Dibble, Dickson

From: Dr. Steve Looker [drlooker@blcremationsystems.com]
Sent: Tuesday, May 08, 2012 2:52 PM
To: Dibble, Dickson
Cc: Chris Jensen
Subject: Equipment Change

Dear Mr. Dibble please be advised that the equipment acknowledged in ARMS, 0330290-001-AG has been changed from the US Crematory unit to a B&L Cremation Systems model N-20 series. We will be forwarding to you our residence time calculations, if any other information is required please feel free to contact me.

Dr Steve Looker Ph.D
President
1.800.622.5411
B&L Cremation Systems, Inc. Website

WORLDWIDE SALES AND SERVICE

Cremation Systems, Inc.

1.800.622.5411 727.541.4666 Fax: 727.547.0669
7205 114th Avenue North Largo, Florida 33773
www.blcremationsystems.com

Dibble, Dickson

From: Chris Jensen [cjensen@knology.net]
Sent: Tuesday, May 08, 2012 3:23 PM
To: Dibble, Dickson
Subject: air permit

mr. dibble, to follow our phone conversation, i was going to go with us cremation for my cremation equipment..however after their initial proposal, they raised the price by a significant amount..we had already applied for the air permit but the machine was never built, shipped or installed...the origional amount was already sent and approved by my bank...i could not go back to the bank with a significant more amount, so i was forced to shop around to find a machine that fit the origional budget...i finally decided on b&l cremation who has contacted you regarding changing the air permit...i appreciate your time and consideration with this change....if the price increase was small, i could handle that, but it was HUGE...that just kills a small business owner like myself...thank you, chris jensen 850-814-4476

Dibble, Dickson

From: April [receptionist@blcremationsystems.com]
Sent: Wednesday, May 09, 2012 10:47 AM
To: Dibble, Dickson
Subject: Specs and emissions test
Attachments: 20120509094711508.pdf

B&L N-20 series specs. and information tests attached.

CALCULATIONS FOR PRODUCTS OF COMBUSTION
AND RESIDENCE TIME FOR 150 LB/hr
TYPE IV WASTE. B&L N-20 SERIES CREMATORY

PROPANE

A. BASIS: 1 LB WASTE

1. $\frac{\text{1 lb waste X 1000 Btu/lb waste X 15 lbs air}}{\text{10,000 Btu}}$ = 1.5 lbs air

2. $\frac{\text{1 lb waste X 0.10 lb combustible}}{\text{1 lb waste}}$ = 0.10 lbs of combustibles

3. $\frac{\text{1 lb waste X 0.85 lb H20 X 1.6*}}{\text{1 lb waste}}$ = 1.36 lbs of water

4. $\frac{\text{6,500 Btu aux fuel** X 23.8 cu ft air/cu ft fuel}}{\text{2,500 Btu/cu ft fuel X 13.35 cu ft air/lb air @ 70f}}$ = 4.64 lbs of air for aux fuel

5. $\frac{\text{6,500 Btu aux fuel X 0.044 lb fuel/cu ft fuel}}{\text{2,500 Btu/cu ft fuel}}$ = 0.11 lb of aux fuel

6. Sum = PRODUCTS OF COMBUSTION (POC) = 7.71 lbs POC per lb waste @ 70f

B. RESIDENCE TIME @ 1600 F

1. $\frac{\text{7.71 lbs POC/lbs waste X 51.89 cu ft / lb POC @ 1600f X 150 lbs waste / hr}}{\text{3600 sec/hr}}$

= 16.67 cu ft / sec @ 1600 f = 17.00 cu ft for 1 second residence time

RESIDENCE TIME @ 1800 F

2. $\frac{\text{7.71 lbs POC/lbs waste X 56.93 cu ft / lb POC @ 1800f X 150 lbs waste / hr}}{\text{3600 sec/hr}}$

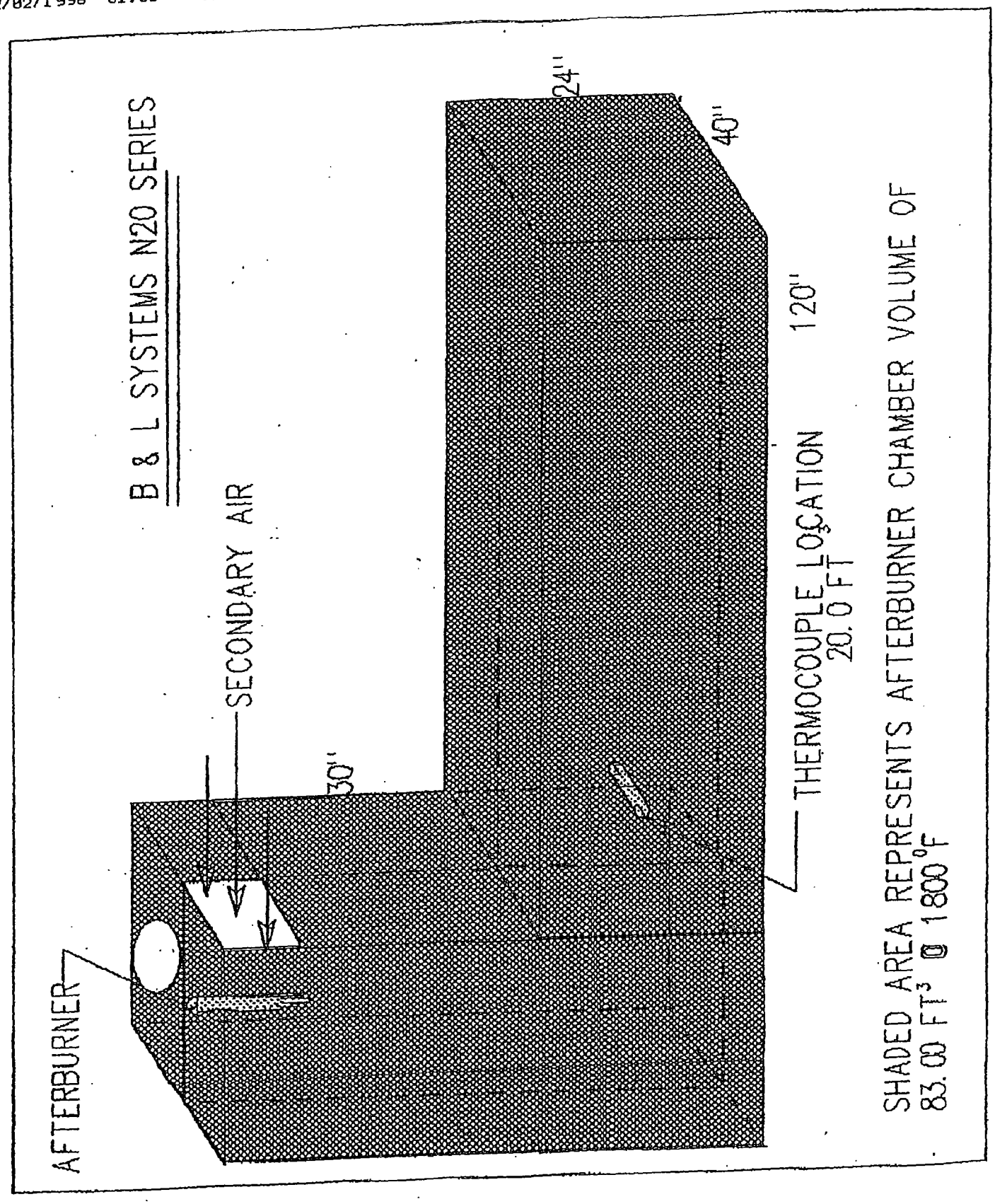
= 18.1 cu ft / sec @ 1800 f = 19.00 cu ft for 1 second residence time

* Correction multiplier for dry air and water vapor
** Fuel is propane

Referances: Incinerator institute of America.
North American Combustion Handbook
Eclipse Combustion Engineering guide

C. THERMOCOUPLE PLACEMENT.

Secondary chamber operating temperature at > or = to 1600f = 17.00 cu ft from flame tip.
1800f = 19.00 cu ft from flame tip.


B & L SYSTEMS N20 SERIES
SECONDARY AIR
AFTERBURNER
24"
40"
30"
120"
THERMOCOUPLE LOCATION
20.0 FT
SHADED AREA REPRESENTS AFTERBURNER CHAMBER VOLUME OF
83.00 FT³ @ 1800°F

EMISSIONS TESTING
of the
FIRST CALL CREMATORY
B & L CREMATION SYSTEMS, INC. N20 SERIES
HUMAN CREMATORY
Clearwater, Florida

April 5, 2008

FDEP Permit No. 1030473-008AG
EU No. 008
SES Reference No. 08S131

Conducted by:

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
1204 North Wheeler Street
Plant City, Florida 33566
Phone (831) 752-5014, Fax (813)752-2475

Project Participants

Byron E. Nelson
Mark S. Gierke
Dale A. Wingler
Travis B. Nelson

SPECIAL EMISSIONS

EMISSION TESTING
of the
FIRST CALL CREMATORY
B & L CREMATION SYSTEMS, INC. N20 SERIES
HUMAN CREMATORY
Clearwater, Florida

April 5, 2008

TABLE OF CONTENTS

1.0 INTRODUCTION

Southern Environmental Sciences, Inc. conducted emissions testing of the First Call Crematory, B & L Cremation Systems, Inc. N20 Series human crematory on April 5, 2008. This facility is located at 12660 34th Street North, Clearwater, Florida. Testing was conducted for particulates, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NOx), total hydrocarbons (VOC) and visible emissions. Oxygen (O_2) concentrations were measured to correct emission rates to 7% O_2. Mr. Jose Rodriguez of the Pinellas County Department of Environmental Management was present as an observer during a portion of the testing.

2.0 SUMMARY OF RESULTS

Results of the particulate, carbon monoxide, sulfur dioxide, nitrogen oxides and total hydrocarbons are summarized in Table 1. A visible emissions evaluation was performed over a one hour period. The average maximum six minute opacity was zero percent.

3.0 PROCESS DESCRIPTION

The B & L Cremation Systems N20 Series crematory incinerator cremates human remains in an environmentally acceptable manner. The unit consists of a primary and secondary (afterburner) chamber each fired with natural gas. The unit is designed to incinerate human remains at a rate of 150 pounds per hour with a maximum heat input rate of 1.5 MMBTU per hour (primary chamber 0.5 MMBTU per hour, secondary chamber 1.0 MMBTU per hour).

TABLE 1. EMISSIONS TEST SUMMARY

Company: FIRST CALL CREMATORY

Source: B & L Cremation Systems, Inc.

N20 Series Human Crematory

	Run 1	**Run 2**	**Run 3**
Date of Run	4/5/08	4/5/08	4/5/08
Weight of Human Remains (lbs.)	170	165	140
Start Time (24-hr. clock)	1005	1348	1722
End Time (24-hr. clock)	1107	1452	1824
Vol. Dry Gas Sampled Meter Cond. (DCF)	39.324	47.848	41.832
Gas Meter Calibration Factor	0.994	0.994	0.994
Barometric Pressure at Barom. (in. Hg.)	30.39	30.29	30.39
Elev. Diff. Manom. To Barom. (ft.)	0	0	0
Vol. Liquid Collected Std. Cond. (SCF)	3.305	5.073	2.966
Moisture in Stack Gas (% Vol.)	7.8	9.9	8.6
Molecular Weight Wet Stack Gas	28.48	28.17	28.62
Stack Gas Static Press. (in. H2O gauge)	-0.03	-0.03	-0.03
Average Square Root Velocity Head	0.166	0.208	0.187
Average Orifice Differential (in. H2O)	1.132	1.669	1.291
Average Gas Meter Temperature (°F)	81.5	88.3	91.7
Average Stack Gas Temperature (°F)	834.3	1013.6	998.3
Pilot Tube Coefficient	0.84	0.84	0.84
Stack Gas Vel. Stack Cond. (ft./sec.)	16.78	19.88	17.65
Effective Stack Area (sq. ft.)	1.87	1.87	1.87
Stack Gas Flow Rate Std. Cond. (DSCFM)	623	715	659
Stack Gas Flow Rate Stack Cond. (ACFM)	1,833	2,202	1,977
Net Time of Run (min.)	60	60	60
Nozzle Diameter (in.)	0.600	0.600	0.600
Percent Isokinetic	98.7	102.6	97.6

TABLE 1. EMISSIONS TEST SUMMARY (con't)

Company: **FIRST CALL CREMATORY**

Source: **B&L Cremation Systems, Inc.**

N20 Series Human Crematory

	Run 1	**Run 2**	**Run 3**	
Date of Run	4/5/08	4/5/08	4/5/08	
Weight of Human Remains (lbs.)	170	165	140	
Start Time (24 hr. clock)	1005	1348	1722	
End Time (24 hr. clock)	1107	1452	1824	
Oxygen (%)	12.7	12.1	13.1	
Particulate Collected (mg.)	27.0	69.1	99.2	
				(Avg.)
Particulate Emissions (gr./DSCF)	0.011	0.023	0.038	0.024
Particulate Emissions (gr./DSCF @ 7% O2)	0.018	0.036	0.066	0.040
Particulate Emissions (lb./hr.)	0.06	0.14	0.21	0.136
CO Emissions (ppm)	3.05	2.27	4.98	3.43
CO Emissions (ppm @ 7% O2)	3.4	2.95	6.7	4.35
CO Emissions (lb./hr.)	0.007	0.006	0.018	0.010
NOx Emissions (ppm)	110.23	122.3	115.7	116.1
NOx Emissions (lb./hr.)	0.58	0.71	0.74	0.677
VOC Emissions (ppm)	1.5	0.80	1.41	1.237
VOC Emissions (lb./hr.)	0.007	0.004	0.009	0.007
SO_2 Collected (mg)	33.1	49.4	59.7	47.4
SO_2 Emissions (lb./hr.)	0.088	0.142	0.167	0.13

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

1.0 MMBTU/hr.). Emissions are controlled by the afterburner that is preheated and maintained at a minimum operating temperature of 1600°F prior to and during ignition of the primary chamber. Process operational data was provided by facility personnel and is included in the appendix.

4.0 SAMPLING PROCEDURES

4.1 Methods

All sampling was performed using methods currently acceptable to the FDEP. All test methods are contained in Title 40 of the Code of Federal Regulations, Appendix A and are as follows:

Pollutant	EPA Method No.	Title
Particulates	5	Determination of Particulate Emissions from Stationary Sources
Carbon Monoxide	10	Determination of Carbon Monoxide Emissions from Stationary Sources
Oxygen	3B	Gas analysis for the Determination of Emissions Rate Correction Factor or Excess Air
Nitrogen Oxides	7E	Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)
Sulfur Dioxide	6	Determination of Sulfur Dioxide Emissions from Stationary Sources, Section 2.1
Total Hydrocarbons	25A	Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer
Visible Emissions	9	Visual Determination of the Opacity of Emissions of Stationary Sources.

Sulfur dioxide emissions were determined simultaneous with particulates as per Section 6.1 of EPA Method 6.

4.2 Sampling Locations

Locations of the sample ports and stack dimensions are shown in Figure 1. Particuale/SO_2 sampling was accomplished by conducting horizontal traverses through each of two ports located on the stack at a ninety degree angle from one another. Twenty four sample points were chosen in accordance with EPA Method 1 – Sample and Velocity Traverses for Stationary Sources, 40 CFR 60, Appendix A. Carbon monoxide, nitrogen oxides, total hydrocarbon and oxygen sampling were performed from the same sampling ports as the particulate/SO_2 sampling.

4.3 Sampling Trains

The particulate/SO2 sampling train consisted of a 3 foot Inconnel probe utilizing a one piece quartz glass nozzle and liner, a heated glass fiber filter and four impinges arranged as shown in Figure 2. Flexible tubing was used between the heated filter and the impingers. The first impinger was charged with 100 milliliters of 80% isopropanol, the second and third impingers were each charged with 100 milliliters of a 3% percent hydrogen peroxide solution and the fourth impinger was charged with indicating silica gel desiccant. The impingers were cooled in an ice and water bath during sampling. A Nutech Corporation control console was used to monitor the gas flow rates and stack conditions during sampling.

The carbon monoxide sampling train consisted of a stainless steel probe, Teflon sample line, condenser, silica gel and carbon dioxide adsorbent tubes and a Thermo Environmental Instruments, Inc. Model 48 Gas Filter Correlation CO analyzer arranged as shown in Figure 3.

The nitrogen oxides sampling train consisted of a stainless steel probe, Teflon sample line, and a California Analytical Inc. Model 300 FID analyzer arranged as shown in Figure 5.

The oxygen sampling train consisted of a probe, sample line, tedlar bag in a rigid container, valve, vacuum pump, and flow meter.

4.4 Sample Collection

Prior to particulate/SO_2 sampling, the pitot tubes were checked for leaks and the manometers were zeroed. A pretest leak check of the sampling train was conducted by sealing the nozzle and applying a 15" Hg vacuum. A leak rate of less than 0.02 cubic feet per minute was considered acceptable. Sample was collected isokinetically for two and one half minutes at each of the points sampled.

All instrumental analyzers were calibrated immediately prior to the beginning and checked after each run by introducing known gases into the instrument through the sampling.

The tedlar bag used for obtaining an integrated oxygen sample was leak checked prior to the test by pressurizing it to 2 to 4 in. H_2O and allowing it to stand overnight. The bag was considered leak free if it remained inflated. A one hour integrated sample was obtained at a rate 0.5 liters per minute for each run.

All sampling was conducted simultaneously.

4.5 Sample Recovery

A post test leak check of the particulate/SO_2 sampling train was performed at the completion of each run by sealing the nozzle and applying a vacuum equal to or greater than the maximum valve reached during the sample period. A leak rate of less than 0.02 CFM or 4 percent of the average sampling rate (whichever was less) was considered acceptable. The probe was then disconnected, the ice bath was drained and the remaining part of the sampling train was purged by drawing charcoal filtered air through the system for fifteen minutes at the average flow rate used during sampling. The nozzle and probe were then brushed and rinsed with reagent grade acetone and the washings were placed in clean polyethylene containers and sealed. The glass fiber filter was removed from the holder with forceps and placed in a covered Petri dish for return to the laboratory. The front half of the filter holder was rinsed with acetone and the washings were added to the nozzle and probe wash. The contents of impingers 1 through 3 were measured volumetrically and the silica gel in the fourth impinger was weighed to the nearest 0.1 gram for determination of moisture content. The 80 percent isopropanol in the first

impinger was discarded and the impinger was rinsed with demonized, distilled water. The 3 percent hydrogen peroxide in the second and third imingers was placed in a clean polyethylene sample bottle. The imingers, associated glassware and back half of the filter holder were then rinsed with de-ionized, distilled water which was added to the sample bottle.

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

5.0 ANALYTICAL PROCDURE

5.1 Pretest Preparation

The glass fiber filters for the particulate train were numbered, oven dried at 105°C for two to three hours, desiccated and weighed to a constant weight in preparation for the test. Results were recorded to the nearest 0.1 milligram. Filters were loaded into holders and a filter was set aside as a control blank. The imingers were charged as described in section 4.3 and the contents of the fourth impinger were weighed to the nearest 0.1 gram. The 3 percent hydrogen peroxide solution for the sulfur dioxide sampling was prepared the morning of the test from 30 percent reagent grade stock solution.

5.2 Analysis

Upon return to the laboratory, the particulate filters were removed from the containers with forceps, dried at 105°C for two to three hours, desiccated and weighed to a constant weight. Results were recorded to the nearest 0.1 milligram. The probe and nozzle washes and an acetone blank were measured volumetrically and transferred to clean, tared evaporating dishes and evaporated to dryness over low heat. The evaporating dishes were then oven dried at 105°C for two to three hours, desiccated and weighed to a constant weigh. Results were recorded to the nearest 0.1 milligram. The total particulate reported is the sum of the filter weight gain and the weight gain of the evaporating dishes, corrected for the acetone blank. The impinger solutions were analyzed for sulfur dioxide procedures specified in Section 4.3 of EPA Method 8.

PROJECT PARTICIPANTS AND CERTIFICATION

FIRST CALL CREMATORY
B & L CREMATION SYSTEMS, INC. N20 SERIES
HUMAN CREMATORY
Clearwater, Florida

April 5, 2008

Project Participants:

Marke S. Gierke
Byron E. Nelson
Dale A. Wingler
Travis B. Nelson

Kenneth M. Roberts

Certification:

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

Byron E. Nelson, CIH

Southern Environmental Sciences, Inc.

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

VISIBLE EMISSIONS EVALUATION

COMPANY: First Call Crematory

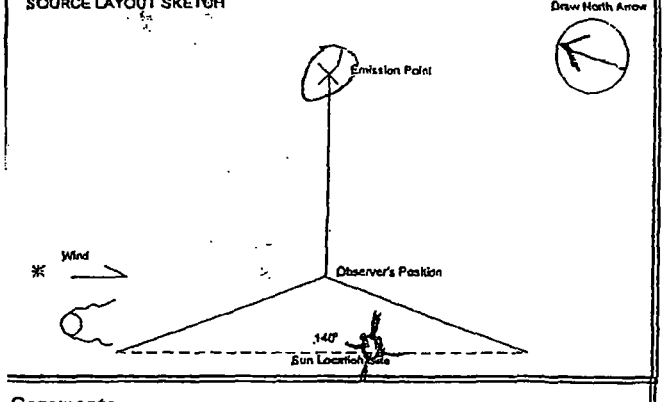
UNIT: N30 AA Crematory Incinerator

ADDRESS: 12660 34th St. N #A-1

Clearwater, FL

PERMIT NO. 1030473-003-AG	COMPLIANCE? YES ☒ NO ☐
AIRS NO. 1030473	EU NO. 001
PROCESS RATE 160 lb Body	PERMITTED RATE Adult Size Body - (150 lb/hr)
PROCESS EQUIPMENT B&L N30AA Crematory Incinerator	
CONTROL EQUIPMENT Afterburner	
OPERATING MODE Nat. Gas Fired	AMBIENT TEMP. (° F) START 85 STOP 85
HEIGHT ABOVE GROUND LEVEL START ≈30' STOP same	HEIGHT RELATIVE TO OBSERVER START ≈30' STOP same
DISTANCE FROM OBSERVER START ≈90' STOP same	DIRECTION FROM OBSERVER START 50° STOP 50°
EMISSION COLOR NONE	PLUME TYPE N/A CONTIN. ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT? NO ☒ YES ☐	IS WATER DROPLET PLUME ATTACHED ☐ DETACHED ☐ N/A
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED START Stack Exit STOP same	
DESCRIBE BACKGROUND START Sky STOP Sky	
BACKGROUND COLOR START Blue STOP same	SKY CONDITIONS START Scattered STOP same
WIND SPEED (MPH) START 0-10 STOP same	WIND DIRECTION START Var. STOP Var.
AVERAGE OPACITY FOR HIGHEST PERIOD 0 %	RANGE OF OPACITY READINGS MIN. 0 MAX. 0

SOURCE LAYOUT SKETCH



Comments

OBSERVATION DATE: 4/5/08 START TIME: 1348 STOP TIME: 1448

SEC MIN	0	15	30	45	SEC MIN	0	15	30	45
0	0	0	0	0	30	0	0	0	0
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

OBSERVER: Mark Gierke

Certified by: FRP thru EIH Certif. # Certified at: Tampa, FL

Date Certified: 2/08 Exp. Date: 8/08

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

Signature: See Process WT. Statement

Title:

Process Weight Statement

DATE 4/5/08 SAMPLING TIME: FROM 10:05 A.M. TO 6:24 P.M.

STATEMENT OF PROCESS WEIGHT

COMPANY	First Call Crematory.
MAILING ADDRESS	12660 34th ST. N. Clearwater FL
SOURCE IDENTIFICATION	B&L Systems N-20 Series Crematory.
SOURCE LOCATION	12660 34th ST. N. Clearwater FL

DATA ON OPERATING CYCLE TIME

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

DATA ON ACTUAL PROCESS RATE DURING OPERATION CYCLE

MATERIAL	Human remains	RATE	160 lbs (Run 1)
MATERIAL	" "	RATE	155 lbs (Run 2)
MATERIAL	" "	RATE	140 lbs (Run 3)
AVERAGE PROCESS WEIGHT		RATE	
PRODUCT		RATE	
PRODUCT		RATE	
PRODUCT		RATE	

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

Name (Please Print)

Signature _____

Title Operator.

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

PARTICULATE MATTER COLLECTED

PLANT: FIRST CALL CREMATORY,

UNIT NO.: B & L CREMATION SYSTEMS, INC. – N20 SERIES HUMAN CREMATORY

TEST DATE: 4/5/08

ANALYZED BY: MG

Acetone blank container no.	405	Filter blank no.	6752
Acetone blank volume, ml., (VA)	200	Filter blank tare weight, g.	0.3402
Acetone blank final weight, g.	101.0509	Filter blank final weight, g.	0.3409
Acetone blank tare weight, g.	101.0507	Filter weight diff., g.	0.0007
Acetone blank weight diff., g. (ma)	0.00012		

Run No. 1

Container Number	Weight of Particulate Collected		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.3603	0.3434	0.0169
2 (Wash)	103.1076	105.6522	0.0102
		Total	0.0271
		Less acetone blank, g. (Wa)	0.0001
		Weight of particulate matter, g	0.0270

Filter No. 6768
Liquid lost during transport 0
Acetone wash volume, ml (Vaw) 100
Acetone wash reside, g.(Wa) 0.0001
Acetone wash container no. 4

Run No. 2

Filter No. 6770
Liquid lost during transport, ml. 0
Acetone wash container no. 18
Acetone wash volume, ml (Vaw) 125
Acetone wash reside, g.(Wa) 0.0001

Container Number	Weight of Particulate Collected		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.3972	0.3391	0.0581
2 (Wash)	105.6633	105.6522	0.0111
		Total	0.0692
		Less acetone blank, g. (Wa)	0.0001
		Weight of particulate matter, g	0.0691

Run No. 3

Filter No. 6769
Liquid lost during transport, ml. 0
Acetone wash container no. 53
Acetone wash volume, ml (Vaw) 130
Acetone wash reside, g.(Wa) 0.0001

Container Number	Weight of Particulate Collected		
	Final Weight	Tare Weight	Weight Gain
1 (Filter)	0.4182	0.3373	0.0362
2 (Wash)	100.6350	100.6166	0.0184
		Total	0.0993
		Less acetone blank, g. (Wa)	0.0001
		Weight of particulate matter, g	0.0992

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

MOISTURE COLLECTED

Plant First Call Cremation.

Unit NZOAA Cremation
Date 4/5/08
Run No. 1

Inpinger Number	1	2	3	4	Weighed by:
Final Weight (g):	160.0	104.0	0	259.4	DW
Initial Weight (g):	100.0	100.0	0	253.3	DW
Difference (g):	60.0	4.0	0	6.1	
Total Condensate (g):				70.1	

Unit Cremation
Date 4/5/08
Run No. 2

Impinger Number	1	2	3	4	Weighed by:
Final Weight (grams)	195.0	105.0	0	266.8	DW
Initial Weight (grams)	100.0	100.0	0	259.2	DW
Difference (grams)	95.0	5.0	0	7.6	
Total Condensate (grams)				107.6	

Unit Cremation
Date 4/5/08.
Run # 3

Impinger Number	1	2	3	4	Weighed by:
Final Weight	144.0	110.0	0	263.2	DW
Initial Weight (grams)	100.0	100.0	0	254.3	DW
Difference (grams)	44.0	10.0	0	8.9	
Total Condensate (grams)				62.9	

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

FIELD DATA SHEET

Company First Call Crematory — Run No. 1

Source N20AA Crematory — Date 4/5/08

Operator(s) MC/TN/DW — 24 hr. time at start 1005

24 hr. time at end 1107

Dimensions Dia ~~X~~ — Filter No(s). -C768

LxW □ 18.5" — Barometric Pressure ("Hg) 30.39

Static Press. ("H2O) -0.03 — Elev Diff. Mano. To Barom. (Ft.) 0

Meter Box No. 001 — Ambient Temperature (F°) 75

Meter ΔH@ 1.450

Meter Correction Factor 0.994 — **Assumptions**

Pitot Tube Cp .84 — % Moisture 10 — **Sample Train Leak Check:**

Nozzle ID — — Stack Temp. 1000 — Initial 0.005 CFM @ 15 "Hg

Nozzle Dia. (Inches) 0.600 — Meter Temp. 80 — Final 0.007 CFM @ 15 "Hg

Probe Length/Liner 3 Quartz — Md/Ms 1.04 — Initial Pilot Tube (-) ✓ (+) ✓

K Factor 38. — Final Pitot Tube (-) ✓ (+) ✓

Moist. Collected: - Imp. No. 1 ,Imp. No. 2 & 3 ,Imp. No 4 ,Total Filter Tare Wt.

Point #	Sample Time	Meter Vol. Vm	Vel. Head ΔP ("H2O)	Orifice Diff. ΔH ("H2O)	Stack Temp., Ts (°F)	Meter Temp., Tm (°F)	Hot Box Temp (°F)	Exit Temp. (°F)	Pump Vacuum ("Hg)	Other
1	0	234.328	.03	1.10	787	68	246	63	3.5	
2	2.5	236.03	.63	1.10	796	69	244	63	3.0	
3	5.0	237.64	.035	1.30	810	70	248	62	3.0	
4	7.5	239.34	.03	1.10	796	70	245	61	3.0	
5	10.0	240.96	.03	1.10	802	73	244	60	3.0	
6	12.5	242.56	.03	1.40	806	75	240	58	3.0	
7	15.0	244.32	.03	1.40	808	77	241	58	3.0	
8	17.5	246.14	.02	.94	785	79	239	57	2.0	
9	20.0	247.70	.02	.94	777	80	239	56	2.0	
10	22.5	249.21	.015	.58	783	80	237	56	1.5	
11	25.0	250.51	.02	.94	791	81	235	55	2.0	
12	27.5	252.19	.02	.94	790	82	238	54	2.0	
13	30.0	25350	.02	.94	805	82	243	53	2.5	
14	32.5	255.00	.02	8.94	832	84	249	53	2.0	
15	35.0	256.54	.025	1.15	840	85	242	53	2.5	
16	37.5	258.17	.025	1.15	839	86	240	53	2.5	
17	40.0	259.83	.025	1.15	843	8C	239	52	2.5	
18	42.5	261.49	.025	1.35	851	87	235	53	2.5	
19	45.0	263.14	.03	1.35	899	88	234	53	3.0	
20	47.5	264.89	.035	1.30	905	90	233	52	3.0	
21	50.0	266.63	.03	1.35	912	90	233	52	3.0	
22	52.5	268.30	.03	1.35	918	90	235	52	3.5	
23	55.0	270.05	.03	1.35	921	91	238	51	3.0	
24	57.5	271.87	.03	1.35	926	92	240	51	3.5	
	60.0	273.652								

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

FIELD DATA SHEET

Company First Call Crematory — Run No. 2

Source N2O AA Crematory — Date 4/5/03

Operator(s) TN/MG/DW — 24 hr. time at start 13:48

24 hr. time at end 14:52

Dimensions Dia/~~D~~ — Filter No(s). 6770

LxW ☐ 18.5" — Barometric Pressure ("Hg) 30.039

Static Press. ("H2O) -.03 — Elev Diff. Mano. To Barom. (Ft.) 0

Meter Box No. 001 — Ambient Temperature (F°) 85

Meter ΔH@ 1.450

Meter Correction Factor 0.994

Pitot Tube Cp .84

Nozzle ID —

Nozzle Dia. (Inches) 0.600

Probe Length/Liner 3 Quartz

Assumptions

% Moisture 10

Stack Temp. 900

Meter Temp. 90

Md/Ms 1.04

K Factor 39.85

Sample Train Leak Check:

Initial 0.002 CFM @ 15 "Hg

Final 0.002 CFM @ 12 "Hg

Initial Pilot Tube (-) ✓ (+) ✓

Final Pitot Tube (-) ✓ (+) ✓

Moist. Collected: - Imp. No. 1 ,Imp. No. 2 & 3 ,Imp. No 4 ,Total Filter Tare Wt.

Point #	Sample Time	Meter Vol. Vm	Vel. Head ΔP ("H2O)	Original Diff. ΔH ("H2O)	Stack Temp., Ts (°F)	Meter Temp., Tm (°F)	Hot Box Temp (°F)	Exit Temp. (°F)	Pump Vacuum ("Hg)	Other
1	0	276.603	.04	1.55	980	72	235	62	6.0	
2	2.5	278.68	.04	1.55	982	72	236	61	6.0	
3	5.0	280.53	.04	1.55	984	79	235	60	6.0	
4	7.5	282.37	.04	1.55	965	75	231	59	6.0	
5	10.0	284.17	.045	1.74	1000	78	234	57	7.0	
6	12.5	286.12	.045	1.74	1005	80	237	57	7.5	
7	15.0	288.12	.04	1.55	1001	82	248	56	7.0	
8	17.5	290.04	.045	1.74	1008	84	2483	55	7.5	
9	20.0	292.03	.045	1.74	1012	86	249	55	8.0	
10	22.5	294.06	.045	1.74	1017	87	245	54	8.0	
11	25.0	296.08	.04	1.55	1012	88	249	54	8.0	
12	27.5	298.05	.04	1.55	1022	89	250	54	8.0	
13	30.0	300.00	.04	1.55	1006	90	254	53	8.0	
14	32.5	301.97	.045	1.74	1020	91	254	54	8.5	
15	35.0	303.90	.045	1.74	1021	93	256	53	9.0	
16	37.5	306.03	.045	1.74	1025	94	258	53	9.0	
17	40.0	308.07	.045	1.74	1028	95	258	53	9.0	
18	42.5	310.13	.045	1.74	1030	96	256	52	9.0	
19	45.0	312.18	.045	1.74	1034	98	253	52	9.0	
20	47.5	314.24	.045	1.74	1033	98	2585	53	9.5	
21	50.0	316.31	.04	1.55	1033	99	253	52	9.0	
22	52.5	318.31	.045	1.74	1036	99	252	52	9.0	
23	55.0	320.34	.045	1.74	1035	99	250	51	9.0	
24	57.5	322.40	.045	1.74	1038	100	248	51	9.5	
	60.0	324.49								

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

FIELD DATA SHEET

Company First Call Crematory — Run No. 3

Source NAOAA Crematory — Date 9/5/08

Operator(s) MG/TN/DW — 24 hr. time at start 1722

24 hr. time at end 1824

Dimensions Dia ☒ — Filter No(s). 6769

LxW ☐ 18.5" — Barometric Pressure ("Hg) 30.39

Static Press. ("H2O) -.03 — Elev Diff. Mano. To Barom. (Ft.) 0

Meter Box No. 001 — Ambient Temperature (F°) 85

Meter ΔH@ 1.450

Meter Correction Factor 0.999

Pitot Tube Cp .84

Nozzle ID —

Nozzle Dia. (Inches) 0.600

Probe Length/Liner 3 Quartz

Assumptions

% Moisture 10

Stack Temp. 1000

Meter Temp. 100

Md/Ms 1.04

K Factor 36.85

Sample Train Leak Check:

Initial 0.005 CFM @ 15 "Hg

Final 0.009 CFM @ 12 "Hg

Initial Pilot Tube (-) ✓ (+) ✓

Final Pitot Tube (-) ✓ (+) ✓

Moist. Collected: - Imp. No. 1 ,Imp. No. 2 & 3 ,Imp. No 4 ,Total Filter Tare Wt.

Point #	Sample Time	Meter Vol. Vm	Vel. Head ΔP ("H2O)	Original Diff. ΔH ("H2O)	Stack Temp., Ts (°F)	Meter Temp., Tm (°F)	Hot Box Temp (°F)	Exit Temp. (°F)	Pump Vacuum ("Hg)	Other
1	0	331.948	.035	1.28	932	82	237	54	4.5	
2	2.5	333.109	.035	1.28	1005	83	236	56	4.0	
3	5.0	335.74	.035	1.28	999	84	235	56	4.0	
4	7.5	337.46	.04	1.47	1019	85	230	54	3.5	
5	10.0	339.25	.035	1.28	1012	86	232	54	3.5	
6	12.5	341.00	.035	1.28	1021	87	235	53	3.5	
7	15.0	342.70	.03	1.10	1020	88	231	53	3.5	
8	17.5	344.35	.03	1.16	1024	89	233	53	3.5	
9	20.0	345.95	.03	1.10	1036	90	234	53	3.5	
10	22.5	347.56	.025	.92	1038	91	236	52	3.5	
11	25.0	349.07	.03	1.10	1028	91	235	53	3.5	
12	27.5	350.69	.03	1.10	1028	92	235	52	3.5	
13	30.0	352.34	.04	1.47	1008	91	234	52	4.5	
14	32.5	354.13	.04	1.47	1053	93	234	52	5.0	
15	35.0	355.99	.04	1.47	1057	94	236	51	5.0	
16	37.5	357.81	.04	1.47	1052	96	239	52	5.0	
17	40.0	359.68	.04	1.47	1062	96	241	52	5.5	
18	42.5	361.54	.04	1.47	1075	96	243	51	5.5	
19	45.0	363.38	.04	1.47	1083	97	245	51	5.0	
20	47.5	365.21	.035	1.28	1078	98	247	51	5.0	
21	50.0	366.99	.035	1.28	1073	98	248	51	5.0	
22	52.5	368.77	.035	1.28	1072	98	249	50	5.0	
23	55.0	370.54	.035	1.28	1071	98	249	50	5.0	
24	57.5	372.13	.035	1.28	1059	98	245	50	6.0	
	60.0	373.780								

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
GAS ANAYLSIS DATA FORM

Plant: First Call Crematory	
Unit: N-Zo AA Crematory	Test No.: 1
Date: 4/5/08	Sampling Loc.: Stack
Sampling Time (24 hr. clock) 10:05 – 11:05	
Sampling Type: Continuous ☐ Integrated Bag ☒ Grab ☐	
Analytical Method Orsat	Ambient Temp. 75
Operator Mc	

RUN→	1		2		3		Average NetVolume	Multiplier	Molecular Weight of Stack Gas(Dry Basis (MD)
GAS	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO2	5.4	5.4	5.5	5.5	5.5	5.4		.44	
O2 (Net is Actual O2 Reading minus actual CO2 Reading)	18.0	12.6	18.2	12.7	18.1	12.7		.32	
CO (Net is Actual CO Reading minus actual O2 Reading)								.28	
N2 (Net is 1000 minus actual CO Reading)								.28	
								TOTAL	

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
GAS ANAYLSIS DATA FORM

Plant: First Call Crematory	
Unit: N-20 AA Crematory	Test No.: 2
Date: 4/5/08	Sampling Loc.: Stack
Sampling Time (24 hr. clock) 13:48 - 14:48.	
Sampling Type: Continuous ☐ Integrated Bag ☒ Grab ☐	
Analytical Method Orsat	Ambient Temp. 80
Operator MG	

RUN→	1		2		3		Average NetVolume	Multiplier	Molecular Weight of Stack Gas(Dry Basis (MD)
GAS	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO2	5.1	5.1	5.1	5.1	5.0	5.0		.44	
O2 (Net is Actual O2 Reading minus actual CO2 Reading)	17.1	12.0	17.1	12.0	17.1	12.1		.32	
CO (Net is Actual CO Reading minus actual O2 Reading)								.28	
N2 (Net is 1000 minus actual CO Reading)								.28	
								TOTAL	

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
GAS ANAYLSIS DATA FORM

Plant: First Call Cremetory.	
Unit: N. Zone Cremetory.	Test No.: 3
Date: 4/5/08	Sampling Loc.: Stack
Sampling Time (24 hr. clock) 17:22 – 18:22	
Sampling Type: Continuous ☐ Integrated Bag ☒ Grab ☐	
Analytical Method orsat	Ambient Temp. 85.
Operator MB	

RUN→	1		2		3		Average NetVolume	Multiplier	Molecular Weight of Stack Gas(Dry Basis (MD)
GAS	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO2	5.6	5.6	5.4	5.4	5.5	5.5		.44	
O2 (Net is Actual O2 Reading minus actual CO2 Reading)	18.4	12.8	18.3	12.9	18.5	13.0		.32	
CO (Net is Actual CO Reading minus actual O2 Reading)								.28	
N2 (Net is 1000 minus actual CO Reading)								.28	
								TOTAL	

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
NOZZLE CALIBRATION

DATE: 4/5/08 BY: MG

Nozzle ID	Run No.	D1 (in.)	D2 (in.)	D3 (in.)	ΔD (in.)	DAVG (in.)
QUEST 2	1-3	.600	.599	.601	.002	.600

Where:

D1 D2 D3 = Nozzle diameter measured on a different Diameter (inches).
Tolerance = 0.001 inches

ΔD = Maximum difference in any two Measurements (inches).
Tolerance = 0.004 inches

Davg. = Average of D_1, D_2, D_3

SAMPLE POINT LOCATIONS

Company: First Call Crematory

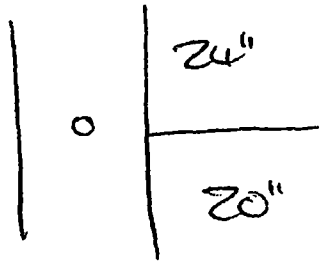
Source: N. 20 AA Crematory

Date: 4/5/08

Stack/Duct Dimensions: 18.5"

Port Length: Yes X No ___

Points corrected for port length? Y



Sketch of Stack/Duct

Point No.	Distance from Duct Wall (inches)
1	7.5
2	8.2
3	9.2
4	10.3
5	11.6
6	13.6
7	18.9
8	20.9
9	22.2
10	23.3
11	24.3
12	25.0

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
Type S Pitot Tube Inspection Form

Pitot Tube ID No.	00.INC	
Inspection Date	4/1/2002	
Inspected By	M. Gierke	
Pitot Tube Assembly Level?	(Yes)	No
Pitot Tube Openings Damaged?	Yes (explain please)	(No)

ANGLE	MEASUREMENT	LIMITS
°1	1°	<10°
a2	1°	<10°
b1	1°	<5°
B2	1°	<5°
Y	1°	
0	2°	
A	.290 inches	
z =A sin Y	.010 inches	<1/8 inch
w =A sin 0	.021 inches	<1/32 inch
Pa	.145 inches	
Pb	.145 inches	
Dt	.190 inches	

COMMENTS

CALIBRATION REQUIRED	YES	(NO)