

# NARRATIVE 6655 LOOKOUT ROAD UNIT #102 USE REVIEW

M. P. Murphy and Associates is proposing to lease unit #102 (1700 s.f.) in the existing building located at 6655 Lookout Road in the City of Boulder. The property is part of the Green's Industrial Park, a subdivision approved for general industrial use under the G-I zone and constructed in 1983.

Mr. Murphy is proposing to use unit #102 of the existing building as a crematorium. The 1700 s.f. rental unit will include the actual retort used to cremate human remains, a refrigeration unit for temporary body storage and a body preparation area. The 1700 s.f. rental unit will include a modification to enlarge the existing office so it can be used as a room for meeting with the family of the deceased and allow viewing of the body.

This facility is not a mortuary and will not be used for funerals or host large public gathering. The only time that members of the public will be at this facility is for meetings with the deceased family and viewing of the deceased. The Applicant estimates that they will conduct approximately one to two family meeting or viewings of the deceased per week

One of the perceived concerns about crematorium is the handling of biohazard materials resulting from body preparation. These materials must be handled as per Federal, State and Local Regulation. These regulations require any biohazard materials must be disposed of by an entity licensed to handle biohazard materials such as Stericycle Inc. All materials must be disposed of properly which prohibits discharging of any materials related to body preparation through any sewage disposal system.

We understand the perceived issues related to the process of cremation and wanted to address some of the common misperceptions. The following are some of the issue that may arise from people not familiar with the cremation process and responses provided by the manufacturer of the proposed crematorium.

1. What is the air quality of gases that are released through the chimney of the cremation unit?
  - As a result of the Clean Air Act of 1990, the Environmental Protection Agency first classified crematories as medical waste incinerators, then later as OSW ("Other Solid Waste") incinerators. After an intensive, testing in 1999 on working crematories that covered most types of emissions, including particulate matter, carbon monoxide and mercury, done jointly with the Cremation Association of North America and reviewing information presented, the EPA decided not to regulate human or animal crematories due to the insignificant amount of hazardous emissions from crematories.
  - The emissions from cremation equipment are not much different than any other fuel burning device. The two most common pollutants from the

cremation process are particulates and carbon monoxide. Particulates are tiny particles of dust, soot and ash resulting from combustion of the human remains, container and fuel. Carbon monoxide (CO) is a by-product of the combustion process including the human remains, container and fuel. The typical quantity of particulates captured from an entire cremation would be the size of a deck of cards. Carbon monoxide emissions from cremation equipment are a non-issue. One of the more stringent emission standards for CO is 100ppm. A well operated cremation system would average less than 15ppm.

- The proposed unit allows for wasted afterburning heat to be recycled through the floor, eliminating fluid problems, lowering fuel consumption and extending the hearth life.
- The entire combustion process is completed within the air controlled chambers eliminating burning in the stack. The cremation is performed using a temperature controlled burner and air jets which stimulate the cremation process. The secondary chamber is where the gases from the cremation process, called products of combustion, are subjected to adequate temperature and turbulence for typically one (1) second or more in order to clean them before they can be exhausted into atmosphere.
- The unit has an integrated automatic system that constantly monitors the stack gases to prevent visible emissions. This feature enables the unit to make all necessary adjustments automatically.

2. Can adjacent property owners and passers-by see when the crematorium is operating?

- Human remains consist of 85% moisture, which vaporizes during the cremation process; 10% combustible solids which release approximately 1000 BTUs per pound and transfer from a solid to vapor state; and 5% non-combustible solids which absorb heat and energy from the cremation process and remain as solids (bone fragments and ash materials) when cremation is completed. The 5% non-combustible solids are returned to the family for memorialization. There are not any elements in human remains that would be harmful to the environment as a result of cremation?
- Due to high internal temperatures and the passing of gas by-products through a secondary combustion chamber the only visible elements leaving the chimney would be primarily water vapor and small amounts (15 ppm) of carbon dioxide.
- Also as a result of the secondary combustion chamber no flames or heat glow are detectable.

3. How safe is the cremation unit?

- The chimney includes a three inch insulating liner is provided as a safety feature. While gases seldom exceed 800°F, the liner reduces heat penetration under every condition, preventing the possibility of fire. The exterior temperature of the chimney and the chamber does not exceed 150°F. Also the chimney must meet building standards which would

include a metal collar used to separate the chimney from other combustible materials.

- All chambers are constructed of high duty refractory walls with six inch 3000°F high duty brick in all non-insulating areas. The hearth is cast from 3000°F abrasive resistant material and the main chamber ceiling is insulating firebrick. This results in a external temperature that does not exceed 150°F.
- By the time a cremation is complete, the remains have been exposed to temperatures in excess of 1600° F. In the “Mass Fatality Management for Incidents,” a document prepared by the US Army and the Department of Justice, cremation and the destruction of both biological and chemical agents were discussed. They stated, “Cremation is the only option whereby remains are considered free from contamination and can be safely returned to the family with no additional constraints.”
- Operators are required to wear adequate personal protective equipment (PPE). Operators need to protect themselves from the potential respiratory irritations that the dust in cremation could cause. Operators need to wear an adequate particle mask to protect their nose and mouth from inhalation of the dust particles. Wearing gloves will minimize skin contact with the dust and the chances of transferring it from hands to other parts of the operator’s body.

(See attached correspondence from Matthews Cremation)

## The Standard of Excellence in Cremation Solutions.

Matthews Cremation Division (MCD) represents over 100 years of experience in cremation technology and our equipment has set the standard of excellence for quality and performance. With over 5,000 installations in 50 countries, we are the oldest and largest manufacturer in the cremation industry.

From design through startup, our goal is to protect your interest and make certain that your investment in cremation equipment is supported with the foundation for long-term success. We'll determine your equipment needs, evaluate your facility, design floor plans, guarantee environmental acceptance, assist your contractors in the installation and provide on-site operator training.

Our Matthews commitment is to go the extra mile...



- Customized Return on Investment Analysis (ROI)
- Zoning Board Assistance
- Operator Certification
- 24/7 Customer Service
- Custom Engineering & Design
- Industry & Trade Support
- Widest array of cremation accessories
- Lease & Finance options.

## Highly advanced engineering. Highly efficient operation. Highly profitable results.

**The Power-Pak II Cremation System** represents the very latest in cremation industry technology. Designed to provide fully automated operation, the Power-Pak II is the fastest, most fuel-efficient cremator in its class.

**Automatic Operation** — The self-monitoring control system simplifies the cremation process, shutting itself off upon completion of the cycle.

**Operator Safety** — Underwriter's Laboratories (UL) listed represents the most widely recognized measure of safety and compliance, ensuring the safety of personnel and facilities.

**SMOKE-BUSTER™/140** — This feature effectively consumes and destroys smoke and odor from the cremation process.

**Hydraulic Loading Table** — Conveniently allows one person to safely and easily load the case into the chamber, coolers, coaches and vans.

**Pollution Monitoring and Control System** — Automatically checks and regulates stack emissions.

The Power-Pak II is pre-wired, pre-plumbed, and pre-tested before shipment, requiring only oil-filling, one connection each for gas line electricity and placement of the stack we provide.



**Quiet Operation** — Features whisper-quiet exhaust operation without disturbing other services.

**Operating Controls** — Simple, easy-to-use, installation independent.

**Stainless Steel Stack** — Vacuum-cast, built-in for strength, durability, and safety.

**SMOKE-BUSTER™ System** — Complete combustion of vapor and odor.

**Insulation Thickness** — 12" of multi-component materials for longest lasting refractory and highest thermal efficiency.

**Retrieval System** — Retrieval of cremated remains is safe and quick with the convenient external collection buffer.

**Loading Door** — Self-lifting, self-sealing door opens and closes at the push of a button.

**Cremation Chamber Floor** — Unique "hot floor" design eliminates fluid runoff and minimizes fuel consumption.

## Who is Matthews Cremation Division?

Matthews Cremation Division

is the premier manufacturer of Industrial Equipment & Engineering (IEE) and ALL

Crematory (ALL) cremation equipment. We are the global leader in cremation equipment

sales, service and repair.

Representing the highest standards for safety, we

manufacture a wide range of human and animal cremation

equipment. As a full-service provider, we offer accessory

equipment, supplies and memorial products to meet

your business requirements.

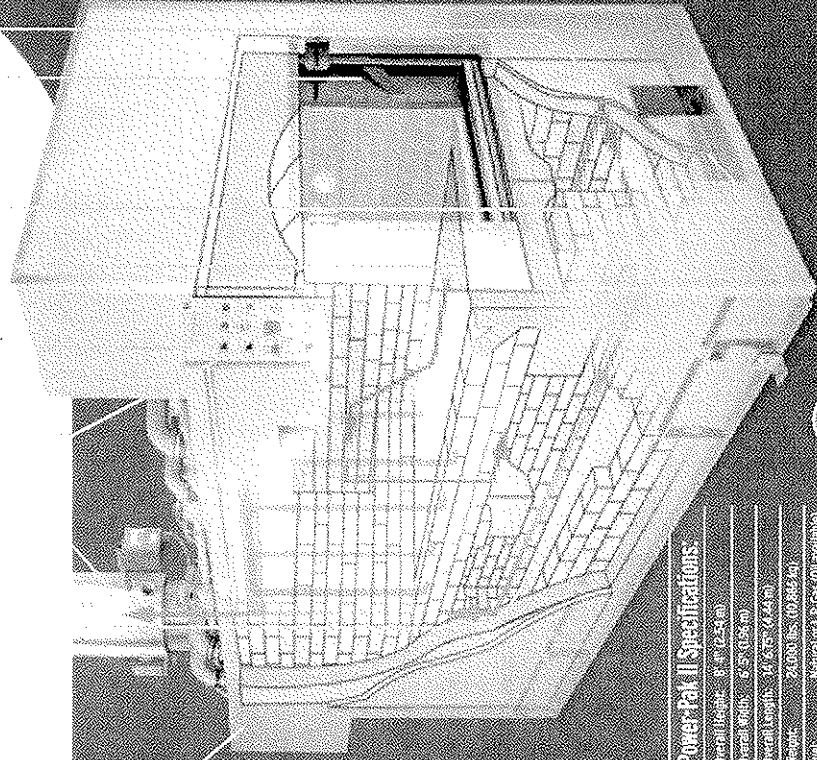
A significant number of our cremators are still operating,

including some manufactured more than 40 years ago.

Discover why Matthews Cremation Division is the

most trusted name in cremation products

and services.



### Power-Pak II Specifications:

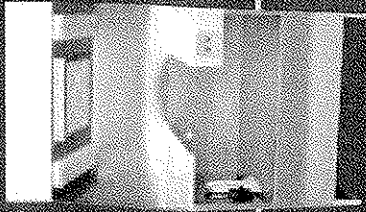
Overall Height	8' 0" (2.44 m)
Overall Width	6' 5" (1.95 m)
Overall Length	30' 0" (9.14 m)
Weight	24,000 lbs. (10,885 kg)
Fuel	Industrial L.G. Gas (Oil available)
Electricity	220 volts, 3-phase system

Control panel can be located inside, left or remote.  
Illustrations include control panel and viewing window.



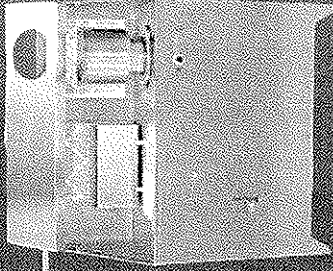
### ECP-200 Electric Cremated Remains Processor

- Reduces cremated remains below 200 cubic inches to fit standard sized urns
- Average processing time is 30 seconds or less
- Quiet and dust-proof.



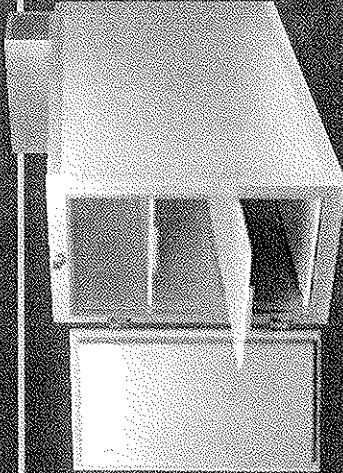
### VPS-1 Processing Station

- Recovers dust when transferring cremated remains for operator safety
- Ventless design eliminates walk or ceiling openings
- Built in florescent lighting adds convenience and safety
- Steel frame construction, finished with heavy gauge stainless steel.



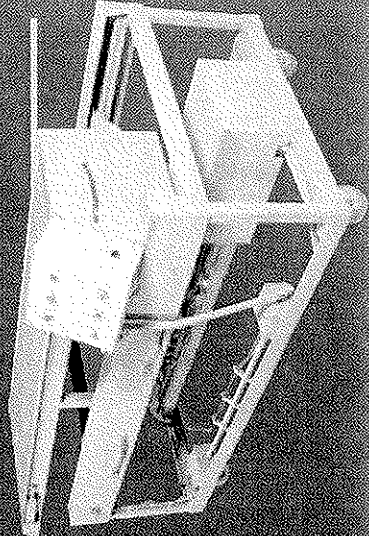
### Deluxe Processing Workstation

- Similar features to the ECP and VPS-1 Processing station with additional benefits:
- Cooling station for cremated remains
  - Built in temporary container filler
  - No perforated screens or drums to clog and eliminates potential commingling.



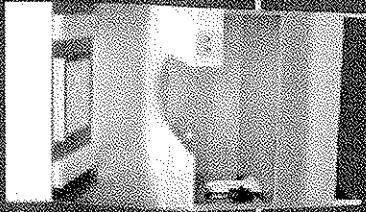
### Three-body Cooler

- Safe storage until final disposition
- Thermostatically controlled system maintains constant temperature
- Removable shelves accommodate a mortuary cart or caskets
- On/off switch, door-mounted thermometer and self-sealing magnetic door



### Auto-Loader

- Increases production
- Enhances operator safety
- Extends the cremation chamber floor life
- Offers a professional presentation during family viewing.



## Matthews Cremation Division

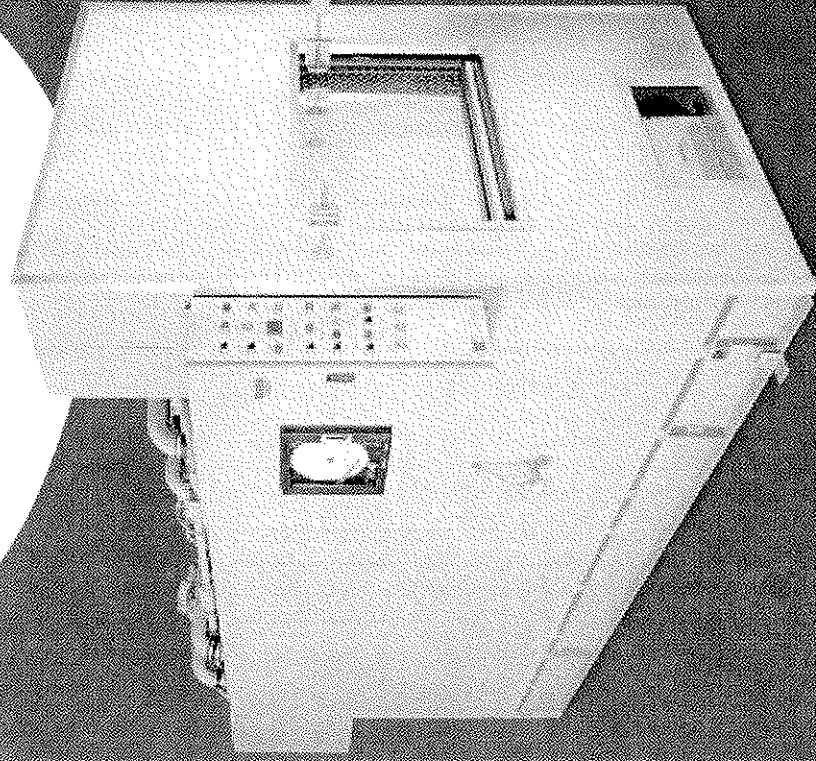
offers several accessories to complement the professional crematory.

**Matthews**  
INTERNATIONAL  
Cremation Division

# Power-Pak II

*The New Standard*

**SMOKE-BUSTER™ 140**  
2-Hours or Less Cremation Time  
Up to 4 Cremations in 8 Hours



**Matthews**  
INTERNATIONAL  
Cremation Division

2045 Sprint Boulevard  
Apopka, FL 32703  
Phone: 407-866-5533  
Toll Free: 1-800-327-2031  
FAX: 407-866-5990  
[www.matthewscremationdivision.com](http://www.matthewscremationdivision.com)





**EMISSIONS TESTING  
REPORT**

**PERMIT NO. 0950126-005-AG**

**IE43-PP11, POWER-PAK II  
CREMATOR**

*PREPARED FOR:*

**BALDWIN FAIRCHILD**

ORLANDO, FLORIDA

MAY 5, 2005

*PREPARED BY:*

**ATC**



**AIR TESTING & CONSULTING, INC.**

333 FALKENBURG ROAD, SUITE B-214  
TAMPA, FLORIDA 33619

ATC



*AIR TESTING & CONSULTING, INC.*

333 FALKENBURG ROAD, SUITE B-214  
TAMPA, FLORIDA 33619

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

  
Kenneth E. Given, P.E.  
5-18-05

Date

## 1.0 INTRODUCTION

On May 5, 2005, Air Testing & Consulting, Inc., conducted the following tests on Baldwin Fairchild's Human Crematory Incinerator located at 301 N. Ivanhoe Blvd. in Orlando, Florida:

- (1) Particulate Emission (EPA Methods 1 – 5)*
- (2) Carbon Monoxide (EPA Method 10)*
- (3) Visible Emissions (EPA Method 9)*
- (4) Oxygen (EPA Method 3A)*

These tests were performed at the request of Mathews Cremation Division to prove compliance on the Power Pak II crematory incinerator. Orange County, Environmental Protection Division, representatives, Gregory Bryant, Ilka Bundy and John Casper audited the test.

## 2.0 SUMMARY OF RESULTS

The results of the emission testing are presented in the Test Summary. The Particulate emissions averaged 0.0549 grains per dry standard cubic foot (gr/dscf) and CO emissions averaged 2.2 parts per million (ppmv), each corrected to 7% O<sub>2</sub>. Opacity, highest six-minute average, on the stack, was 0%.



## 4.0 PROCESS DESCRIPTION

The facility operates a Matthews Power Pak II crematory for the purpose of disposing of human remains. The unit is rated at 100 lbs/hr and operates on a two hour cycle. See attached flow diagram. The design firing rate to the primary chamber is 0.7 MMBtu/hr and the rate to the afterburner is 1.2 MMBtu/hr.

After the secondary chamber has been heated sufficiently, the cremator burner ignites the cremation process is initiated. A typical cremation takes from 1 to 2 hours, but the time may vary depending on the body weights and various other factors. (See "Crematory Process Flow Diagram").

The testing personnel detected no objectionable odor during the stack test.

### 3.0 SUMMARY OF TEST DATA

PLANT : BALDWIN

UNIT : POWER-PACK II

RUN NUMBERS : 1, 2, 3

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

FIELD DATA AND SAMPLES UNDER THE CONTROL OF

TIM CAPELLE

LABORATORY ANALYSIS UNDER THE CONTROL OF

ATC

REGULATORY SUMMARY  
BALDWIN FAIRCHILD  
HUMAN CREMATORY  
MAY 5, 2005

PERMIT NO. NEDS NO. ID #	EPA METHOD	METHOD DESCRIPTION	ACTUAL EMISSION RATE	ALLOWABLE EMISSION RATE	PROCESS RATE POUNDS PER HOUR	
					ACTUAL	PERMIT
0950126-005-AG  0126	5	PARTICULATE  gr/dscf @ 7% O <sub>2</sub>	0.055	0.080	68	100
	10	CARBON MONOXIDE  ppmv @ 7% O <sub>2</sub>	2	100		
	9	VISIBLE EMISSIONS  % Opacity	0	5% except for 20% up to 3 min/hr		

*E. VISIBLE EMISSIONS*

# AIR TESTING & CONSULTING, INC.

(813) 651-0878

Facility Name <b>BALDWIN FAIRCHILD</b>		Permit Number <i>6-15-05</i>		Observation Date <b>5-5-05</b>		Start Time <b>10:29</b>		Stop Time <b>11:29</b>					
Source <b>CREMATORY</b>		ID No		SEC	0	15	30	45	SEC	0	15	30	45
Address <b>301 N. IVANHOE BLVD.</b>				MIN	1	2	3	4	MIN	31	32	33	34
City <b>ORLANDO</b>		County <b>ORANGE</b>		Zip <b>32804</b>		5	6	7	8	9	10	11	12
Contact		Phone		13	14	15	16	17	18	19	20	21	22
Process Equipment <b>CREMATORY - POWER PAK II</b>		Operating Rate <b>150 lbs</b>		23	24	25	26	27	28	29	30	31	32
Control Equipment <b>AFTER BURNER</b>		Operating Mode		33	34	35	36	37	38	39	40	41	42
Fuel Type/Rate <b>NAT. GAS</b>		Material Type/Rate <b>HUMAN REMAINS</b>		43	44	45	46	47	48	49	50	51	52
Describe Emission Point <b>STACK EXIT</b>				53	54	55	56	57	58	59	60	61	62
Height Above Ground Level Start <b>15</b> Stop <input checked="" type="checkbox"/>		Height Relative to Observer Start <b>10</b> Stop <input checked="" type="checkbox"/>		63	64	65	66	67	68	69	70	71	72
Distance from Observer Start <b>65</b> Stop <input checked="" type="checkbox"/>		Direction from Observer Start <b>310°</b> Stop <b>310°</b>		73	74	75	76	77	78	79	80	81	82
Describe Emissions Start <b>None</b> Stop <input checked="" type="checkbox"/>				83	84	85	86	87	88	89	90	91	92
Emission Color Start <b>N/A</b> Stop		Plume Type <input type="checkbox"/> Continuous <input checked="" type="checkbox"/> Intermittent <b>N/A</b>		93	94	95	96	97	98	99	100	101	102
Water Droplets Present <input type="checkbox"/> No <input type="checkbox"/> Yes		Water Droplet Plume <input type="checkbox"/> Attached <input type="checkbox"/> Detached		103	104	105	106	107	108	109	110	111	112
Point in the Plume at which Opacity was determined Start Stop				113	114	115	116	117	118	119	120	121	122
Describe Background Start <b>SKY</b> Stop <input checked="" type="checkbox"/>		Ambient Temp Start <b>75</b> Stop <b>82°</b>		123	124	125	126	127	128	129	130	131	132
Background Color Start <b>light grey</b> Stop <input checked="" type="checkbox"/>		Sky Conditions Start <b>cloudy</b> Stop <input checked="" type="checkbox"/>		133	134	135	136	137	138	139	140	141	142
Wind Speed Start <b>1-3</b> Stop <b>4-7</b>		Wind Direction Start <b>S</b> Stop <input checked="" type="checkbox"/>		143	144	145	146	147	148	149	150	151	152
Stack with Plume <input type="checkbox"/> Sun <input checked="" type="checkbox"/> Wind <input checked="" type="checkbox"/>		SOURCE LAYOUT SKETCH Draw North Arrow		153	154	155	156	157	158	159	160	161	162
				Average Opacity for Highest 24 Consecutive Readings		Range of Opacity Readings Min Max							
				Observer's Name (Print) <b>GIVEN</b>		Observer's Signature <i>[Signature]</i>		Date <b>5/5/05</b>					
I certify the above process rate data is true to the best of my knowledge SIGNATURE _____ Date _____ Title _____				Certified by E.T.A.		Date <b>2/05</b>							
				Comments									