4	48C-68845-361
		48.10	48.00	-0.10	-0.2						

UNCORRECTED RAW DATA

DATE & TIME	O2 %	CO2 %	CO PPM
4/28/2016 8:55	13.38	4.95	19.20
4/28/2016 8:56	13.38	4.95	17.23
4/28/2016 8:57	13.38	4.94	18.08
4/28/2016 8:58	13.41	4.92	17.75
4/28/2016 8:59	13.36	4.95	18.18
4/28/2016 9:00	13.41	4.92	18.00
4/28/2016 9:01	13.40	4.92	17.75
4/28/2016 9:02	13.07	5.12	18.20
4/28/2016 9:03	14.51	4.13	15.88
4/28/2016 9:04	13.31	5.06	13.20
4/28/2016 9:05	12.74	5.33	13.98
4/28/2016 9:06	12.88	5.24	14.15
4/28/2016 9:07	12.94	5.19	9.62
4/28/2016 9:08	12.83	5.27	9.03
4/28/2016 9:09	12.76	5.32	10.05
4/28/2016 9:10	12.69	5.37	10.28
4/28/2016 9:11	12.64	5.41	13.38
4/28/2016 9:12	12.64	5.40	14.20
4/28/2016 9:13	12.61	5.42	14.05
4/28/2016 9:14	12.64	5.39	17.20
4/28/2016 9:15	12.68	5.36	16.83
4/28/2016 9:16	12.72	5.34	15.98
4/28/2016 9:17	12.71	5.36	13.58
4/28/2016 9:18	12.64	5.40	11.80
4/28/2016 9:19	13.22	4.92	13.90
4/28/2016 9:20	12.81	5.66	15.23
4/28/2016 9:21	11.59	6.14	14.18
4/28/2016 9:22	12.34	5.62	7.95
4/28/2016 9:23	12.57	5.46	6.90
4/28/2016 9:24	12.73	5.36	5.60
4/28/2016 9:25	12.82	5.29	5.75
4/28/2016 9:26	12.24	5.69	10.08
4/28/2016 9:27	12.77	5.33	12.05
4/28/2016 9:28	12.24	5.66	13.65
4/28/2016 9:29	12.74	5.36	11.75
4/28/2016 9:30	12.18	5.69	13.40
4/28/2016 9:31	12.72	5.36	12.83
4/28/2016 9:32	12.29	5.62	10.60
4/28/2016 9:33	12.76	5.32	9.17
4/28/2016 9:34	12.49	5.47	11.48
4/28/2016 9:35	12.73	5.32	9.78
4/28/2016 9:36	13.97	4.62	11.95
4/28/2016 9:37	11.96	5.86	13.75
4/28/2016 9:38	11.81	5.92	15.98
4/28/2016 9:39	12.52	5.44	15.58
4/28/2016 9:40	12.56	5.43	14.70
4/28/2016 9:41	12.53	5.45	15.28
4/28/2016 9:42	12.58	5.41	14.55
4/28/2016 9:43	12.58	5.42	13.58
4/28/2016 9:44	12.44	5.54	18.60
4/28/2016 9:45	12.01	5.80	18.85
4/28/2016 9:46	12.53	5.46	18.60
4/28/2016 9:47	12.10	5.81	21.18
4/28/2016 9:48	12.13	5.71	23.75
4/28/2016 9:49	12.37	5.57	20.38
4/28/2016 9:50	12.33	5.61	16.55
4/28/2016 9:51	12.24	5.66	17.85
4/28/2016 9:52	13.52	4.86	19.63
4/28/2016 9:53	11.89	5.98	23.88
4/28/2016 9:54	11.41	6.23	21.60

MEAN ANALYZER VALUES

Avg. % O2	12.69
Avg. % CO2	5.38
Avg. CO ppmvd	14.60

UNIVERSITY OF FLORIDA ANIMAL CARE SERVICES

DATE: 4/28/2016
RUN: 2
UNIT: 1

AVG. ADJUSTED CO ppmvd @ 7% O2	0.97
CORRECTED O2 %	11.56
CORRECTED CO2 %	6.24
CORRECTED CO ppmvd	0.65

ANALYZER RESPONSE, SYSTEM BIAS AND SYSTEM DRIFT DATA

RANGE SETTING	CAL GASES	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFFERENCE PPM	% SPAN	ANALYZER PRETEST VALUE	% SPAN	ANALYZER POSTTEST VALUE	% SPAN	% DRIFT	ANALYZER SERIAL #
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	% O2	12.07	12.10	0.03	0.13	12.10	0.00	12.10	0.00	0.00	01420B153
		22.55	22.60	0.05	0.22						
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	% CO2	8.70	8.70	0.00	0.00	8.60	-0.60	8.60	-0.60	0.00	01410/B139
		16.74	16.70	-0.04	-0.24						
		0.00	0.00	0.00	0.0	0.00	0.0	0.20	0.4	0.4	
50	PPM CO	19.30	19.40	0.10	0.2	19.10	-0.6	19.00	46.8	-0.2	48C-68845-361
		48.10	48.00	-0.10	-0.2						

UNCORRECTED RAW DATA

DATE & TIME	O2 %	CO2 %	CO PPM
4/28/2016 10:23	11.43	6.20	1.03
4/28/2016 10:24	12.55	5.47	5.03
4/28/2016 10:25	12.84	5.32	3.93
4/28/2016 10:26	12.88	5.29	0.00
4/28/2016 10:27	12.91	5.29	0.00
4/28/2016 10:28	12.90	5.32	1.43
4/28/2016 10:29	12.84	5.34	1.85
4/28/2016 10:30	12.31	6.06	2.98
4/28/2016 10:31	9.76	7.55	5.48
4/28/2016 10:32	10.73	6.77	4.18
4/28/2016 10:33	11.13	6.52	0.75
4/28/2016 10:34	11.21	6.46	0.60
4/28/2016 10:35	11.30	6.38	1.18
4/28/2016 10:36	11.36	6.36	1.05
4/28/2016 10:37	11.30	6.40	0.60
4/28/2016 10:38	11.31	6.39	1.10
4/28/2016 10:39	11.26	6.44	0.58
4/28/2016 10:40	11.30	6.39	0.00
4/28/2016 10:41	11.34	6.37	0.03
4/28/2016 10:42	11.31	6.38	0.18
4/28/2016 10:43	11.36	6.36	0.20
4/28/2016 10:44	11.33	6.38	0.13
4/28/2016 10:45	11.32	6.37	0.58
4/28/2016 10:46	12.33	5.67	0.08
4/28/2016 10:47	11.70	6.26	0.00
4/28/2016 10:48	11.24	6.41	0.00
4/28/2016 10:49	11.34	6.33	0.00
4/28/2016 10:50	11.38	6.31	0.15
4/28/2016 10:51	11.39	6.31	0.40
4/28/2016 10:52	11.44	6.26	0.10
4/28/2016 10:53	11.46	6.26	1.30
4/28/2016 10:54	11.99	5.87	0.45
4/28/2016 10:55	12.11	5.85	0.10
4/28/2016 10:56	11.94	5.98	0.30
4/28/2016 10:57	11.89	5.97	0.48
4/28/2016 10:58	12.04	5.88	0.00
4/28/2016 10:59	12.24	5.77	0.13
4/28/2016 11:00	12.20	5.82	0.00
4/28/2016 11:01	11.30	6.38	0.03
4/28/2016 11:02	11.21	6.42	0.87
4/28/2016 11:03	11.23	6.42	0.08
4/28/2016 11:04	12.05	5.89	0.38
4/28/2016 11:05	10.69	7.12	0.75
4/28/2016 11:06	10.81	6.74	1.68
4/28/2016 11:07	11.10	6.51	0.98
4/28/2016 11:08	11.39	6.22	0.03
4/28/2016 11:09	11.53	6.11	0.03
4/28/2016 11:10	11.28	6.31	0.00
4/28/2016 11:11	11.30	6.29	0.00
4/28/2016 11:12	11.39	6.19	0.03
4/28/2016 11:13	11.34	6.23	0.00
4/28/2016 11:14	11.58	6.09	0.28
4/28/2016 11:15	11.34	6.26	0.18
4/28/2016 11:16	11.29	6.27	0.10
4/28/2016 11:17	11.29	6.25	0.00
4/28/2016 11:18	11.37	6.19	0.00
4/28/2016 11:19	11.77	5.92	0.00
4/28/2016 11:20	11.51	6.09	0.18
4/28/2016 11:21	12.74	5.47	0.00
4/28/2016 11:22	11.24	6.29	2.45

MEAN ANALYZER VALUES

Avg. % O2	11.59
Avg. % CO2	6.17
Avg. CO ppmvd	0.74

UNIVERSITY OF FLORIDA ANIMAL CARE SERVICES

DATE:	4/28/2016
RUN:	3
UNIT:	1

AVG. ADJUSTED CO ppmvd @ 7% O2	2.79
CORRECTED O2 %	11.81
CORRECTED CO2 %	6.12
CORRECTED CO ppmvd	1.82

ANALYZER RESPONSE, SYSTEM BIAS AND SYSTEM DRIFT DATA

RANGE SETTING	CAL GASES	CERTIFIED GAS VALUE	ANALYZER VALUE	DIFFERENCE PPM	% SPAN	ANALYZER PRETEST VALUE	% SPAN	ANALYZER POSTTEST VALUE	% SPAN	% DRIFT	ANALYZER SERIAL #
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	% O2	12.07	12.10	0.03	0.13	12.10	0.00	12.10	0.00	0.00	01420B153
		22.55	22.60	0.05	0.22						
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20	% CO2	8.70	8.70	0.00	0.00	8.60	-0.60	8.40	-1.80	-1.20	01410/B139
		16.74	16.70	-0.04	-0.24						
		0.00	0.00	0.00	0.0	0.20	0.4	0.10	0.2	-0.2	
50	PPM CO	19.30	19.40	0.10	0.2	19.00	-0.8	18.90	-1.0	-0.2	48C-68845-361
		48.10	48.00	-0.10	-0.2						

UNCORRECTED RAW DATA

DATE & TIME	O2 %	CO2 %	CO PPM
4/28/2016 11:45	11.79	5.64	4.28
4/28/2016 11:46	11.58	6.00	2.65
4/28/2016 11:47	11.64	6.05	1.78
4/28/2016 11:48	11.52	6.13	1.45
4/28/2016 11:49	11.52	6.14	1.43
4/28/2016 11:50	11.49	6.16	1.50
4/28/2016 11:51	11.50	6.14	0.98
4/28/2016 11:52	11.76	5.98	1.70
4/28/2016 11:53	11.52	6.14	1.45
4/28/2016 11:54	11.55	6.14	1.15
4/28/2016 11:55	11.88	5.89	1.08
4/28/2016 11:56	11.83	6.26	1.40
4/28/2016 11:57	11.08	6.51	1.55
4/28/2016 11:58	11.27	6.37	1.25
4/28/2016 11:59	11.46	6.21	1.23
4/28/2016 12:00	11.32	6.29	1.65
4/28/2016 12:01	11.30	6.32	2.08
4/28/2016 12:02	11.18	6.41	1.85
4/28/2016 12:03	11.43	6.23	1.83
4/28/2016 12:04	11.21	6.41	1.90
4/28/2016 12:05	11.31	6.31	2.18
4/28/2016 12:06	11.55	6.16	2.43
4/28/2016 12:07	11.29	6.32	2.43
4/28/2016 12:08	11.28	6.32	2.25
4/28/2016 12:09	11.49	6.16	2.65
4/28/2016 12:10	11.55	6.15	2.55
4/28/2016 12:11	11.28	6.33	2.58
4/28/2016 12:12	11.36	6.24	2.98
4/28/2016 12:13	12.32	5.66	2.78
4/28/2016 12:14	10.97	6.77	3.18
4/28/2016 12:15	10.69	6.79	3.05
4/28/2016 12:16	10.84	6.68	3.15
4/28/2016 12:17	11.19	6.39	1.50
4/28/2016 12:18	11.42	6.29	1.28
4/28/2016 12:19	11.73	6.06	1.28
4/28/2016 12:20	11.83	5.94	1.65
4/28/2016 12:21	13.14	5.16	1.48
4/28/2016 12:22	12.61	5.63	1.68
4/28/2016 12:23	13.10	5.10	1.48
4/28/2016 12:24	14.47	4.27	0.80
4/28/2016 12:25	13.56	5.01	1.50
4/28/2016 12:26	12.01	5.87	3.38
4/28/2016 12:27	12.56	5.44	2.30
4/28/2016 12:28	14.24	4.40	2.10
4/28/2016 12:29	14.66	4.13	1.65
4/28/2016 12:30	14.21	4.48	2.55
4/28/2016 12:31	11.38	6.36	2.43
4/28/2016 12:32	10.92	6.59	3.80
4/28/2016 12:33	11.37	6.22	2.90
4/28/2016 12:34	11.43	6.22	1.45
4/28/2016 12:35	11.34	6.31	1.43
4/28/2016 12:36	11.29	6.37	1.63
4/28/2016 12:37	11.19	6.45	1.63
4/28/2016 12:38	11.04	6.55	1.38
4/28/2016 12:39	11.09	6.50	0.87
4/28/2016 12:40	12.41	5.55	1.15
4/28/2016 12:41	13.45	4.94	1.38
4/28/2016 12:42	13.73	4.73	1.08
4/28/2016 12:43	12.01	6.06	1.23
4/28/2016 12:44	11.13	6.46	2.40

MEAN ANALYZER VALUES

Avg. % O2	11.84
Avg. % CO2	5.98
Avg. CO ppmvd	1.93

Beatty Environmental Services, LLC

Particulate Field Data

Plant	University of Florida	Y_{qa}	0.9851
Report	16027-ST-1	^Ha	1.6588
Date	04/28/16	Dn	0.5000
Operator	ZB	Diameter (in.)	20.0
Time	Start - 8:55 End - 10:00	Traverses X Points	2 X 10
K Factor	15.5	Static Pressure	-0.05
Assumed Moisture %	12	Barometric Pressure (in. Hg)	29.98
Dry Gas Meter No.	1	Test Time (min.)	60
Nozzle ID No.	#16	Metered Volume	41.324
Wet Bulb Temperature	N/A	Avg. Sq Rt ^P	0.295
Post Leak Check	.000 cfm @ 16" Hg.	Avg. ^H	1.372
Cp Factor	0.84	Avg. Meter Temp.	71.6
Y	1.0073	Avg. Stack Temp.	1175.8

Traverse Point Number	Sampling Time (min.)	DG METER (cu.ft.) 548.914	Velocity Head ΔP(in. H2O)	Pressure Orifice Meter ΔH(in. H2O)	Meter Temperature (°F)	Pump Vacuum (in. Hg)	Impinger Temperature (°F)	Filter Temperature (°F)	Stack Temperature (°F)
1	3	551.61	0.14	2.17	69	4.0	60	260	1188
2	3	553.63	0.11	1.71	69	3.0	54	257	1192
3	3	555.81	0.11	1.71	70	3.0	56	259	1193
4	3	558.06	0.10	1.55	70	3.0	56	259	1193
5	3	560.01	0.08	1.24	71	2.5	57	250	1197
6	3	561.84	0.06	0.93	71	2.5	57	252	1189
7	3	563.76	0.08	1.24	71	3.0	57	261	1165
8	3	565.74	0.08	1.24	71	3.0	58	264	1139
9	3	567.71	0.08	1.24	71	3.0	58	267	1121
10	3	569.83	0.08	1.24	71	3.0	58	257	1100
1	3	572.38	0.15	2.33	72	5.0	62	255	1150
2	3	574.74	0.11	1.71	72	5.0	59	265	1227
3	3	577.01	0.10	1.55	72	5.0	61	263	1239
4	3	579.25	0.09	1.40	72	5.0	61	260	1236
5	3	581.25	0.08	1.24	73	4.0	62	255	1234
6	3	582.85	0.05	0.78	73	3.0	63	264	1148
7	3	584.56	0.06	0.93	73	3.0	64	259	1150
8	3	586.48	0.07	1.09	73	3.0	64	260	1144
9	3	588.37	0.07	1.09	74	3.0	64	260	1160
10	3	590.238	0.07	1.09	74	3.0	64	259	1150

Beatty Environmental Services, LLC

Particulate Field Data

Plant	University of Florida	Y_{qa}	0.9853
Report	16027-ST-2	^Ha	1.6588
Date	04/28/16	Dn	0.5000
Operator	ZB	Diameter (in.)	20.0
Time	Start - 10:23 End - 11:24	Traverses X Points	2 X 10
K Factor	15.5	Static Pressure	-0.05
Assumed Moisture %	12	Barometric Pressure (in. Hg)	29.98
Dry Gas Meter No.	1	Test Time (min.)	60
Nozzle ID No.	#16	Metered Volume	40.898
Wet Bulb Temperature	N/A	Avg. Sq Rt ^P	0.289
Post Leak Check	.000cfm @ 15" Hg.	Avg. ^H	1.341
Cp Factor	0.84	Avg. Meter Temp.	74.6
Y	1.0073	Avg. Stack Temp.	1261.2

Traverse Point Number	Sampling Time (min.)	DG METER (cu.ft.) 590.481	Velocity Head ΔP(in. H2O)	Pressure Orifice Meter ΔH(in. H2O)	Meter Temperature (°F)	Pump Vacuum (in. Hg)	Impinger Temperature (°F)	Filter Temperature (°F)	Stack Temperature (°F)
1	3	593.08	0.14	2.17	73	4.0	64	255	1252
2	3	595.42	0.12	1.86	73	4.0	63	254	1298
3	3	597.61	0.10	1.55	73	3.5	62	255	1316
4	3	599.64	0.09	1.40	73	3.0	62	263	1321
5	3	601.56	0.08	1.24	73	3.0	61	263	1310
6	3	603.25	0.06	0.93	73	2.5	61	258	1312
7	3	605.09	0.06	0.93	73	2.5	60	264	1296
8	3	606.94	0.08	1.24	74	3.0	60	265	1200
9	3	609.05	0.08	1.24	74	3.0	60	253	1202
10	3	611.05	0.08	1.24	74	3.0	60	253	1208
1	3	613.95	0.15	2.33	74	5.0	61	260	1158
2	3	616.03	0.12	1.86	75	5.0	60	261	1350
3	3	618.34	0.11	1.71	75	5.0	60	260	1348
4	3	620.63	0.09	1.40	76	5.0	60	254	1341
5	3	622.93	0.09	1.40	76	5.0	60	262	1290
6	3	624.61	0.06	0.93	76	3.5	60	260	1205
7	3	626.52	0.07	1.09	76	4.0	61	256	1202
8	3	628.49	0.08	1.24	76	4.0	60	269	1200
9	3	629.96	0.04	0.62	77	1.5	60	257	1206
10	3	631.379	0.03	0.47	77	1.5	61	255	1209

Beatty Environmental Services, LLC

Particulate Field Data

Plant	University of Florida	Y_{qa}	0.9848
Report	16027-ST-3	^Ha	1.6588
Date	04/28/16	Dn	0.5000
Operator	ZB	Diameter (in.)	20.0
Time	Start - 11:45 End - 12:46	Traverses X Points	2 X 10
K Factor	14.0	Static Pressure	-0.05
Assumed Moisture %	14	Barometric Pressure (in. Hg)	29.98
Dry Gas Meter No.	1	Test Time (min.)	60
Nozzle ID No.	#16	Metered Volume	38.697
Wet Bulb Temperature	N/A	Avg. Sq Rt ^P	0.289
Post Leak Check	.000 cfm @ 15" Hg.	Avg. ^H	1.190
Cp Factor	0.84	Avg. Meter Temp.	78.3
Y	1.0073	Avg. Stack Temp.	1347.8

Traverse Point Number	Sampling Time (min.)	DG METER (cu.ft.) 632.312	Velocity Head ΔP(in. H2O)	Pressure Orifice Meter ΔH(in. H2O)	Meter Temperature (°F)	Pump Vacuum (in. Hg)	Impinger Temperature (°F)	Filter Temperature (°F)	Stack Temperature (°F)
1	3	634.81	0.14	1.96	76	4.0	64	259	1330
2	3	637.02	0.11	1.54	76	4.0	63	252	1419
3	3	639.14	0.10	1.40	76	4.0	63	260	1405
4	3	641.09	0.08	1.12	77	3.0	63	257	1425
5	3	643.04	0.08	1.12	77	3.0	63	256	1415
6	3	644.62	0.06	0.84	77	2.0	63	258	1397
7	3	646.32	0.07	0.98	77	2.0	64	266	1329
8	3	648.14	0.08	1.12	78	2.0	63	261	1203
9	3	650.01	0.06	0.84	78	2.0	63	266	1228
10	3	651.59	0.06	0.84	78	2.0	62	255	1258
1	3	653.86	0.13	1.82	78	4.0	63	260	1250
2	3	656.08	0.11	1.54	79	4.0	62	258	1430
3	3	657.96	0.08	1.12	79	3.0	62	266	1393
4	3	659.81	0.07	0.98	79	2.0	63	260	1365
5	3	661.47	0.07	0.98	79	2.0	63	256	1338
6	3	663.06	0.06	0.84	80	2.0	63	270	1376
7	3	665.01	0.08	1.12	80	3.5	63	256	1367
8	3	666.97	0.08	1.12	80	3.5	63	259	1360
9	3	668.92	0.09	1.26	80	3.5	63	256	1352
10	3	671.009	0.09	1.26	81	3.5	63	262	1315

Beatty Environmental Services, LLC

315 SE 20th Pl
Cape Coral, Florida 33990
(239) 246-3646
beattyenvironmental12@gmail.com

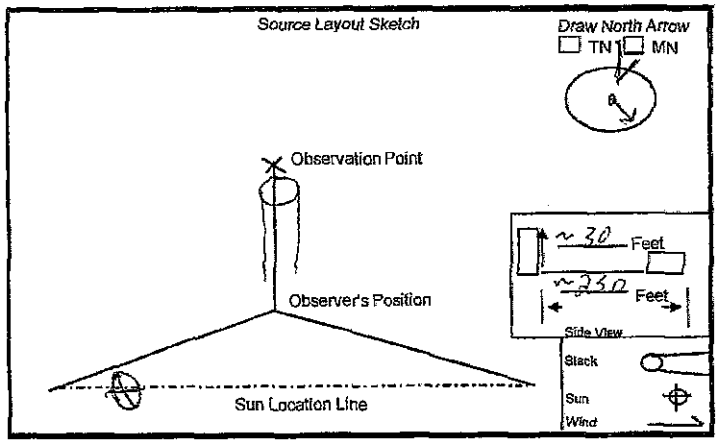
VISIBLE EMISSION OBSERVATION FORM

Method Used (Circle One): Method 9 (circled) 203A 203B Report___

Company Name	University of Florida
	Animal Care Services Blg 1371 — AIRS 0010121
Street Address	2292 SW 23rd St. (Westside)
City	Gainesville — Zip Code 32610
Phone No.	

Process	Animal Cremation	Unit # EU-001	Operating Mode 396 lb/hr
Control Equipment	Afterburners		Operating Mode 1800 F

Describe Emission Point	Round Stack
Ht of Emis.Point ~ 30'	Ht Rel to Observer ~ 25'
Distance to Emis. Pt ~ 250'	Direction to Emis. Pt (Degrees) N 222°
Vertical Angle to Obs. < 18°	Direction to Obs. Pt. (Degrees) N 222°
Distance and Direction to Obs. Pt from Emission Pt	~ 1' above
Describe Emissions	None
Emission Color NA	Water Droplet Plume Attached___ Detached___ None X
Describe Plume Background	Sky
Background Color Blue	Sky Conditions Clear
Wind Speed 5-7 mph	Wind Direction SW
Ambient Temp. ~ 80°F	Wet Bulb Temp. — % RH ~ 58%



Latitude 29°37' 42"	Longitude 82°21' 35"	Declination

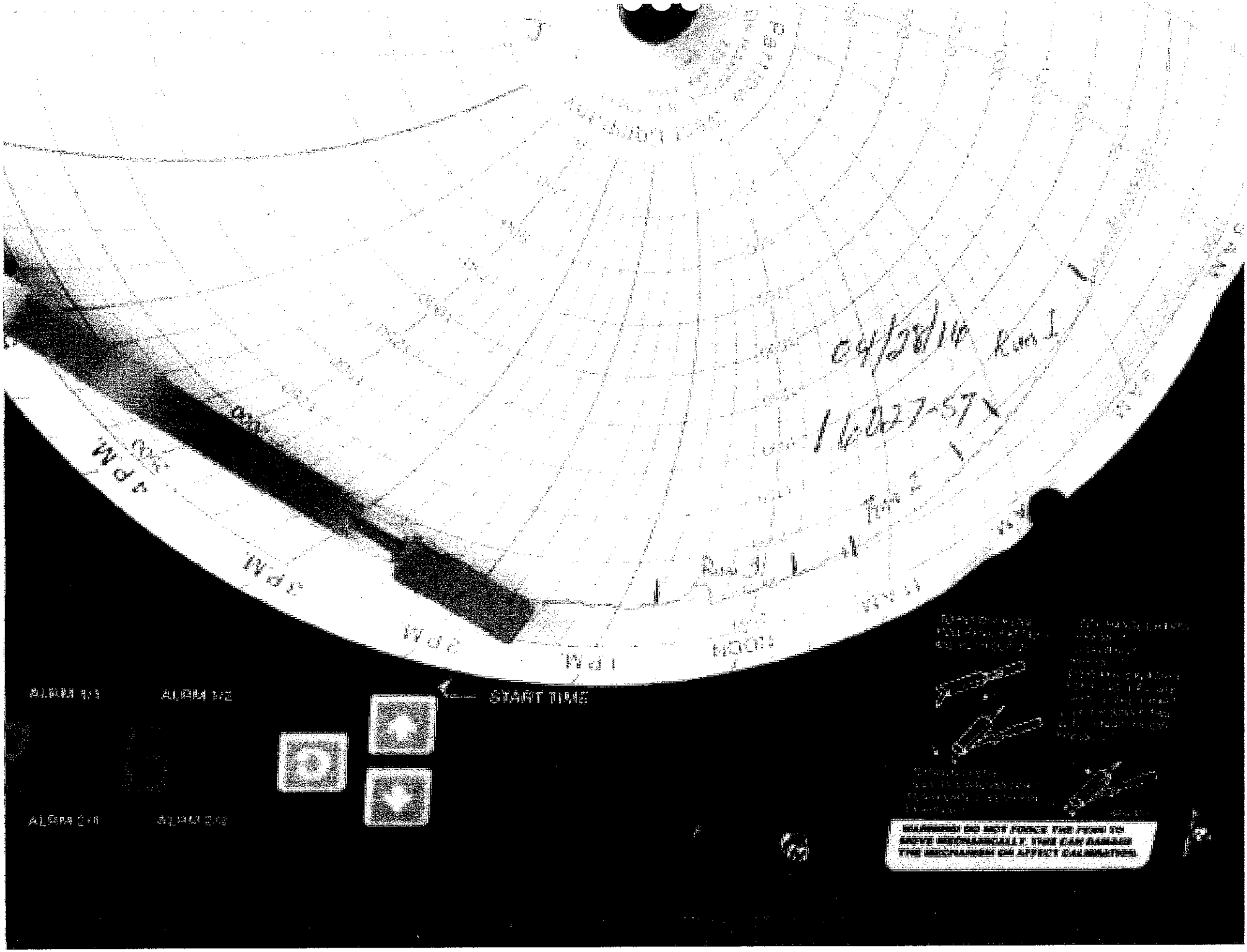
Comments

START 1025 STOP 1125

Observation Date 4-28-16 Start Time 1025 Stop Time 1125

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

Number of Readings Above 10 were 0	Average Opacity for Highest 6 Min Period 0
Range of opacity Readings Min 0 Max 0	
Observers Name (Print) Stephen Webb	
Observers Signature Stephen C. Webb	Date 4-28-16
Organization Beatty Environmental Services, llc	
Certified By Whitlowe	Date 1-7-16


START TIME
MOON
WARNING: DO NOT FORCE THE PEN TO MOVE MECHANICALLY. THIS CAN DAMAGE THE MECHANISM OR AFFECT CALIBRATION.

Whitlow Enterprises, LLC
www.smokeschool.net
Certifies that
Steve Webb- Coastal Air
Has passed the certification test required by EPA Method 9
40 CFR 60 Appendix A and is qualified as a visible emissions evaluator.
Certification Date: ***January 7, 2016*** **Location:** ***Lakeland, FL***

George Whitlow
President

LFL010716-28

Attachment B - Laboratory Data

Particulate Laboratory Data
University of Florida
FID# 0010121
16027-ST

Run 1

Filter Number	Q1	
	Final Weight	0.4182 grams
	Tare Weight	0.4071 grams
	Difference	0.0111 grams
Beaker Number	1C	
	Final Weight	114.0617 grams
	Tare Weight	114.0551 grams
	Difference	0.0066 grams
Filter Blank Number	Q4	
	Final Weight	0.4130 grams
	Tare Weight	0.4130 grams
	Difference	0.0000 grams
Acetone Wash Down		
	Volume of Rinse	95 mL
	Residue in Rinse (calculated)	2.53197E-06 mg/mg
	Total Residue in Rinse	0.00019 grams
Total Particulate Weight		**0.0175 grams**

Water Collected

Final Impinger Water	304 mL
Initial Impinger Water	200 mL
Final Silica Weight	208.1 grams
Silica Tare Weight	200.0 grams
Total Water Collected	**111.9 grams**

Analyst

Particulate Laboratory Data
University of Florida
FID# 0010121
16027-ST

Run 2

Filter Number	Q2	
	Final Weight	0.4421 grams
	Tare Weight	0.4126 grams
	Difference	0.0295 grams
Beaker Number	2C	
	Final Weight	117.5146 grams
	Tare Weight	117.5087 grams
	Difference	0.0059 grams
Filter Blank Number	Q4	
	Final Weight	0.4130 grams
	Tare Weight	0.4130 grams
	Difference	0.0000 grams
Acetone Wash Down		
	Volume of Rinse	95 mL
	Residue in Rinse (calculated)	2.53197E-06 mg/mg
	Total Residue in Rinse	0.00019 grams
Total Particulate Weight		**0.0352 grams**

Water Collected

Final Impinger Water	335 mL
Initial Impinger Water	200 mL
Final Silica Weight	209.7 grams
Silica Tare Weight	200.0 grams
Total Water Collected	**144.5 grams**

Analyst

Particulate Laboratory Data
University of Florida
FID# 0010121
16027-ST

Run 3

Filter Number	Q3	
	Final Weight	0.4445 grams
	Tare Weight	0.4169 grams
	Difference	0.0276 grams
Beaker Number	3C	
	Final Weight	114.4588 grams
	Tare Weight	114.4522 grams
	Difference	0.0066 grams
Filter Blank Number	Q4	
	Final Weight	0.4130 grams
	Tare Weight	0.4130 grams
	Difference	0.0000 grams
Acetone Wash Down		
	Volume of Rinse	110 mL
	Residue in Rinse (calculated)	2.53197E-06 mg/mg
	Total Residue in Rinse	0.00022 grams
Total Particulate Weight		**0.0340 grams**

Water Collected

Final Impinger Water	334 mL
Initial Impinger Water	200 mL
Final Silica Weight	208.6 grams
Silica Tare Weight	200.0 grams
Total Water Collected	**142.4 grams**

Analyst

Beatty Environmental Services, LLC

315 SE 20th Pl.
Cape Coral, FL 33990

Project No: 16027-ST

Hydrogen Chloride

EPA Method 26A Analysis

Analytical Report
27370

Element One, Inc.
6319-D Carolina Beach Rd., Wilmington, NC 28412
910-793-0128 FAX: 910-792-6853 e1lab@e1lab.com

The following data for Analytical Report 27370
has been reviewed for completeness, accuracy,
adherence to method protocol,
and compliance with quality assurance guidelines.

Review by:

Linda Ann Webb

Linda Ann Webb, M.S. Chemist
May 24, 2016

Report Reviewed and Finalized By:

Ken Smith, Laboratory Director
May 24, 2016

Summary of Analysis

Summary of Method 26A Analysis

Element	M26A-R1 e27370-1 Total mg	M26A-R2 e27370-2 Total mg	M26A-R3 e27370-3 Total mg
HCl	7.76	17.6	19.6

Element	Reagent Blank 0.1N H_2SO_4 e27370-4 Total mg	Reagent Blank DI H_2O e27370-4 Total mg
HCl	< 0.035	< 0.015

Element One Analytical Narrative

Client:	Beatty Environmental Services,LLC.	Element One #:	27370
Client ID:	16027-ST	Analyst:	LAW
Method:	M26A	Dates Received:	05.17.2016
Analytes:	HCl	Dates Analyzed:	05.23.2016

Summary of Analysis

The samples were prepared and analyzed according to Method 26A protocol. The samples were analyzed for chloride on a Metrohm 761/788 ion chromatograph system.

Detection Limits

The Metrohm reporting limit was 0.1µg/mL for chloride.

Analysis QA/QC

Duplicate analyses relative percent difference (RPD) and spike recovery data are summarized in the Quality Control section. All QA/QC data was within the criteria of the method.

Additional Comments

The reported results have not been corrected for any blank values or spike recovery values. The reported results relate only to the items tested or calibrated.

Summary of Quality Control Data

Summary of Method 26A Duplicate Analysis RPD

(26A QC limits: <5% for RPD)

Element	M26A-R1 RPD	M26A-R2 RPD	M26A-R3 RPD
HCl	0.5%	0.6%	0.1%

Element	Reagent Blank 0.1N H_2SO_4 RPD	Reagent Blank DI H_2O RPD
HCl	NA	NA

Summary of Method 26A Spike Recoveries

(26A QC limits: 90-110% for Spike Recoveries)

Element	M26A-R3 Recovery
HCl	101%

27370

Element One, Inc.
6319-D Carolina Beach Rd
Wilmington, NC 28412

CHAIN OF CUSTODY
Air Emissions Samples

Phone: 910-793-0128
FAX: 910-792-6853
Email: e1lab@e1lab.com

Client: Beatty Environmental Services	Sampling Site: University of Florida
Project No: 16027-ST	Date: 4/28/2016
Project ID:	Plant Name: Cat House
PO No	Plant City, State: Gainesville, Florida

Contact: Daniel Beatty		Address: 315 SE 20th Pl. Cape Coral, Fl 33990
Phone: (239) 246-3646	Cell	
Fax:	email: beattyenvironmental12@gmail.com	

Sample Box ID	Custody Seal #	Date	Unit / Run Number	Sample Fraction	Filter ID	Filter Tare
		4/28/2016	Run 1 Acid Catch Cont. #3	50% 152mL/304mL		
		4/28/2016	Run 2 Acid Catch Cont. #3	50% 167.5mL/335mL		
		4/28/2016	Run 3 Acid Catch Cont. #3	50% 167mL/334mL		
		4/28/2016	Absorb. Sol. Blank Cont. #6	50% 170mL/340mL		
		4/28/2016	Rinse Blank Cont. #7	50% 150mL/300mL		

Analysis Requested.

Method	EPA Method 26a
Analytical Parameters	HCL Analysis Only Per Client via phone, need 5 day TAT -5.18.16 RDS

	Signature	Company	Date	Time
Relinquished by:	Nicholas Becker	Beatty Environmental Services	5-13-16	10:35
Received by:	[illegible]	Beatty Environmental Services	5-13-16	10:35
Relinquished by:				
Received by:				
Relinquished by:				
Received by:	Lora Brinton	Element One Inc	5-17-16	1515
Sample Condition Upon Receipt		Temperature Upon Receipt		

Samples received in good condition. No empty containers.

Element One, Inc. Form 120 - Revision 1.1

Analytical Calculations

HCl-

Total HX (mg) =[X Results (µg/mL)*Dilution*Final Volume (mL)/1000]*Correction Factor

Where-

X Results= Raw sample concentration (ppm)—*IC Data Sheet*

Dilution= $\frac{\text{Diluted Volume}}{\text{Aliquot}}$—*IC Run Sheet*

Final Volume--*Sample Submission*

1.028= Correction factor for hydrogen chloride

Analytical Calculations

Spike Recovery-

$$\text{Spike (\%)} = \frac{\text{(Spiked Result (µg/mL) – Sample Result (µg/mL))}}{\text{Spike Amount (µg/mL)}} \times 100$$

Where-

Spike Result = Raw sample concentration (ppm)--*IC-Data Sheet*

Sample Result = Raw sample concentration (ppm)--*IC-Data Sheet*

Spike Amount--*IC-Data Sheet*

Duplicate Analysis RPD-

$$\text{RPD (\%)} = \frac{\text{(Duplicate Result (µg/mL) - Sample Result (µg/mL))}}{\text{Average (µg/mL)}} \times 100$$

Where-

Sample Result and Duplicate Results=Raw sample concentration (ppm)--*IC-Data Sheet*

$$\text{Average} = \frac{\text{(Duplicate + Sample Results)}}{2}$$

elementOne **AIR TESTING SAMPLE SUBMISSION FORM** **Lab ID 27370**

RUSH---5 DAY TAT

Analysis Due Date 05.20.16
QA/QC/Report Due Date 05.23.16

Client	Beatty Environmental Services, LLC
Project No	16027-ST

Date Rec	05.17.16
Time Rec	1515

Volume Marked	Volume Loss	FH pH < 2	BH pH > 8	Ref. Method:
Y (N)	Y N (?)	(Y) N	Y N	26 / 26A

Sample Identification

1	M26A-R1	4	Reagent Blank		
2	M26A-R2				
3	M26A-R3				
	M26A-R3 Spike				

Analyses Requested Samples 1-4 HCl

Runs/FB

	Impinger 1,2, & 3 (.1) & BT						Impinger 4 & 5 (.2)			
	FH Impinger 1 (or Combined Imp)		FH Impinger 2		FH Impinger 3		BH Impinger 4 (or Combined Imp)		BH Impinger 5	
Lab ID	BV, ml	FV, ml	BV, ml	FV, ml	BV, ml	FV, ml	BV, ml	FV, ml	BV, ml	FV, ml
1 152	172									
2	170									
3.S	170									

Reagent Blanks

Lab ID	Fractions	BV, ml	FV, ml	NOTES
4	0.1 N H_2SO_4	172		
	0.1 N NaOH			
	DI H_2O	150		

Lab Communications

Fractions Received: Runs: H2SO4; RB: H2SO4, DI---05.17.16 LLB

SS Page 1 of 1
SS by
5/18/2016 12:32:25 PM

Imp 1, 2, &3 Prep By / Date LMW 05.23.16
Imp 4 & 5 Prep By / Date
Labeled By/Date 5.18.16
ID Verification By/Date 5.19.16

elementOne

M26A-HCl IC Data Sheet

Lab ID #: 27370

Client: Beatty
Date: 05.24.16
Analyst: LAW
Detection Limit, (µg/ml): 0.10

Column: Metrosep A Supp 5
Eluent: 6.4 mM Na_2CO_3/ 2.0 mM $NaHCO_3$
Flow Rate: 0.7mL/min.
Cl⁻ to HCl factor: 1.028

Sample ID	Cl⁻ µg/ml	Dilution	Final Vol, ml	HCl, Total mg	Spike, µg/ml	% RPD/ Recovery	File Name	Date Time
LRB	0.000	1	10	< 0.001			_2016-05-23_15-07.CHW	5/23/2016 15:07
LRB	0.000	1	10	< 0.001		NA	_2016-05-23_15-22.CHW	5/23/2016 15:22
LRB SPK	4.911	1	10	0.051	5.00	98%	_2016-05-23_15-37.CHW	5/23/2016 15:37
LRB SPK	4.984	1	10	0.051	5.00	100%	_2016-05-23_15-51.CHW	5/23/2016 15:51
27370-1	4.978	10	152	7.78			_2016-05-23_16-06.CHW	5/23/2016 16:06
27370-1 DUP	4.953	10	152	7.74		0.5%	_2016-05-23_16-21.CHW	5/23/2016 16:21
27370-2	2.012	50	170	17.6			_2016-05-24_11-17.CHW	5/24/2016 11:17
27370-2 DUP	2.000	50	170	17.5		0.6%	_2016-05-24_11-31.CHW	5/24/2016 11:31
27370-3	2.241	50	170	19.6			_2016-05-24_10-18.CHW	5/24/2016 10:18
27370-3 DUP	2.244	50	170	19.6		0.1%	_2016-05-24_10-33.CHW	5/24/2016 10:33
27370-3 SPK	7.293	50	170	63.8	5.00	101%	_2016-05-24_10-47.CHW	5/24/2016 10:47
27370-3 SPK DUP	7.246	50	170	63.3	5.00	100%	_2016-05-24_11-02.CHW	5/24/2016 11:02
27370-4 RB H2SO4	0.000	2	172	< 0.035			_2016-05-23_19-03.CHW	5/23/2016 19:03
27370-4 RB H2SO4 D	0.000	2	172	< 0.035		NA	_2016-05-23_19-17.CHW	5/23/2016 19:17
27370-4 DI	0.087	1	150	< 0.015			_2016-05-23_19-32.CHW	5/23/2016 19:32
27370-4 DI DUP	0.086	1	150	< 0.015		NA	_2016-05-23_19-47.CHW	5/23/2016 19:47

Standards	Cl⁻ µg/ml	QC, µg/ml	% Recovery	File Name	Date Time
0	0.000			_2016-05-23_12-25.CHW	5/23/2016 12:25
0.1	0.107			_2016-05-23_12-40.CHW	5/23/2016 12:40
1	0.925			_2016-05-23_12-55.CHW	5/23/2016 12:55
5	4.846			_2016-05-23_13-10.CHW	5/23/2016 13:10
10	10.224			_2016-05-23_13-24.CHW	5/23/2016 13:24
0.1	0.109			_2016-05-23_21-15.CHW	5/23/2016 21:15
1	0.917			_2016-05-23_21-30.CHW	5/23/2016 21:30
5	4.929			_2016-05-23_21-44.CHW	5/23/2016 21:44
10	10.275			_2016-05-23_21-59.CHW	5/23/2016 21:59
Correlation=	0.99986				
QC	4.936	5.00	99%	_2016-05-23_13-39.CHW	5/23/2016 13:39
QC	4.901	5.00	98%	_2016-05-23_13-54.CHW	5/23/2016 13:54
QC	5.058	5.00	101%	_2016-05-23_17-34.CHW	5/23/2016 17:34
QC	4.868	5.00	97%	_2016-05-23_17-49.CHW	5/23/2016 17:49
QC	5.009	5.00	100%	_2016-05-23_20-31.CHW	5/23/2016 20:31
QC	4.933	5.00	99%	_2016-05-23_22-14.CHW	5/23/2016 22:14
QC	4.878	5.00	98%	_2016-05-24_11-46.CHW	5/24/2016 11:46
DL	0.109	0.10	109%	_2016-05-23_14-38.CHW	5/23/2016 14:38
DL	0.110	0.10	110%	_2016-05-23_14-53.CHW	5/23/2016 14:53
DL	0.110	0.10	110%	_2016-05-23_22-28.CHW	5/23/2016 22:28
26524-5 QC	4.063	2 8.77	98%	_2016-05-23_20-01.CHW	5/23/2016 20:01
26524-5 QC DUP	4.154	2 8.77	97%	_2016-05-23_20-16.CHW	5/23/2016 20:16

elementOne
e 27370-HCl

Linda Anderson

elementOne

IC Sample Sheet/Digestion Worksheet

Lab ID #: 27370

Date: 05.23.16
Analyst: LAW
Batch name: 052316-27370

Column: Metrosep A Supp 5
Eluent: 6.4 mM Na_2CO_3/ 2.0mM $NaHCO_3$
Flow Rate: .7 mL/min.
Method: 26A

AS LOC.	Sample ID	Client	Analyte	Results (ug/mL)	Results (ug/mL)	Dilution	Wt (g) / FV (mL)
1	00			QC		R2	
2	0.1		Cl-	H2-CL0111.4		.9993	
3	1.0						
4	5.0						
5	10.0						
6	QC						
7	QC						
8	BLK						
9	BLK						
10	DL						
11	DL						
12	LRB						
13	LRB						
14	LRB+						
15	LRB+						
16	27390-1		HCl		4.978	10X	
17	-1D		↓		4953	↓	
18	-3				12.737		over curve
19	-3D				12.683		↓
20	-3+				18.718		
21	-3+D		↓		18.787	↓	↓
22	QC						
23	QC						
24	BLK						
25	BLK						

Curve IC Lot # LCS-023-2 Comments: pg 1 of 2
Spike 100 uL from 1000 ug/mL Std. to 10mL sample Lot #'s: IC ME Solution 152121
Submitted for QC- Date: 05.24.16 Time: 9:54 By: LAW QC Review- Date: ✓ Time: ____ By: ____
Re-Test Required- No ____ Yes ✓ Comments: 27370-2,3 over curve
Re-Submitted for QC- Date: 05.24.16 Time: 12:13 By: LAW QC Review- Date: ✓ Time: ____ By: ____

elementOne **IC Sample Sheet/Digestion Worksheet** **Lab ID #:** 27370

Date: 05-23-16
Analyst: LAW
Batch name: 052316-27370

Column: Metrosep A Supp 5
Eluent: 6.4 mM Na_2CO_3/ 2.0mM $NaHCO_3$
Flow Rate: .7 mL/min.
Method: 26A

AS LOC.	Sample ID	Client	Analyte	Results (ug/mL)	Results (ug/mL)	Dilution	Wt (g) / FV (mL)
26	27370-2		HCl		11.143	10X	overcurve
27	-2D		↓		11.288	↓	↓
28	-4 2B H_2SO_4		↓		—	2X	
29	-4 2BD H_2SO_4		↓		—	↓	
30	26524-5GC				4.083	2X	TV=8.77
31	-5GCD				4.154	↓	↓
32	QC						
33	BLK						
34	0.0						
35	0.1						
36	1.0						
37	5.0						
38	10.0						
39	QC						
40	DC						
41	BLK						
42	27370-D1		HCl		—	1X	} insert sequence
43	LAW 05.24.16 -D1D		↓		—	↓	
44	27370-3				2.241	50X	
45	-3D				2.244		
46	-3+			LAW 05.24.16	7.8293		
47	-3+D				7.246	↓	
48	-2				2.012	50X	
49	-2D				2.000	↓	
50	QC						
51	BLK						

Curve IC Lot #_____ Comments: Pg 2 of 2
Spike 100 uL from 1000 ug/mL Std. to 10mL sample Lot #s: TC ME Solution _____
Submitted for QC- Date:____ Time:____ By:____ QC Review- Date:____ Time:____ By:____
Re-Test Required- No____ Yes____ Comments:____
Re-Submitted for QC- Date:____ Time:____ By:____ QC Review- Date:____ Time:____ By:____

Attachment C
Process Data

Beatty Environmental Services, LLC

Emission Control Device and Process Data Form

Company: University of Florida - Gainesville

Installation: Model C-1000P Cremation/Incineration Chamber

Type of Installation: Crawford Incineration Chamber

Type of Material Processed: Feline Remains

Type of Fuel Used: Natural Gas

Type of Pollution Control System: Afterburner

General Condition of Control Equipment: Normal

Run No.	1	2	3
Start Time	8:55	10:23	11:45
Stop Time	10:00	11:24	12:46
Fuel GPH	Natural Gas	Natural Gas	Natural Gas
Date	04/28/2016	04/28/2016	04/28/2016
Pressure Drop(in.H20)	N/a	N/a	N/a
Process Rate ~~TPH~~ lbs	396 lb/hr	396 lb/hr	396 lb/hr
Percent Recycle	N/a	N/a	N/a

Signature: Fred F Koerper Title: Maintenance Mech II

Printed Name: FRED F Koerper Report No. 16027-ST

*By signing above facility designee agrees that all information on this form is true and correct to the best of his/her knowledge.

Attachment D - Calculations for Run 1

CALCULATIONS FOR RUN 1
University of Florida
FID# 0010121
16027-ST

STACK AREA

3.1416 x (Diameter / 24)^2
3.1416 X (20.00 /24)^2
2.18 SQ.FT.

STACK PRESSURE

BAROMETRIC PRESSURE + (STATIC PRESSURE/ 13.6)
29.98 + (-0.05 /13.6)
29.98 IN.HG

METER PRESSURE

BAROMETRIC PRESSURE + (ORIFICE PRESURE/13.6)
29.98 + (1.37 / 13.6)
30.08 IN.Hg

SAMPLE VOLUME

17.64 X (Y) X METER VOLUME X METER PRESSURE / (METER TEMP. + 460)
17.64 X 1.0073 X 41.324 X 30.08 / (71.6 + 460)
41.549 STD.CU.FT.

WATER VAPOR VOLUME

0.04715 X WATER COLLECTED
0.04715 X 111.9
5.28 STD.CU.FT.

SAMPLE MOISTURE

100 X WATER VAPOR VOLUME / (WATER VAPOR VOLUME + SAMPLE VOLUME)
100 X 5.28 / (5.28 + 41.549)
11.27 %

SATURATION MOISTURE

100 X (VAPOR PRESSURE @ STACK TEMP. / STACK PRESSURE)
100 X (######## / 29.98)
100.00 %

STACK MOISTURE FRACTION

(THE LESSER OF SAMPLE MOISTURE OR SATURATION MOISTURE) / 100
0.113

DRY MOLECULAR WEIGHT OF STACK GAS

(0.28 X (100-%N2)) + (0.44 X %CO2) + (0.32 X %O2)
(0.28 X (100 - (5.41 + 12.66))) + (0.44 X 5.41) + (0.32 X 12.66)
29.37

CALCULATIONS FOR RUN 1
University of Florida
FID# 0010121
16027-ST

MOLECULAR WEIGHT OF STACK GAS

MOLECULAR WEIGHT X (1 - MOISTURE) + (18 X MOISTURE)

29.37 X (1 - 0.113) + (18 X 0.113)

28.09

STACK VELOCITY

85.49 X CP X 60 X SQ.(^P) X SQ.(STACK TEMP + 460)/SQ.(STACK PRESSURE X MOLECULAR WT.)

85.49 X 0.840 X 60 X 0.295 X SQ.(1175.8 + 460) / SQR(29.98 X 28.091)

1770 FPM

VOLUMETRIC FLOW RATE (ACFM)

STACK AREA X STACK VELOCITY

2.18 X 1770

3861 ACFM

VOLUMETRIC FLOW RATE (SCFM) DRY

17.64 X (ACFM) X STACK PRESSURE X (1-MOISTURE) / (STACK TEMP. + 460)

17.64 X 3861 X 29.98 X (1 - 0.113) / (1175.8 + 460)

1107 SCFM (DRY)

CONCENTRATION (gr/dscf)

Total Particulate Weight X 15.43 / Sample Volume

0.0175 X 15.43 / 41.55

0.0065

CONCENTRATION@7% O2 (gr/dscf)

Concentration X 13.9 / (20.9 - %o2)

0.0065 X 13.9 / (20.9 - 12.660)

0.0110

MASS EMISSION RATE (LBS./HR.)

CONCENTRATION X (SCFM- DRY) X 60 / 7000

0.0065 X 1107 X 60 / 7000

0.06 LBS/HR

PERCENT ISOKINETIC

.0945 X (STACK TEMP. + 460) X SAMPLE VOLUME X 60

. (STACK PRES. X VELOCITY X NOZZLE AREA X TEST TIME X (1-MOISTURE))

0.0945 X (1175.75 + 460) X 41.55 X 6O

29.98 X 1770 X 0.00136 X 60.00 X (1- 0.113)

100.08 %

Attachment E - Calibration Data

ANNUAL METER CALIBRATION METER NO. 002047 ORIFICE SET NO. JC40-73

DATE 9/9/2015 Y= 1.0073 MAX % VARIATION 1.8276% PASS

BAROMETRIC PRESSURE 30.05 ^Ha= 1.6588 MAX % VARIATION 2.9348% PASS

CRITICAL ORIFICE DATA

ORIFICE SERIAL NO.	ORIFICE K' FACTOR	ACTUAL VACUUM	^H (IN H2O)	TIME (MIN.)	AMBIENT TEMP INITIAL	AMBIENT TEMP. FINAL	METER TEMP. INITIAL	METER TEMP. FINAL	METER READING INITIAL	METER READING FINAL	VM (CU.FT.)	VM CORRECTED	Vcr STD	Vcr NOMINAL	Y	VARIATION	^H (IN. H2O)	VARIATION
40	0.2435	23.5	0.29	10	77	77	78	79	202.600	205.778	3.1780	3.1305	3.1576	3.1988	1.0086	-0.0038	1.6111	0.0010
40	0.2435	23.5	0.29	10	77	77	79	79	205.778	208.947	3.1690	3.1188	3.1576	3.1988	1.0124	0.0000	1.6096	-0.0005
40	0.2435	23.0	0.29	10	77	77	79	79	208.947	212.104	3.1570	3.1070	3.1576	3.1988	1.0163	0.0038	1.6096	-0.0005
AVERAGE															1.0125	0.0125	1.6101	0.0293
48	0.3557	22.0	0.62	10	77	77	79	79	212.300	216.893	4.5930	4.5239	4.6126	4.6727	1.0196	0.0013	1.6127	0.0000
48	0.3557	22.0	0.62	10	77	77	79	79	216.893	221.495	4.6020	4.5327	4.6126	4.6727	1.0176	-0.0007	1.6127	0.0000
48	0.3557	22.0	0.62	10	77	77	79	79	221.495	226.097	4.6020	4.5327	4.6126	4.6727	1.0176	-0.0007	1.6127	0.0000
AVERAGE															1.0183	0.0183	1.6127	0.0278
55	0.4616	20.5	1.10	10	77	77	80	80	226.200	232.254	6.0540	5.9588	5.9858	6.0639	1.0045	0.0010	1.6958	0.0000
55	0.4616	20.5	1.10	10	77	78	80	81	232.254	238.321	6.0670	5.9661	5.9830	6.0668	1.0028	-0.0007	1.6958	0.0000
55	0.4616	20.5	1.10	10	78	78	81	81	238.321	244.388	6.0670	5.9606	5.9802	6.0696	1.0033	-0.0003	1.6959	0.0000
AVERAGE															1.0036	0.0036	1.6958	0.0223
63	0.5916	19.0	1.80	10	79	79	82	82	244.700	252.595	7.8950	7.7554	7.6573	7.7862	0.9874	-0.0126	1.6895	0.0016
63	0.5916	19.0	1.80	10	79	79	82	83	252.595	260.292	7.6970	7.5539	7.6573	7.7862	1.0137	0.0137	1.6879	0.0000
63	0.5916	19.0	1.80	10	79	79	83	83	260.292	268.110	7.8180	7.6656	7.6573	7.7862	0.9989	-0.0011	1.6864	-0.0016
AVERAGE															1.0000	0.0000	1.6879	0.0175
73	0.8234	16.0	3.50	10	79	79	84	84	268.300	279.090	10.7900	10.6040	10.6576	10.8369	1.0051	0.0029	1.6896	0.0021
73	0.8234	16.0	3.50	10	79	79	84	85	279.090	289.949	10.8590	10.6620	10.6576	10.8369	0.9996	-0.0025	1.6880	0.0005
73	0.8234	16.0	3.50	10	79	79	85	86	289.949	300.805	10.8560	10.6395	10.6576	10.8369	1.0017	-0.0004	1.6849	-0.0026
AVERAGE															1.0021	0.0021	1.6875	0.0173

SEMI ANNUAL CALIBRATION DATE 3/6/2016 BAROMETRIC PRESSURE 30.14

ORIFICE SERIAL NO.	ORIFICE K' FACTOR	ACTUAL VACUUM	^H (IN H2O)	TIME (MIN.)	AMBIENT TEMP INITIAL	AMBIENT TEMP. FINAL	METER TEMP. INITIAL	METER TEMP. FINAL	METER READING INITIAL	METER READING FINAL	VM (CU.FT.)	VM CORRECTED	Vcr STD	Vcr NOMINAL	Y	VARIATION	^H (IN. H2O)	VARIATION
55	0.4616	21.0	1.1	10	82	85	80	82	206.200	212.281	6.0810	5.9922	5.9677	6.1005	0.9959	-0.0076	1.7081	0.0026
55	0.4616	21.0	1.1	10	85	85	82	84	212.281	218.381	6.1000	5.9887	5.9595	6.1089	0.9951	-0.0084	1.7065	0.0010
55	0.4616	21.0	1.1	10	85	85	84	85	218.381	224.491	6.1100	5.9820	5.9595	6.1089	0.9962	-0.0073	1.7018	-0.0037
AVERAGE or Max															0.9958	0.11%	1.7054	0.63%

METER COMPARISON CHECK (Yqa) Y_{qa} = (O / Vm) X sqr(.319 x Tm X 29 / (^Ha x (Pb + (Havg / 13.6) x Md)) X sqr ^H avg

	Run 1	Run 2	Run 3	Average
Y_{qa} =	0.9851	0.9853	0.9848	0.9850

THERMOCOUPLE CALIBRATION

DATE

	TC-1 (DEG F)	ASTM THERMOMETER (DEG F)
ICE	30	32
BOILING H2O	212	212
OIL	407	407

NOZZLE CALIBRATION

DATE 4/28/2016

READINGS IN (IN.)

				AVERAGE
#16	0.500	0.500	0.500	0.5000

PITOT TUBE CP=.84 ACCORDING TO DESIGN SPECIFICATIONS

Beatty Environmental Stack Test Thermocouple Calibrations

Calibration Date : 4/28/2016
Calibration Device: ASTM Thermometer
Calibrated By:Nicholas Decker, Beatty Environmental Services, LLC

Device	Ambient Air
ASTM Thermometer	77
Dry Gas Meter Thermocouple	77
Filter Thermocouple	76
Filter Heater Thermocouple	77
Impinger Outlet Thermocouple	78
Stack Temp Thermocouple (5ft. Air Cooled)	77

Analyst:

10.5 Temperature Sensors. Use the procedure in Section 10.3 of Method 2 to calibrate in-stack temperature sensors. Dial thermometers, such as are used for the DGM and condenser outlet, shall be calibrated against mercury-in-glass thermometers. An alternative mercury-free NISTtraceable thermometer may be used if the thermometer is, at a minimum, equivalent in terms of performance or suitably effective for the specific temperature measurement application. As an alternative, the following single-point calibration procedure may be used. After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall agree to within ±2 °F.

Acetone Blank Calculations

METHOD 5—DETERMINATION OF PARTICULATE MATTER EMISSIONS FROM STATIONARY SOURCES
7.2 Sample Recovery. Acetone, reagent grade, ≤0.001 percent residue, in glass bottles, is required. Acetone from metal containers generally has a high residue blank and should not be used. Sometimes, suppliers transfer acetone to glass bottles from metal containers; thus, acetone blanks shall be run prior to field use and only acetone with low blank values (≤0.001 percent) shall be used. In no case shall a blank value of greater than 0.001 percent of the weight of acetone used be subtracted from the sample weight.

Date of Acetone Blank: 4/22/2016
Lot # A16011

Blank Analyzed By: Nicholas Decker

X.

Constant Variables Used

Density of Acetone:	789.9 mg/ml
Quantity of Blank:	200ml

Beaker No.	1A
Initial Weight of Beaker	109.314
Final Weight of Beaker	109.3144
Residue from Blank	**0.0004 g**
Conversion G>MG	0.4 mg

Beaker final weight - Beaker initial weight
.0004g
Residue from Blank multiplied by 1,000.
.4mg

Quantity of Blank	200 ml
Density of Acetone	789.9 mg/ml
Total mg of Acetone	**157980 mg of acetone**

Quantity of Blank x Density of Acetone

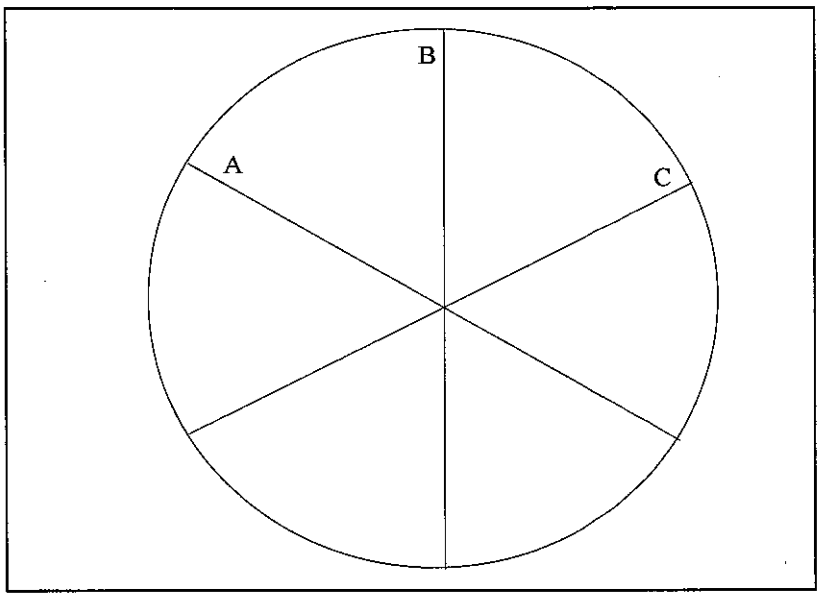
Total mg of Acetone	157980 mg
Acetone mg Residue	0.4 mg
Residue expressed as %	**0.000253197**

Total mg of Acetone / Acetone mg Residue
.000253197 %
Residue MUST be <.001%
☑ Pass
☐ Fail

Nozzle Calibration

Nozzle ID #16

A =	0.500
B =	0.500
C =	0.500
Average	0.5000

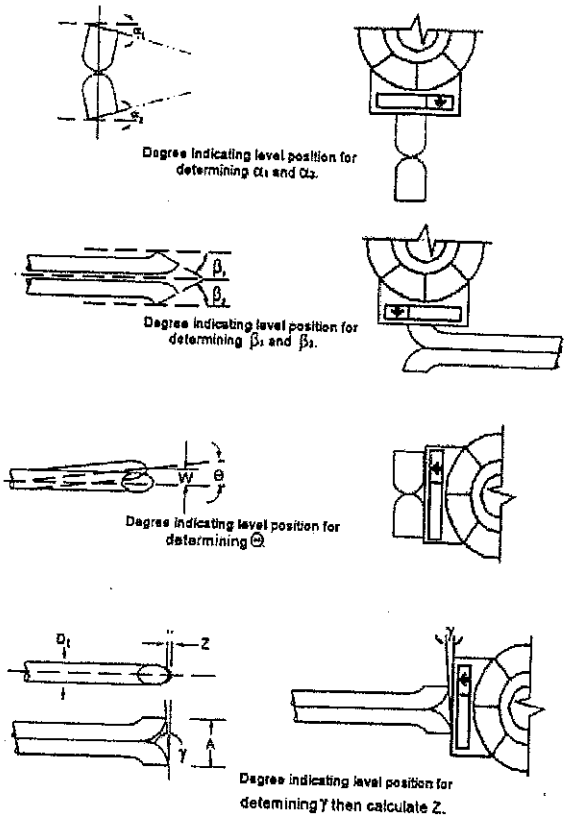


Calibration Date 4/28/2016

Calibrated by

PITOT CALIBRATION

(Type S Pitot Tube Inspection)



Level and Perpendicular?	Yes
Obstruction?	No
Damaged?	No
α_1 ($-10° \leq \alpha_1 \leq +10°$)	1
α_2 ($-10° \leq \alpha_2 \leq +10°$)	2
β_1 ($-5° \leq \beta_1 \leq +5°$)	2
β_2 ($-5° \leq \beta_2 \leq +5°$)	1
Y	-1
θ	1
$z = A \tan\gamma$ ($\leq 0.125°$)	-0.017
$w = A \tan\theta$ ($\leq 0.03125°$)	0.017
D_t (3/16 "$\leq D_t \leq$ + 3/8")	0.375
A	0.964
$A/2\,D_t$ ($1.05 \leq P_A / D_t \leq 1.51$)	1.285

Certification

I hereby certify that type S pitot tube ID# P-5AC meets or exceeds all specifications, criteria and applicable design features, and is hereby assigned a pitot tube calibration factor of 0.84.

Certified by:

Date 09/09/2015

LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis

- EPA PROTOCOL GAS -

Customer	Coastal Air Consulting (Deland, FL)
Date	March 10, 2015
Delivery Receipt	DR-55632
Gas Standard	19.0 ppm Nitric Oxide, 19.0 ppm Sulfur Dioxide, 19.0 ppm CO/Nitrogen
Final Analysis Date	February 24, 2015
Expiration Date	February 25, 2018

DO NOT USE BELOW 100 psig

Analytical Data:
EPA Protocol, Section No. 2.2, Procedure G-1.

Reported Concentrations
Nitric Oxide: 18.8 ppm +/- 0.1 ppm
Sulfur Dioxide: 17.8 ppm +/- 0.1 ppm
Carbon Monoxide: 19.3 ppm +/- 0.1 ppm
Nitrogen: Balance
Total NOx: 18.9 ppm
** Total NOx for Reference Use Only **

Reference Standards

SRM/GMIS:	GMIS	GMIS	GMIS
Cylinder Number:	CC-231360	EB-0026731	EB-0056065
Concentration:	24.24 ppm NO (+/- 0.08 ppm)	25.556 ppm SO2 (+/- 0.06 ppm)	25.23 ppm CO (+/- 0.06 ppm)
Expiration Date:	09/22/202	08/23/20	04/30/22

Certification Instrumentation

Component:	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
Make/Model:	Nicolet 6700	Nicolet 6700	Nicolet 6700
Serial Number:	APW1100563	APW1100563	APW1100563
Principal of Measurement:	FTIR	FTIR	FTIR
Last Calibration:	February 22, 2015	February 27, 2015	January 17, 2015

Cylinder Data

Cylinder Number:	CA-05882	Cylinder Volume:	133 Cubic Feet
Cylinder Outlet:	CGA 660	Cylinder Pressure:	1925 psig, 70°F
Expiration Date:	February 25, 2018		

Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

Certified by: Cole Dylewski

Cole Dylewski

PGVP Vendor ID: E12015

GMIS Traceability	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
SRM Number:	SRM-1683b	SRM-1693a	SRM-1678c
Cylinder Number:	CAL-018172	CAL-015255	CAL-016939
Cylinder Concentration:	48.79 ppm NO (+/- 0.34 ppm)	49.66 ppm SO2 (+/- 0.51 ppm)	49.07 ppm CO (+/- 0.19 ppm)
Expiration Date:	03/25/19	06/01/16	08/14/15
NIST Sample Number:	45-V-08	96-K-026	4-K-33

"UNMATCHED EXCELLENCE"

2048 APEX COURT, APOPKA, FLORIDA 32703 ~ PHONE (407)-292-2990 FAX (407)-292-3313
WWW.LIQUIDTECHCORP.COM
APOPKA, FL • PASADENA, TX

LIQUID TECHNOLOGY CORPORATION

"INDUSTRY LEADER IN SPECIALTY GASES"

Certificate of Analysis

- EPA PROTOCOL GAS -

Customer	Coastal Air Consulting (Deland, FL)
Date	March 04, 2015
Delivery Receipt	DR-55575
Gas Standard	47.0 ppm Nitric Oxide, 47.0 ppm Sulfur Dioxide, 47.0 ppm CO/Nitrogen
Final Analysis Date	February 27, 2015
Expiration Date	February 28, 2018

DO NOT USE BELOW 100 psig

Analytical Data:
EPA Protocol, Section No. 2.2, Procedure G-1.

Reported Concentrations

Nitric Oxide: 48.8 ppm +/- 0.3 ppm
Sulfur Dioxide: 46.3 ppm +/- 0.3 ppm
Carbon Monoxide: 48.1 ppm +/- 0.2 ppm
Nitrogen: Balance
Total NOx: 49.8 ppm
** Total NOx for Reference Use Only **

Reference Standards

SRM/GMIS:	GMIS	GMIS	GMIS
Cylinder Number:	ND-45700	EB-0014694	EB-0017129
Concentration:	49.256 ppm NO (+/- 0.43 ppm)	50.82 ppm SO2 (+/- 0.12 ppm)	50.81 ppm CO (+/- 0.35 ppm)
Expiration Date:	08/23/20	08/20/16	06/16/18

Certification Instrumentation

Component:	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
Make/Model:	Nicolet 6700	Nicolet 6700	Nicolet 6700
Serial Number:	APW1200289	APW1200289	APW1200289
Principal of Measurement:	FTIR	FTIR	FTIR
Last Calibration:	January 31, 2015	February 14, 2015	January 31, 2015

Cylinder Data

Cylinder Number:	EB-0056549	Cylinder Volume:	138 Cubic Feet
Cylinder Outlet:	CGA 660	Cylinder Pressure:	1975 psig, 70°F
Expiration Date:	February 28, 2018		

Analytical Uncertainty and NIST Traceability are in compliance with EPA-600/R-12/531.

Certified by: Cole Dylewski

Cole Dylewski

PGVP Vendor ID: E12015

GMIS Traceability	Nitric Oxide	Sulfur Dioxide	Carbon Monoxide
SRM Number:	SRM-1683b	SRM-1693a	SRM-1678c
Cylinder Number:	CAL-018172	CAL-015255	CAL-016939
Cylinder Concentration:	48.79 ppm NO (+/- 0.34 ppm)	49.66 ppm SO2 (+/- 0.51 ppm)	49.07 ppm CO (+/- 0.19 ppm)
Expiration Date:	03/25/19	06/01/16	08/14/15
NIST Sample Number:	45-V-08	96-K-026	4-K-33

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APOPKA, FL • PASADENA, TX

Attachment F - Project Participants

Project Participants

Beatty Environmental Services, LLC

Daniel R. Beatty
Project Director

Nick Decker
Field Technician

Zachary Beatty
Field/Lab Manager

Coastal Air Consulting

Steve Webb
Gas Analysis

University of Florida - FID# 0010121

Michael Cormier
Engineer
Matt Johnson and Fred Koerper
Animal Care Services