Visible Emission Test Report

Completed for:

Gainesville Renewable Energy Center
Woody Biomass Power Plant
Biomass Fuel Handling System (EU-001)
Ash Handling System (EU-003)
Alkaline Sorbent Storage Silo (EU-007)

Test Report Number: 20-11542-010307-001

Testing Completed:
March 21 - 24, 2017

1183 East Overdrive Circle • Hernando, FL 34442 • (352) 489-4337 • Fax: (352) 489-4801

Visible Emission Test Report

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Gainesville, Florida

C.E.M. Solutions Project No. 11542

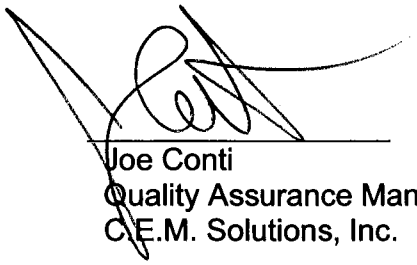
Testing Conducted:
March 21 – 24, 2017

C.E.M. Solutions, Inc Report Number: 20-11542-010307-001

C.E.M. Solutions, Inc.
1183 E. Overdrive Circle
Hernando, Florida 34442
Phone: 352-489-4337

Declaration of Conformance to ASTM D 7036-04: Standard Practice for Competence of Air Emission Testing Bodies

C.E.M. Solutions operates in conformance with the requirements of ASTM D 7036-04: Standard Practice for Competence of Air Emission Testing Bodies through the use of a quality system which incorporates a quality manual, internal audit system, systematic training of personnel and rigorous review of test methods and operating procedures. C.E.M. Solutions Inc. collects performance data related to the quality system and this data is available upon request.



Joe Conti
Quality Assurance Manager,
C.E.M. Solutions, Inc.

Statement of Validity

I hereby certify the information and data provided in this emissions test report for tests performed at the Gainesville Renewable Energy Center's Woody Biomass Power Plant (Emission Units 001, 003, and 007), conducted March 21 through March 24, 2017, are complete and accurate to the best of my knowledge.

Joe Conti
Quality Assurance Manager,
C.E.M. Solutions, Inc.

Project Background

Name of Source Owner:	Gainesville Renewable Energy Center
Address of Owner:	11201 NW Hwy 441 Gainesville, FL 32653
Source Identification:	Facility ID: 0010131 Biomass Fuel Delivery Preparation, Storage and Handling (EU-001) Ash Handling, Storage and Shipment (EU-003) Alkaline Sorbent Storage Silo (EU-007)
Location of Source:	Alachua County, Florida
Type of Operation:	SIC Code: 4911
Tests Performed:	Method 9 – Determination of Visible Emission
Test Technicians (VE Certified):	Charles Horton Matthew Brock
Date(s) Tests Conducted:	March 21, 2017: Alkaline Sorbent Storage Silo Bin Vent Screen/Hog Building Baghouse Fuel Day Bin Vent Fly Ash Silo Dust Collector B March 22, 2017: Fly Ash Silo Dust Collector A March 24, 2017: Fly Ash Silo
Site Test Coordinator:	Ali Leaphart, GREC
State Regulatory Observers:	Marc Lovallo, FDEP

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1.0 Introduction

Gainesville Renewable Energy Center (GREC) retained C.E.M. Solutions, Inc. to perform visible emissions monitoring on the Gainesville Renewable Energy Center's Woody Biomass Power Plant. Visible emissions were conducted on the Biomass Fuel Delivery System (EU-001), the Ash Handling System (EU-003) and the Alkaline Sorbent Storage Silo (EU-007) to show compliance with FDEP permit number 0010131-006-AV.

Ali Leaphart of GREC coordinated plant operations throughout the monitoring program. All testing was conducted in accordance with test methods promulgated by the USEPA.

Table 1 summarizes the results of the test program.

Table 1: Summary of Test Results
Woody Biomass Power Plant
Emission Units -001, -003 and -007

Sample Location	Emission Unit ID	VE %[a]	Emission Limit	Status (Pass/Fail)
Screen/Hog Building Baghouse	001	0.0 %	5% VE	PASS
BFB Boiler Fuel Day Bin Vent Filter	001	0.0 %	5% VE	PASS
Fly Ash Silo Baghouse	003	0.0 %	5% VE	PASS
Fly Ash Silo Dust Collector A	003	0.4 %	10% VE	PASS
Fly Ash Silo Dust Collector B	003	5.4 %	10% VE	PASS
Alkaline Sorbent Storage Bin Vent Filter	007	0.0 %	5% VE	PASS

a = highest 6 minute block average

2.0 Facility Description

The Gainesville Renewable Energy Center's Woody Biomass Power Plant consists of a Biomass Fuel Delivery, Preparation, Storage and Handling system, a Woody Biomass-fueled BFB Boiler, and an Ash Handling, Storage and Shipment system.

2.1 Biomass Fuel Delivery, Preparation Storage and Handling (EU 001)

The biomass fuel delivery, preparation, storage and handling system consists of: three truck dumpers; two sets of screens and hogs (i.e., machines used to size wood chips); and automatic and manual stacker/reclaimers to maintain on average a 15 to 20 day supply of biomass fuel for the BFB boiler based on full load operation and average biomass fuel moisture content. The GREC biomass fuels are initially chipped/ground and processed at offsite locations and then transported to the site by truck. Between 130 and 150 fuel truck deliveries per day are expected based on the maximum BFB boiler biomass fuel consumption rate/average moisture content and a 6-day-per-week delivery schedule. During peak delivery periods, the delivery facilities are capable of unloading 24 truckloads of biomass fuel per hour. The GREC biomass fuel handling system includes scales to weigh each truck entering and departing the facility to determine the delivered fuel weight. The maximum designed hourly biomass processing rate is 600 tons per hour (TPH) with a maximum designed yearly rate of 1,395,030 tons per year (TPY).

2.2 Boiling fluidized bed (BFB) boiler (EU 002)

The boiler is a woody biomass fueled bubbling fluidized bed (BFB) boiler wherein wood is combusted within a bed of hot sand. Heat from the exhaust is recovered to generate superheated steam to generate 100 MW (net) of electricity in a steam turbine generator. Primary fuel will be clean woody biomass. Natural gas is used as a startup fuel. The maximum steam production rate is 930,000 pounds per hour while firing woody biomass. Flue gas exhausts will exit a 230 feet tall, 12 ft. outer diameter stack at approximately 310°F and a volumetric flow rate of 520,600 actual cubic feet per minute (acfm).

An alkaline sorbent storage silo (EU-007) is used to store sodium bicarbonate for the IDSIS emission control system. The storage silo has a bin vent installed to control PM emissions while the silo is loaded with sorbent from a truck.

2.3 Ash Handling, Storage and Shipment (EU 003)

Approximately two thirds of ash created by the combustion of biomass fuel exits the BFB boiler as fly ash with the remaining third leaving as bottom ash. The design maximum process throughput rates are 27,594 TPY of fly ash and 13,140 TPY of bottom ash.

Fly ash from the boiler convective pass and fabric filter baghouse hoppers is collected dry and transported pneumatically to a single fly ash storage silo by means of two vacuum blowers. The transferred fly ash first passes through a receiver/collector that separates the fly ash from the conveying air stream. The separated fly ash then flowd through an air lock valve into the storage silo, which will be vented through a baghouse for control of PM emissions. From the silo, the fly ash is either stabilized using water in a pug mill or loaded dry into a receiving truck. For the fly ash stabilization case, fly ash and water are mixed in a pug mill and then transferred via a chute into covered trucks and then hauled offsite for reuse or disposal. During the dry transfer of fly ash, an enclosed process is utilized to transfer ash from the silo through a chute into sealed trucks.

3.0 Test Program/Operating Conditions

Monitoring was conducted while the systems were operating at maximum capacity to the extent practicable. During the visible emission observations, the truck hoppers operated at approximately 242.97. The Alkaline storage tank was filled at a pressure of 10 psi. The depth of the sorbent in the silo was documented during the filling operation.

Plant operating data were provided by Gainesville Renewable Energy Center, Inc. and are located in Appendix A.

4.0 Test Methods

All testing was performed in accordance with methods approved by the USEPA and FDEP. The following discusses the methods, as well as quality assurance and sample handling procedures.

Table 2 summarizes the EPA test methods utilized to complete the test program.

Table 2: Summary of EPA Reference Methods
Woody Biomass Power Plant
Emission Units -001, -003 and -007

EPA Method	Description
9	Opacity (Visible Emissions)

4.1 Visible Emission Determination

USEPA Method 9 was utilized to determine visible emissions.

Visible emissions observations were performed by a FDEP certified visible emissions reader. Readings were taken at 15 second intervals and reduced into six minute averages as required by the applicable EPA standard. One, sixty (60) or thirty (30) minute visible emissions test run was performed on each of the point sources while the system was operating at or near maximum capacity, to the extent practical.

Method 9 data summary, field data and VE reader's certification are located in Appendix B and C.

5.0 Emission Monitoring Results

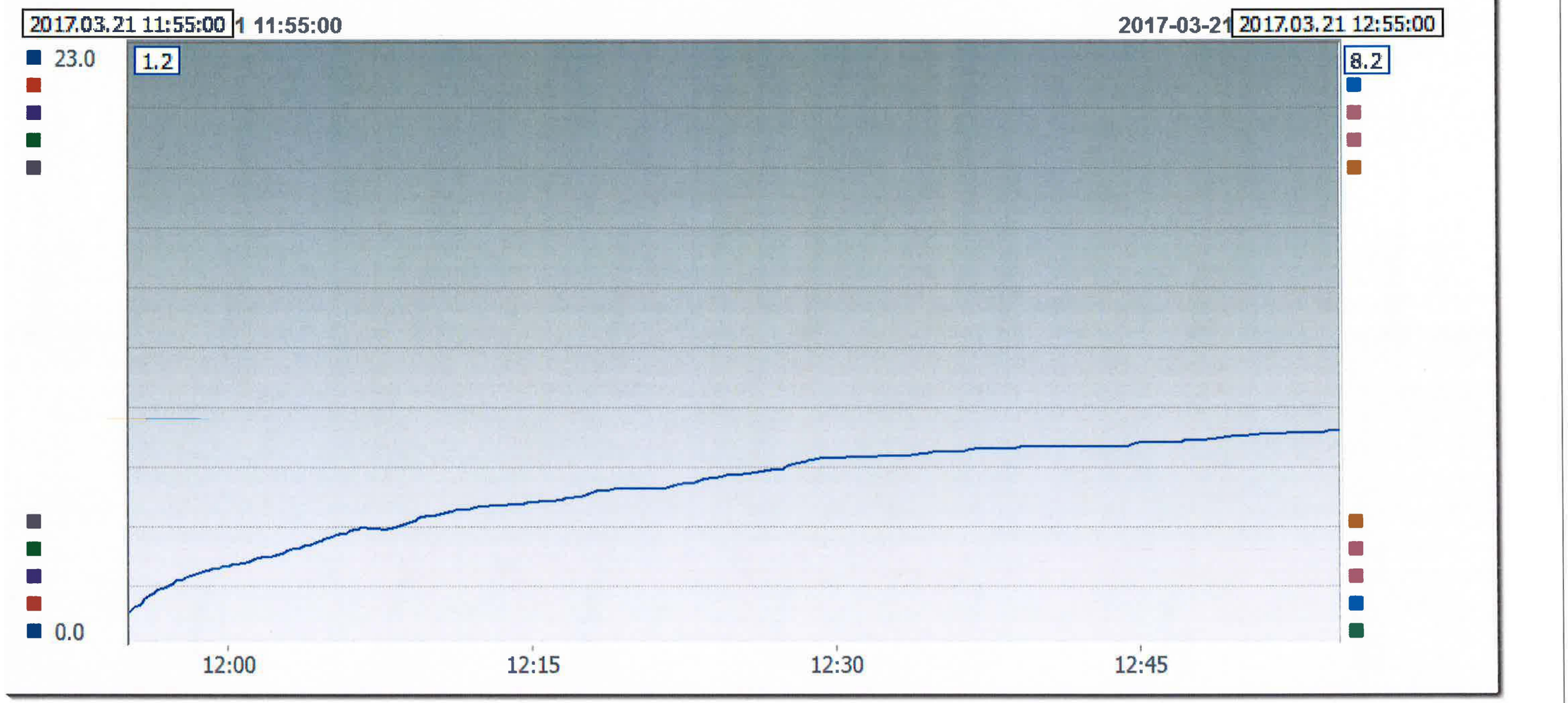
The following section presents the results of the monitoring program. Table 3 summarizes the test program results. Supporting RM field data are presented in Appendix B.

Table 3: Visible Emissions Summary
Woody Biomass Power Plant
Emission Units -001, -003 and -007

Sample Location	Date	Start Time (EST)	End Time (EST)	VE %[a]	Emission Limit
Screen/Hog Building Baghouse	3/21/2017	13:10	13:40	0.0%	5% VE
BFB Boiler Fuel Day Bin Vent Filter	3/21/2017	14:45	15:15	0.0%	5% VE
Fly Ash Silo Baghouse	3/24/2017	8:00	8:30	0.0%	5% VE
Fly Ash Silo Dust Collector A	3/22/2017	16:05	17:05	0.4%	10% VE
Fly Ash Silo Dust Collector B	3/21/2017	16:02	17:02	5.4%	10% VE
Alkaline Sorbent Storage Bin Vent Filter	3/21/2017	11:55	12:25	0.0%	5% VE

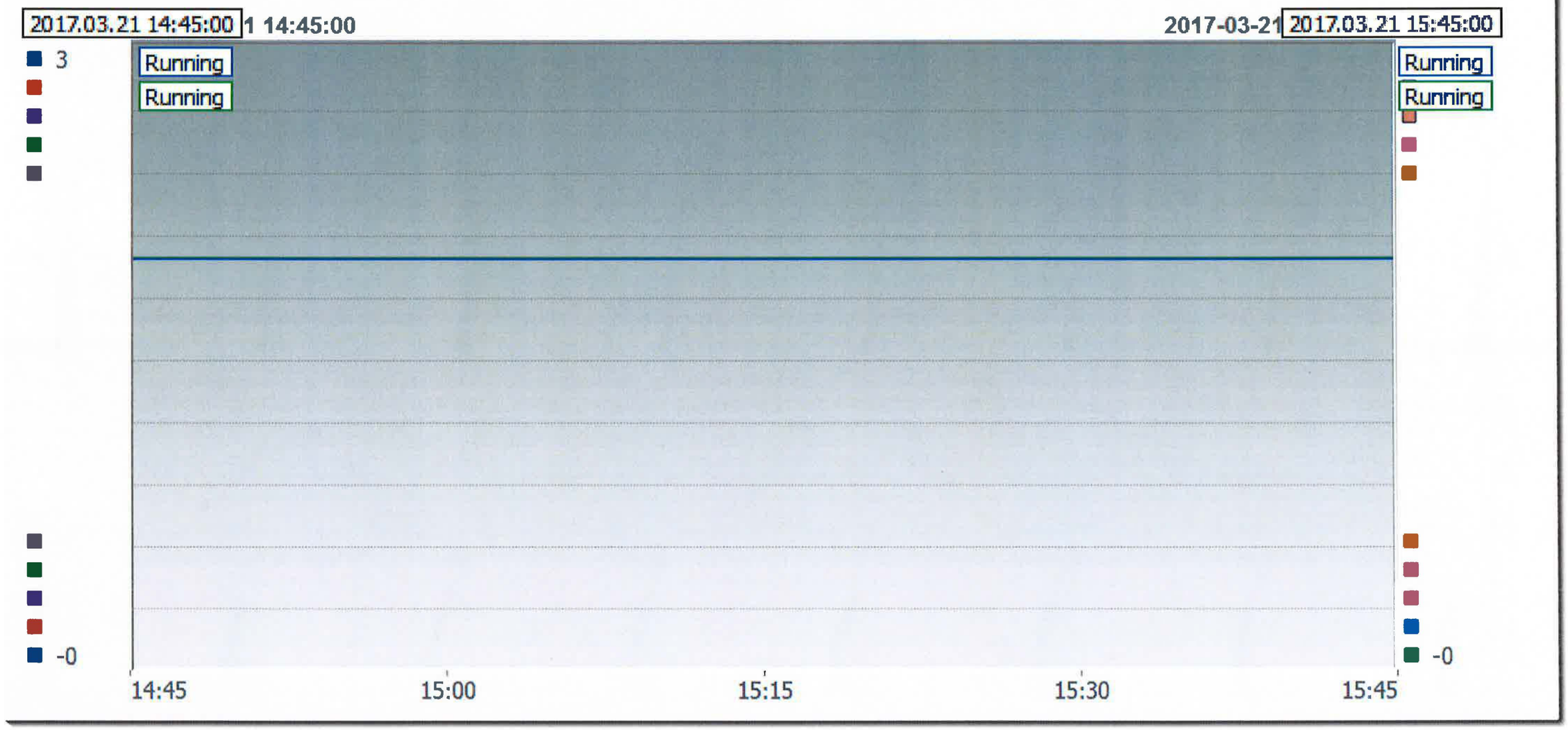
a = highest 6 minute block average

Appendix A: Facility Operating Data

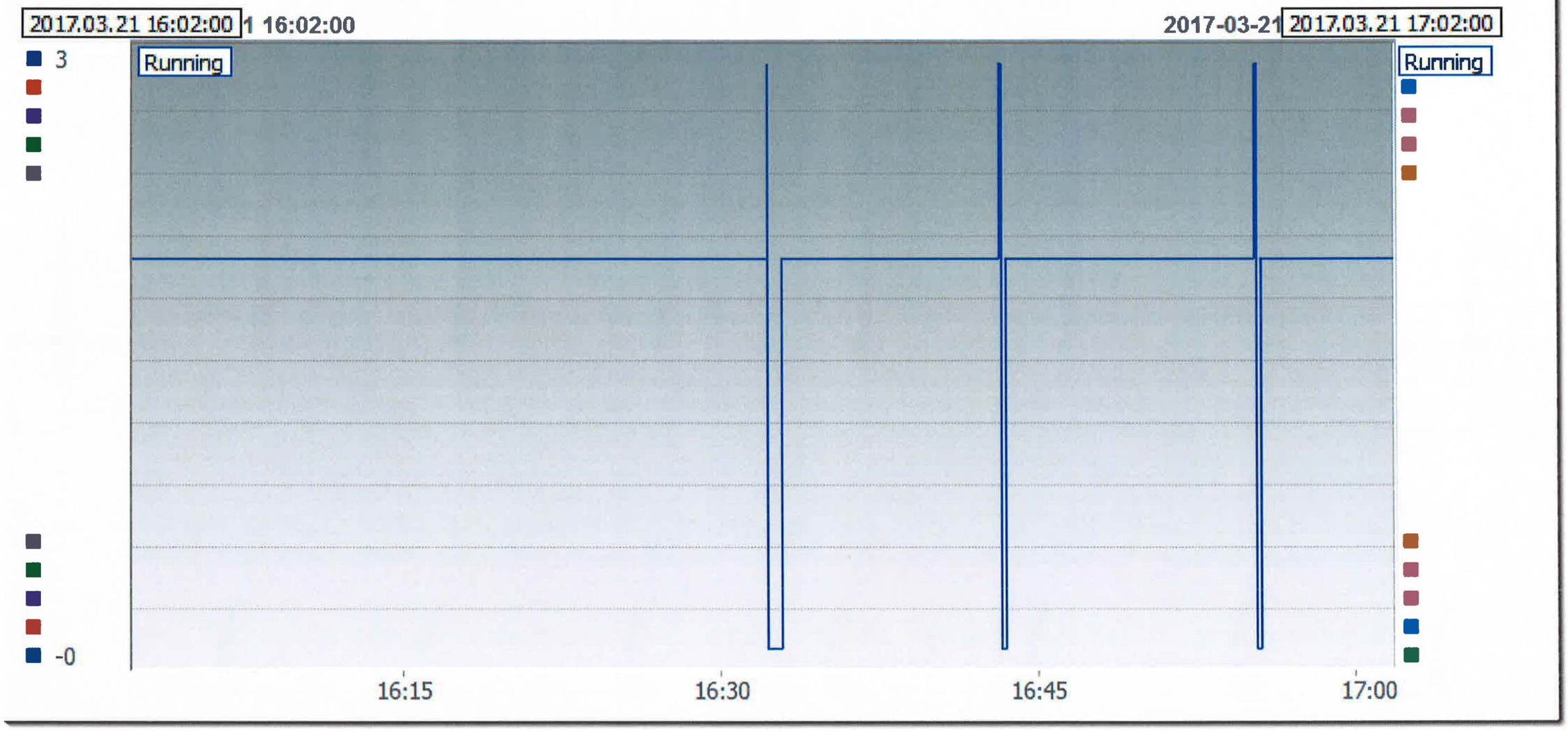


SBC SILO LEVEL	SBC-LI-1001-40	8.2	ft	

TicketDate	TicketNumber	Net tons	Remarks	DumpTime
03/21/2017	61407	26.22	VE#	3/21/17 13:11
03/21/2017	61409	33.78	VE start#	3/21/17 13:15
03/21/2017	61410	26.79	#	3/21/17 13:13
03/21/2017	61411	32.21	#	3/21/17 13:37
03/21/2017	61412	29.9	#	3/21/17 13:24
03/21/2017	61413	26.24	#	3/21/17 13:27
03/21/2017	61414	30.9	#	3/21/17 13:35
03/21/2017	61416	36.93	#	3/21/17 13:39
		242.97		



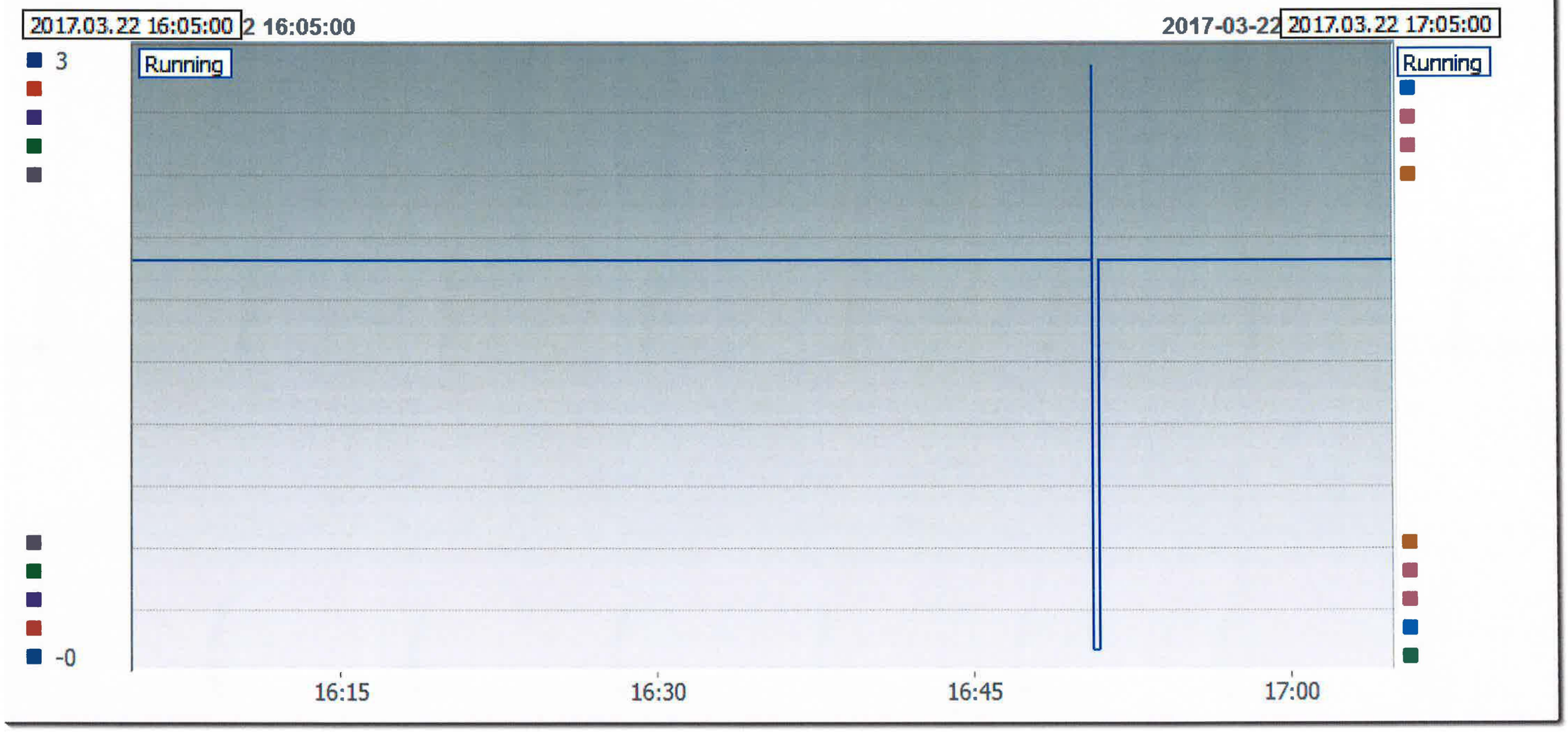
FUEL SILO 1 RECLAIMER	FCS-CNV-1016	Running	FUEL SILO 2 RECLAIMER	FCS-CNV-1017	Running



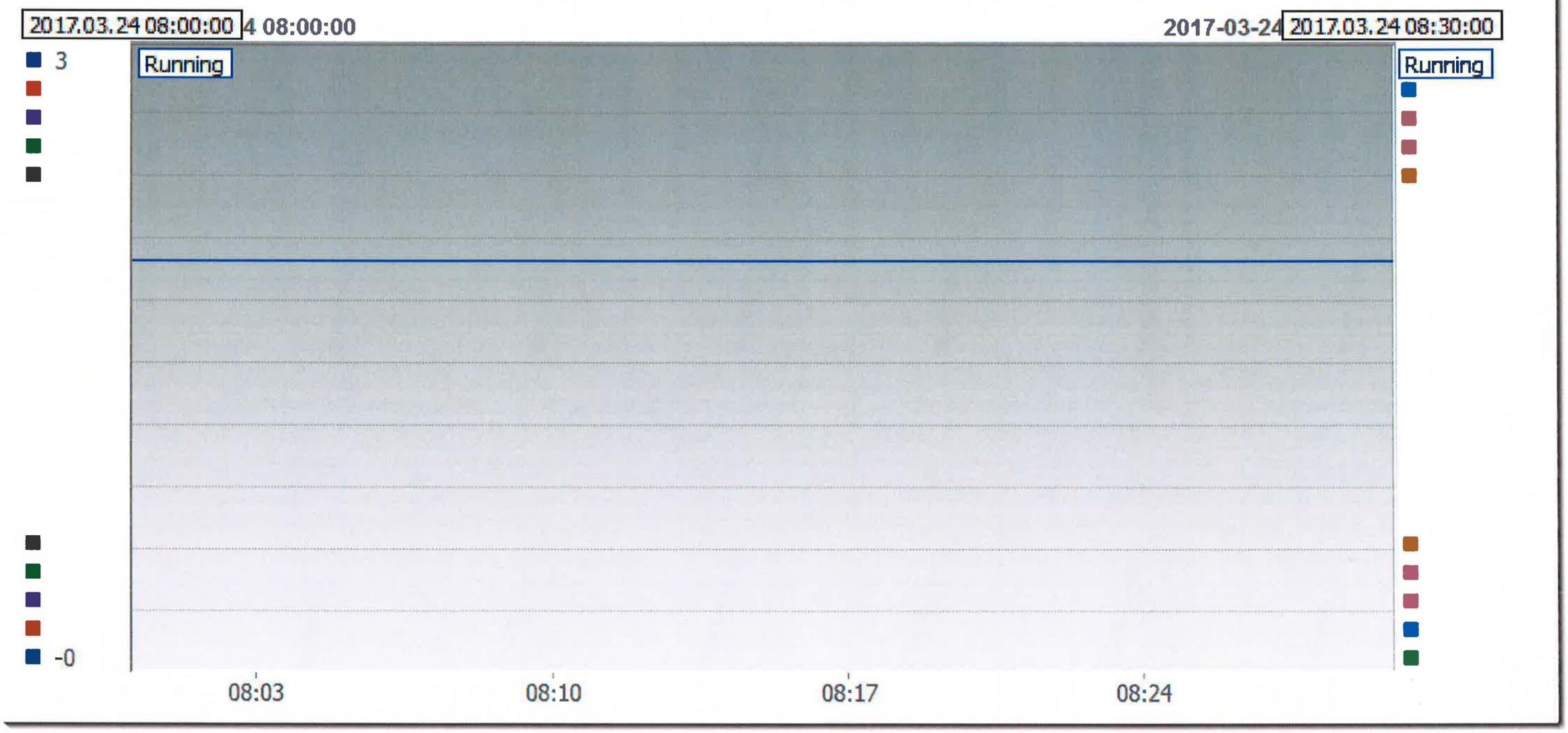
VACUUM BLOWER B	AHS-BLR-1138	Open	

Date/Time	BFB1: STACK_FLOW_SCFH_P75 (SCFH) Raw Value
3/22/2017 14:10	18,240,000
3/22/2017 14:11	18,318,000
3/22/2017 14:12	18,048,000
3/22/2017 14:13	17,706,000
3/22/2017 14:14	17,886,000
3/22/2017 14:15	17,904,000
3/22/2017 14:16	17,634,000
3/22/2017 14:17	17,682,000
3/22/2017 14:18	17,898,000
3/22/2017 14:19	18,036,000
3/22/2017 14:20	17,988,000
3/22/2017 14:21	18,078,000
3/22/2017 14:22	17,634,000
3/22/2017 14:23	17,940,000
3/22/2017 14:24	18,000,000
3/22/2017 14:25	17,916,000
3/22/2017 14:26	18,042,000
3/22/2017 14:27	18,462,000
3/22/2017 14:28	18,408,000
3/22/2017 14:29	18,396,000
3/22/2017 14:30	18,564,000
3/22/2017 14:31	18,492,000
3/22/2017 14:32	18,132,000
3/22/2017 14:33	18,366,000
3/22/2017 14:34	18,198,000
3/22/2017 14:35	18,096,000
3/22/2017 14:36	17,628,000
3/22/2017 14:37	17,964,000
3/22/2017 14:38	17,754,000
3/22/2017 14:39	17,250,000
3/22/2017 14:40	17,850,000
3/22/2017 14:41	17,790,000
3/22/2017 14:42	18,198,000
3/22/2017 14:43	18,066,000
3/22/2017 14:44	18,096,000
3/22/2017 14:45	18,492,000
3/22/2017 14:46	18,018,000
3/22/2017 14:47	18,504,000
3/22/2017 14:48	18,258,000
3/22/2017 14:49	18,132,000
3/22/2017 14:50	18,090,000
3/22/2017 14:51	18,114,000
3/22/2017 14:52	18,258,000
3/22/2017 14:53	17,808,000
3/22/2017 14:54	17,364,000
3/22/2017 14:55	17,652,000

Date/Time	BFB1: STACK_FLOW_SCFH_P75 (SCFH) Raw Value
3/22/2017 14:56	17,736,000
3/22/2017 14:57	17,592,000
3/22/2017 14:58	17,268,000
3/22/2017 14:59	17,856,000
3/22/2017 15:00	17,826,000
3/22/2017 15:01	17,766,000
3/22/2017 15:02	18,414,000
3/22/2017 15:03	18,186,000
3/22/2017 15:04	18,546,000
3/22/2017 15:05	18,390,000
3/22/2017 15:06	18,600,000
3/22/2017 15:07	18,546,000
3/22/2017 15:08	17,982,000
3/22/2017 15:09	18,024,000
3/22/2017 15:10	17,706,000



VACUUM BLOWER A	AHS-BLR-1137	Running	



VACUUM BLOWER A	AHS-BLR-1137	Running	

Appendix B: Method 9 Support Data

VE Field Documentation

VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (EU-001)

Source Name: Screen/Hog Building

Permit Number: 0010131-006-AV

Location Address: 11201 NW US Hwy 441

City: Gainesville | State: FL | Zip: 32653

Unit Load: Base

Operating Mode: Normal

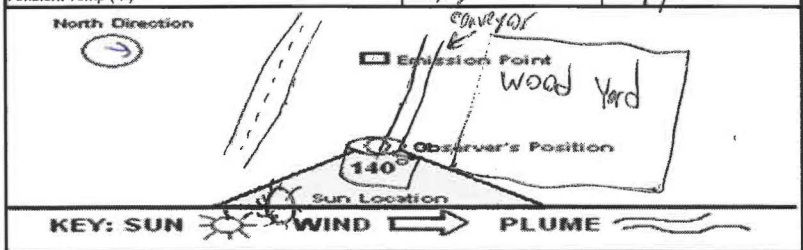
Fuel Type: N/A

Permitted Rate:

Control Equipment: Baghouse

Describe Emission Point: Horizontal exhaust port from screen Hog

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	Dust	Dust
Height of Emission Point (ft)	~20 ft	~20 ft
Height Relative to Observer (ft)	~14 ft	~14 ft
Distance from Observer (ft)	~100 ft	~100 ft
Direction to Source	WSW	WSW
Plume Type (Continuous, Intermittent, Fugitive, etc.)	Continuous	Continuous
Plume Color	Clear	Clear
Water Droplets Present?	No	No
Plume Attached or Detached?	—	—
Angle of Inclination (°)	6	6
Description of Background (Sky, Trees, Building, etc.)	Sky	Sky
Color of Background	Blue	Blue
Condition of Sky (Clear, Scattered, Broken, Overcast)	Clear	Clear
Wind Speed (mph)	4	4
Wind Direction (From)	W	W
Ambient Temp (°F)	77	79



Comments

Range of Opacity Readings (%) Minimum

Maximum

Average Opacity for _____ Readings = %

Observer's Name (print): Matthew Brock | Date: 03/21/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: EPA 444523

Certification Date: 02/01/17

Date: 3/21/17

OBSERVATION RECORD

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
1310	0	0	0	0	0				
	1	0	0	0	0				
	2	0	0	0	0				
	3	0	0	0	0				
	4	0	0	0	0				
	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
1320	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
1330	20	0	0	0	0				
	21	0	0	0	0				
	22	0	0	0	0				
	23	0	0	0	0				
	24	0	0	0	0				
	25	0	0	0	0				
	26	0	0	0	0				
	27	0	0	0	0				
	28	0	0	0	0				
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1340	30								
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VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (FCU-001)

Source Name: Bin vent Filter

Permit Number: 0010131-006-AV

Location Address: 11201 NW US Hwy 441

City: Gainesville State: FL Zip: 32653

Unit Load: Base

Operating Mode: Normal

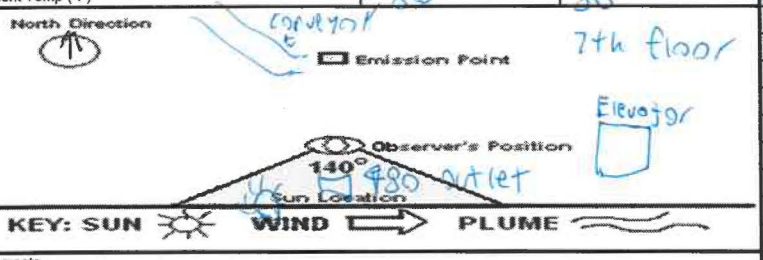
Fuel Type: N/A

Permitted Rate:

Control Equipment:

Describe Emission Point: Grey vertical exhaust at top of conveyor

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	Dust	Dust
Height of Emission Point (ft)	~100 ft	~100 ft
Height Relative to Observer (ft)	~10 ft	~ 6 ft
Distance from Observer (ft)	~ 40 ft	~ 40 ft
Direction to Source	N	N
Plume Type (Continuous, Intermittent, Fugitive, etc.)	continuous	Continuous
Plume Color	Clear	Clear
Water Droplets Present?	NO	NO
Plume Attached or Detached?	—	—
Angle of Inclination (°)	8	8
Description of Background (Sky, Trees, Building, etc.)	sky	Sky
Color of Background	Blue	Blue
Condition of Sky (Clear, Scattered, Broken, Overcast)	scattered	Scattered
Wind Speed (mph)	7	2
Wind Direction (From)	WSW	WSW
Ambient Temp (°F)	80	80



Comments

Range of Opacity Readings (%) Minimum 0 Maximum 0

Average Opacity for _____ Readings = 0 %

Observer's Name (print): Matthew Brock Date: 03/21/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: EPA 444523

Certification Date: 02/01/17

Date: 3/21/17

OBSERVATION RECORD

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
1445	0	0	0	0	0				
	1	0	0	0	0				
	2	0	0	0	0				
	3	0	0	0	0				
	4	0	0	0	0				
	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
1455	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
1505	20	0	0	0	0				
	21	0	0	0	0				
	22	0	0	0	0				
	23	0	0	0	0				
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VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (EU-003)

Source Name: Fly Ash Silo

Permit Number: 0010131-006-AV

Location Address: 11201 NW US Hwy 441

City: Gainesville

State: FL

Zip: 32653

Unit Load: Base

Operating Mode: Normal

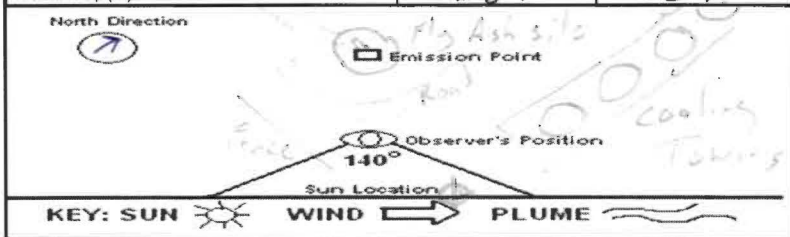
Fuel Type: N/A

Permitted Rate:

Control Equipment:

Describe Emission Point: West side roof on Fly Ash Silo Baghouse

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	None	SAME
Height of Emission Point (ft)	~ 70 ft	"
Height Relative to Observer (ft)	~ 65 ft	"
Distance from Observer (ft)	~ 70 ft	"
Direction to Source	NW	"
Plume Type (Continuous, Intermittent, Fugitive, etc.)	CONTINUOUS	"
Plume Color	N/A	"
Water Droplets Present?	NO	"
Plume Attached or Detached?	N/A	"
Angle of Inclination (°)	~ 10 (Slight)	"
Description of Background (Sky, Trees, Building, etc.)	Clouds	"
Color of Background	White	"
Condition of Sky (Clear, Scattered, Broken, Overcast)	Covered	"
Wind Speed (mph)	~4 mph	"
Wind Direction (From)	NNE	"
Ambient Temp (°F)	56°F	58°F



Comments

Range of Opacity Readings (%) — Minimum:

Maximum:

Average Opacity for ____ Readings = %

Observer's Name (print): Charles Horton

Date: 3/24/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: Eastern Technical Associates

Certification Date: 2/1/2017 ~~#444523~~ #444542

Date: 3/24/17

OBSERVATION RECORD

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
8:00	0	0	0	0	0				
0:01	1	0	0	0	0				
0:02	2	0	0	0	0				
0:03	3	0	0	0	0				
0:04	4	0	0	0	0				
0:05	5	0	0	0	0				
0:06	6	0	0	0	0				
0:07	7	0	0	0	0				
0:08	8	0	0	0	0				
0:09	9	0	0	0	0				
0:10	10	0	0	0	0				
0:11	11	0	0	0	0				
0:12	12	0	0	0	0				
0:13	13	0	0	0	0				
0:14	14	0	0	0	0				
0:15	15	0	0	0	0				
0:16	16	0	0	0	0				
0:17	17	0	0	0	0				
0:18	18	0	0	0	0				
0:19	19	0	0	0	0				
0:20	20	0	0	0	0				
0:21	21	0	0	0	0				
0:22	22	0	0	0	0				
0:23	23	0	0	0	0				
0:24	24	0	0	0	0				
0:25	25	0	0	0	0				
0:26	26	0	0	0	0				
0:27	27	0	0	0	0				
0:28	28	0	0	0	0				
0:29	29	0	0	0	0				
0:30	30								
0:31	31								
0:32	32								
0:33	33								
0:34	34								
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0:40	40								
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0:42	42								
0:43	43								
0:44	44								
0:45	45								
0:46	46								
0:47	47								
0:48	48								
0:49	49								
0:50	50								
0:51	51								
0:52	52								
0:53	53								
0:54	54								
0:55	55								
0:56	56								
0:57	57								
0:58	58								
0:59	59								

VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (EU-003)

Source Name: Fly Ash Silo Dust collector A

Permit Number: 0010131-006-AV

Location Address: 11201 NW US Hwy 441

City: Gainesville

State: FL

Zip: 32653

Unit Load: Full

Operating Mode: Normal

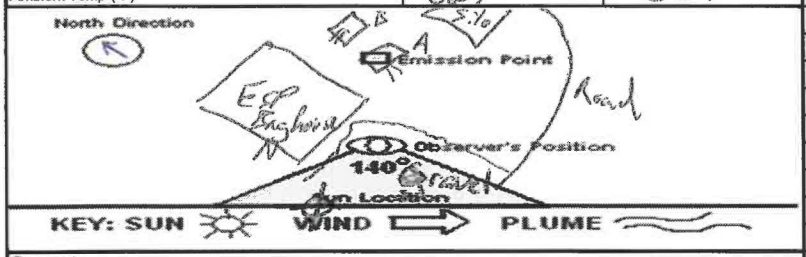
Fuel Type: —

Permitted Rate: —

Control Equipment:

Describe Emission Point: Southwest vents on Dust Collector A

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	None	Smoke
Height of Emission Point (ft)	~ 80 ft	Same
Height Relative to Observer (ft)	~ 20 ft	"
Distance from Observer (ft)	~ 50 ft	"
Direction to Source	NE	"
Plume Type (Continuous, Intermittent, Fugitive, etc.)	Continuous	"
Plume Color	Clear	White
Water Droplets Present?	NO	Same
Plume Attached or Detached?	N/A	"
Angle of Inclination (°)	~ 10°	"
Description of Background (Sky, Trees, Building, etc.)	Pipe	"
Color of Background	Green	"
Condition of Sky (Clear, Scattered, Broken, Overcast)	Scattered	"
Wind Speed (mph)	~ 9	"
Wind Direction (From)	NW	"
Ambient Temp (°F)	80°F	82°F



Comments

Range of Opacity Readings (%) — Minimum: 0 — Maximum: 10

Average Opacity for 24 Readings = 2.4 0.4 %

Observer's Name (print): Charles Horton

Date: 3/22/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: Eastern Technical Associates

Certification Date: 2/1/2017 444542

Date 3/22/17

OBSERVATION RECORD

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
1605	0	0	0	0	0				
	1	0	0	0	0				
	2	0	0	0	0				
	3	0	0	0	0				
	4	0	0	0	0				
1610	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
1615	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
1620	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
1625	20	0	0	0	0				
	21	0	0	0	0				
	22	0	0	0	0				
	23	0	0	0	0				
	24	0	0	0	0				
1630	25	0	0	0	0				
	26	0	0	0	0				
	27	0	0	0	0				
	28	0	0	0	0				
	29	0	0	0	0				
1635	30	0	0	0	0				
	31	0	0	0	0				
	32	0	0	0	0				
	33	0	0	0	0				
	34	0	0	0	0				
1640	35	0	0	0	0				
	36	0	0	0	0				
	37	0	0	0	0				
	38	0	0	0	0				
	39	0	0	0	0				
1645	40	0	0	0	0				
	41	0	0	0	0				
	42	0	0	0	0				
	43	0	0	0	0				
	44	0	0	0	0				
1650	45	0	0	0	0				
	46	0	0	0	0				
	47	0	0	0	0				
	48	0	0	0	0				
	49	0	0	0	0				
1655	50	0	0	0	0				
	51	0	0	0	0				
	52	0	0	0	0				
	53	0	0	0	0				
	54	0	0	0	10				
1700	55	0	0	0	0				
	56	0	0	0	0				
	57	0	0	0	0				
	58	0	0	0	0				
1704	59	0	0	0	0				

x = 0.4

VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (EU-003)

Source Name: Fly Ash Silo dust collector B

Permit Number: 0010131-006-AV

Location Address: 11201 NW US Hwy 441

City: Gainesville | State: FL | Zip: 32653

Unit Load: Base

Operating Mode: Normal

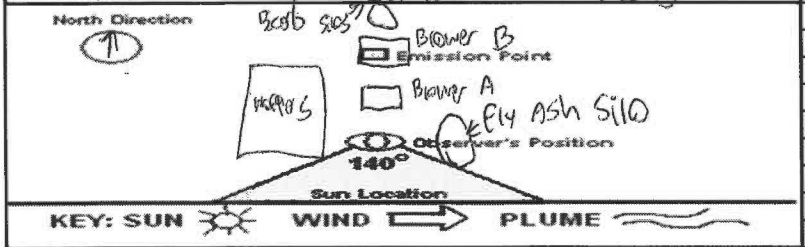
Fuel Type: None

Permitted Rate:

Control Equipment:

Describe Emission Point: Northernmost blower horizontal exhaust vent

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	Dust	Dust
Height of Emission Point (ft)	~84 ft	~84 ft
Height Relative to Observer (ft)	~2 ft	~2 ft
Distance from Observer (ft)	~20 ft	~20 ft
Direction to Source	N	N
Plume Type (Continuous, Intermittent, Fugitive, etc.)	Continuous	Intermittent
Plume Color	Clear	Grey
Water Droplets Present?	NO	NO
Plume Attached or Detached?		
Angle of Inclination (°)	3	3
Description of Background (Sky, Trees, Building, etc.)	Silo	Silo
Color of Background	White	White
Condition of Sky (Clear, Scattered, Broken, Overcast)	Scattered	Scattered
Wind Speed (mph)	1	1
Wind Direction (From)	SW	SW
Ambient Temp (°F)	80	80



Comments: Sun obstructed by structure to west

Max average observed from 16:23:30 -- 16:29:15

Range of Opacity Readings (%): Minimum 0, Maximum 15

Average Opacity for 24 Readings = 5.4 %

Observer's Name (print): Matthew Brack

Date: 03/21/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: ETA 4445523

Certification Date: 02/01/17

Date 03/21/17

OBSERVATION RECORD

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
1602	0	0	0	0	0				
	1	0	0	0	0				
	2	0	0	0	0				
	3	0	0	0	0				
	4	0	0	0	0				
	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
1612	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
1622	20	0	0	0	0				
	21	0	0	5	5	x̄	5.4		
	22	10	10	10	10				
	23	10	10	10	10				
	24	10	10	10	5				
	25	0	0	0	0				
	26	0	5	0	0				
	27	0	0	10	0				
	28	0	0	0	0				
	29	0	0	5	0	x̄	2.9		
1632	30	0	0	0	0				
	31	15	15	10	10				
	32	5	5	5	0				
	33	0	0	0	0				
	34	0	0	0	0				
	35	0	0	0	0				
	36	0	0	0	0				
	37	0	0	0	0				
	38	5	5	10	10	x̄	4.4		
	39	10	5	5	5				
1642	40	0	0	0	0				
	41	5	10	10	5				
	42	5	5	5	5				
	43	0	0	0	0				
	44	0	0	0	0				
	45	0	0	0	0				
	46	0	0	0	0				
	47	0	0	0	0				
	48	0	0	0	0				
	49	5	5	0	0				
1652	50	0	0	0	0				
	51	0	0	0	0				
	52	0	0	0	0				
	53	5	5	10	10				
	54	10	0	0	0				
	55	0	0	0	0				
	56	10	0	0	0				
	57	0	0	0	0				
	58	0	0	0	5				
	59	0	0	0	0				

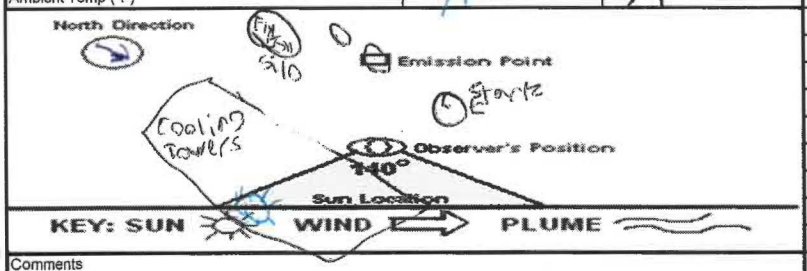
1702

VISIBLE EMISSION OBSERVATION FORM

SOURCE INFORMATION

Facility Name: GREC (EU-007)	
Source Name: Alkaline Sorbent Storage Silo	Permit Number: 0010131-006-AV
Location Address: 11201 NW US Hwy 441	
City: Gainesville	State: FL Zip: 32653
Unit Load: N/A	Operating Mode: Normal
Fuel Type: N/A	Permitted Rate: —
Control Equipment: Baghouse	
Describe Emission Point: Vent on Northmost Silo at top	

PLUME INFORMATION	START	END
Describe Emissions (Smoke, Dust, Heat Trace, etc.)	Dust	Dust
Height of Emission Point (ft)	~50 ft	~50 ft
Height Relative to Observer (ft)	~44 ft	~44 ft
Distance from Observer (ft)	~100 ft	~100 ft
Direction to Source	SW	SW
Plume Type (Continuous, Intermittent, Fugitive, etc.)	continuous	continuous
Plume Color	clear	clear
Water Droplets Present?	NO	NO
Plume Attached or Detached?	—	—
Angle of Inclination (°)	21	21
Description of Background (Sky, Trees, Building, etc.)	Blower Box	Blower Box
Color of Background	Grey	Grey
Condition of Sky (Clear, Scattered, Broken, Overcast)	clear	clear
Wind Speed (mph)	4	3
Wind Direction (From)	W	WSW
Ambient Temp (°F)	71	74



Comments

Range of Opacity Readings (%) Minimum
Maximum

Average Opacity for _____ Readings = %

Observer's Name (print): Matthew Brock

Date: 03/21/17

Observer's Signature

Organization: C.E.M. Solutions, Inc.

Certified By: ETA

Certification Date: 02/01/17

OBSERVATION RECORD

Date: 03/21/17

Hour	Minute	Stack A 0	Stack A 15	Stack A 30	Stack A 45	Stack B 0	Stack B 15	Stack B 30	Stack B 45
~~1148~~	0	0	0	0	0				
1155	1	0	0	0	0				
	2	0	0	0	0				
	3	0	0	0	0				
	4	0	0	0	0				
	5	0	0	0	0				
	6	0	0	0	0				
	7	0	0	0	0				
	8	0	0	0	0				
	9	0	0	0	0				
1205	10	0	0	0	0				
	11	0	0	0	0				
	12	0	0	0	0				
	13	0	0	0	0				
	14	0	0	0	0				
	15	0	0	0	0				
	16	0	0	0	0				
	17	0	0	0	0				
	18	0	0	0	0				
	19	0	0	0	0				
1215	20	0	0	0	0				
	21	0	0	0	0				
	22	0	0	0	0				
	23	0	0	0	0				
	24	0	0	0	0				
	25	0	0	0	0				
	26	0	0	0	0				
	27	0	0	0	0				
	28	0	0	0	0				
	29	0	0	0	0				
1225	30								
	31								
	32								
	33								
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	36								
	37								
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Appendix C: Accreditations and Certifications

STAC
STACK TESTING ACCREDITATION COUNCIL

A2LA
American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

C.E.M. SOLUTIONS, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this organization is accredited to perform testing activities in compliance with ASTM D7036 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 24th day of November 2015.

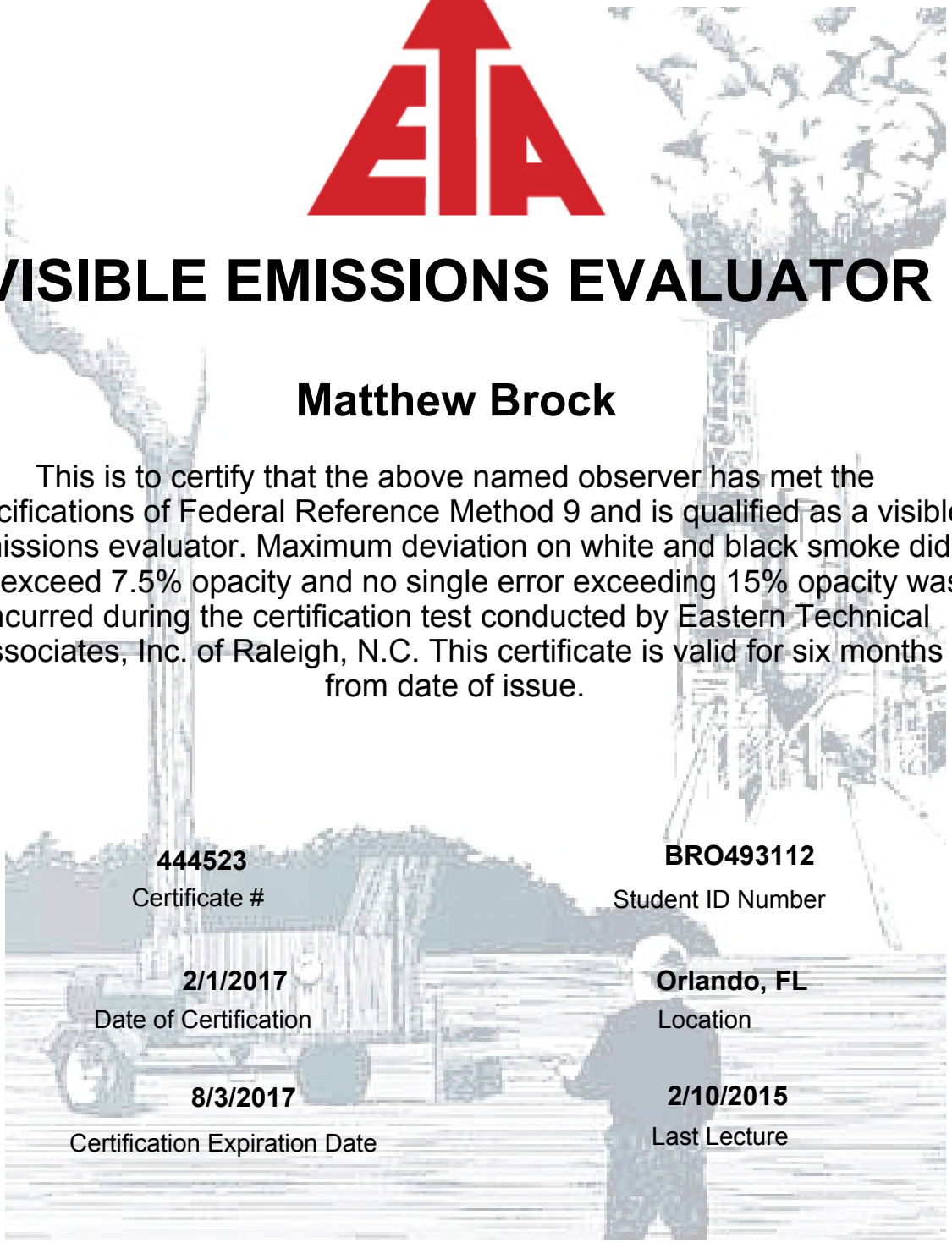
President & CEO
Certificate Number 3820.01
Valid to December 31, 2017

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

VISIBLE EMISSIONS EVALUATOR

Matthew Brock

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



444523
Certificate #

BRO493112
Student ID Number

2/1/2017
Date of Certification

Orlando, FL
Location

8/3/2017
Certification Expiration Date

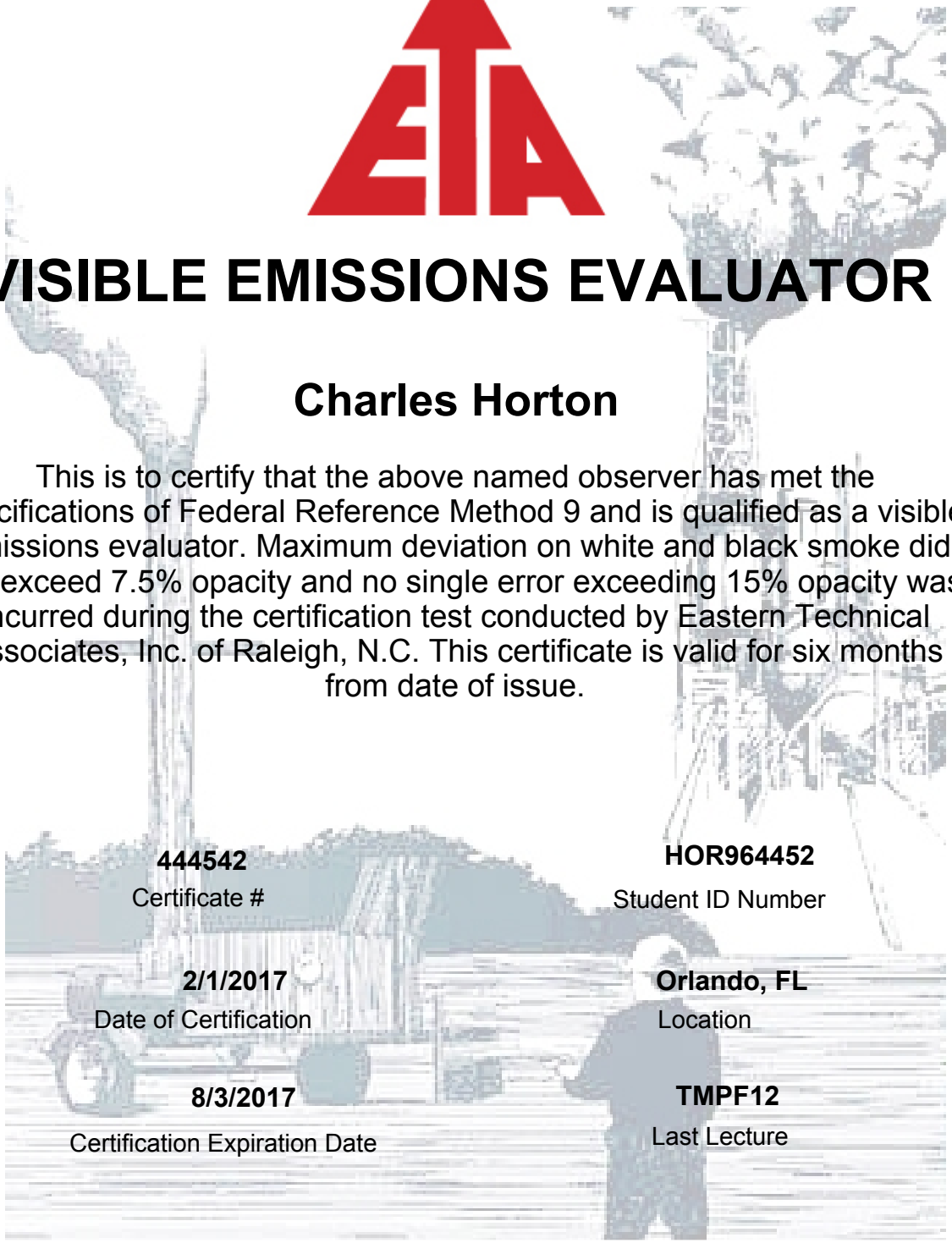
2/10/2015
Last Lecture

Marty Hughes
Director of Training

VISIBLE EMISSIONS EVALUATOR

Charles Horton

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



444542
Certificate #

HOR964452
Student ID Number

2/1/2017
Date of Certification

Orlando, FL
Location

8/3/2017
Certification Expiration Date

TMPF12
Last Lecture

Marty Hughes
Director of Training