
United States Stove Company

Project # 18-405

Model (s): 5770, 5770i, VG5770, VG5770i,
AP5770, AP5770i, DNMP577, DNMP577i,
5790, VG5790, AP5790, DNMP579, Comfort
Glow CGPS2100, CGPS2200, DuraHeat
DHPS2100 and DuraHeat DHPS2200

Type: Pellet-Fired Room Heater

March 21, 2018

Revised Date: March 1, 2023, May 30,
2023, February 7, 2024

ASTM E2779 Standard Test Method for Determining Particulate Matter Emissions from Pellet Heaters

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Laboratory Supervisor



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Revision History

Date: 3/21/2018 – Original Issue

Date: 3/1/2023 – The following revisions to the report were made as part of the 5-year renewal review of the report:

- Added a note about conditioning being performed at a medium burn setting on page 4.
- Added Run 1 test data to Appendix A, partial data only from aborted test run, see page 22 of Non-CBI report.
- Added Heat Output data to Summary table on Page 7.
- Added a note about dual train precision (in percent) to test result summary pages in Appendix A, see pages 36 and 73 of Non-CBI report.
- Added emissions results where negative filter weights were adjusted to zero to the test result summary pages in Appendix A, see pages 36 and 73 of Non-CBI report.

5/30/2023

- Model Variants confirmed and C of C updated to match application.

2/7/2024

The following models have been added by client request. No changes to any K-list components have been made. Additional names are for marketing purposes only.

- Comfort Glow CGPS2100, CGPS2200, DuraHeat DHPS2100 and DuraHeat DHPS2200

Contents

Affidavit	3
Introduction	4
Notes	4
Pellet Heater Identification and Testing	5
Test Procedures and Equipment	6
Results	7
Summary Table	7
Test Run Narrative	8
Run 1	8
Run 2	8
Run 3	8
Test Conditions Summary	9
Appliance Operation and Test Settings	9
Settings & Run Notes	9
Appliance Description	10
Appliance Dimensions	10
Test Fuel Properties	13
Pellet Fuel Analysis	14
Sampling Locations and Descriptions	15
Sample Points	15
Sampling Methods	16
Analytical Methods Description	16
Calibration, Quality Control and Assurances	16
Appliance Sealing and Storage	16
Sealing Label	16
Sealed Unit	17
List of Appendices	18

Affidavit

PFS-TECO was contracted by Unites State Stove Company to provide testing services for the 5770/5790 Series Pellet-Fired Room Heater (See Appliance Specifications section for full breakdown of series models) per ASTM E2779, *Determining PM Emissions from Pellet Heaters*. All testing and associated procedures were conducted at PFS-TECO's Portland Laboratory beginning on 2/5/2018 and ending on 2/8/2018. PFS-TECO's Portland Laboratory is located at 11785 SE Highway 212 – Suite 305, Clackamas, Oregon 97015. Testing procedures followed ASTM E2779. Particulate sampling was performed per ASTM E2515, *Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel*.

PFS-TECO is accredited by the U.S. Environmental Protection Agency for the certification and auditing of wood heaters pursuant to subpart AAA of 40 CFR Part 60, New Source Performance Standards for Residential Wood Heaters and subpart QQQQ of 40 CFR Part 60, Standards of Performance for New Hydronic Heaters and Forced Air Furnaces, Methods 28R, 28WHH, 28 WHH-PTS, and all methods listed in Sections 60.534 and 60.5476. PFS-TECO holds EPA Accreditation Certificate Numbers 4 and 4M (mobile). PFS-TECO is accredited by IAS to ISO 17020:2012 "Criteria for Bodies Performing Inspections, By A2LA to ISO 17025:2005 "Requirements for Testing Laboratories", and by Standards Council of Canada to ISO 17065:2012 "Requirements for Bodies Operating Product Certification Systems".

The following people were associated with the testing, analysis and report writing associated with this project.



Sebastian Button, Laboratory Supervisor

Introduction

United States Stove Company of South Pittsburg, TN, contracted with PFS-TECO to perform EPA certification testing on 5770/5790 Series Pellet-Fired Room Heater. All testing was performed at PFS-TECO's Portland Laboratory. Testing was performed by Mr. Sebastian Button.

Notes

- Prior to start of testing, 50 hours of conditioning was performed by PFS staff at a medium air setting, per ASTM E2779
- Prior to start of testing, the dilution tunnel was cleaned with a steel brush.
- Front filters were changed on sample train A at one hour for Runs 2 and 3.
- A total of 3 test runs were performed:
 - Sampling equipment malfunction occurred at the beginning of test Run 1, test was aborted approximately 30 minutes into test run.
 - The Run 2 medium burn rate was >50% of the high burn rate, nullifying the results.
 - The medium burn rate setting used on Run 3 was the same as the low burn rate setting, as that is the only setting that yields a burn rate of <50% of the high burn rate.

Pellet Heater Identification and Testing

- Appliance Tested: **5770**
- Serial Number: **CH16822-36**
- Manufacturer: **United States Stove Company**
- Catalyst: **No**
- Heat exchange blower: **Integral**
- Type: **Pellet Stove**
- Style: **Free Standing**
- Date Received: **Wednesday, December 20, 2017**
- Wood Heater Aging: **January 15, 2018 - January 26, 2018**
- Testing Period – Start: **Monday, February 05, 2018** Finish: **Thursday, February 08, 2018**
- Test Location: **PFS-TECO Portland Laboratory, 11785 SE HWY 212 - Suite 305, Clackamas, OR 97015**
- Elevation: **≈131 Feet above sea level**
- Test Technician(s): **Sebastian Button**
- Observers: **N/A**

Test Procedures and Equipment

All Sampling and analytical procedures were performed by Sebastian Button. All procedures used are directly from ASTM E2779 and ASTM E2515. See the list below for equipment used. See Appendix C submitted with this report for calibration data.

Equipment List:

Equipment ID#	Equipment Description
041	Rice Lake 3'x3' floor scale w/digital weight indicator
053	APEX XC-60 Digital Emissions Sampling Box A
054	APEX XC-60 Digital Emissions Sampling Box B
055	APEX Ambient sampling box
057	California Analytical ZRE CO2/CO/O2 IR ANALYZER
109A/B	Troemner 100mg/200mg Audit Weights
107	Sartorius Analytical Balance
051	10 lb audit weight
095	Anemometer
111	Microtector
CC144992	Gas Analyzer Calibration Span Gas
CC332147	Gas Analyzer Calibration Mid Gas

Results

The integrated test run emission rate for test Run 3 was measured to be **0.85 g/hr** with a Higher Heating Values efficiency of **70%** and a CO emission rate of **0.41 g/min**. The calculated first hour particulate emission rate was **1.2 g/hr**. The United States Stove Company Model 5770 Pellet-Fired Room Heater meets the 2020 PM emission standard of ≤ 2.0 g/hr per CFR 40 part 60, §60.532 (b).

Detailed individual run data can be found in Appendix A submitted with this report.

Summary Table

	Run 1	Run 2*	Run 3
Date	2/5/2018	2/6/2018	2/8/2018
Overall Emission Rate (g/hr)	N/A – Test aborted due to sampling equipment malfunction	0.96	0.85
First Hour Emission Rate (g/hr)		1.07	1.19
HHV Efficiency (%)		71.9	70.0
LHV Efficiency (%)		76.8	74.8
CO Emissions (g/min)		0.28	0.41
Integrated Burn Rate (kg/hr)		0.84	0.79
Integrated Test Output Rate (btu/hr)		11,980	10,728
High Burn Rate (kg/hr)		1.38	1.36
High Output Rate (btu/hr)		19,344	18,619
Medium Burn Rate (kg/hr)		0.91	0.66
Medium Output Rate (btu/hr)		13,187	8,830
Low Burn Rate (kg/hr)		0.62	0.69
Low Output Rate (btu/hr)		8,592	9,218

*Run 2 discarded due to medium burn rate exceeding 50% requirement, per ASTM E2779

Test Run Narrative

Run 1

Run 1 was performed on 2/5/2018 as an attempted integrated test run per ASTM E2779. Approximately 30 minutes into the test run it was discovered that one of the particulate sampling trains was malfunctioning, effectively nullifying the results of the test, therefore the test run was aborted.

Run 2

Run 2 was performed on 2/6/2018 as an attempted integrated test run per ASTM E2779. The overall test duration was 360 minutes. The particulate emissions rate for the integrated test run was 0.96 g/hr. The run had an overall HHV efficiency of 71.9%. The Trian A front filter was changed at 1 hr. The medium burn rate for this tested came in at 65.6% of the high burn rate, in excess of the requirement that it be less than 50%. For this reason, the test run is invalid.

Run 3

Run 3 was performed on 2/8/2018 as an attempted integrated test run per ASTM E2779. The overall test duration was 360 minutes. The particulate emissions rate for the integrated test run was 0.85 g/hr. The run had an overall HHV efficiency of 70.0%. The Trian A front filter was changed at 1 hr. All test results were appropriate and valid and the burn rate requirement for the integrated test run were achieved. There were no anomalies and all criteria were met.

Test Conditions Summary

Testing conditions for all runs fell within allowable specifications of ASTM E2779 and ASTM E2515. A summary of facility conditions, fuel burned, and run times is listed below.

Runs	Ambient (°F)		Relative Humidity (%)		Average Barometric Pressure (In. Hg.)	Preburn Fuel Weight (lbs)	Test Fuel Weight (lbs)	Test Fuel Moisture (%DB)	Test Run Time (Min)
	Pre	Post	Pre	Post					
1	N/A – Test aborted less than 30 minutes in due to sampling equipment malfunction.								
2	64	68	38.5	39.6	30.25	3.2	11.7	5	360
3	64	68	39.7	41.8	30.11	4.1	10.8	5	360

Appliance Operation and Test Settings

The appliance was operated according to procedures as described in the Operations Manual, found in Appendix B submitted with this report. Detailed run information can be found in Appendix A submitted with this report.

Settings & Run Notes

	Pre-Burn	Test Run
Run1	Heat Setting #5, Air inlet damper set to half open	High Segment: Heat Setting #5, Air inlet damper set to half open Test aborted in middle of High segment
Run 2	Heat Setting #5, Air inlet damper set to half open	High Segment: Heat Setting #5, Air inlet damper set to half open Medium Segment: Heat Setting #2, Air inlet damper set to fully closed. Low Segment: Heat Setting #1, Air inlet damper set to fully closed.
Run 3	Heat Setting #5, Air inlet damper set to half open	High Segment: Heat Setting #5, Air inlet damper set to half open Medium Segment: Heat Setting #1, Air inlet damper set to fully closed. Low Segment: Heat Setting #1, Air inlet damper set to fully closed.

Appliance Description

Model(s): 5770(i), VG5770(i), AP5770(i), DNMP577(i), 5790, VG5790, AP5790, DNMP579

Additional Models Discussion: Certification testing was performed on the model 5770. The 5770 series comes in both a freestanding and insert model, designated by the “i” at the end of the model name. Additionally, the 5770 series is branded under a several different names, including Vogelzang, Ashely, and Newmac. Both the freestanding and insert models under these various brand names utilize the same basic design with respect to performance and emissions controls. In addition to the 5770 series, the 5790 series is also being considered under this certification report. The 5790 series, which also has several branding designations, is also identical with respect to performance and emissions controls, the only difference being a slightly bulkier outer shell. All models listed above are presumed to have the same emissions performance as the test specimen provided for certification testing.

Appliance Type: Pellet-Fired Room Heater

Air Introduction System: Air enters the burn chamber by being pulled though the firepot, via the exhaust blower, see air flow diagram in Appendix D.

Combustion Control: Feed rate is electronically controlled via user-selectable controls, inlet air damper provides additional manual control of combustion air.

Baffles: N/A

Flue Outlet: 3-inch exhaust outlet located on the bottom/rear of the appliance.

Appliance Dimensions

Freestanding 5770-unit dimensions

Height	Width	Depth	Firebox Volume	Weight
37”	19”	19”	N/A – Pellet Stove	228 lbs

Freestanding 5790-unit dimensions

Height	Width	Depth	Firebox Volume	Weight
37.5”	26.3”	27.1”	N/A – Pellet Stove	245 lbs

Appliance design drawings can be found in Appendix D submitted with the CBI copy of this report.

Appliance Front



Appliance Left



Appliance Right



Appliance Rear



Test Fuel Properties



Test fuel used was Pres-to-Logs Wood Pellet Fuel, a PFI Certified Premium Pellet Brand. A sample of pellets was sent to Twin Ports Testing for analysis, see report below.

Pellet Fuel Analysis



Twin Ports Testing, Inc.
 1301 North 3rd Street
 Superior, WI 54880
 p: 715-392-7114
 p: 800-373-2562
 f: 715-392-7183
 www.twinportstesting.com

Report No: **USR:W218-0155-01**
 Issue No: **1**

Analytical Test Report

Client: PFS-TECO
 11785 SE Hwy 212
 Clackamas, OR 97015
 Attention: Sebastian Button
 PO No: S. Button

Signed: *Stephen Sundeen*
 Stephen Sundeen
 Chemistry Laboratory Manager
 Date of Issue: 2/27/2018
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details			
Sample Log No:	W218-0155-01	Sample Date:	
Sample Designation:	Presto Log - Pure Western Conife	Sample Time:	
Sample Recognized As:	Wood Pellets	Arrival Date:	2/15/2018

Test Results				
	METHOD	UNITS	MOISTURE FREE	AS RECEIVED
Moisture Total	ASTM E871	wt. %		3.03
Ash	ASTM D1102	wt. %	0.20	0.19
Volatile Matter	ASTM D3175	wt. %		
Fixed Carbon by Difference	ASTM D3172	wt. %		
Sulfur	ASTM D4239	wt. %	0.006	0.006
SO ₂	Calculated	lb/mmbtu		0.013
Net Cal. Value at Const. Pressure	ISO 1928	GJ/tonne	19.07	18.42
Net Cal. Value at Const. Pressure	ISO 1928	J/g	19075	18424
Gross Cal. Value at Const. Vol.	ASTM E711	J/g	20397	19780
Gross Cal. Value at Const. Vol.	ASTM E711	Btu/lb	8770	8504
Carbon	ASTM D5373	wt. %	50.57	49.04
Hydrogen*	ASTM D5373	wt. %	6.08	5.89
Nitrogen	ASTM D5373	wt. %	< 0.20	< 0.19
Oxygen*	ASTM D3176	wt. %	> 42.95	> 41.65

*Note: As received values do not include hydrogen and oxygen in the total moisture.

Chlorine	ASTM D6721	mg/kg		
Fluorine	ASTM D3761	mg/kg		
Mercury	ASTM D6722	mg/kg		

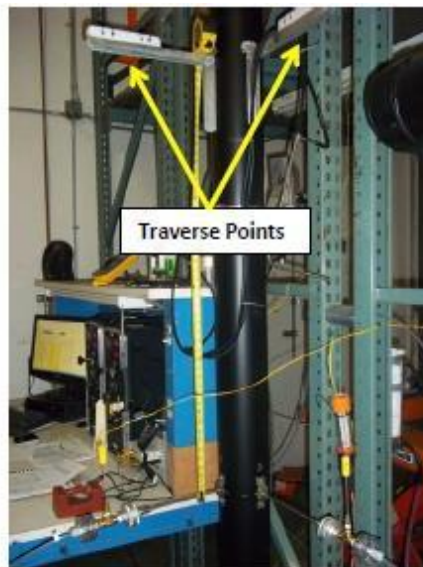
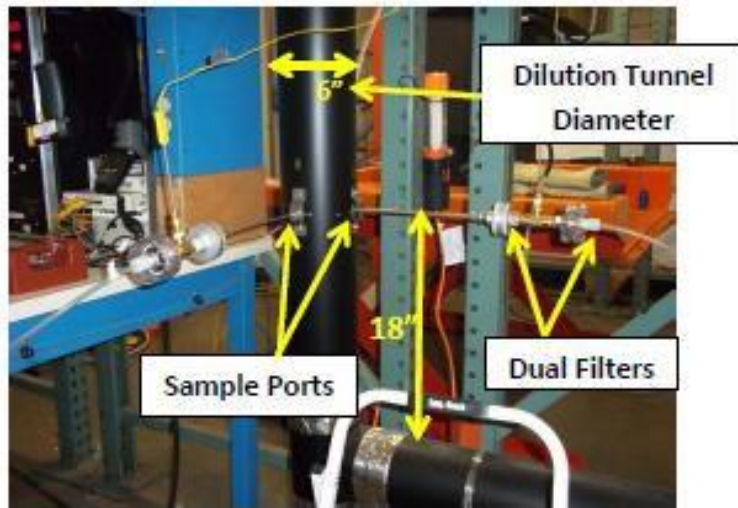
Bulk Density	ASTM E873	lbs/ft ³		
Fines (Less than 1/8")	TPT CH-P-06	wt. %		
Durability Index	Kansas State	PDI		
Sample Above 1.50"	TPT CH-P-06	wt. %		
Maximum Length (Single Pellet)	TPT CH-P-06	inch		
Diameter, Range	TPT CH-P-05	inch		to
Diameter, Average	TPT CH-P-05	inch		
Stated Bag Weight	TPT CH-P-01	lbs		
Actual Bag Weight	TPT CH-P-01	lbs		

Comments

Sampling Locations and Descriptions

Sample ports are located 16.5 feet downstream from any disturbances and 1 foot upstream from any disturbances. Flow rate traverse data was collected 12 feet downstream from any disturbances and 5.5 feet upstream from any disturbances. (See below).

Sample Points



Sampling Methods

ASTM E2515 was used in collecting particulate samples. The dilution tunnel is 6 inches in diameter. All sampling conditions per ASTM E2515 were followed. No alternate procedures were used.

Analytical Methods Description

All sample recovery and analysis procedures followed ASTM E2515 procedures. At the end of each test run, filters, O-Rings and probes were removed from their housings, dessicated for a minimum of 24 hours, and then weighed at 6 hour intervals to a constant weight per ASTM E2515-11 Section 10.

Calibration, Quality Control and Assurances

Calibration procedures and results were conducted per EPA Method 28R, ASTM E2515-11 and ASTM E2780-10. Test method quality control procedures (leak checks, volume meter checks, stratification checks, proportionality results) followed the procedures outlined.

Appliance Sealing and Storage

Upon completion of testing, the appliance was secured with metal strapping and the seal below was applied, the appliance was then returned to the manufacturer’s location at: 227 Industrial Park Road, South Pittsburg, TN 37380 for archival.

Sealing Label

ATTENTION:

THIS SEAL IS NOT TO BE BROKEN WITHOUT PRIOR AUTHORIZATION FROM THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.

THIS APPLIANCE HAS BEEN SEALED INACCORDANCE WITH REQUIREMNTS OF 40CFR PART 60 SUBPART AAA §60.535 (a)(2)(vii)

REPORT # _____

DATE SEALED _____

MANUFACTURER _____

MODEL # _____

Sealed Unit



List of Appendices

The following appendices have been submitted electronically in conjunction with this report:

Appendix A – Test Run Data, Technician Notes, and Sample Analysis

Appendix B – Labels and Manuals

Appendix C – Equipment Calibration Records

Appendix D – Design Drawings (CBI Report Only)

Appendix E – Manufacturer QAP (CBI Report Only)

Conditioning Data

Client: USSC

Job #: 18-405

Model: 5770

Technician: SJB

Date(s): 1/15/2018 - 1/26/2018

Elapsed Time (hrs)	Scale Reading (lbs)	Average:	261.5	71.3	N/A
		Weight Change (lbs)	Flue (°F)	Ambient (°F)	Catalyst Exit (°F)
0	251.0	-	305	71	N/A
1	249.0	-2.0	200	71	N/A
2	248.0	-1.0	175	71	N/A
3	247.0	-1.0	186	71	N/A
4	246.0	-1.0	187	72	N/A
5	265.0	19.0	253	70	N/A
6	263.0	-2.0	304	71	N/A
7	261.0	-2.0	232	72	N/A
8	259.0	-2.0	79	68	N/A
9	256.0	-3.0	307	71	N/A
10	253.0	-3.0	312	71	N/A
11	250.0	-3.0	302	71	N/A
12	246.0	-4.0	318	72	N/A
13	243.0	-3.0	320	73	N/A
14	239.0	-4.0	310	74	N/A
15	236.0	-3.0	314	75	N/A
16	267.0	31.0	63	70	N/A
17	265.0	-2.0	72	70	N/A
18	264.0	-1.0	316	70	N/A
19	260.0	-4.0	316	72	N/A
20	257.0	-3.0	320	73	N/A
21	254.0	-3.0	319	73	N/A
22	251.0	-3.0	327	74	N/A
23	247.0	-4.0	325	74	N/A
24	246.0	-1.0	61	68	N/A
25	244.0	-2.0	299	69	N/A
26	241.0	-3.0	284	71	N/A
27	238.0	-3.0	324	72	N/A
28	235.0	-3.0	313	73	N/A
29	232.0	-3.0	322	74	N/A
30	229.0	-3.0	321	74	N/A
31	253.0	24.0	65	67	N/A
32	254.0	1.0	63	67	N/A
33	252.0	-2.0	259	69	N/A
34	249.0	-3.0	309	70	N/A
35	246.0	-3.0	314	71	N/A
36	243.0	-3.0	315	72	N/A
37	239.0	-4.0	326	73	N/A
38	236.0	-3.0	319	73	N/A
39	276.0	40.0	111	68	N/A
40	272.0	-4.0	315	70	N/A
41	269.0	-3.0	307	71	N/A
42	266.0	-3.0	300	71	N/A
43	263.0	-3.0	312	72	N/A
44	260.0	-3.0	316	72	N/A
45	257.0	-3.0	315	73	N/A
46	255.0	-2.0	319	73	N/A
47	254.0	-1.0	109	69	N/A
48	251.0	-3.0	289	71	N/A
49	249.0	-2.0	291	72	N/A
50	246.0	-3.0	296	72	N/A

PELLET TEST DATA PACKET
ASTM E2779/E2515



Run 1 Data Summary

Client: USSC
Model: 5770
Job #: 18-405
Tracking #: 0001
Test Date: 2/5/2018



Technician Signature

2/1/2021

Date

TEST RESULTS - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 1

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/5/2018

Burn Rate Summary	
High Burn Rate (dry kg/hr)	#DIV/0!
Medium Burn Rate (dry kg/hr)	#DIV/0!
Low Burn Rate (dry kg/hr)	1.50
Overall Burn Rate (dry kg/hr)	1.50

#DIV/0! of High Burn Rate
 #DIV/0! of High Burn Rate

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft ³)	0.000	6.857	6.852	6.857
Average Gas Velocity in Dilution Tunnel (ft/sec)	14.4			
Average Gas Flow Rate in Dilution Tunnel (dscf/hr)	9552.5			
Average Gas Meter Temperature (°F)	65.4	75.6	74.3	75.6
Total Sample Volume (dscf)	0.000	6.808	6.834	6.808
Average Tunnel Temperature (°F)	95.0			
Total Time of Test (min)	60			
Total Particulate Catch (mg)	0.0	0.0	0.0	0.0
Particulate Concentration, dry-standard (g/dscf)	0.0000000	0.0000000	0.0000000	0.0000000
Total PM Emissions (g)	0.00	0.00	0.00	0.00
Particulate Emission Rate (g/hr)	0.00	0.00	0.00	0.00
Emissions Factor (g/kg)	-	0.00	0.00	#DIV/0!
Difference from Average Total Particulate Emissions (g)	-	0.00	0.00	-
Difference from Average Emissions Factor (g/kg)	-	0.00	0.00	-

Final Average Results	
Total Particulate Emissions (g)	0.00
Particulate Emission Rate (g/hr)	0.00
Emissions Factor (g/kg)	0.00
HHV Efficiency (%)	#DIV/0!
LHV Efficiency (%)	#DIV/0!
CO Emissions (g/min)	#DIV/0!

Quality Checks	Requirement	Observed	Result
Dual Train Precision	Each train within 7.5% of average emissions (in grams), or emission factors within 0.5 g/kg	See Above	OK
Filter Temps	<90 °F	74	OK
Face Velocity	< 30 ft/min	6.4	OK
Leakage Rate	Less than 4% of average sample rate	0 cfm	OK
Ambient Temp	55-90 °F	Min: 61 / Max: 67	OK
Negative Probe Weight Evaluation	<5% of Total Catch	#DIV/0!	#DIV/0!
Pro-Rate Variation	90% of readings between 90-110%; none greater than 120% or less than 80%	See Data Tabs	OK
Medium Burn Rate	< 50% of High	#DIV/0!	#DIV/0!

Overall Pellet Test Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/05/18
Run: 1
Control #: 18-405
Test Duration: 60
Output Category: Integrated

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	#DIV/0!	#DIV/0!
Combustion Efficiency	#DIV/0!	#DIV/0!
Heat Transfer Efficiency	#DIV/0!	#DIV/0!

Output Rate (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)
Burn Rate (kg/h)	1.50	3.30	(lb/h)
Input (kJ/h)	0	0	(Btu/h)

Test Load Weight (dry kg)	1.50	3.30	dry lb
MC wet (%)	0.00		
MC dry (%)	0.00		
Particulate (g)	0.00		
CO (g)	#DIV/0!		
Test Duration (h)	1.00		

Emissions	Particulate	CO
g/MJ Output	#DIV/0!	#DIV/0!
g/kg Dry Fuel	0.00	#DIV/0!
g/h	0.00	#DIV/0!
g/min	0.00	#DIV/0!
lb/MM Btu Output	#DIV/0!	#DIV/0!

Air/Fuel Ratio (A/F)	#DIV/0!
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VERSION:

2.2

12/14/2009

Max Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/05/18
Run: 1
Control #: 18-405
Test Duration:
Output Category: Maximum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	#DIV/0!	#DIV/0!
Combustion Efficiency	#DIV/0!	#DIV/0!
Heat Transfer Efficiency	#DIV/0!	#DIV/0!

Output Rate (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)
Burn Rate (kg/h)	#DIV/0!	#DIV/0!	(lb/h)
Input (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)

Test Load Weight (dry kg)	0.00	0.00	dry lb
MC wet (%)	0.00		
MC dry (%)	0.00		
Particulate (g)	N/A		
CO (g)	#DIV/0!		
Test Duration (h)	0.00		

Emissions	Particulate	CO
g/MJ Output	N/A	#DIV/0!
g/kg Dry Fuel	N/A	#DIV/0!
g/h	N/A	#DIV/0!
g/min	N/A	#DIV/0!
lb/MM Btu Output	N/A	#DIV/0!

Air/Fuel Ratio (A/F)	#DIV/0!
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VERSION:

2.2

12/14/2009

Medium Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/05/18
Run: 1
Control #: 18-405
Test Duration:
Output Category: Medium

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	#DIV/0!	#DIV/0!
Combustion Efficiency	#DIV/0!	#DIV/0!
Heat Transfer Efficiency	#DIV/0!	#DIV/0!

Output Rate (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)
Burn Rate (kg/h)	#DIV/0!	#DIV/0!	(lb/h)
Input (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)

Test Load Weight (dry kg)	0.00	0.00	dry lb
MC wet (%)	0.00		
MC dry (%)	0.00		
Particulate (g)	N/A		
CO (g)	#DIV/0!		
Test Duration (h)	0.00		

Emissions	Particulate	CO
g/MJ Output	N/A	#DIV/0!
g/kg Dry Fuel	N/A	#DIV/0!
g/h	N/A	#DIV/0!
g/min	N/A	#DIV/0!
lb/MM Btu Output	N/A	#DIV/0!

Air/Fuel Ratio (A/F)	#DIV/0!
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VERSION:

2.2

12/14/2009

Minimum Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/05/18
Run: 1
Control #: 18-405
Test Duration: 60
Output Category: Minimum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	#DIV/0!	#DIV/0!
Combustion Efficiency	#DIV/0!	#DIV/0!
Heat Transfer Efficiency	#DIV/0!	#DIV/0!

Output Rate (kJ/h)	#DIV/0!	#DIV/0!	(Btu/h)
Burn Rate (kg/h)	1.50	3.30	(lb/h)
Input (kJ/h)	0	0	(Btu/h)

Test Load Weight (dry kg)	1.50	3.30	dry lb
MC wet (%)	0.00		
MC dry (%)	0.00		
Particulate (g)	N/A		
CO (g)	#DIV/0!		
Test Duration (h)	1.00		

Emissions	Particulate	CO
g/MJ Output	N/A	#DIV/0!
g/kg Dry Fuel	N/A	#DIV/0!
g/h	N/A	#DIV/0!
g/min	N/A	#DIV/0!
lb/MM Btu Output	N/A	#DIV/0!

Air/Fuel Ratio (A/F)	#DIV/0!
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VERSION:

2.2

12/14/2009

DILUTION TUNNEL & MISC. DATA - ASTM E2779 / E2515

Client: USSC
 Model: 5770
 Run #: 1
 Test Start Time: _____

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/5/2018

High Burn End Time (min): _____
 Medium Burn End Time (min): _____
 Total Sampling Time (min): 60
 Recording Interval (min): 1

Meter Box γ Factor: 0.995 (A)
 Meter Box γ Factor: 0.997 (B)
 Meter Box γ Factor: 1.000 (Ambient)

Induced Draft Check (in. H₂O): 0
 Smoke Capture Check (%): 100%
 Date Flue Pipe Last Cleaned: _____

	Pre-Test	Post Test	Avg.
Barometric Pressure (in. Hg)	30.2	30.2	30.20
Relative Humidity (%)			
Room Air Velocity (ft/min)	0	0	
Scale Audit (lbs)	10.0	10.0	
Ambient Sample Volume:		0.000	ft ³

Sample Train Post-Test Leak Checks

(A) _____ cfm @ _____ in. Hg
 (B) _____ cfm @ _____ in. Hg
 (Ambient) _____ cfm @ _____ in. Hg

DILUTION TUNNEL FLOW

Traverse Data

Point	dP (in H ₂ O)	Temp (°F)
1	0.044	90
2	0.045	90
3	0.045	90
4	0.044	90
5	0.043	90
6	0.046	90
7	0.046	90
8	0.048	90
Center	0.045	90

Dilution Tunnel H₂O: 2.00 percent
 Tunnel Diameter: 6 inches
 Pitot Tube C_p: 0.99 [unitless]
 Dilution Tunnel MW(dry): 29.00 lb/lb-mole
 Dilution Tunnel MW(wet): 28.78 lb/lb-mole
 Tunnel Area: 0.1963 ft²

V_{strav}: 14.30 ft/sec
 V_{scent}: 14.28 ft/sec
 F_p: 1.001 [ratio]

Initial Tunnel Flow: 160.0 scf/min

Static Pressure: -0.120 in. H₂O

TEST FUEL PROPERTIES

Default Fuel Values

Fuel Type:	D. Fir	Oak
HHV (kJ/kg)	19,810	19,887
%C	48.73	50
%H	6.87	6.6
%O	43.9	42.9
%Ash	0.5	0.5

Actual Fuel Used Properties

Pellet Brand:	_____
Pellet Fuel Grade:	_____
HHV (kJ/kg)	_____
%C	_____
%H	_____
%O	_____
%Ash	_____
MC (%DB)	_____

PELLET STOVE PREBURN DATA - ASTM E2779

Client: <u>USSC</u>	Job #: <u>18-405</u>
Model: <u>5770</u>	Tracking #: <u>0001</u>
Run #: <u>1</u>	Technician: <u>SJB</u>
	Date: <u>2/5/2018</u>

Recording Interval (min): 1
 Run Time (min): 68

Elapsed Time (min)	Scale Reading (lbs)	Weight Change (lbs)	Average:		
			-0.037	344	64
			Flue Draft (in H ₂ O)	Flue (°F)	Ambient (°F)
0	41.1	-	-0.038	333	63
1	41.0	-0.1	-0.037	335	63
2	40.9	-0.1	-0.039	339	63
3	40.9	0	-0.036	328	63
4	40.9	0	-0.037	327	63
5	40.8	-0.1	-0.038	327	63
6	40.7	-0.1	-0.040	330	63
7	40.7	0	-0.038	328	63
8	40.7	0	-0.038	316	64
9	40.6	-0.1	-0.033	315	64
10	40.6	0	-0.037	321	64
11	40.5	-0.1	-0.039	325	64
12	40.5	0	-0.038	325	64
13	40.4	-0.1	-0.038	324	64
14	40.4	0	-0.038	331	64
15	40.3	-0.1	-0.040	336	64
16	40.2	-0.1	-0.038	331	64
17	40.2	0	-0.040	330	64
18	40.1	-0.1	-0.038	331	64
19	40.1	0	-0.039	337	64
20	40.0	-0.1	-0.039	342	64
21	40.0	0	-0.044	342	64
22	39.9	-0.1	-0.038	335	64
23	39.9	0	-0.034	330	64
24	39.8	-0.1	-0.040	336	64
25	39.7	-0.1	-0.038	337	64
26	39.7	0	-0.040	342	64
27	39.6	-0.1	-0.032	343	64
28	39.6	0	-0.038	341	64
29	39.5	-0.1	-0.043	350	64
30	39.5	0	-0.033	344	64
31	39.4	-0.1	-0.036	345	64
32	39.4	0	-0.035	346	64
33	39.4	0	-0.035	349	64
34	39.3	-0.1	-0.034	332	64
35	39.3	0	-0.037	332	65
36	39.2	-0.1	-0.034	345	65
37	39.1	-0.1	-0.039	353	65
38	39.1	0	-0.038	359	65
39	39.0	-0.1	-0.029	349	65
40	38.9	-0.1	-0.041	354	65
41	38.9	0	-0.038	357	65
42	38.9	0	-0.036	351	65
43	38.9	0	-0.037	352	65
44	38.8	-0.1	-0.035	361	65
45	38.7	-0.1	-0.038	360	64
46	38.7	0	-0.038	360	64

PELLET STOVE PREBURN DATA - ASTM E2779

Client: USSC

Job #: 18-405

Model: 5770

Tracking #: 0001

Run #: 1

Technician: SJB

Date: 2/5/2018

47	38.6	-0.1	-0.040	361	64
48	38.5	-0.1	-0.039	360	64
49	38.5	0	-0.041	368	64
50	38.4	-0.1	-0.042	361	64
51	38.5	0.1	-0.035	354	64
52	38.3	-0.2	-0.038	354	63
53	38.3	0	-0.043	352	63
54	38.2	-0.1	-0.038	353	63
55	38.2	0	-0.031	345	63
56	38.1	-0.1	-0.036	339	63
57	38.0	-0.1	-0.040	351	63
58	38.0	0	-0.033	350	62
59	37.9	-0.1	-0.036	357	64
60	37.8	-0.1	-0.037	358	64
61	37.9	0.1	-0.043	360	64
62	37.8	-0.1	-0.038	365	64
63	37.7	-0.1	-0.036	339	65
64	37.7	0	-0.034	337	65
65	37.6	-0.1	-0.033	347	65
66	37.6	0	-0.033	357	65
67	37.5	-0.1	-0.036	368	65
68	37.5	0	-0.035	353	65

BOX A TEST DATA - ASTM E2779 / ASTM E2515Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 1Technician: SJBDate: 2/5/2018

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
0	0.000		0.045	0.00	68	-0.04		3.3		94	354	68	66
1	0.103	0.103	0.045	1.39	68	-0.42	91	3.2	-0.1	94	358	69	66
2	0.217	0.114	0.045	1.41	68	-0.41	101	3.2	0.0	94	366	69	66
3	0.331	0.114	0.045	1.39	68	-0.5	101	3.1	-0.1	94	345	70	66
4	0.446	0.115	0.045	1.37	68	-1.14	102	3.1	0.0	95	350	70	65
5	0.564	0.118	0.045	1.40	68	-0.96	105	3.0	-0.1	94	351	70	63
6	0.677	0.113	0.045	1.38	69	-1.24	100	3.0	0.0	94	350	70	62
7	0.789	0.112	0.045	1.38	69	-1.05	99	2.9	-0.1	94	363	70	61
8	0.903	0.114	0.045	1.37	69	-0.72	101	2.9	0.0	94	346	69	63
9	1.015	0.112	0.045	1.36	69	-0.98	99	2.9	0.0	94	348	69	63
10	1.130	0.115	0.045	1.37	69	-0.62	102	2.8	-0.1	94	353	69	64
11	1.246	0.116	0.045	1.36	70	-0.57	102	2.8	0.0	94	352	69	64
12	1.359	0.113	0.045	1.35	70	-0.45	100	2.7	-0.1	94	349	69	64
13	1.471	0.112	0.045	1.35	70	-0.7	99	2.6	-0.1	94	349	70	64
14	1.585	0.114	0.045	1.36	70	-0.38	101	2.7	0.1	94	356	70	64
15	1.696	0.111	0.045	1.35	71	-0.5	98	2.6	-0.1	94	360	70	64
16	1.811	0.115	0.045	1.36	71	-1.24	101	2.4	-0.2	94	363	70	64
17	1.927	0.116	0.045	1.35	71	-1.13	102	2.4	0.0	94	359	70	65
18	2.040	0.113	0.045	1.35	71	-1.17	100	2.3	-0.1	95	355	70	65
19	2.154	0.114	0.045	1.37	72	-0.54	100	2.3	0.0	94	351	70	65
20	2.266	0.112	0.045	1.36	72	-0.74	99	2.2	-0.1	95	352	70	65
21	2.378	0.112	0.045	1.35	72	-0.85	99	2.2	0.0	95	356	71	65
22	2.493	0.115	0.045	1.37	73	-0.47	101	2.1	-0.1	94	349	71	65
23	2.609	0.116	0.045	1.35	73	-1.08	102	2.1	0.0	95	357	71	65
24	2.723	0.114	0.045	1.36	73	-1.28	100	2.0	-0.1	95	355	71	65
25	2.837	0.114	0.045	1.36	74	-1.17	100	2.0	0.0	95	358	71	65
26	2.949	0.112	0.045	1.37	74	-1.03	98	1.9	-0.1	95	356	71	65
27	3.061	0.112	0.045	1.35	74	-0.65	98	1.9	0.0	95	351	71	65
28	3.177	0.116	0.045	1.36	75	-0.7	102	1.8	-0.1	95	358	71	65
29	3.293	0.116	0.045	1.36	75	-0.47	102	1.7	-0.1	95	360	71	65
30	3.407	0.114	0.045	1.34	76	-0.44	100	1.6	-0.1	95	367	71	66
31	3.521	0.114	0.045	1.35	76	-1.02	100	1.6	0.0	95	371	71	66
32	3.634	0.113	0.045	1.36	76	-1.15	99	1.5	-0.1	95	353	72	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 1Technician: SJBDate: 2/5/2018

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
33	3.746	0.112	0.045	1.36	77	-0.58	98	1.5	0.0	95	349	72	65
34	3.862	0.116	0.045	1.36	77	-0.55	101	1.5	0.0	95	361	72	66
35	3.978	0.116	0.045	1.35	77	-0.72	101	1.4	-0.1	95	359	72	66
36	4.092	0.114	0.045	1.35	78	-0.79	99	1.3	-0.1	95	362	72	66
37	4.206	0.114	0.045	1.35	78	-1.19	99	1.3	0.0	96	363	72	66
38	4.320	0.114	0.045	1.36	78	-1.05	99	1.1	-0.2	95	360	72	66
39	4.432	0.112	0.045	1.35	79	-1.17	97	1.1	0.0	95	356	72	66
40	4.548	0.116	0.045	1.35	79	-0.9	101	1.1	0.0	96	363	72	66
41	4.666	0.118	0.045	1.35	79	-0.55	103	0.9	-0.2	96	368	72	66
42	4.780	0.114	0.045	1.37	79	-0.64	99	1.0	0.1	96	364	72	66
43	4.894	0.114	0.045	1.36	80	-0.57	99	0.9	-0.1	96	356	72	66
44	5.008	0.114	0.045	1.37	80	-0.45	99	0.9	0.0	96	348	72	66
45	5.123	0.115	0.045	1.36	80	-0.68	100	0.8	-0.1	96	362	72	66
46	5.238	0.115	0.045	1.37	81	-0.39	100	0.8	0.0	95	349	72	66
47	5.355	0.117	0.045	1.36	81	-0.97	101	0.7	-0.1	95	353	72	66
48	5.470	0.115	0.045	1.37	81	-1.26	100	0.7	0.0	96	360	72	66
49	5.583	0.113	0.045	1.36	81	-0.61	98	0.6	-0.1	96	356	73	66
50	5.697	0.114	0.045	1.38	82	-1.06	99	0.5	-0.1	96	363	73	66
51	5.814	0.117	0.045	1.38	82	-0.52	101	0.5	0.0	96	346	73	66
52	5.930	0.116	0.045	1.37	82	-0.62	100	0.4	-0.1	96	348	73	67
53	6.046	0.116	0.045	1.36	83	-0.48	100	0.4	0.0	96	361	73	67
54	6.161	0.115	0.045	1.36	83	-0.55	99	0.3	-0.1	96	365	73	67
55	6.275	0.114	0.045	1.37	83	-0.62	98	0.3	0.0	96	347	73	67
56	6.389	0.114	0.045	1.36	83	-1.28	98	0.2	-0.1	96	348	73	67
57	6.506	0.117	0.045	1.36	84	-0.65	101	0.2	0.0	96	347	73	67
58	6.626	0.120	0.045	1.54	84	-1.04	103	0.1	-0.1	96	354	73	67
59	6.742	0.116	0.045	1.40	84	-1	100	0.1	0.0	96	366	73	67
60	6.857	0.115	0.045	1.40	84	-0.44	99	0.0	-0.1	96	347	73	67
Avg/Tot	6.857	0.114	0.045	1.34	76	-0.77	100			95	356	71	65

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 1

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/5/2018

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
0	0.000		0.00	67	1		69	0.000	0.79	0.02
1	0.112	0.112	1.45	67	1.3	99	70	-0.040	0.62	0.01
2	0.227	0.115	1.45	67	1.31	102	71	-0.040	0.56	0.02
3	0.345	0.118	1.44	67	1.42	105	71	-0.030	0.56	0.03
4	0.459	0.114	1.45	67	1.36	101	71	-0.030	0.60	0.01
5	0.573	0.114	1.45	68	1.43	101	71	-0.040	0.51	0.02
6	0.688	0.115	1.45	68	1.34	102	71	-0.040	0.55	0.02
7	0.801	0.113	1.44	68	1.28	100	71	-0.040	0.24	0.02
8	0.915	0.114	1.43	68	1.35	101	71	-0.040	0.12	0.02
9	1.032	0.117	1.42	68	1.32	104	71	-0.040	0.10	0.01
10	1.147	0.115	1.44	69	1.53	102	71	-0.040	0.05	0.01
11	1.260	0.113	1.44	69	1.42	100	71	-0.040	0.07	0.02
12	1.374	0.114	1.42	69	1.45	101	71	-0.040	0.08	0.01
13	1.486	0.112	1.43	69	1.49	99	71	-0.040	0.04	0.02
14	1.600	0.114	1.42	69	1.48	101	71	-0.040	0.06	0.01
15	1.716	0.116	1.43	70	1.37	102	71	-0.040	0.07	0.00
16	1.830	0.114	1.42	70	1.54	101	71	-0.040	0.07	0.01
17	1.943	0.113	1.42	70	1.35	100	71	-0.040	0.05	0.01
18	2.057	0.114	1.42	70	1.37	101	71	-0.040	0.11	0.01
19	2.169	0.112	1.41	71	1.69	99	71	-0.030	0.08	0.01
20	2.283	0.114	1.42	71	1.29	100	71	-0.040	0.08	0.02
21	2.399	0.116	1.41	71	1.49	102	71	-0.040	0.04	0.02
22	2.513	0.114	1.41	72	1.39	100	72	-0.030	0.09	0.02
23	2.627	0.114	1.41	72	1.4	100	72	-0.040	0.09	0.01
24	2.740	0.113	1.41	72	1.36	99	72	-0.040	0.09	0.01
25	2.852	0.112	1.41	73	1.37	98	72	-0.030	0.12	0.01
26	2.966	0.114	1.40	73	1.42	100	72	-0.040	0.11	0.03
27	3.081	0.115	1.40	73	1.59	101	72	-0.030	0.19	0.02
28	3.195	0.114	1.40	74	1.48	100	72	-0.030	0.22	0.01
29	3.310	0.115	1.41	74	1.35	101	72	-0.040	0.23	0.02
30	3.422	0.112	1.41	74	1.37	98	72	-0.040	0.31	0.02
31	3.535	0.113	1.41	75	1.55	99	72	-0.040	0.32	0.03

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 1

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/5/2018

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
32	3.649	0.114	1.41	75	1.44	100	72	-0.040	0.40	0.02
33	3.764	0.115	1.40	75	1.31	101	72	-0.040	0.42	0.03
34	3.879	0.115	1.41	76	1.29	100	72	-0.030	0.44	0.02
35	3.994	0.115	1.41	76	1.38	100	73	-0.040	0.45	0.02
36	4.106	0.112	1.40	76	1.34	98	73	-0.040	0.48	0.02
37	4.219	0.113	1.40	76	1.48	99	73	-0.040	0.46	0.01
38	4.334	0.115	1.41	77	1.31	100	73	-0.030	0.44	0.02
39	4.448	0.114	1.39	77	1.44	99	73	-0.040	0.41	0.02
40	4.563	0.115	1.40	77	1.56	100	73	-0.040	0.42	0.01
41	4.678	0.115	1.41	78	1.57	100	73	-0.040	0.36	0.02
42	4.791	0.113	1.39	78	1.49	98	73	-0.040	0.35	0.02
43	4.904	0.113	1.40	78	1.51	98	73	-0.030	0.37	0.01
44	5.019	0.115	1.41	78	1.28	100	73	-0.040	0.37	0.01
45	5.134	0.115	1.41	79	1.37	100	73	-0.040	0.35	0.01
46	5.249	0.115	1.40	79	1.54	100	73	-0.030	0.39	0.01
47	5.364	0.115	1.40	79	1.53	100	73	-0.040	0.37	0.01
48	5.477	0.113	1.40	80	1.57	98	73	-0.040	0.32	0.01
49	5.589	0.112	1.40	80	1.39	97	73	-0.040	0.29	0.02
50	5.705	0.116	1.40	80	1.43	101	73	-0.040	0.31	0.01
51	5.821	0.116	1.40	80	1.35	101	73	-0.030	0.29	0.02
52	5.935	0.114	1.39	81	1.38	99	73	-0.040	0.26	0.03
53	6.050	0.115	1.40	81	1.36	100	73	-0.040	0.37	0.01
54	6.164	0.114	1.41	81	1.52	99	73	-0.040	0.34	0.01
55	6.276	0.112	1.39	81	1.37	97	74	-0.030	0.28	0.03
56	6.391	0.115	1.39	81	1.73	100	74	-0.040	0.30	0.02
57	6.508	0.117	1.40	82	1.25	101	74	-0.040	0.29	0.02
58	6.624	0.116	1.40	82	1.51	100	74	-0.040	0.29	0.02
59	6.738	0.114	1.40	82	1.39	98	74	-0.040	0.02	0.02
60	6.852	0.114	1.40	82	1.28	98	74	-0.030	0.40	0.02
Avg/Tot	6.852	0.114	1.39	74	1.41	100			0.29	0.02

LAB SAMPLE DATA - ASTM E2515

Client: USSC
 Model: 5770
 Run #: 1

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/5/2018

	Sample ID	Tare, mg	Total, mg	Final, mg	Catch, mg
Train A Filters - First Hour			0.0	0.0	0.0
Train A Filters - Remainder			0.0	0.0	0.0
Train A Probe			0.0	0.0	
Train A O-Rings			0.0	0.0	
Train B Filters			0.0	0.0	
Train B Probe			0.0	0.0	
Train B O-Rings			0.0	0.0	
Background Filter			0.0	0.0	

Placed in Dessicator on:

Train A Filters - First Hour					
Train A Filters - Remainder					
Train A Probe					
Train A O-Rings					
Train B Filters					
Train B Probe					
Train B O-Rings					
Background Filter					

1st hour Sub-Total, mg:	0.0
Remainder Sub-Total, mg:	0.0
Train 1 Aggregate, mg:	0.0
Train 2 Aggregate, mg:	0.0
Ambient Aggregate, mg:	0.0

**PELLET TEST DATA PACKET
ASTM E2779/E2515**



Run 2 Data Summary

USSC

Model : 5770

Job #: 18-405

A handwritten signature in black ink, appearing to be "RL", is written above a horizontal line.

Techician Signature

3/20/2018

Date

TEST RESULTS - ASTM E2779 / ASTM E2515

Client: USSCModel: 5770Run #: 2Job #: 18-405Tracking #: 0001Technician: SJBDate: 2/6/2018

Burn Rate Summary	
High Burn Rate (dry kg/hr)	1.41
Medium Burn Rate (dry kg/hr)	0.92
Low Burn Rate (dry kg/hr)	0.63
Overall Burn Rate (dry kg/hr)	0.86

65.6% of High Burn Rate

44.8% of High Burn Rate

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft ³)	48.939	49.384	48.396	8.105
Average Gas Velocity in Dilution Tunnel (ft/sec)	14.2			
Average Gas Flow Rate in Dilution Tunnel (dscf/min)	9645.5			
Average Gas Meter Temperature (°F)	66.4	89.5	87.7	75.1
Total Sample Volume (dscf)	49.467	47.947	47.371	8.080
Average Tunnel Temperature (°F)	85.3			
Total Time of Test (min)	360			
Total Particulate Catch (mg)	0.0	5.1	4.4	0.9
Particulate Concentration, dry-standard (g/dscf)	0.0000000	0.0001064	0.0000929	0.0001114
Total PM Emissions (g)	0.00	6.16	5.38	1.07
Particulate Emission Rate (g/hr)	0.00	1.03	0.90	1.07
Emissions Factor (g/kg)	-	1.20	1.04	0.76
Difference from Average Total Particulate Emissions (g)	-	0.39	0.39	-
Difference from Average Emissions Factor (g/kg)	-	0.08	0.08	-

Final Average Results	
Total Particulate Emissions (g)	5.77
Particulate Emission Rate (g/hr)	0.96
Emissions Factor (g/kg)	1.12
HHV Efficiency (%)	72.1%
LHV Efficiency (%)	77.1%
CO Emissions (g/min)	0.29

Dual Train Precision:
Individual Train
Difference from
Average = 6.8%

Quality Checks	Requirement	Observed	Result
Dual Train Precision	Each train within 7.5% of average emissions (in grams), or emission factors within 0.5 g/kg	See Above	OK
Filter Temps	<90 °F	74	OK
Face Velocity	< 30 ft/min	7.6	OK
Leakage Rate	Less than 4% of average sample rate	0.001 cfm	OK
Ambient Temp	55-90 °F	Min: 63 / Max: 68	OK
Negative Probe Weight Evaluation	<5% of Total Catch	Probe Catch Not Negative	OK
Pro-Rate Variation	90% of readings between 90-110%; none greater than 120% or less than 80%	See Data Tabs	OK
Medium Burn Rate	< 50% of High	65.6%	Not Acceptable

All negative filter weights were appropriately handled, for informational purposes, the following emissions rates have been calculated with negative weights adjusted to zero, which resulted in the following values: Total Particulate = 6.13 g, Emissions Rate = 1.02 g/hr, Emissions Factor = 1.19 g/kg. These results are informational only, correct numbers are as reported above.

Overall Pellet Test Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/06/18
Run: 2
Control #: 18-405
Test Duration: 360
Output Category: Integrated

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	72.1%	77.1%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	72.5%	77.5%

Output Rate (kJ/h)	12,629	11,980	(Btu/h)
Burn Rate (kg/h)	0.86	1.89	(lb/h)
Input (kJ/h)	17,504	16,604	(Btu/h)

Test Load Weight (dry kg)	5.15	11.35	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	5.77		
CO (g)	103		
Test Duration (h)	6.00		

Emissions	Particulate	CO
g/MJ Output	0.08	1.36
g/kg Dry Fuel	1.12	20.00
g/h	0.96	17.16
g/min	0.02	0.29
lb/MM Btu Output	0.18	3.16

Air/Fuel Ratio (A/F)	34.37
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VERSION:

2.2

12/14/2009

Max Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/06/18
Run: 2
Control #: 18-405
Test Duration: 60
Output Category: Maximum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	71.0%	75.9%
Combustion Efficiency	99.0%	99.0%
Heat Transfer Efficiency	71.7%	76.6%

Output Rate (kJ/h)	20,392	19,344	(Btu/h)
Burn Rate (kg/h)	1.41	3.10	(lb/h)
Input (kJ/h)	28,724	27,248	(Btu/h)

Test Load Weight (dry kg)	1.41	3.10	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	38		
Test Duration (h)	1.00		

Emissions	Particulate	CO
g/MJ Output	N/A	1.86
g/kg Dry Fuel	N/A	26.90
g/h	N/A	37.88
g/min	N/A	0.63
lb/MM Btu Output	N/A	4.32

Air/Fuel Ratio (A/F)	24.75
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VERSION:

2.2

12/14/2009

Medium Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/06/18
Run: 2
Control #: 18-405
Test Duration: 120
Output Category: Medium

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	73.7%	78.8%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	74.1%	79.2%

Output Rate (kJ/h)	13,901	13,187	(Btu/h)
Burn Rate (kg/h)	0.92	2.04	(lb/h)
Input (kJ/h)	18,850	17,881	(Btu/h)

Test Load Weight (dry kg)	1.85	4.07	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	23		
Test Duration (h)	2.00		

Emissions	Particulate	CO
g/MJ Output	N/A	0.82
g/kg Dry Fuel	N/A	12.41
g/h	N/A	11.47
g/min	N/A	0.19
lb/MM Btu Output	N/A	1.92

Air/Fuel Ratio (A/F)	29.41
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VERSION:

2.2

12/14/2009

Minimum Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/06/18
Run: 2
Control #: 18-405
Test Duration: 180
Output Category: Minimum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	70.4%	75.2%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	70.8%	75.6%

Output Rate (kJ/h)	9,058	8,592	(Btu/h)
Burn Rate (kg/h)	0.63	1.39	(lb/h)
Input (kJ/h)	12,866	12,205	(Btu/h)

Test Load Weight (dry kg)	1.89	4.17	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	43		
Test Duration (h)	3.00		

Emissions	Particulate	CO
g/MJ Output	N/A	1.59
g/kg Dry Fuel	N/A	22.89
g/h	N/A	14.44
g/min	N/A	0.24
lb/MM Btu Output	N/A	3.71

Air/Fuel Ratio (A/F)	45.20
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VERSION:

2.2

12/14/2009

PELLET STOVE PREBURN DATA

Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 2Technician: SJBDate: 2/6/2018
 Recording Interval (min): 1
 Run Time (min): 60

Elapsed Time (min)	Scale Reading (lbs)	Weight Change (lbs)	Average:		
			-0.037	345	57
			Flue Draft (in H ₂ O)	Flue (°F)	Ambient (°F)
0	32.3	-	-0.027	307	63
1	32.3	0	-0.034	317	63
2	32.1	-0.2	-0.043	344	63
3	32.1	0	-0.035	356	63
4	32.1	0	-0.042	359	62
5	31.9	-0.2	-0.035	358	60
6	32.0	0.1	-0.038	354	60
7	31.9	-0.1	-0.037	350	59
8	31.8	-0.1	-0.036	352	59
9	31.8	0	-0.040	355	59
10	31.7	-0.1	-0.038	354	59
11	31.7	0	-0.038	350	58
12	31.6	-0.1	-0.040	353	58
13	31.6	0	-0.039	346	58
14	31.5	-0.1	-0.032	333	58
15	31.5	0	-0.036	341	57
16	31.4	-0.1	-0.039	347	57
17	31.3	-0.1	-0.035	351	57
18	31.3	0	-0.041	355	57
19	31.2	-0.1	-0.040	354	57
20	31.2	0	-0.038	348	57
21	31.1	-0.1	-0.040	348	57
22	31.1	0	-0.037	344	56
23	31.0	-0.1	-0.039	351	56
24	31.0	0	-0.037	354	56
25	30.9	-0.1	-0.036	348	56
26	30.9	0	-0.038	349	56
27	30.8	-0.1	-0.033	350	56
28	30.7	-0.1	-0.036	348	56
29	30.7	0	-0.040	346	56
30	30.7	0	-0.040	349	56
31	30.5	-0.2	-0.035	341	55
32	30.6	0.1	-0.035	333	56
33	30.5	-0.1	-0.043	348	56
34	30.4	-0.1	-0.039	358	56
35	30.4	0	-0.035	337	56
36	30.5	0.1	-0.035	337	56
37	30.3	-0.2	-0.040	351	56
38	30.2	-0.1	-0.035	351	56
39	30.2	0	-0.038	349	56
40	30.2	0	-0.039	346	56
41	30.1	-0.1	-0.035	346	55
42	30.0	-0.1	-0.036	349	55
43	29.9	-0.1	-0.041	354	55
44	29.9	0	-0.038	348	55
45	29.9	0	-0.033	340	55
46	29.8	-0.1	-0.036	331	55

PELLET STOVE PREBURN DATA

Client: USSC Job #: 18-405

Model: 5770 Tracking #: 0001

Run #: 2 Technician: SJB

Date: 2/6/2018

47	29.8	0	-0.039	345	55
48	29.7	-0.1	-0.039	355	55
49	29.7	0	-0.036	336	55
50	29.6	-0.1	-0.032	325	55
51	29.6	0	-0.029	326	55
52	29.4	-0.2	-0.039	339	55
53	29.5	0.1	-0.036	346	55
54	29.4	-0.1	-0.038	351	55
55	29.4	0	-0.041	353	55
56	29.3	-0.1	-0.038	349	55
57	29.3	0	-0.032	329	55
58	29.2	-0.1	-0.036	326	55
59	29.2	0	-0.038	345	55
60	29.1	-0.1	-0.038	352	55

DILUTION TUNNEL DATA - ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/6/2018

	Beginning	Middle	End	Avg.
P _{bar} (in Hg):	30.25	30.28	30.23	30.25

Dilution Tunnel MW(dry): 29.00 lb/lb-mole
 Dilution Tunnel MW(wet): 28.78 lb/lb-mole
 Tunnel Area: 0.1963 ft²
 Dilution Tunnel H₂O: 2.00 percent
 Tunnel Diameter: 6 inches
 Pitot Tube Cp: 0.99

Dilution Tunnel Static: -0.120 in H₂O

	Tunnel Traverse Information								
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center
dP (in H ₂ O)	0.044	0.045	0.045	0.044	0.043	0.046	0.046	0.048	0.045
Tunnel Temp (°F)	92	92	92	92	92	92	92	92	92

V_{strav}: 14.31 ft/sec
 V_{scent}: 14.30 ft/sec
 F_p: 1.001
 Initial Tunnel Flow: 159.8 scf/min

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
0	0.000		0.045	0.01	67	-0.06		11.7		92	351	66	64
1	0.125	0.125	0.045	1.99	67	-0.71	96	11.5	-0.2	93	358	67	64
2	0.260	0.135	0.045	1.98	67	-0.88	103	11.6	0.1	93	351	68	64
3	0.397	0.137	0.045	1.98	67	-1.17	105	11.5	-0.1	93	348	69	64
4	0.529	0.132	0.045	1.98	67	-0.99	101	11.5	0.0	93	349	69	64
5	0.666	0.137	0.045	1.95	68	-0.72	105	11.4	-0.1	93	350	69	64
6	0.799	0.133	0.045	1.96	68	-0.66	102	11.3	-0.1	94	355	69	65
7	0.932	0.133	0.045	1.94	68	-0.74	102	11.3	0.0	93	338	70	65
8	1.069	0.137	0.045	1.95	68	-0.96	105	11.3	0.0	93	328	70	65
9	1.202	0.133	0.045	1.94	68	-0.75	102	11.2	-0.1	93	331	70	65
10	1.335	0.133	0.045	1.96	69	-0.75	101	11.0	-0.2	93	346	70	65
11	1.472	0.137	0.045	1.93	69	-1.35	104	11.1	0.1	93	353	70	65
12	1.603	0.131	0.045	1.94	69	-1.34	100	11.0	-0.1	93	351	70	64
13	1.740	0.137	0.045	1.92	69	-1.3	104	11.0	0.0	93	357	70	65
14	1.874	0.134	0.045	1.95	70	-1.21	102	10.9	-0.1	93	359	71	65
15	2.006	0.132	0.045	1.94	70	-0.93	101	10.9	0.0	94	342	71	65
16	2.143	0.137	0.045	1.95	70	-0.75	104	10.8	-0.1	94	353	71	65
17	2.276	0.133	0.045	1.95	71	-1.14	101	10.8	0.0	94	352	71	65
18	2.409	0.133	0.045	1.95	71	-0.99	101	10.7	-0.1	94	350	71	65
19	2.546	0.137	0.045	1.94	71	-0.7	104	10.7	0.0	94	346	71	65
20	2.678	0.132	0.045	1.94	72	-0.65	100	10.6	-0.1	94	356	71	65
21	2.815	0.137	0.045	1.94	72	-1.14	104	10.6	0.0	94	333	71	65
22	2.949	0.134	0.045	1.95	72	-0.79	102	10.5	-0.1	93	329	71	65
23	3.081	0.132	0.045	1.95	73	-1.15	100	10.4	-0.1	94	349	71	65
24	3.219	0.138	0.045	1.95	73	-1.19	105	10.4	0.0	94	359	72	65
25	3.352	0.133	0.045	1.93	73	-1.35	101	10.3	-0.1	94	346	72	65
26	3.486	0.134	0.045	1.95	74	-1.09	101	10.4	0.1	94	348	72	65
27	3.624	0.138	0.045	1.93	74	-1.33	104	10.2	-0.2	94	349	72	65
28	3.755	0.131	0.045	1.94	74	-0.97	99	10.2	0.0	94	352	72	65
29	3.893	0.138	0.045	1.94	75	-0.92	104	10.1	-0.1	94	356	72	65

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
30	4.027	0.134	0.045	1.94	75	-0.78	101	10.1	0.0	94	327	72	65
31	4.161	0.134	0.045	1.94	76	-1.03	101	10.1	0.0	94	312	72	65
32	4.298	0.137	0.045	1.94	76	-1.07	103	10.1	0.0	94	336	72	65
33	4.432	0.134	0.045	1.95	76	-0.81	101	9.9	-0.2	94	346	72	65
34	4.567	0.135	0.045	1.94	77	-1.09	101	9.9	0.0	94	345	72	65
35	4.705	0.138	0.045	1.95	77	-0.79	104	9.8	-0.1	94	358	72	65
36	4.836	0.131	0.045	1.92	77	-0.89	98	9.8	0.0	94	341	72	65
37	4.976	0.140	0.045	1.95	78	-1.28	105	9.6	-0.2	94	337	72	65
38	5.109	0.133	0.045	1.94	78	-0.8	100	9.6	0.0	94	348	72	65
39	5.244	0.135	0.045	1.95	78	-1.37	101	9.6	0.0	95	359	72	65
40	5.383	0.139	0.045	1.94	79	-1.32	104	9.7	0.1	94	341	72	65
41	5.515	0.132	0.045	1.94	79	-0.83	99	9.5	-0.2	95	335	72	66
42	5.654	0.139	0.045	1.94	79	-0.72	104	9.5	0.0	94	331	72	66
43	5.788	0.134	0.045	1.95	80	-0.96	100	9.4	-0.1	94	337	72	65
44	5.923	0.135	0.045	1.94	80	-1.43	101	9.4	0.0	94	349	73	65
45	6.061	0.138	0.045	1.94	80	-1.3	103	9.3	-0.1	94	349	73	65
46	6.195	0.134	0.045	1.96	80	-0.81	100	9.2	-0.1	94	348	73	65
47	6.332	0.137	0.045	1.96	81	-1.23	102	9.2	0.0	95	354	73	65
48	6.468	0.136	0.045	1.94	81	-0.88	101	9.2	0.0	94	344	73	65
49	6.603	0.135	0.045	1.96	81	-1	101	9.1	-0.1	94	330	73	66
50	6.741	0.138	0.045	1.95	81	-1.01	103	9.1	0.0	94	333	73	66
51	6.876	0.135	0.045	1.94	82	-1.24	101	9.0	-0.1	94	345	73	66
52	7.011	0.135	0.045	1.93	82	-0.88	101	8.9	-0.1	94	346	73	66
53	7.150	0.139	0.045	1.96	82	-1.41	104	8.9	0.0	94	340	73	66
54	7.283	0.133	0.045	1.94	82	-1.4	99	8.9	0.0	94	346	73	66
55	7.422	0.139	0.045	1.93	83	-1.14	103	8.8	-0.1	95	338	73	66
56	7.557	0.135	0.045	1.96	83	-0.77	100	8.8	0.0	94	334	73	66
57	7.693	0.136	0.045	1.95	83	-0.87	101	8.6	-0.2	94	343	73	66
58	7.832	0.139	0.045	1.97	83	-1.33	103	8.6	0.0	95	344	73	66
59	7.965	0.133	0.045	1.93	84	-0.8	99	8.6	0.0	95	348	73	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
60	8.105	0.140	0.045	1.96	84	-1.02	104	8.5	-0.1	95	349	73	66
61	8.242	0.137	0.045	2.02	84	-0.56	101	8.5	0.0	91	324	72	66
62	8.378	0.136	0.045	1.95	84	-1.15	100	8.4	-0.1	89	306	73	66
63	8.518	0.140	0.045	1.96	84	-1.21	103	8.4	0.0	88	297	73	66
64	8.652	0.134	0.045	1.96	85	-1.22	99	8.4	0.0	87	289	73	66
65	8.791	0.139	0.045	1.96	85	-1.33	102	8.4	0.0	87	285	73	66
66	8.927	0.136	0.045	1.95	85	-0.68	100	8.3	-0.1	86	284	73	66
67	9.063	0.136	0.045	1.95	85	-1.01	100	8.3	0.0	86	287	73	66
68	9.202	0.139	0.045	1.94	85	-1.07	102	8.2	-0.1	85	284	73	66
69	9.337	0.135	0.045	1.95	86	-1.25	99	8.2	0.0	85	279	73	66
70	9.477	0.140	0.045	1.95	86	-1.04	103	8.2	0.0	85	275	73	66
71	9.613	0.136	0.045	1.95	86	-0.7	100	8.1	-0.1	85	281	73	66
72	9.749	0.136	0.045	1.95	86	-0.74	100	8.1	0.0	85	281	72	66
73	9.888	0.139	0.045	1.97	86	-1.34	102	8.1	0.0	85	282	72	66
74	10.023	0.135	0.045	1.97	86	-1.09	99	8.0	-0.1	85	280	72	66
75	10.163	0.140	0.045	1.95	87	-1.26	102	8.0	0.0	84	277	72	66
76	10.299	0.136	0.045	1.96	87	-1.02	99	7.9	-0.1	84	272	72	66
77	10.437	0.138	0.045	1.96	87	-0.99	101	7.9	0.0	84	276	72	66
78	10.574	0.137	0.045	1.94	87	-0.78	100	7.9	0.0	84	274	72	66
79	10.710	0.136	0.045	1.96	87	-1.37	99	7.8	-0.1	84	271	72	66
80	10.849	0.139	0.045	1.93	87	-1.4	102	7.8	0.0	84	267	72	66
81	10.984	0.135	0.045	1.96	88	-1	99	7.8	0.0	84	273	72	66
82	11.124	0.140	0.045	1.96	88	-0.9	102	7.7	-0.1	84	273	72	66
83	11.260	0.136	0.045	1.96	88	-0.73	99	7.7	0.0	84	277	72	66
84	11.397	0.137	0.045	1.96	88	-1.36	100	7.7	0.0	84	269	71	66
85	11.537	0.140	0.045	1.96	88	-1.22	102	7.6	-0.1	84	271	71	66
86	11.671	0.134	0.045	1.96	88	-1.36	98	7.6	0.0	84	268	71	66
87	11.812	0.141	0.045	1.97	88	-1.28	103	7.6	0.0	84	278	71	66
88	11.947	0.135	0.045	1.95	88	-0.67	99	7.5	-0.1	84	274	71	66
89	12.084	0.137	0.045	1.97	89	-1.26	100	7.5	0.0	84	282	71	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
90	12.225	0.141	0.045	1.96	89	-1.06	103	7.5	0.0	84	273	71	66
91	12.358	0.133	0.045	1.95	89	-1.21	97	7.4	-0.1	84	279	71	66
92	12.500	0.142	0.045	1.96	89	-1.26	103	7.4	0.0	84	276	71	66
93	12.636	0.136	0.045	1.94	89	-1.17	99	7.3	-0.1	84	283	71	66
94	12.773	0.137	0.045	1.97	89	-0.81	100	7.2	-0.1	84	274	71	66
95	12.913	0.140	0.045	1.94	89	-1.13	102	7.2	0.0	84	278	71	66
96	13.047	0.134	0.045	1.95	89	-0.72	98	7.2	0.0	84	269	71	66
97	13.187	0.140	0.045	1.96	89	-0.85	102	7.2	0.0	84	272	71	66
98	13.324	0.137	0.045	1.95	89	-1.35	100	7.2	0.0	84	272	71	66
99	13.461	0.137	0.045	1.96	90	-0.85	100	7.0	-0.2	84	280	71	66
100	13.600	0.139	0.045	1.94	90	-0.93	101	7.1	0.1	84	273	71	66
101	13.736	0.136	0.045	1.95	90	-0.84	99	7.1	0.0	84	282	71	66
102	13.876	0.140	0.045	1.96	90	-0.7	102	7.0	-0.1	84	277	71	66
103	14.012	0.136	0.045	1.96	90	-0.88	99	7.0	0.0	84	282	71	66
104	14.150	0.138	0.045	1.95	90	-1.37	100	7.0	0.0	84	275	71	66
105	14.288	0.138	0.045	1.96	90	-1.14	100	6.9	-0.1	85	280	71	66
106	14.425	0.137	0.045	1.94	90	-0.77	100	6.9	0.0	84	268	71	66
107	14.564	0.139	0.045	1.95	90	-1.38	101	6.8	-0.1	85	277	71	66
108	14.699	0.135	0.045	1.97	90	-0.82	98	6.7	-0.1	84	271	71	66
109	14.840	0.141	0.045	1.95	90	-0.88	103	6.8	0.1	84	276	71	66
110	14.976	0.136	0.045	1.95	90	-1.22	99	6.7	-0.1	84	275	71	66
111	15.113	0.137	0.045	1.96	90	-1	100	6.7	0.0	85	281	71	66
112	15.254	0.141	0.045	1.96	91	-1.15	102	6.7	0.0	84	274	71	66
113	15.387	0.133	0.045	1.96	91	-0.84	97	6.7	0.0	84	275	71	66
114	15.529	0.142	0.045	1.96	91	-1.29	103	6.6	-0.1	84	268	71	66
115	15.665	0.136	0.045	1.94	91	-1.32	99	6.6	0.0	84	273	71	66
116	15.802	0.137	0.045	1.96	91	-1.18	99	6.5	-0.1	84	270	71	66
117	15.942	0.140	0.045	1.94	91	-1.15	102	6.5	0.0	84	277	71	66
118	16.076	0.134	0.045	1.95	91	-0.87	97	6.5	0.0	84	272	71	66
119	16.217	0.141	0.045	1.94	91	-0.97	102	6.4	-0.1	85	278	71	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
120	16.354	0.137	0.045	1.96	91	-0.75	99	6.4	0.0	84	280	71	66
121	16.491	0.137	0.045	1.95	91	-1	99	6.4	0.0	84	275	71	66
122	16.630	0.139	0.045	1.97	91	-1.24	101	6.3	-0.1	84	278	71	66
123	16.766	0.136	0.045	1.96	91	-0.78	99	6.3	0.0	84	272	71	66
124	16.906	0.140	0.045	1.95	91	-0.9	102	6.3	0.0	84	277	71	66
125	17.042	0.136	0.045	1.95	91	-1.07	99	6.1	-0.2	84	275	71	67
126	17.182	0.140	0.045	1.94	91	-0.82	102	6.2	0.1	84	278	71	67
127	17.319	0.137	0.045	1.94	91	-1.39	99	6.2	0.0	84	272	71	66
128	17.456	0.137	0.045	1.96	91	-1.42	100	6.2	0.0	85	277	71	67
129	17.596	0.140	0.045	1.96	92	-0.79	101	6.1	-0.1	84	267	71	67
130	17.730	0.134	0.045	1.94	92	-1.07	97	6.1	0.0	84	269	71	67
131	17.872	0.142	0.045	1.95	92	-0.9	103	6.0	-0.1	84	269	71	67
132	18.007	0.135	0.045	1.93	92	-0.8	98	6.0	0.0	84	277	71	67
133	18.144	0.137	0.045	1.95	92	-1.17	99	5.9	-0.1	84	275	71	66
134	18.285	0.141	0.045	1.94	92	-1.47	102	5.8	-0.1	84	277	71	67
135	18.419	0.134	0.045	1.96	92	-0.76	97	5.9	0.1	85	281	71	67
136	18.561	0.142	0.045	1.96	92	-1.37	103	5.8	-0.1	85	286	71	67
137	18.697	0.136	0.045	1.94	92	-1.23	99	5.8	0.0	85	275	71	67
138	18.834	0.137	0.045	1.95	92	-1.13	99	5.8	0.0	85	281	71	67
139	18.974	0.140	0.045	1.94	92	-1	102	5.7	-0.1	85	276	71	67
140	19.109	0.135	0.045	1.94	92	-0.96	98	5.7	0.0	85	277	71	67
141	19.250	0.141	0.045	1.94	92	-1.07	102	5.7	0.0	85	273	71	67
142	19.386	0.136	0.045	1.96	92	-1.17	99	5.6	-0.1	85	281	71	67
143	19.525	0.139	0.045	1.93	92	-1.28	101	5.6	0.0	84	272	71	67
144	19.663	0.138	0.045	1.96	92	-0.94	100	5.6	0.0	85	269	71	67
145	19.800	0.137	0.045	1.94	92	-0.82	99	5.5	-0.1	85	275	71	67
146	19.939	0.139	0.045	1.96	92	-0.87	101	5.5	0.0	85	277	71	67
147	20.074	0.135	0.045	1.96	92	-0.87	98	5.5	0.0	85	279	71	67
148	20.215	0.141	0.045	1.95	92	-1.09	102	5.4	-0.1	85	281	71	67
149	20.351	0.136	0.045	1.93	92	-0.83	99	5.4	0.0	85	277	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
150	20.489	0.138	0.045	1.95	92	-1.19	100	5.3	-0.1	85	276	71	67
151	20.629	0.140	0.045	1.96	92	-0.69	102	5.3	0.0	85	280	71	67
152	20.763	0.134	0.045	1.96	92	-0.77	97	5.4	0.1	85	276	71	67
153	20.905	0.142	0.045	1.95	92	-0.87	103	5.2	-0.2	85	275	71	67
154	21.041	0.136	0.045	1.93	92	-0.82	99	5.2	0.0	85	271	71	67
155	21.178	0.137	0.045	1.94	93	-1.39	99	5.2	0.0	85	277	71	67
156	21.319	0.141	0.045	1.96	93	-0.79	102	5.2	0.0	85	272	71	67
157	21.453	0.134	0.045	1.95	93	-1.31	97	5.1	-0.1	85	277	71	67
158	21.594	0.141	0.045	1.95	93	-0.83	102	5.1	0.0	85	272	71	67
159	21.730	0.136	0.045	1.95	93	-1.37	98	5.0	-0.1	85	281	71	67
160	21.868	0.138	0.045	1.93	93	-1.34	100	5.0	0.0	85	277	71	67
161	22.006	0.138	0.045	1.95	93	-1.44	100	5.0	0.0	85	282	71	67
162	22.143	0.137	0.045	1.94	93	-1.19	99	4.8	-0.2	85	276	71	67
163	22.282	0.139	0.045	1.95	93	-0.82	101	4.9	0.1	85	274	71	67
164	22.418	0.136	0.045	1.96	93	-1.33	98	4.9	0.0	85	263	71	67
165	22.559	0.141	0.045	1.96	93	-1.4	102	4.9	0.0	85	269	71	67
166	22.695	0.136	0.045	1.93	93	-0.88	98	4.8	-0.1	85	271	71	67
167	22.833	0.138	0.045	1.95	93	-1.27	100	4.7	-0.1	85	271	71	67
168	22.973	0.140	0.045	1.95	93	-0.91	101	4.7	0.0	85	270	71	67
169	23.107	0.134	0.045	1.95	93	-0.98	97	4.7	0.0	85	275	71	67
170	23.249	0.142	0.045	1.95	93	-1.47	103	4.7	0.0	85	275	72	67
171	23.385	0.136	0.045	1.94	93	-1.43	98	4.6	-0.1	85	282	72	67
172	23.521	0.136	0.045	1.94	93	-1.35	98	4.6	0.0	85	277	72	67
173	23.662	0.141	0.045	1.94	93	-1.21	102	4.5	-0.1	85	282	72	67
174	23.796	0.134	0.045	1.94	93	-1.42	97	4.6	0.1	85	270	72	67
175	23.937	0.141	0.045	1.95	93	-1.36	102	4.5	-0.1	85	273	72	67
176	24.073	0.136	0.045	1.95	93	-0.87	98	4.5	0.0	85	271	72	67
177	24.211	0.138	0.045	1.94	93	-1	100	4.4	-0.1	85	282	72	67
178	24.350	0.139	0.045	1.95	93	-1.11	101	4.4	0.0	85	281	72	67
179	24.486	0.136	0.045	1.94	93	-1.26	98	4.3	-0.1	85	281	72	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
180	24.626	0.140	0.045	1.94	93	-1.43	101	4.3	0.0	85	274	72	67
181	24.762	0.136	0.045	1.92	93	-1.21	99	4.3	0.0	86	281	72	67
182	24.901	0.139	0.045	1.94	93	-0.87	101	4.3	0.0	85	268	72	67
183	25.039	0.138	0.045	1.94	93	-1.19	100	4.2	-0.1	85	258	72	67
184	25.176	0.137	0.045	1.94	93	-0.95	99	4.2	0.0	85	261	72	67
185	25.316	0.140	0.045	1.96	93	-0.95	101	4.1	-0.1	84	255	72	67
186	25.450	0.134	0.045	1.92	93	-1.31	97	4.1	0.0	84	246	72	67
187	25.591	0.141	0.045	1.94	93	-1.28	102	4.2	0.1	84	249	72	67
188	25.727	0.136	0.045	1.92	93	-1.26	98	4.1	-0.1	84	250	72	66
189	25.864	0.137	0.045	1.95	93	-1.46	99	4.1	0.0	84	240	71	63
190	26.005	0.141	0.045	1.93	93	-0.88	102	4.1	0.0	83	235	71	63
191	26.139	0.134	0.045	1.92	94	-1.22	97	4.1	0.0	84	244	71	63
192	26.281	0.142	0.045	1.95	93	-0.89	103	4.0	-0.1	83	242	71	64
193	26.417	0.136	0.045	1.93	93	-1.36	98	4.0	0.0	84	246	70	65
194	26.554	0.137	0.045	1.94	93	-0.76	99	4.1	0.1	83	245	70	65
195	26.694	0.140	0.045	1.94	93	-0.8	101	4.0	-0.1	83	239	70	65
196	26.829	0.135	0.045	1.93	93	-1.24	98	3.9	-0.1	83	247	70	66
197	26.969	0.140	0.045	1.95	93	-1.32	101	3.9	0.0	83	241	70	66
198	27.106	0.137	0.045	1.93	93	-0.89	99	3.9	0.0	83	231	70	66
199	27.244	0.138	0.045	1.94	93	-0.79	100	3.9	0.0	83	232	70	66
200	27.382	0.138	0.045	1.93	93	-0.8	100	3.8	-0.1	83	234	70	66
201	27.519	0.137	0.045	1.93	93	-1.22	99	3.8	0.0	82	226	70	66
202	27.658	0.139	0.045	1.92	93	-1.51	100	3.8	0.0	82	225	70	66
203	27.794	0.136	0.045	1.94	93	-1.46	98	3.8	0.0	82	231	70	66
204	27.934	0.140	0.045	1.92	93	-1.52	101	3.8	0.0	82	226	70	66
205	28.070	0.136	0.045	1.93	93	-0.99	98	3.7	-0.1	82	228	70	66
206	28.208	0.138	0.045	1.94	93	-1.59	100	3.7	0.0	82	235	70	66
207	28.348	0.140	0.045	1.93	93	-0.95	101	3.7	0.0	82	236	70	66
208	28.482	0.134	0.045	1.94	93	-1.06	97	3.6	-0.1	83	247	70	66
209	28.624	0.142	0.045	1.97	93	-1.48	103	3.6	0.0	82	235	70	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
210	28.760	0.136	0.045	1.94	93	-0.91	98	3.6	0.0	82	231	70	66
211	28.897	0.137	0.045	1.94	93	-0.89	99	3.6	0.0	83	239	71	66
212	29.037	0.140	0.045	1.94	93	-1.02	101	3.6	0.0	82	235	71	66
213	29.171	0.134	0.045	1.92	93	-1.45	97	3.6	0.0	83	238	71	66
214	29.312	0.141	0.045	1.95	93	-0.95	102	3.5	-0.1	82	238	71	66
215	29.448	0.136	0.045	1.93	93	-1.33	98	3.5	0.0	82	229	71	66
216	29.585	0.137	0.045	1.94	93	-1.56	99	3.4	-0.1	83	237	71	66
217	29.725	0.140	0.045	1.96	93	-1.52	101	3.4	0.0	82	238	71	66
218	29.861	0.136	0.045	1.95	93	-0.89	98	3.4	0.0	83	234	71	67
219	30.001	0.140	0.045	1.94	93	-0.97	101	3.3	-0.1	83	243	71	67
220	30.137	0.136	0.045	1.93	93	-1.22	98	3.3	0.0	82	239	71	66
221	30.276	0.139	0.045	1.93	93	-1.3	100	3.4	0.1	82	228	71	67
222	30.413	0.137	0.045	1.95	93	-1.06	99	3.3	-0.1	83	234	71	67
223	30.550	0.137	0.045	1.93	93	-1.47	99	3.3	0.0	82	234	71	67
224	30.689	0.139	0.045	1.92	93	-0.78	100	3.2	-0.1	82	231	71	67
225	30.824	0.135	0.045	1.95	93	-0.91	98	3.2	0.0	83	240	71	67
226	30.965	0.141	0.045	1.94	93	-1.42	102	3.2	0.0	83	243	71	67
227	31.101	0.136	0.045	1.93	93	-0.81	98	3.1	-0.1	83	242	71	67
228	31.238	0.137	0.045	1.94	93	-1.36	99	3.1	0.0	83	243	71	67
229	31.379	0.141	0.045	1.94	93	-0.84	102	3.0	-0.1	83	233	71	67
230	31.512	0.133	0.045	1.92	93	-0.98	96	3.1	0.1	83	227	71	67
231	31.654	0.142	0.045	1.94	93	-1.4	103	3.0	-0.1	83	238	71	67
232	31.790	0.136	0.045	1.93	93	-1.45	98	3.1	0.1	83	229	71	67
233	31.927	0.137	0.045	1.94	93	-0.84	99	3.0	-0.1	83	229	71	67
234	32.067	0.140	0.045	1.93	93	-1.3	101	3.0	0.0	83	237	71	67
235	32.201	0.134	0.045	1.93	93	-0.97	97	3.0	0.0	82	227	71	67
236	32.341	0.140	0.045	1.95	93	-0.99	101	2.9	-0.1	83	223	71	67
237	32.478	0.137	0.045	1.94	93	-1.12	99	2.9	0.0	83	228	71	67
238	32.615	0.137	0.045	1.93	93	-1.08	99	2.8	-0.1	83	231	71	67
239	32.755	0.140	0.045	1.96	93	-1.12	101	2.9	0.1	82	225	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
240	32.890	0.135	0.045	1.93	94	-1.47	97	2.9	0.0	83	227	71	67
241	33.030	0.140	0.045	1.94	94	-1.43	101	2.9	0.0	82	221	71	67
242	33.167	0.137	0.045	1.93	94	-0.8	99	2.8	-0.1	82	211	71	67
243	33.305	0.138	0.045	1.92	94	-1.07	99	2.8	0.0	82	215	71	67
244	33.443	0.138	0.045	1.95	94	-1.43	99	2.8	0.0	82	221	71	67
245	33.579	0.136	0.045	1.94	94	-1.46	98	2.9	0.1	82	219	71	67
246	33.719	0.140	0.045	1.93	94	-0.87	101	2.7	-0.2	82	218	71	67
247	33.854	0.135	0.045	1.94	94	-1.02	97	2.7	0.0	82	227	71	67
248	33.994	0.140	0.045	1.93	94	-0.94	101	2.7	0.0	82	218	71	67
249	34.130	0.136	0.045	1.92	94	-1.44	98	2.7	0.0	82	218	71	67
250	34.268	0.138	0.045	1.93	94	-1.35	99	2.7	0.0	82	219	71	67
251	34.408	0.140	0.045	1.92	94	-1.48	101	2.6	-0.1	82	213	71	67
252	34.542	0.134	0.045	1.92	94	-1.19	97	2.6	0.0	82	213	71	67
253	34.684	0.142	0.045	1.94	94	-0.9	102	2.6	0.0	82	221	71	67
254	34.819	0.135	0.045	1.94	94	-1.5	97	2.6	0.0	81	214	71	67
255	34.956	0.137	0.045	1.93	94	-0.89	99	2.6	0.0	82	216	71	67
256	35.096	0.140	0.045	1.93	94	-1.45	101	2.5	-0.1	82	226	71	67
257	35.230	0.134	0.045	1.90	94	-1.08	97	2.5	0.0	82	220	71	67
258	35.371	0.141	0.045	1.94	94	-0.82	102	2.5	0.0	82	225	71	67
259	35.507	0.136	0.045	1.93	94	-1.32	98	2.5	0.0	82	230	71	67
260	35.644	0.137	0.045	1.93	94	-1.35	99	2.4	-0.1	82	220	71	67
261	35.784	0.140	0.045	1.94	94	-1.54	101	2.4	0.0	82	221	71	67
262	35.919	0.135	0.045	1.92	94	-0.77	97	2.3	-0.1	82	228	71	67
263	36.059	0.140	0.045	1.93	94	-1.18	101	2.4	0.1	82	223	71	67
264	36.196	0.137	0.045	1.95	94	-1.27	99	2.3	-0.1	82	225	71	67
265	36.334	0.138	0.045	1.93	94	-0.79	100	2.3	0.0	83	236	71	67
266	36.471	0.137	0.045	1.91	94	-1.31	99	2.2	-0.1	82	231	71	67
267	36.608	0.137	0.045	1.94	94	-1.45	99	2.2	0.0	83	238	71	67
268	36.747	0.139	0.045	1.92	94	-1.04	100	2.2	0.0	83	233	71	67
269	36.883	0.136	0.045	1.94	94	-1.42	98	2.2	0.0	83	221	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
270	37.023	0.140	0.045	1.94	94	-1.08	101	2.2	0.0	83	226	71	67
271	37.159	0.136	0.045	1.94	94	-1.52	98	2.2	0.0	83	230	71	67
272	37.296	0.137	0.045	1.94	94	-1.01	99	2.1	-0.1	83	224	71	67
273	37.437	0.141	0.045	1.92	94	-1.03	102	2.1	0.0	82	220	71	67
274	37.571	0.134	0.045	1.93	94	-0.77	97	2.1	0.0	83	228	71	67
275	37.712	0.141	0.045	1.93	94	-0.89	102	2.0	-0.1	82	232	71	67
276	37.848	0.136	0.045	1.94	94	-1.51	98	2.0	0.0	83	239	71	67
277	37.984	0.136	0.045	1.92	94	-1.52	98	2.0	0.0	83	238	71	67
278	38.125	0.141	0.045	1.94	94	-0.85	102	2.0	0.0	83	233	71	67
279	38.258	0.133	0.045	1.91	94	-1.47	96	1.9	-0.1	83	240	71	67
280	38.399	0.141	0.045	1.93	94	-1.43	102	1.8	-0.1	83	243	71	67
281	38.536	0.137	0.045	1.93	94	-1.04	99	1.9	0.1	83	239	71	67
282	38.672	0.136	0.045	1.94	94	-0.94	98	1.9	0.0	83	242	71	67
283	38.813	0.141	0.045	1.93	94	-1.33	102	1.7	-0.2	83	232	71	67
284	38.947	0.134	0.045	1.91	94	-1.39	97	2.0	0.3	83	226	71	67
285	39.087	0.140	0.045	1.92	94	-1.03	101	1.7	-0.3	83	231	71	67
286	39.223	0.136	0.045	1.91	94	-1.4	98	1.8	0.1	83	229	71	67
287	39.361	0.138	0.045	1.93	94	-1.17	100	1.8	0.0	83	232	71	67
288	39.499	0.138	0.045	1.95	94	-1	100	1.7	-0.1	83	235	71	67
289	39.635	0.136	0.045	1.93	94	-0.93	98	1.7	0.0	83	232	71	67
290	39.775	0.140	0.045	1.93	94	-1.05	101	1.7	0.0	83	233	71	67
291	39.911	0.136	0.045	1.92	94	-1.36	98	1.5	-0.2	83	240	71	67
292	40.050	0.139	0.045	1.91	94	-1.35	100	1.6	0.1	83	241	71	67
293	40.187	0.137	0.045	1.92	94	-1.33	99	1.6	0.0	83	245	71	67
294	40.324	0.137	0.045	1.94	94	-0.84	99	1.6	0.0	83	235	71	67
295	40.463	0.139	0.045	1.93	94	-1.54	100	1.5	-0.1	84	240	71	68
296	40.598	0.135	0.045	1.92	94	-1.43	97	1.5	0.0	84	244	72	68
297	40.738	0.140	0.045	1.93	94	-1.08	101	1.5	0.0	83	236	71	68
298	40.874	0.136	0.045	1.92	94	-1.51	98	1.5	0.0	83	231	71	67
299	41.011	0.137	0.045	1.93	94	-1.31	99	1.4	-0.1	84	242	72	68

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
300	41.151	0.140	0.045	1.94	94	-1.41	101	1.4	0.0	83	241	71	68
301	41.285	0.134	0.045	1.92	94	-1.37	97	1.4	0.0	83	237	71	67
302	41.426	0.141	0.045	1.93	94	-1.51	102	1.4	0.0	84	243	71	66
303	41.561	0.135	0.045	1.92	94	-1.38	97	1.3	-0.1	83	234	71	67
304	41.698	0.137	0.045	1.91	94	-1.13	99	1.3	0.0	83	229	71	67
305	41.838	0.140	0.045	1.93	94	-1.03	101	1.2	-0.1	84	238	71	67
306	41.971	0.133	0.045	1.92	94	-1.06	96	1.3	0.1	83	232	71	67
307	42.113	0.142	0.045	1.93	94	-1.32	102	1.2	-0.1	83	230	71	67
308	42.249	0.136	0.045	1.92	94	-1.15	98	1.3	0.1	83	228	71	67
309	42.385	0.136	0.045	1.93	94	-1.45	98	1.2	-0.1	83	220	71	67
310	42.525	0.140	0.045	1.94	94	-1.04	101	1.2	0.0	83	216	71	67
311	42.660	0.135	0.045	1.93	94	-1.45	97	1.2	0.0	83	217	71	65
312	42.800	0.140	0.045	1.91	95	-1.26	101	1.2	0.0	83	222	71	65
313	42.936	0.136	0.045	1.94	95	-0.86	98	1.0	-0.2	83	226	71	65
314	43.072	0.136	0.045	1.90	94	-0.92	98	1.1	0.1	83	238	71	66
315	43.212	0.140	0.045	1.93	94	-0.86	101	1.1	0.0	83	233	71	66
316	43.347	0.135	0.045	1.91	94	-1.03	97	1.0	-0.1	83	234	71	67
317	43.487	0.140	0.045	1.93	94	-1.51	101	1.0	0.0	84	247	71	67
318	43.623	0.136	0.045	1.92	94	-1.51	98	1.0	0.0	83	232	71	67
319	43.761	0.138	0.045	1.92	94	-1.3	100	0.9	-0.1	83	227	71	67
320	43.898	0.137	0.045	1.91	94	-0.89	99	0.8	-0.1	83	233	71	67
321	44.035	0.137	0.045	1.94	94	-0.84	99	0.9	0.1	83	223	71	67
322	44.174	0.139	0.045	1.91	94	-1.35	100	0.9	0.0	83	223	71	67
323	44.309	0.135	0.045	1.94	94	-1.54	97	0.9	0.0	83	231	71	67
324	44.449	0.140	0.045	1.93	94	-1.57	101	0.8	-0.1	83	226	71	67
325	44.585	0.136	0.045	1.93	94	-1.39	98	0.8	0.0	83	228	71	67
326	44.722	0.137	0.045	1.93	94	-1.37	99	0.8	0.0	83	230	71	67
327	44.861	0.139	0.045	1.92	94	-1.26	100	0.8	0.0	83	221	71	67
328	44.995	0.134	0.045	1.92	94	-1.49	97	0.8	0.0	83	228	71	67
329	45.135	0.140	0.045	1.92	94	-1.49	101	0.7	-0.1	83	227	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
330	45.271	0.136	0.045	1.91	94	-0.92	98	0.7	0.0	82	215	71	67
331	45.408	0.137	0.045	1.92	94	-0.95	99	0.7	0.0	82	215	71	67
332	45.547	0.139	0.045	1.91	94	-1.02	100	0.7	0.0	83	224	71	67
333	45.681	0.134	0.045	1.94	94	-1.5	97	0.6	-0.1	83	227	71	67
334	45.821	0.140	0.045	1.94	94	-1.27	101	0.7	0.1	83	228	71	67
335	45.956	0.135	0.045	1.90	94	-1.43	97	0.6	-0.1	83	235	71	67
336	46.093	0.137	0.045	1.92	94	-1.38	99	0.6	0.0	83	226	71	67
337	46.233	0.140	0.045	1.91	94	-1.36	101	0.6	0.0	83	227	71	67
338	46.366	0.133	0.045	1.92	95	-1.19	96	0.5	-0.1	83	231	71	67
339	46.508	0.142	0.045	1.93	94	-1.17	102	0.5	0.0	83	232	71	67
340	46.643	0.135	0.045	1.92	94	-1.13	97	0.5	0.0	83	239	71	67
341	46.779	0.136	0.045	1.92	94	-1.51	98	0.5	0.0	83	233	71	67
342	46.919	0.140	0.045	1.91	95	-1.37	101	0.4	-0.1	83	226	71	67
343	47.052	0.133	0.045	1.92	95	-1.58	96	0.4	0.0	83	231	71	67
344	47.193	0.141	0.045	1.92	95	-1.35	102	0.4	0.0	83	234	71	67
345	47.329	0.136	0.045	1.92	95	-1.51	98	0.4	0.0	83	231	71	67
346	47.465	0.136	0.045	1.93	95	-0.87	98	0.3	-0.1	83	241	71	67
347	47.604	0.139	0.045	1.91	95	-1.54	100	0.3	0.0	83	240	71	67
348	47.737	0.133	0.045	1.90	95	-0.99	96	0.3	0.0	83	238	72	67
349	47.878	0.141	0.045	1.92	95	-1.24	102	0.2	-0.1	83	240	72	67
350	48.013	0.135	0.045	1.91	95	-1.09	97	0.2	0.0	83	231	72	67
351	48.150	0.137	0.045	1.93	95	-1.2	99	0.2	0.0	83	232	72	67
352	48.289	0.139	0.045	1.92	95	-1.53	100	0.2	0.0	83	238	72	68
353	48.422	0.133	0.045	1.91	95	-1.08	96	0.2	0.0	83	234	72	68
354	48.563	0.141	0.045	1.93	95	-1.34	102	0.1	-0.1	83	241	72	68
355	48.698	0.135	0.045	1.91	95	-0.93	97	0.1	0.0	84	246	72	67
356	48.834	0.136	0.045	1.93	95	-1.04	98	0.1	0.0	83	234	72	68
357	48.974	0.140	0.045	1.91	95	-1.53	101	0.1	0.0	83	227	72	68
358	49.107	0.133	0.045	1.91	95	-1.05	96	0.0	-0.1	83	236	72	68
359	49.248	0.141	0.045	1.93	95	-1.61	102	0.0	0.0	83	232	72	68

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 2	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 10:00	Date: 2/6/2018	Recording Interval (min): 1
Ambient Vol (L): 1385.788	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.001 cfm @ -16 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
360	49.384	0.136	0.045	1.92	95	-1.19	98	0.0	0.0	83	234	72	68
Avg/Tot	49.384	0.137	0.045	1.93	89	-1.12	100			85	266	71	66

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
0	0.000		0.00	66	1		67	0.000	6.34	0.05
1	0.124	0.124	1.97	66	1.5	97	68	-0.040	5.44	0.07
2	0.257	0.133	1.97	66	1.71	104	69	-0.040	4.90	0.10
3	0.393	0.136	1.98	66	1.55	106	69	-0.040	4.28	0.11
4	0.527	0.134	1.96	67	2.1	104	70	-0.040	5.53	0.04
5	0.660	0.133	1.96	67	1.11	104	70	-0.030	5.05	0.08
6	0.794	0.134	1.95	67	1.34	104	70	-0.040	4.88	0.07
7	0.927	0.133	1.94	67	0.96	104	70	-0.030	3.80	0.16
8	1.059	0.132	1.94	67	1.57	103	71	-0.030	3.31	0.16
9	1.195	0.136	1.95	68	2	106	71	-0.040	3.92	0.13
10	1.325	0.130	1.94	68	1.66	101	71	-0.040	5.36	0.08
11	1.458	0.133	1.92	68	1.66	103	71	-0.040	5.53	0.06
12	1.593	0.135	1.94	68	1.71	105	71	-0.030	5.45	0.11
13	1.722	0.129	1.92	69	2.09	100	71	-0.040	5.71	0.06
14	1.856	0.134	1.93	69	2.1	104	72	-0.040	7.76	0.02
15	1.988	0.132	1.92	69	2.1	102	72	-0.030	3.09	0.23
16	2.120	0.132	1.92	69	0.9	102	72	-0.040	4.43	0.11
17	2.255	0.135	1.92	70	1.73	105	72	-0.040	6.04	0.07
18	2.385	0.130	1.91	70	1.09	101	72	-0.040	4.89	0.09
19	2.516	0.131	1.91	70	1.52	102	72	-0.030	4.24	0.10
20	2.650	0.134	1.90	71	1.84	104	72	-0.040	5.14	0.09
21	2.782	0.132	1.90	71	1.26	102	72	-0.030	3.21	0.25
22	2.914	0.132	1.92	71	0.88	102	72	-0.030	3.18	0.18
23	3.047	0.133	1.90	72	1.95	103	73	-0.040	6.70	0.03
24	3.178	0.131	1.91	72	1.04	101	73	-0.030	7.46	0.03
25	3.309	0.131	1.90	72	0.87	101	73	-0.030	4.07	0.16
26	3.444	0.135	1.89	73	1.79	104	73	-0.040	4.28	0.12
27	3.575	0.131	1.91	73	1.09	101	73	-0.040	5.61	0.05
28	3.706	0.131	1.90	74	1.67	101	73	-0.040	5.69	0.07
29	3.841	0.135	1.89	74	2.06	104	73	-0.040	6.10	0.04
30	3.971	0.130	1.90	74	1.18	100	73	-0.030	2.57	0.29

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
31	4.104	0.133	1.90	75	1.72	102	73	-0.030	2.31	0.19
32	4.237	0.133	1.90	75	1.25	102	73	-0.040	2.92	0.23
33	4.367	0.130	1.89	75	1.59	100	73	-0.040	4.89	0.09
34	4.503	0.136	1.89	76	1.07	104	73	-0.040	6.81	0.04
35	4.633	0.130	1.90	76	1.25	100	73	-0.040	5.88	0.08
36	4.765	0.132	1.89	76	1.31	101	73	-0.030	5.01	0.10
37	4.899	0.134	1.88	77	1.95	102	73	-0.040	6.30	0.04
38	5.031	0.132	1.89	77	0.92	101	74	-0.030	4.52	0.15
39	5.163	0.132	1.89	77	1.6	101	74	-0.040	3.56	0.18
40	5.297	0.134	1.88	77	1.38	102	74	-0.030	5.18	0.06
41	5.429	0.132	1.88	78	1.72	101	74	-0.040	6.36	0.04
42	5.561	0.132	1.89	78	1.49	101	74	-0.030	4.45	0.16
43	5.696	0.135	1.90	78	1.67	103	74	-0.030	3.65	0.16
44	5.826	0.130	1.89	79	2.02	99	74	-0.040	3.85	0.13
45	5.960	0.134	1.89	79	1.46	102	74	-0.040	4.15	0.12
46	6.095	0.135	1.89	79	1.81	103	74	-0.040	5.29	0.07
47	6.225	0.130	1.88	79	2.03	99	74	-0.040	5.67	0.05
48	6.360	0.135	1.88	80	1.67	103	74	-0.030	5.08	0.07
49	6.492	0.132	1.89	80	2.02	100	74	-0.030	5.27	0.07
50	6.624	0.132	1.88	80	1.26	100	74	-0.040	4.85	0.08
51	6.759	0.135	1.89	80	1.93	103	74	-0.040	3.72	0.15
52	6.891	0.132	1.89	81	1.39	100	74	-0.030	3.42	0.14
53	7.023	0.132	1.89	81	2.09	100	74	-0.040	4.84	0.08
54	7.158	0.135	1.89	81	1.93	102	74	-0.030	5.82	0.04
55	7.290	0.132	1.88	81	1.37	100	74	-0.040	4.48	0.15
56	7.422	0.132	1.89	82	1.8	100	74	-0.030	4.28	0.11
57	7.558	0.136	1.88	82	1.73	103	74	-0.030	4.98	0.08
58	7.688	0.130	1.88	82	1.13	99	74	-0.040	4.18	0.11
59	7.823	0.135	1.89	82	0.94	102	74	-0.040	4.84	0.08
60	7.956	0.133	1.90	82	1.21	101	74	-0.040	5.00	0.09
61	8.088	0.132	1.88	83	1.58	100	74	-0.030	5.43	0.06

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
62	8.223	0.135	1.89	83	1.56	102	74	-0.030	5.10	0.05
63	8.356	0.133	1.89	83	1.38	100	74	-0.030	4.81	0.06
64	8.488	0.132	1.88	83	1.73	99	74	-0.030	4.46	0.05
65	8.623	0.135	1.89	83	0.91	101	74	-0.030	4.04	0.06
66	8.756	0.133	1.89	84	1.64	100	73	-0.030	4.03	0.04
67	8.888	0.132	1.89	84	2.1	99	73	-0.030	3.99	0.05
68	9.024	0.136	1.87	84	2.08	102	73	-0.030	4.60	0.03
69	9.154	0.130	1.88	84	2.01	97	73	-0.020	4.98	0.04
70	9.290	0.136	1.88	84	2.05	102	73	-0.030	4.34	0.04
71	9.423	0.133	1.88	84	1.9	100	73	-0.030	3.68	0.05
72	9.556	0.133	1.90	85	0.88	99	73	-0.030	3.86	0.04
73	9.690	0.134	1.88	85	1.47	100	73	-0.040	4.81	0.02
74	9.824	0.134	1.87	85	1.62	100	73	-0.030	4.66	0.02
75	9.955	0.131	1.88	85	1.65	98	73	-0.040	4.43	0.05
76	10.092	0.137	1.88	85	1.66	102	73	-0.030	4.23	0.04
77	10.224	0.132	1.89	85	1.84	99	73	-0.030	4.02	0.06
78	10.357	0.133	1.88	85	2.09	99	73	-0.030	3.60	0.06
79	10.493	0.136	1.88	86	1.44	101	72	-0.030	4.28	0.03
80	10.623	0.130	1.87	86	1.94	97	72	-0.030	4.10	0.04
81	10.760	0.137	1.90	86	1.6	102	72	-0.030	3.73	0.05
82	10.892	0.132	1.88	86	1.39	98	72	-0.030	3.19	0.06
83	11.025	0.133	1.88	86	1.99	99	72	-0.030	4.14	0.03
84	11.160	0.135	1.89	86	1.45	101	72	-0.030	4.38	0.03
85	11.293	0.133	1.89	86	2.1	99	72	-0.030	4.75	0.04
86	11.426	0.133	1.89	86	1.94	99	72	-0.030	3.46	0.08
87	11.562	0.136	1.89	87	1.04	101	72	-0.030	3.71	0.05
88	11.694	0.132	1.89	87	2.02	98	72	-0.030	3.64	0.04
89	11.829	0.135	1.88	87	2.05	100	72	-0.030	4.95	0.04
90	11.962	0.133	1.88	87	1.33	99	72	-0.030	4.43	0.04
91	12.095	0.133	1.88	87	0.99	99	72	-0.030	4.99	0.04
92	12.230	0.135	1.88	87	1.07	100	72	-0.030	3.84	0.06

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
93	12.364	0.134	1.87	87	1.82	100	72	-0.030	4.24	0.03
94	12.496	0.132	1.89	87	1.43	98	72	-0.030	4.10	0.03
95	12.633	0.137	1.88	87	1.55	102	72	-0.030	4.91	0.03
96	12.765	0.132	1.88	88	1.38	98	72	-0.030	3.87	0.05
97	12.898	0.133	1.86	88	2.07	99	72	-0.030	4.06	0.05
98	13.034	0.136	1.88	88	1.01	101	72	-0.030	3.09	0.07
99	13.165	0.131	1.87	88	1.49	97	72	-0.030	3.66	0.05
100	13.302	0.137	1.88	88	2.05	102	72	-0.030	4.06	0.05
101	13.434	0.132	1.89	88	0.93	98	72	-0.030	5.06	0.03
102	13.567	0.133	1.85	88	1.02	99	72	-0.030	4.18	0.06
103	13.703	0.136	1.88	88	1.51	101	72	-0.030	4.73	0.04
104	13.836	0.133	1.88	88	2.05	99	72	-0.030	4.36	0.03
105	13.968	0.132	1.88	88	2.07	98	72	-0.030	4.57	0.02
106	14.105	0.137	1.87	88	1.33	102	72	-0.030	3.99	0.05
107	14.236	0.131	1.88	88	1.02	97	72	-0.030	4.07	0.04
108	14.372	0.136	1.88	88	1.88	101	72	-0.030	3.17	0.08
109	14.506	0.134	1.88	88	1.48	100	72	-0.030	3.82	0.05
110	14.639	0.133	1.88	89	1.7	99	72	-0.030	3.95	0.03
111	14.774	0.135	1.87	89	1.68	100	72	-0.040	3.94	0.05
112	14.908	0.134	1.88	89	1.61	99	72	-0.030	4.32	0.02
113	15.040	0.132	1.87	89	1.82	98	72	-0.030	4.53	0.03
114	15.176	0.136	1.88	89	0.92	101	72	-0.030	4.25	0.04
115	15.308	0.132	1.88	89	1.32	98	72	-0.030	3.70	0.06
116	15.443	0.135	1.87	89	1.67	100	72	-0.030	3.69	0.04
117	15.578	0.135	1.88	89	1.61	100	72	-0.030	3.65	0.04
118	15.710	0.132	1.88	89	2.06	98	72	-0.030	3.93	0.03
119	15.846	0.136	1.88	89	1.59	101	72	-0.030	4.26	0.03
120	15.979	0.133	1.87	89	1.4	99	72	-0.030	4.43	0.04
121	16.112	0.133	1.88	89	0.97	99	72	-0.030	4.17	0.03
122	16.247	0.135	1.87	89	1.85	100	72	-0.030	4.88	0.02
123	16.381	0.134	1.87	89	1.58	99	72	-0.030	4.15	0.05

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
124	16.513	0.132	1.86	89	1.38	98	72	-0.030	4.46	0.04
125	16.650	0.137	1.88	89	1.69	102	72	-0.030	3.61	0.06
126	16.780	0.130	1.87	89	1.65	96	72	-0.030	4.15	0.04
127	16.917	0.137	1.86	90	1.07	101	72	-0.030	3.87	0.04
128	17.050	0.133	1.88	90	1.15	98	72	-0.030	4.47	0.03
129	17.183	0.133	1.87	90	1.36	98	72	-0.030	3.77	0.07
130	17.319	0.136	1.86	90	1.86	101	72	-0.030	3.88	0.04
131	17.452	0.133	1.86	90	1.53	98	72	-0.030	3.62	0.05
132	17.584	0.132	1.87	90	0.98	98	72	-0.030	3.29	0.05
133	17.721	0.137	1.88	90	1.51	101	72	-0.030	3.62	0.03
134	17.852	0.131	1.87	90	1.76	97	72	-0.030	4.13	0.04
135	17.988	0.136	1.86	90	1.48	101	72	-0.040	4.61	0.02
136	18.122	0.134	1.87	90	1.46	99	72	-0.030	4.27	0.03
137	18.255	0.133	1.87	90	1.03	98	72	-0.030	4.58	0.04
138	18.390	0.135	1.87	90	1.31	100	72	-0.030	4.98	0.02
139	18.524	0.134	1.86	90	1.55	99	72	-0.040	4.37	0.04
140	18.656	0.132	1.88	90	2.03	98	72	-0.040	3.69	0.05
141	18.792	0.136	1.87	90	2.05	101	72	-0.030	4.11	0.04
142	18.924	0.132	1.87	90	1.48	98	72	-0.040	3.77	0.04
143	19.059	0.135	1.87	90	1.63	100	72	-0.030	3.75	0.02
144	19.194	0.135	1.86	90	1	100	72	-0.030	4.02	0.04
145	19.326	0.132	1.86	90	1.96	98	72	-0.030	4.48	0.03
146	19.462	0.136	1.87	90	2.11	101	72	-0.040	3.16	0.09
147	19.594	0.132	1.86	90	1.61	98	72	-0.030	3.86	0.04
148	19.728	0.134	1.87	90	1.26	99	72	-0.030	4.14	0.03
149	19.863	0.135	1.86	90	1.38	100	72	-0.030	4.95	0.03
150	19.997	0.134	1.87	90	2.09	99	72	-0.040	4.39	0.05
151	20.129	0.132	1.87	90	1.03	98	72	-0.030	4.55	0.03
152	20.266	0.137	1.84	90	1.03	101	72	-0.040	3.72	0.05
153	20.396	0.130	1.87	90	1.01	96	72	-0.030	3.96	0.03
154	20.532	0.136	1.87	90	2.04	101	72	-0.030	4.00	0.02

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
155	20.666	0.134	1.86	90	1.17	99	72	-0.040	3.98	0.04
156	20.798	0.132	1.88	91	1.82	98	72	-0.030	3.47	0.04
157	20.934	0.136	1.87	91	1.2	101	72	-0.030	3.63	0.04
158	21.067	0.133	1.88	91	1.37	98	72	-0.030	4.10	0.02
159	21.200	0.133	1.87	91	2.09	98	72	-0.030	3.95	0.03
160	21.336	0.136	1.86	91	2.12	101	72	-0.030	4.13	0.03
161	21.467	0.131	1.86	91	2.11	97	72	-0.030	3.88	0.04
162	21.603	0.136	1.85	91	1.93	101	72	-0.030	4.51	0.03
163	21.737	0.134	1.87	91	1.62	99	72	-0.030	4.48	0.03
164	21.869	0.132	1.86	91	1.54	98	72	-0.030	4.15	0.03
165	22.005	0.136	1.87	91	1.74	101	73	-0.030	3.75	0.03
166	22.138	0.133	1.86	91	1.77	98	73	-0.030	3.23	0.04
167	22.271	0.133	1.87	91	1.25	98	73	-0.030	2.89	0.05
168	22.406	0.135	1.85	91	2.11	100	73	-0.030	3.71	0.03
169	22.539	0.133	1.85	91	1.93	98	73	-0.030	3.96	0.03
170	22.672	0.133	1.86	91	1.74	98	73	-0.030	3.85	0.03
171	22.809	0.137	1.87	91	2.06	101	73	-0.030	3.99	0.04
172	22.939	0.130	1.86	91	2	96	73	-0.030	4.21	0.03
173	23.075	0.136	1.84	91	1.59	101	73	-0.030	4.51	0.02
174	23.208	0.133	1.86	91	2.05	98	73	-0.030	5.01	0.02
175	23.341	0.133	1.87	91	1.67	98	73	-0.040	4.30	0.04
176	23.477	0.136	1.87	91	1.4	101	73	-0.030	4.21	0.03
177	23.610	0.133	1.85	91	1.35	98	73	-0.030	3.13	0.07
178	23.742	0.132	1.87	91	1.77	98	73	-0.030	3.74	0.06
179	23.879	0.137	1.87	91	1.71	101	73	-0.030	3.90	0.04
180	24.010	0.131	1.85	91	1.92	97	73	-0.030	4.74	0.03
181	24.145	0.135	1.85	91	1.82	100	73	-0.030	4.49	0.03
182	24.279	0.134	1.87	91	1.04	99	73	-0.020	4.34	0.04
183	24.411	0.132	1.86	91	2.06	98	73	-0.030	3.64	0.05
184	24.547	0.136	1.87	91	1.02	101	73	-0.030	4.05	0.05
185	24.680	0.133	1.84	91	1.36	98	73	-0.030	2.87	0.11

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 2Technician: SJBDate: 2/6/2018Meter Box Y Factor: 1.000 (B)Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
186	24.813	0.133	1.87	91	1.03	98	73	-0.030	2.35	0.10
187	24.948	0.135	1.85	91	1.14	100	73	-0.020	2.96	0.05
188	25.081	0.133	1.86	91	1.32	98	73	-0.020	2.48	0.06
189	25.213	0.132	1.86	91	1.92	97	73	-0.030	2.17	0.06
190	25.350	0.137	1.87	91	1.44	101	72	-0.030	2.86	0.04
191	25.482	0.132	1.92	91	1.34	97	72	-0.030	2.81	0.05
192	25.620	0.138	1.92	91	2.19	102	72	-0.020	2.22	0.06
193	25.756	0.136	1.91	91	2.04	100	72	-0.030	2.22	0.08
194	25.890	0.134	1.93	91	1.42	99	71	-0.030	3.05	0.03
195	26.029	0.139	1.91	91	1.17	103	71	-0.020	2.93	0.04
196	26.163	0.134	1.93	91	1.68	99	72	-0.030	3.27	0.03
197	26.300	0.137	1.92	91	1.79	101	72	-0.020	2.89	0.04
198	26.435	0.135	1.92	91	0.91	100	72	-0.020	2.56	0.05
199	26.571	0.136	1.91	91	1.14	100	72	-0.030	3.21	0.02
200	26.708	0.137	1.92	91	1.7	101	72	-0.020	2.69	0.06
201	26.843	0.135	1.92	91	1.66	100	72	-0.020	1.96	0.08
202	26.979	0.136	1.92	91	2.2	100	72	-0.020	2.40	0.05
203	27.116	0.137	1.93	91	2.15	101	72	-0.020	2.57	0.05
204	27.250	0.134	1.91	91	2.29	99	72	-0.020	2.05	0.06
205	27.388	0.138	1.92	91	1.77	102	72	-0.020	2.17	0.06
206	27.523	0.135	1.90	91	2.1	100	72	-0.020	2.67	0.04
207	27.658	0.135	1.90	91	1.64	100	72	-0.020	2.33	0.06
208	27.796	0.138	1.93	91	1.83	102	72	-0.030	2.69	0.06
209	27.930	0.134	1.92	91	2.14	99	72	-0.020	3.17	0.03
210	28.067	0.137	1.93	91	1.53	101	72	-0.030	3.20	0.05
211	28.203	0.136	1.91	91	1.06	100	72	-0.030	3.62	0.03
212	28.337	0.134	1.91	91	1.66	99	72	-0.020	2.55	0.09
213	28.476	0.139	1.93	91	2.14	103	72	-0.030	2.24	0.09
214	28.609	0.133	1.91	91	1.06	98	72	-0.020	2.93	0.04
215	28.747	0.138	1.92	91	2.23	102	72	-0.030	2.73	0.04
216	28.882	0.135	1.92	91	1.63	100	72	-0.030	2.93	0.03

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
217	29.017	0.135	1.92	91	1.34	100	72	-0.020	2.84	0.06
218	29.155	0.138	1.91	91	2.18	102	72	-0.020	2.29	0.09
219	29.288	0.133	1.91	91	2.11	98	72	-0.030	2.98	0.05
220	29.426	0.138	1.92	91	2.21	102	72	-0.020	2.97	0.06
221	29.561	0.135	1.92	91	2.25	100	72	-0.020	2.71	0.06
222	29.696	0.135	1.91	91	1.65	100	72	-0.030	3.34	0.04
223	29.833	0.137	1.91	91	2.2	101	72	-0.020	2.93	0.07
224	29.969	0.136	1.92	91	1.02	100	72	-0.030	2.12	0.10
225	30.104	0.135	1.90	91	1.17	100	72	-0.030	2.53	0.07
226	30.241	0.137	1.92	91	2.17	101	72	-0.020	2.75	0.06
227	30.375	0.134	1.90	91	1.44	99	72	-0.030	2.49	0.08
228	30.512	0.137	1.90	91	1.69	101	72	-0.030	3.24	0.05
229	30.648	0.136	1.92	91	2.17	100	72	-0.020	3.47	0.03
230	30.782	0.134	1.92	91	1.1	99	72	-0.020	3.08	0.04
231	30.920	0.138	1.90	91	1.25	102	72	-0.020	2.97	0.04
232	31.053	0.133	1.92	91	1.07	98	72	-0.020	2.16	0.07
233	31.192	0.139	1.92	91	1.95	103	72	-0.020	1.85	0.07
234	31.327	0.135	1.91	91	1.45	100	72	-0.020	2.65	0.04
235	31.461	0.134	1.92	91	2.17	99	72	-0.020	2.43	0.07
236	31.599	0.138	1.90	92	1.53	102	72	-0.020	2.28	0.06
237	31.733	0.134	1.92	92	1.32	99	72	-0.020	2.81	0.04
238	31.870	0.137	1.92	92	2.2	101	72	-0.020	2.38	0.08
239	32.006	0.136	1.91	92	2.2	100	72	-0.020	2.02	0.07
240	32.140	0.134	1.90	92	1.1	99	72	-0.020	2.48	0.04
241	32.277	0.137	1.91	92	1.08	101	72	-0.020	2.73	0.05
242	32.413	0.136	1.91	92	1.7	100	72	-0.020	2.33	0.07
243	32.548	0.135	1.91	92	1.06	99	72	-0.020	2.42	0.05
244	32.685	0.137	1.92	92	2.16	101	72	-0.020	2.13	0.07
245	32.819	0.134	1.91	92	1.96	99	72	-0.020	1.49	0.09
246	32.956	0.137	1.91	92	1.48	101	72	-0.020	1.87	0.04
247	33.092	0.136	1.91	92	1.64	100	72	-0.020	2.45	0.03

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
248	33.226	0.134	1.91	92	2.24	99	72	-0.020	2.32	0.04
249	33.364	0.138	1.91	92	0.84	102	72	-0.020	2.28	0.04
250	33.497	0.133	1.91	92	2.11	98	72	-0.020	2.74	0.04
251	33.636	0.139	1.92	92	1.73	102	72	-0.020	2.26	0.07
252	33.770	0.134	1.90	92	1.66	99	72	-0.020	2.17	0.07
253	33.905	0.135	1.92	92	1.47	99	72	-0.020	2.30	0.05
254	34.043	0.138	1.90	92	1.66	101	72	-0.010	1.91	0.06
255	34.176	0.133	1.90	92	1.88	98	72	-0.020	1.95	0.05
256	34.313	0.137	1.91	92	0.93	101	72	-0.020	2.51	0.03
257	34.449	0.136	1.91	92	2.21	100	72	-0.020	2.29	0.04
258	34.583	0.134	1.90	92	1.28	99	72	-0.030	2.26	0.06
259	34.720	0.137	1.91	92	1.79	101	72	-0.020	2.92	0.03
260	34.856	0.136	1.91	92	1.25	100	72	-0.020	2.62	0.05
261	34.990	0.134	1.89	92	0.99	99	72	-0.020	2.73	0.05
262	35.128	0.138	1.90	92	1.2	102	72	-0.020	2.92	0.03
263	35.261	0.133	1.90	92	1.65	98	72	-0.020	2.28	0.08
264	35.398	0.137	1.92	92	1.21	101	72	-0.020	2.12	0.07
265	35.534	0.136	1.90	92	1.92	100	72	-0.030	2.65	0.04
266	35.668	0.134	1.92	92	0.97	99	72	-0.020	2.47	0.05
267	35.806	0.138	1.91	92	2.22	102	72	-0.020	2.54	0.05
268	35.939	0.133	1.90	92	1.34	98	72	-0.020	3.23	0.03
269	36.077	0.138	1.89	92	0.89	102	72	-0.020	2.84	0.04
270	36.211	0.134	1.91	92	1.49	99	72	-0.020	2.93	0.03
271	36.347	0.136	1.91	92	2.09	100	72	-0.020	2.65	0.06
272	36.484	0.137	1.91	92	1.09	101	72	-0.020	1.86	0.12
273	36.618	0.134	1.91	92	1.94	99	72	-0.020	2.13	0.07
274	36.754	0.136	1.91	92	1.69	100	72	-0.020	2.72	0.05
275	36.890	0.136	1.89	92	1.39	100	72	-0.020	2.34	0.07
276	37.024	0.134	1.89	92	1.85	99	72	-0.020	2.18	0.05
277	37.162	0.138	1.91	92	1.09	102	72	-0.020	2.55	0.04
278	37.297	0.135	1.90	92	1.83	99	72	-0.020	2.97	0.03

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
279	37.430	0.133	1.90	92	1.97	98	73	-0.030	3.32	0.02
280	37.570	0.140	1.92	92	2.3	103	73	-0.030	3.24	0.05
281	37.701	0.131	1.88	92	2.3	96	73	-0.020	2.63	0.06
282	37.840	0.139	1.91	92	2.27	102	73	-0.030	2.85	0.05
283	37.975	0.135	1.90	92	2.1	99	73	-0.020	3.33	0.04
284	38.108	0.133	1.90	92	2.19	98	73	-0.020	2.81	0.05
285	38.246	0.138	1.89	92	1.43	102	73	-0.020	2.75	0.05
286	38.379	0.133	1.88	92	1.87	98	73	-0.020	2.41	0.06
287	38.517	0.138	1.90	92	1.78	102	73	-0.020	1.89	0.09
288	38.652	0.135	1.91	92	1.76	99	73	-0.020	2.20	0.06
289	38.786	0.134	1.89	92	1.1	99	73	-0.020	2.47	0.04
290	38.923	0.137	1.90	92	1.25	101	73	-0.020	2.58	0.03
291	39.058	0.135	1.90	92	1.51	99	73	-0.030	2.79	0.03
292	39.192	0.134	1.90	92	2.25	99	73	-0.030	2.70	0.05
293	39.330	0.138	1.90	92	1.79	102	73	-0.030	2.66	0.04
294	39.463	0.133	1.90	92	2.24	98	73	-0.020	3.12	0.03
295	39.601	0.138	1.90	92	1.03	102	73	-0.030	3.21	0.03
296	39.736	0.135	1.90	92	1.82	100	73	-0.030	3.35	0.03
297	39.869	0.133	1.89	92	1.03	98	73	-0.020	2.78	0.04
298	40.008	0.139	1.89	92	1.24	102	73	-0.020	2.62	0.04
299	40.141	0.133	1.90	92	2.25	98	73	-0.020	3.07	0.02
300	40.277	0.136	1.90	92	2.34	100	73	-0.030	2.71	0.06
301	40.412	0.135	1.90	92	1.31	99	73	-0.020	2.17	0.07
302	40.547	0.135	1.89	92	1.14	100	73	-0.030	3.31	0.02
303	40.684	0.137	1.89	92	2.15	101	73	-0.020	3.32	0.04
304	40.819	0.135	1.90	92	1	99	73	-0.020	2.56	0.06
305	40.953	0.134	1.89	92	1.48	99	73	-0.020	3.02	0.03
306	41.091	0.138	1.90	92	2.01	102	73	-0.030	2.52	0.07
307	41.224	0.133	1.90	92	1.73	98	73	-0.020	2.13	0.08
308	41.361	0.137	1.91	92	1.71	101	73	-0.020	2.88	0.04
309	41.496	0.135	1.89	92	1.73	99	73	-0.020	2.59	0.04

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
310	41.630	0.134	1.90	92	2.06	99	73	-0.020	2.28	0.05
311	41.768	0.138	1.89	92	1.23	102	73	-0.020	2.21	0.03
312	41.901	0.133	1.90	92	1.71	98	72	-0.020	1.79	0.07
313	42.038	0.137	1.90	93	2.06	101	72	-0.020	1.71	0.05
314	42.173	0.135	1.89	92	1.55	99	72	-0.030	1.95	0.06
315	42.308	0.135	1.90	92	1.19	99	72	-0.020	2.50	0.03
316	42.444	0.136	1.89	92	2.22	100	72	-0.030	2.89	0.03
317	42.579	0.135	1.90	92	1.14	100	72	-0.030	3.54	0.03
318	42.714	0.135	1.89	92	2.23	99	72	-0.030	3.09	0.05
319	42.851	0.137	1.91	92	2.11	101	72	-0.020	2.86	0.05
320	42.984	0.133	1.89	92	1.87	98	72	-0.030	3.72	0.03
321	43.121	0.137	1.90	92	1.04	101	72	-0.020	2.83	0.09
322	43.256	0.135	1.89	92	1.59	99	72	-0.020	2.05	0.10
323	43.390	0.134	1.90	92	1.06	99	72	-0.020	2.50	0.05
324	43.528	0.138	1.89	92	1.99	102	72	-0.020	2.21	0.05
325	43.661	0.133	1.89	92	1.64	98	72	-0.020	2.02	0.06
326	43.798	0.137	1.89	92	1.08	101	72	-0.020	2.68	0.04
327	43.933	0.135	1.89	92	2.2	99	72	-0.020	2.53	0.04
328	44.068	0.135	1.89	92	2.26	99	73	-0.020	2.44	0.04
329	44.204	0.136	1.89	92	1.14	100	73	-0.020	2.50	0.04
330	44.339	0.135	1.89	92	1.36	99	73	-0.020	2.11	0.07
331	44.473	0.134	1.90	92	1.03	99	73	-0.020	2.39	0.05
332	44.610	0.137	1.90	92	2.12	101	73	-0.020	2.56	0.04
333	44.743	0.133	1.89	92	1.34	98	73	-0.020	1.84	0.09
334	44.880	0.137	1.90	92	1.68	101	73	-0.020	1.76	0.08
335	45.015	0.135	1.89	92	1.03	99	73	-0.030	2.49	0.04
336	45.149	0.134	1.89	93	2.23	99	73	-0.020	2.89	0.03
337	45.287	0.138	1.89	93	2.24	101	73	-0.020	2.81	0.04
338	45.420	0.133	1.90	93	1.78	98	73	-0.020	3.00	0.03
339	45.556	0.136	1.88	93	1.84	100	73	-0.020	2.66	0.06
340	45.691	0.135	1.90	93	1.06	99	73	-0.030	2.41	0.07

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/6/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
341	45.826	0.135	1.88	93	0.98	99	73	-0.020	2.66	0.04
342	45.962	0.136	1.88	93	1.89	100	73	-0.020	2.76	0.04
343	46.097	0.135	1.90	93	1.49	99	73	-0.030	3.02	0.03
344	46.231	0.134	1.89	93	1.02	99	73	-0.020	3.10	0.05
345	46.369	0.138	1.88	93	2.22	101	73	-0.020	2.23	0.10
346	46.501	0.132	1.88	93	2.32	97	73	-0.030	2.36	0.07
347	46.638	0.137	1.89	93	2.32	101	73	-0.020	2.99	0.03
348	46.773	0.135	1.89	93	2.29	99	73	-0.020	2.68	0.04
349	46.906	0.133	1.89	93	2.3	98	73	-0.030	3.02	0.03
350	47.044	0.138	1.89	93	1.36	101	73	-0.020	3.40	0.02
351	47.177	0.133	1.88	93	1.8	98	73	-0.020	2.86	0.04
352	47.313	0.136	1.88	93	1.9	100	73	-0.020	2.76	0.04
353	47.449	0.136	1.90	93	1.19	100	73	-0.020	2.55	0.05
354	47.583	0.134	1.89	93	2.07	99	73	-0.030	2.25	0.07
355	47.719	0.136	1.89	93	1.48	100	73	-0.020	2.61	0.04
356	47.854	0.135	1.90	93	2.03	99	73	-0.020	2.73	0.03
357	47.988	0.134	1.88	93	1.12	99	73	-0.020	2.81	0.03
358	48.126	0.138	1.88	93	1.07	101	73	-0.030	3.59	0.02
359	48.258	0.132	1.89	93	1.06	97	73	-0.020	2.87	0.06
360	48.396	0.138	1.89	93	2.04	101	73	-0.020	2.05	0.09
Avg/Tot	48.396	0.134	1.89	88	1.62	100			3.51	0.06

LAB SAMPLE DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 2

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/6/2018

TRAIN A (1st Hour)

Sample Component	Sample Type	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3187	119.2	118.3	0.9
B. Rear filter catch	Filter				0.0
C. Probe catch*	Probe				0.0
D. O-Ring catch*	O-Ring				0.0

Sub-Total Total Particulate, mg: 0.9

TRAIN A (Post 1st hour)

Sample Component	Sample Type	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3188	122.2	118.8	3.4
B. Rear filter catch	Filter	3189	116.9	117.2	-0.3
C. Probe catch*	Probe	10A	116826.5	116826.4	0.1
D. O-Ring catch*	O-Ring	4A	3531.2	3530.2	1.0

Sub-Total Total Particulate, mg: 4.2

Train A Aggregate Total Particulate, mg: **5.1**

TRAIN B

Sample Component	Reagent	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3190	123.9	119.8	4.1
B. Rear filter catch	Filter	3191	118.0	118.3	-0.3
C. Probe catch*	Probe	10B	117167.8	117167.8	0.0
D. O-Ring catch*	O-Ring	4B	3550.1	3549.5	0.6

Total Particulate, mg: **4.4**

AMBIENT

Sample Component	Reagent	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Filter catch*	Filter	3192	118.6	118.6	0.0
B. O-Ring Catch	O-Ring	4 AMB	1679.5	1679.5	0.0

Total Particulate, mg: **0.0**

*Particulate catch that results in a negative number, is assumed to be zero for probes and O-rings, negative numbers for filters are assumed to be part of the O-Ring weight.

ASTM E2779 Pellet Heater Run Sheets

Client: United States Stove Company Job Number: 18-405
 Model: 5770 Run Number: 2 Test Date: 2/6/2018

Pellet Heater Run Notes

Pellet Heater Control Settings

High Burn Rate Settings: Heat Setting #5, Air inlet damper set to half open.

Medium Burn Rate Settings: Heat Setting #2, Air inlet damper set to fully closed.

Low Burn Rate Settings: Heat Setting #1, Air inlet damper set to fully closed.

Preburn Notes

Preburn Start Time: 9:00

Time	Notes
N/A	N/A

Test Notes

Test Burn Start Time: 10:00

Time	Notes
60 min 180 min 360 min	Changed 1-hour filter, set to medium burn rate setting. Changed to Low test setting. End of Test.

Test Burn End Time: 16:00

Background Filter Volume (L): 1385.788

Filter Data

Train	A	A	A	A	A	B	B	B	B	AMB	AMB
Element	Front Filter (First Hour)	Front Filter (Remainder)	Rear Filter	Probe	O-Ring Pair	Front Filter	Rear Filter	Probe	O-Ring Pair	Filter	O-Ring Pair
ID #	3187	3188	3189	10A	4A	3190	3191	10B	4B	3192	4 AMB
Tare (mg)	118.3	118.8	117.2	116826.4	3530.2	119.8	118.3	117167.8	3549.5	118.6	1679.5
Final Weight (mg)	119.2	122.2	116.9	116826.5	3531.2	123.9	118.0	117167.8	3550.1	118.6	1679.5

Sample Train Leak Check: A: 0.002 @ -19 "Hg B: 0.000 @ -15 "Hg

Technician Signature: 

Date: 3/19/2018

ASTM E2779 Pellet Heater Run Sheets

Client: United States Stove Company Job Number: 18-405
 Model: 5770 Run Number: 2 Test Date: 2/6/2018

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO₂ (%): 17.06 CO (%): 4.25
 Mid Gas CO₂ (%): 10.02 CO (%): 2.52

Calibration Results:

	Pre Test			Post Test		
	Zero	Mid	Span	Zero	Mid	Span
Time	9:30	9:32	9:35	16:20	16:20	16:20
CO ₂	0.00	10.15	17.06	0.01	10.06	17.10
CO	0.000	2.508	4.250	0.018	2.479	4.289

Flue Gas Probe Leak Check: Initial: No Leakage Final: No Leakage

Dilution Tunnel Flow

Pitot Tube Leak Test: Initial: No Leakage Final: No Leakage

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center
dP (inH₂O):	0.044	0.045	0.045	0.044	0.043	0.046	0.046	0.048	0.045
Temp (°F):	92	92	92	92	92	92	92	92	92

Dilution Tunnel Static Pressure (inH₂O): -0.120

Supplemental Data

Room Air Velocity (ft/min): Initial: <50 Final: <50

Scale Audit (lbs): Initial: 10 Final: 10

Stack Diameter (in): 3

Induced Draft (in H₂O): 0

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series: Date: 2/2/2018

	Initial	Middle	Ending
P _b (inHg)	30.25	30.28	30.23
RH (%)	38.5	40.2	39.6

Technician Signature: 

Date: 3/19/2018

PELLET TEST DATA PACKET
ASTM E2779/E2515



Run 3 Data Summary

USSC

Model : 5770

Job #: 18-405

A handwritten signature in dark ink, appearing to be "R. L.", is written above a horizontal line.

Techician Signature

3/20/2018

Date

TEST RESULTS - ASTM E2779 / ASTM E2515

Client: USSCModel: 5770Run #: 3Job #: 18-405Tracking #: 0001Technician: SJBDate: 2/8/2018

Burn Rate Summary	
High Burn Rate (dry kg/hr)	1.36
Medium Burn Rate (dry kg/hr)	0.66
Low Burn Rate (dry kg/hr)	0.69
Overall Burn Rate (dry kg/hr)	0.79

48.4% of High Burn Rate

50.5% of High Burn Rate

	Ambient Sample	Sample Train A	Sample Train B	1st Hour Filter
Total Sample Volume (ft ³)	59.590	49.520	48.628	8.127
Average Gas Velocity in Dilution Tunnel (ft/sec)	14.2			
Average Gas Flow Rate in Dilution Tunnel (dscf/min)	9632.3			
Average Gas Meter Temperature (°F)	66.2	89.3	87.3	74.4
Total Sample Volume (dscf)	59.971	47.873	47.418	8.075
Average Tunnel Temperature (°F)	84.3			
Total Time of Test (min)	360			
Total Particulate Catch (mg)	0.0	4.4	4.0	1.0
Particulate Concentration, dry-standard (g/dscf)	0.0000000	0.0000919	0.0000844	0.0001238
Total PM Emissions (g)	0.00	5.31	4.88	1.19
Particulate Emission Rate (g/hr)	0.00	0.89	0.81	1.19
Emissions Factor (g/kg)	-	1.12	1.03	0.87
Difference from Average Total Particulate Emissions (g)	-	0.22	0.22	-
Difference from Average Emissions Factor (g/kg)	-	0.05	0.05	-

Final Average Results	
Total Particulate Emissions (g)	5.09
Particulate Emission Rate (g/hr)	0.85
Emissions Factor (g/kg)	1.07
HHV Efficiency (%)	70.0%
LHV Efficiency (%)	74.8%
CO Emissions (g/min)	0.41

Dual Train Precision:
Individual Train
Difference from
Average = 4.3%

Quality Checks	Requirement	Observed	Result
Dual Train Precision	Each train within 7.5% of average emissions (in grams), or emission factors within 0.5 g/kg	See Above	OK
Filter Temps	<90 °F	74	OK
Face Velocity	< 30 ft/min	7.7	OK
Leakage Rate	Less than 4% of average sample rate	0 cfm	OK
Ambient Temp	55-90 °F	Min: 62 / Max: 68	OK
Negative Probe Weight Evaluation	<5% of Total Catch	Probe Catch Not Negative	OK
Pro-Rate Variation	90% of readings between 90-110%; none greater than 120% or less than 80%	See Data Tabs	OK
Medium Burn Rate	< 50% of High	48.4%	OK

All negative filter weights were appropriately handled, for informational purposes, the following emissions rates have been calculated with negative weights adjusted to zero, which resulted in the following values: Total Particulate = 4.90 g, Emissions Rate = 0.82 g/hr, Emissions Factor = 1.04 g/kg
These results are informational only, correct numbers are as reported above.

Overall Pellet Test Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/08/18
Run: 3
Control #: 18-405
Test Duration: 360
Output Category: Integrated

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	70.0%	74.8%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	70.3%	75.2%

Output Rate (kJ/h)	11,309	10,728	(Btu/h)
Burn Rate (kg/h)	0.79	1.75	(lb/h)
Input (kJ/h)	16,157	15,327	(Btu/h)

Test Load Weight (dry kg)	4.75	10.48	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	5.09		
CO (g)	148		
Test Duration (h)	6.00		

Emissions	Particulate	CO
g/MJ Output	0.08	2.18
g/kg Dry Fuel	1.07	31.11
g/h	0.85	24.65
g/min	0.01	0.41
lb/MM Btu Output	0.17	5.06

Air/Fuel Ratio (A/F)	34.08
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VERSION:

2.2

12/14/2009

Max Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/08/18
Run: 3
Control #: 18-405
Test Duration: 60
Output Category: Maximum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	70.5%	75.4%
Combustion Efficiency	99.1%	99.1%
Heat Transfer Efficiency	71.2%	76.0%

Output Rate (kJ/h)	19,627	18,619	(Btu/h)
Burn Rate (kg/h)	1.36	3.01	(lb/h)
Input (kJ/h)	27,826	26,396	(Btu/h)

Test Load Weight (dry kg)	1.36	3.01	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	37		
Test Duration (h)	1.00		

Emissions	Particulate	CO
g/MJ Output	N/A	1.86
g/kg Dry Fuel	N/A	26.83
g/h	N/A	36.61
g/min	N/A	0.61
lb/MM Btu Output	N/A	4.33

Air/Fuel Ratio (A/F)	23.24
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VERSION:

2.2

12/14/2009

Medium Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/08/18
Run: 3
Control #: 18-405
Test Duration: 120
Output Category: Medium

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	69.1%	73.9%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	69.5%	74.3%

Output Rate (kJ/h)	9,308	8,830	(Btu/h)
Burn Rate (kg/h)	0.66	1.45	(lb/h)
Input (kJ/h)	13,464	12,772	(Btu/h)

Test Load Weight (dry kg)	1.32	2.91	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	45		
Test Duration (h)	2.00		

Emissions	Particulate	CO
g/MJ Output	N/A	2.40
g/kg Dry Fuel	N/A	33.80
g/h	N/A	22.31
g/min	N/A	0.37
lb/MM Btu Output	N/A	5.57

Air/Fuel Ratio (A/F)	37.48
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VERSION:

2.2

12/14/2009

Minimum Burn Rate Segment Efficiency Results

Manufacturer: USSC
Model: 5770
Date: 02/08/18
Run: 3
Control #: 18-405
Test Duration: 180
Output Category: Minimum

Test Results in Accordance with CSA B415.1-09

	HHV Basis	LHV Basis
Overall Efficiency	69.1%	73.8%
Combustion Efficiency	99.5%	99.5%
Heat Transfer Efficiency	69.4%	74.2%

Output Rate (kJ/h)	9,717	9,218	(Btu/h)
Burn Rate (kg/h)	0.69	1.52	(lb/h)
Input (kJ/h)	14,063	13,340	(Btu/h)

Test Load Weight (dry kg)	2.07	4.56	dry lb
MC wet (%)	3.01		
MC dry (%)	3.10		
Particulate (g)	N/A		
CO (g)	68		
Test Duration (h)	3.00		

Emissions	Particulate	CO
g/MJ Output	N/A	2.32
g/kg Dry Fuel	N/A	32.75
g/h	N/A	22.58
g/min	N/A	0.38
lb/MM Btu Output	N/A	5.40

Air/Fuel Ratio (A/F)	37.62
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VERSION:

2.2

12/14/2009

PELLET STOVE PREBURN DATA

Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 3Technician: SJBDate: 2/8/2018
 Recording Interval (min): 1
 Run Time (min): 66

Elapsed Time (min)	Scale Reading (lbs)	Weight Change (lbs)	Average:		
			-0.036	337	62
			Flue Draft (in H ₂ O)	Flue (°F)	Ambient (°F)
0	16.4	-	-0.023	269	62
1	16.4	0	-0.022	256	62
2	16.3	-0.1	-0.025	263	62
3	16.3	0	-0.031	285	62
4	16.2	-0.1	-0.034	318	62
5	16.1	-0.1	-0.039	337	62
6	16.0	-0.1	-0.045	357	62
7	16.0	0	-0.040	362	62
8	15.9	-0.1	-0.039	365	61
9	15.9	0	-0.039	354	62
10	15.7	-0.2	-0.041	358	62
11	15.8	0.1	-0.043	365	62
12	15.7	-0.1	-0.041	365	62
13	15.7	0	-0.037	359	62
14	15.5	-0.2	-0.036	347	62
15	15.6	0.1	-0.043	354	62
16	15.5	-0.1	-0.036	357	62
17	15.5	0	-0.039	347	62
18	15.4	-0.1	-0.037	338	62
19	15.4	0	-0.038	341	62
20	15.3	-0.1	-0.035	342	62
21	15.4	0.1	-0.039	347	62
22	15.2	-0.2	-0.035	354	62
23	15.2	0	-0.046	347	62
24	15.1	-0.1	-0.038	346	62
25	15.1	0	-0.042	350	62
26	14.9	-0.2	-0.040	349	62
27	15.0	0.1	-0.038	346	62
28	14.9	-0.1	-0.042	354	62
29	14.8	-0.1	-0.044	361	62
30	14.8	0	-0.036	359	62
31	14.7	-0.1	-0.039	355	62
32	14.6	-0.1	-0.039	344	62
33	14.6	0	-0.038	352	62
34	14.5	-0.1	-0.033	349	62
35	14.5	0	-0.043	352	62
36	14.4	-0.1	-0.040	361	62
37	14.4	0	-0.038	354	62
38	14.3	-0.1	-0.038	352	62
39	14.3	0	-0.041	359	62
40	14.2	-0.1	-0.037	358	62
41	14.2	0	-0.036	342	62
42	14.2	0	-0.033	337	62
43	14.1	-0.1	-0.034	333	62
44	14.0	-0.1	-0.035	337	62
45	14.0	0	-0.039	347	62
46	13.9	-0.1	-0.040	355	62

DILUTION TUNNEL DATA - ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/8/2018

	Beginning	Middle	End	Avg.
P _{bar} (in Hg):	30.15	30.11	30.08	30.11

Dilution Tunnel MW(dry): 29.00 lb/lb-mole
 Dilution Tunnel MW(wet): 28.78 lb/lb-mole
 Tunnel Area: 0.1963 ft²
 Dilution Tunnel H₂O: 2.00 percent
 Tunnel Diameter: 6 inches
 Pitot Tube Cp: 0.99

Dilution Tunnel Static: -0.120 in H₂O

	Tunnel Traverse Information								
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center
dP (in H ₂ O)	0.044	0.045	0.045	0.044	0.043	0.046	0.046	0.048	0.045
Tunnel Temp (°F)	94	94	94	94	94	94	94	94	94

V_{strav}: 14.36 ft/sec
 V_{scent}: 14.35 ft/sec
 F_p: 1.001
 Initial Tunnel Flow: 159.1 scf/min

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
0	0.000		0.045	0.00	67	-0.16		10.8		94	372	65	64
1	0.131	0.131	0.045	2.01	67	-1.17	100	10.7	-0.1	94	378	67	64
2	0.265	0.134	0.045	2.01	67	-1.05	102	10.8	0.1	94	356	67	64
3	0.400	0.135	0.045	1.98	67	-0.7	103	10.6	-0.2	94	353	68	64
4	0.538	0.138	0.045	1.97	67	-0.99	106	10.6	0.0	94	360	68	64
5	0.669	0.131	0.045	1.98	67	-1	100	10.5	-0.1	94	368	69	64
6	0.809	0.140	0.045	1.97	67	-0.96	107	10.4	-0.1	94	371	69	64
7	0.941	0.132	0.045	1.97	67	-0.99	101	10.4	0.0	94	367	69	64
8	1.076	0.135	0.045	1.96	67	-1.27	103	10.4	0.0	94	362	69	64
9	1.212	0.136	0.045	1.94	68	-0.76	104	10.3	-0.1	94	362	69	64
10	1.345	0.133	0.045	1.96	68	-0.8	101	10.2	-0.1	94	364	70	65
11	1.480	0.135	0.045	1.95	68	-1.31	103	10.1	-0.1	94	363	70	64
12	1.616	0.136	0.045	1.96	68	-1.32	104	10.1	0.0	94	362	70	65
13	1.747	0.131	0.045	1.94	69	-0.96	100	10.1	0.0	94	363	70	65
14	1.885	0.138	0.045	1.95	69	-1.04	105	10.0	-0.1	94	362	70	65
15	2.017	0.132	0.045	1.95	69	-0.62	101	10.0	0.0	94	359	70	65
16	2.152	0.135	0.045	1.95	69	-0.6	103	9.9	-0.1	94	356	71	65
17	2.288	0.136	0.045	1.96	70	-0.65	103	9.8	-0.1	94	360	71	65
18	2.420	0.132	0.045	1.95	70	-1.07	100	9.8	0.0	94	362	71	65
19	2.557	0.137	0.045	1.96	70	-0.7	104	9.8	0.0	94	361	71	65
20	2.691	0.134	0.045	1.95	71	-0.95	102	9.7	-0.1	94	363	71	65
21	2.824	0.133	0.045	1.95	71	-0.77	101	9.7	0.0	95	358	71	65
22	2.962	0.138	0.045	1.95	72	-1.26	105	9.6	-0.1	95	360	71	65
23	3.094	0.132	0.045	1.95	72	-1.1	100	9.5	-0.1	95	356	71	65
24	3.229	0.135	0.045	1.95	72	-1.32	102	9.5	0.0	94	347	71	65
25	3.367	0.138	0.045	1.94	73	-1.23	104	9.4	-0.1	94	350	72	65
26	3.498	0.131	0.045	1.93	73	-1.12	99	9.5	0.1	94	351	72	65
27	3.637	0.139	0.045	1.95	73	-0.75	105	9.2	-0.3	95	353	72	65
28	3.770	0.133	0.045	1.97	74	-0.81	100	9.3	0.1	94	348	72	65
29	3.904	0.134	0.045	1.95	74	-1.11	101	9.2	-0.1	94	344	72	65

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
30	4.042	0.138	0.045	1.95	74	-0.96	104	9.2	0.0	95	355	72	65
31	4.176	0.134	0.045	1.95	75	-1.08	101	9.2	0.0	94	343	72	65
32	4.311	0.135	0.045	1.94	75	-0.78	102	9.1	-0.1	94	342	72	65
33	4.449	0.138	0.045	1.97	75	-0.92	104	9.1	0.0	94	334	72	65
34	4.580	0.131	0.045	1.95	76	-1.04	98	9.0	-0.1	94	343	72	65
35	4.720	0.140	0.045	1.96	76	-1.22	105	9.0	0.0	94	344	72	65
36	4.854	0.134	0.045	1.95	77	-0.76	101	8.9	-0.1	94	356	72	65
37	4.988	0.134	0.045	1.95	77	-0.66	101	8.9	0.0	94	346	72	65
38	5.127	0.139	0.045	1.96	77	-1.3	104	8.8	-0.1	94	340	72	65
39	5.259	0.132	0.045	1.96	78	-0.98	99	8.8	0.0	94	354	72	65
40	5.399	0.140	0.045	1.95	78	-0.81	105	8.7	-0.1	94	359	72	65
41	5.532	0.133	0.045	1.95	78	-1.28	100	8.7	0.0	94	356	72	65
42	5.668	0.136	0.045	1.95	78	-0.66	102	8.6	-0.1	95	357	72	65
43	5.807	0.139	0.045	1.96	79	-0.71	104	8.4	-0.2	95	360	73	65
44	5.940	0.133	0.045	1.96	79	-1.26	100	8.5	0.1	95	368	73	65
45	6.079	0.139	0.045	1.95	79	-1	104	8.4	-0.1	95	358	73	65
46	6.214	0.135	0.045	1.96	80	-1.04	101	8.4	0.0	95	358	73	65
47	6.349	0.135	0.045	1.95	80	-1.25	101	8.3	-0.1	95	354	73	65
48	6.487	0.138	0.045	1.94	80	-1.36	103	8.3	0.0	95	352	73	66
49	6.622	0.135	0.045	1.96	81	-0.63	101	8.2	-0.1	95	363	73	66
50	6.760	0.138	0.045	1.96	81	-0.7	103	8.2	0.0	95	345	73	65
51	6.896	0.136	0.045	1.94	81	-0.69	101	8.1	-0.1	95	352	73	65
52	7.031	0.135	0.045	1.97	81	-0.93	101	8.1	0.0	95	360	73	66
53	7.170	0.139	0.045	1.96	82	-0.68	103	8.0	-0.1	95	357	73	66
54	7.305	0.135	0.045	1.97	82	-0.7	100	8.0	0.0	95	353	73	66
55	7.442	0.137	0.045	1.96	82	-0.71	102	7.9	-0.1	95	344	73	66
56	7.579	0.137	0.045	1.95	82	-1.32	102	7.9	0.0	95	345	73	66
57	7.714	0.135	0.045	1.95	83	-1.06	100	7.9	0.0	95	353	73	66
58	7.853	0.139	0.045	1.97	83	-0.91	103	7.9	0.0	95	352	73	66
59	7.989	0.136	0.045	1.97	83	-1.32	101	7.7	-0.2	95	365	73	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
60	8.127	0.138	0.045	1.96	83	-0.73	102	7.7	0.0	95	350	73	65
61	8.266	0.139	0.045	2.04	83	-0.81	103	7.6	-0.1	95	353	72	66
62	8.404	0.138	0.045	1.97	84	-0.65	102	7.6	0.0	95	356	73	66
63	8.543	0.139	0.045	1.96	84	-0.69	103	7.5	-0.1	91	332	74	66
64	8.677	0.134	0.045	1.96	84	-0.68	99	7.5	0.0	89	315	74	66
65	8.817	0.140	0.045	1.97	84	-1.05	103	7.4	-0.1	88	294	74	66
66	8.952	0.135	0.045	1.95	85	-1.23	99	7.4	0.0	87	288	74	66
67	9.089	0.137	0.045	1.96	85	-0.93	101	7.4	0.0	86	276	74	66
68	9.229	0.140	0.045	1.95	85	-1.1	103	7.4	0.0	86	271	73	66
69	9.363	0.134	0.045	1.97	85	-0.99	98	7.4	0.0	85	271	73	66
70	9.503	0.140	0.045	1.96	85	-1.41	103	7.3	-0.1	84	263	73	66
71	9.638	0.135	0.045	1.94	86	-0.91	99	7.1	-0.2	84	263	73	66
72	9.775	0.137	0.045	1.96	86	-0.71	100	7.3	0.2	84	260	73	66
73	9.916	0.141	0.045	1.96	86	-1.03	103	7.3	0.0	83	256	72	66
74	10.049	0.133	0.045	1.96	86	-0.71	97	7.2	-0.1	84	259	72	66
75	10.191	0.142	0.045	1.96	86	-1.36	104	7.2	0.0	83	246	72	66
76	10.326	0.135	0.045	1.96	86	-1.16	99	7.2	0.0	83	239	72	66
77	10.463	0.137	0.045	1.96	87	-1.01	100	7.2	0.0	83	247	72	66
78	10.603	0.140	0.045	1.96	87	-1.34	102	7.2	0.0	82	236	72	66
79	10.736	0.133	0.045	1.95	87	-1.16	97	7.1	-0.1	82	236	72	66
80	10.878	0.142	0.045	1.96	87	-1.25	103	7.0	-0.1	82	242	72	66
81	11.014	0.136	0.045	1.96	87	-0.98	99	7.1	0.1	82	237	71	66
82	11.150	0.136	0.045	1.94	87	-1.36	99	7.1	0.0	82	243	71	66
83	11.290	0.140	0.045	1.95	87	-1.28	102	7.1	0.0	82	241	71	66
84	11.425	0.135	0.045	1.94	88	-1.21	98	7.0	-0.1	81	238	71	66
85	11.565	0.140	0.045	1.96	88	-0.71	102	7.0	0.0	82	243	71	66
86	11.701	0.136	0.045	1.95	88	-1.07	99	7.0	0.0	81	237	71	66
87	11.839	0.138	0.045	1.96	88	-0.81	100	6.9	-0.1	81	235	71	66
88	11.977	0.138	0.045	1.96	88	-1.32	100	6.9	0.0	81	241	71	66
89	12.114	0.137	0.045	1.95	88	-0.67	100	6.9	0.0	81	241	71	65

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
90	12.253	0.139	0.045	1.95	88	-0.74	101	6.8	-0.1	81	247	71	66
91	12.389	0.136	0.045	1.95	88	-0.98	99	6.8	0.0	81	245	71	66
92	12.529	0.140	0.045	1.97	89	-1.2	102	6.8	0.0	81	244	71	66
93	12.665	0.136	0.045	1.97	89	-1	99	6.8	0.0	81	245	71	66
94	12.803	0.138	0.045	1.97	89	-1.06	100	6.7	-0.1	81	237	71	66
95	12.942	0.139	0.045	1.96	89	-1.1	101	6.7	0.0	81	242	71	66
96	13.077	0.135	0.045	1.97	89	-1.27	98	6.7	0.0	82	250	70	65
97	13.218	0.141	0.045	1.94	89	-1.02	102	6.7	0.0	81	240	70	66
98	13.354	0.136	0.045	1.95	89	-0.75	99	6.7	0.0	81	238	70	66
99	13.490	0.136	0.045	1.96	89	-1.27	99	6.7	0.0	81	242	70	66
100	13.631	0.141	0.045	1.96	89	-0.7	102	6.6	-0.1	81	233	70	66
101	13.765	0.134	0.045	1.94	89	-1	97	6.6	0.0	82	243	70	66
102	13.907	0.142	0.045	1.95	90	-0.93	103	6.6	0.0	81	244	70	66
103	14.043	0.136	0.045	1.95	90	-1.31	98	6.6	0.0	81	230	70	66
104	14.180	0.137	0.045	1.95	90	-0.67	99	6.5	-0.1	81	234	70	66
105	14.320	0.140	0.045	1.96	90	-0.72	101	6.5	0.0	81	234	70	66
106	14.455	0.135	0.045	1.96	90	-0.73	98	6.5	0.0	81	228	70	66
107	14.596	0.141	0.045	1.96	90	-0.69	102	6.4	-0.1	82	240	70	66
108	14.733	0.137	0.045	1.97	90	-0.98	99	6.5	0.1	81	238	70	66
109	14.871	0.138	0.045	1.96	90	-0.71	100	6.4	-0.1	81	236	70	66
110	15.009	0.138	0.045	1.97	90	-1.31	100	6.3	-0.1	81	238	70	66
111	15.146	0.137	0.045	1.94	90	-1.28	99	6.4	0.1	81	230	70	66
112	15.286	0.140	0.045	1.95	90	-0.73	101	6.3	-0.1	81	237	70	65
113	15.421	0.135	0.045	1.95	91	-0.84	98	6.3	0.0	81	239	70	62
114	15.562	0.141	0.045	1.96	91	-1.38	102	6.3	0.0	80	231	70	62
115	15.698	0.136	0.045	1.96	91	-1.34	98	6.2	-0.1	80	237	69	62
116	15.835	0.137	0.045	1.96	91	-0.79	99	6.3	0.1	80	228	69	62
117	15.976	0.141	0.045	1.97	91	-1.07	102	6.2	-0.1	80	221	69	63
118	16.110	0.134	0.045	1.95	91	-1.19	97	6.2	0.0	81	233	69	64
119	16.252	0.142	0.045	1.95	91	-1.1	103	6.2	0.0	80	228	69	64

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
120	16.389	0.137	0.045	1.95	91	-0.71	99	6.2	0.0	80	231	69	64
121	16.526	0.137	0.045	1.96	91	-1.24	99	6.1	-0.1	80	234	69	64
122	16.666	0.140	0.045	1.96	91	-1.2	101	6.1	0.0	80	223	69	64
123	16.802	0.136	0.045	1.95	91	-1.04	98	6.1	0.0	80	226	69	64
124	16.942	0.140	0.045	1.96	91	-1.26	101	6.1	0.0	80	233	69	64
125	17.079	0.137	0.045	1.95	91	-1.44	99	6.0	-0.1	80	226	69	64
126	17.218	0.139	0.045	1.95	91	-0.85	100	6.0	0.0	80	232	69	64
127	17.356	0.138	0.045	1.96	91	-1.28	100	6.0	0.0	80	234	69	65
128	17.493	0.137	0.045	1.95	91	-1.36	99	6.0	0.0	80	233	69	65
129	17.634	0.141	0.045	1.95	91	-1.31	102	5.8	-0.2	81	243	69	65
130	17.768	0.134	0.045	1.97	91	-0.89	97	6.0	0.2	80	238	69	65
131	17.910	0.142	0.045	1.96	91	-0.87	103	5.9	-0.1	81	236	69	65
132	18.046	0.136	0.045	1.95	91	-1.36	98	5.8	-0.1	81	241	69	65
133	18.184	0.138	0.045	1.96	91	-1.34	100	5.9	0.1	80	227	69	65
134	18.324	0.140	0.045	1.93	91	-1.2	101	5.8	-0.1	80	228	69	65
135	18.459	0.135	0.045	1.96	91	-1.27	98	5.8	0.0	81	243	69	65
136	18.600	0.141	0.045	1.94	91	-1.34	102	5.9	0.1	81	237	69	65
137	18.737	0.137	0.045	1.96	91	-1.33	99	5.6	-0.3	81	244	69	65
138	18.875	0.138	0.045	1.95	91	-1.37	100	5.7	0.1	81	247	69	65
139	19.014	0.139	0.045	1.95	91	-1.34	100	5.7	0.0	81	241	69	65
140	19.151	0.137	0.045	1.96	91	-0.94	99	5.6	-0.1	81	246	69	65
141	19.291	0.140	0.045	1.95	91	-0.79	101	5.6	0.0	81	244	69	65
142	19.427	0.136	0.045	1.95	91	-0.68	98	5.6	0.0	81	231	69	65
143	19.568	0.141	0.045	1.96	91	-0.94	102	5.6	0.0	81	233	69	65
144	19.704	0.136	0.045	1.94	91	-1.3	98	5.5	-0.1	81	232	69	65
145	19.842	0.138	0.045	1.95	92	-0.9	99	5.6	0.1	80	224	69	65
146	19.983	0.141	0.045	1.94	92	-1.46	102	5.5	-0.1	81	234	69	65
147	20.117	0.134	0.045	1.94	92	-1.36	97	5.5	0.0	80	227	69	66
148	20.259	0.142	0.045	1.96	92	-0.67	102	5.5	0.0	81	230	70	66
149	20.396	0.137	0.045	1.97	92	-1.28	99	5.5	0.0	81	237	70	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
150	20.533	0.137	0.045	1.95	92	-1.36	99	5.5	0.0	80	228	70	66
151	20.673	0.140	0.045	1.95	92	-1.28	101	5.4	-0.1	80	230	70	66
152	20.810	0.137	0.045	1.95	92	-0.76	99	5.4	0.0	81	235	70	66
153	20.950	0.140	0.045	1.94	92	-0.79	101	5.4	0.0	80	229	70	66
154	21.086	0.136	0.045	1.96	92	-1.29	98	5.3	-0.1	81	242	70	66
155	21.227	0.141	0.045	1.95	92	-0.94	102	5.3	0.0	81	241	70	66
156	21.363	0.136	0.045	1.95	92	-1.25	98	5.3	0.0	81	235	70	66
157	21.501	0.138	0.045	1.96	92	-0.78	100	5.2	-0.1	81	245	70	66
158	21.642	0.141	0.045	1.96	92	-0.75	102	5.2	0.0	81	244	70	66
159	21.776	0.134	0.045	1.95	92	-0.71	97	5.2	0.0	81	244	70	66
160	21.919	0.143	0.045	1.95	92	-1.29	103	5.2	0.0	82	250	70	66
161	22.055	0.136	0.045	1.95	92	-0.7	98	5.2	0.0	81	236	70	66
162	22.192	0.137	0.045	1.94	92	-1.1	99	5.1	-0.1	81	232	70	66
163	22.333	0.141	0.045	1.95	92	-0.91	102	5.1	0.0	81	242	70	66
164	22.468	0.135	0.045	1.95	92	-0.75	97	5.1	0.0	81	234	70	66
165	22.609	0.141	0.045	1.96	92	-0.85	102	5.0	-0.1	81	236	70	66
166	22.746	0.137	0.045	1.96	92	-1.02	99	5.0	0.0	81	238	70	66
167	22.885	0.139	0.045	1.94	92	-0.69	100	5.0	0.0	81	232	70	66
168	23.023	0.138	0.045	1.95	92	-1.14	100	5.0	0.0	81	237	70	66
169	23.161	0.138	0.045	1.96	92	-0.76	100	5.0	0.0	81	239	70	66
170	23.301	0.140	0.045	1.96	92	-0.79	101	4.9	-0.1	81	238	70	66
171	23.436	0.135	0.045	1.97	92	-0.98	97	4.9	0.0	81	244	70	66
172	23.578	0.142	0.045	1.94	92	-1.36	102	4.9	0.0	81	231	70	66
173	23.714	0.136	0.045	1.95	92	-1.25	98	4.9	0.0	81	231	70	66
174	23.852	0.138	0.045	1.96	92	-1.27	100	4.8	-0.1	81	241	70	66
175	23.993	0.141	0.045	1.94	92	-1.37	102	4.8	0.0	81	231	70	66
176	24.127	0.134	0.045	1.94	92	-1.18	97	4.9	0.1	81	237	70	66
177	24.268	0.141	0.045	1.92	92	-1.11	102	4.8	-0.1	81	238	70	66
178	24.405	0.137	0.045	1.96	92	-1.28	99	4.7	-0.1	81	239	70	66
179	24.544	0.139	0.045	1.95	93	-0.89	100	4.7	0.0	82	247	70	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
180	24.682	0.138	0.045	1.94	93	-0.83	99	4.7	0.0	81	242	70	66
181	24.819	0.137	0.045	1.96	93	-1.42	99	4.6	-0.1	81	243	70	66
182	24.960	0.141	0.045	1.95	93	-0.92	102	4.6	0.0	82	252	70	66
183	25.095	0.135	0.045	1.94	93	-0.82	97	4.6	0.0	82	242	70	66
184	25.237	0.142	0.045	1.95	93	-0.92	102	4.6	0.0	82	247	70	66
185	25.373	0.136	0.045	1.92	93	-0.98	98	4.5	-0.1	82	243	70	66
186	25.511	0.138	0.045	1.97	93	-1.47	99	4.5	0.0	82	237	70	66
187	25.652	0.141	0.045	1.93	93	-1.02	102	4.5	0.0	82	247	70	66
188	25.786	0.134	0.045	1.93	93	-1.16	97	4.5	0.0	82	239	70	66
189	25.928	0.142	0.045	1.95	93	-1.41	102	4.5	0.0	81	228	70	66
190	26.065	0.137	0.045	1.94	93	-0.95	99	4.4	-0.1	82	239	70	66
191	26.202	0.137	0.045	1.93	93	-0.99	99	4.4	0.0	81	231	70	66
192	26.342	0.140	0.045	1.96	93	-1.12	101	4.4	0.0	82	240	70	66
193	26.478	0.136	0.045	1.94	93	-1.21	98	4.4	0.0	82	242	70	66
194	26.619	0.141	0.045	1.95	93	-0.99	102	4.3	-0.1	81	237	70	66
195	26.755	0.136	0.045	1.95	93	-0.94	98	4.3	0.0	82	242	70	66
196	26.896	0.141	0.045	1.95	93	-1.47	102	4.4	0.1	81	234	70	66
197	27.032	0.136	0.045	1.96	93	-0.9	98	4.3	-0.1	81	226	70	66
198	27.170	0.138	0.045	1.95	93	-0.79	99	4.2	-0.1	82	235	70	66
199	27.311	0.141	0.045	1.95	93	-1.17	102	4.2	0.0	81	236	70	66
200	27.445	0.134	0.045	1.94	93	-0.78	97	4.2	0.0	82	242	70	66
201	27.587	0.142	0.045	1.95	93	-0.84	102	4.1	-0.1	81	244	70	66
202	27.724	0.137	0.045	1.94	93	-0.95	99	4.1	0.0	81	241	70	66
203	27.861	0.137	0.045	1.94	93	-0.92	99	4.0	-0.1	82	245	70	66
204	28.002	0.141	0.045	1.95	93	-1.29	102	4.1	0.1	82	244	70	66
205	28.138	0.136	0.045	1.95	93	-0.85	98	4.1	0.0	81	234	70	66
206	28.278	0.140	0.045	1.95	93	-0.73	101	4.0	-0.1	82	242	70	66
207	28.415	0.137	0.045	1.93	93	-0.98	99	4.0	0.0	81	235	70	66
208	28.555	0.140	0.045	1.93	93	-1.27	101	4.0	0.0	81	229	70	66
209	28.692	0.137	0.045	1.95	93	-0.93	99	3.8	-0.2	82	236	70	66

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
210	28.830	0.138	0.045	1.95	93	-1.05	99	4.0	0.2	81	232	70	66
211	28.970	0.140	0.045	1.94	93	-1.41	101	3.9	-0.1	82	233	70	66
212	29.105	0.135	0.045	1.95	93	-0.98	97	3.9	0.0	81	241	70	66
213	29.247	0.142	0.045	1.95	93	-1.19	102	3.9	0.0	81	234	70	66
214	29.383	0.136	0.045	1.93	93	-1.06	98	3.8	-0.1	81	235	70	66
215	29.521	0.138	0.045	1.95	93	-0.75	99	3.8	0.0	82	243	71	67
216	29.662	0.141	0.045	1.95	93	-0.84	102	3.8	0.0	81	239	71	67
217	29.797	0.135	0.045	1.94	93	-0.8	97	3.7	-0.1	82	243	71	67
218	29.938	0.141	0.045	1.95	93	-1.1	102	3.7	0.0	82	247	71	67
219	30.074	0.136	0.045	1.93	93	-0.9	98	3.7	0.0	82	240	71	66
220	30.213	0.139	0.045	1.94	93	-1.33	100	3.7	0.0	82	247	71	67
221	30.351	0.138	0.045	1.94	93	-1.35	99	3.7	0.0	82	240	71	67
222	30.488	0.137	0.045	1.93	93	-1.21	99	3.6	-0.1	82	238	71	67
223	30.629	0.141	0.045	1.93	93	-1.04	102	3.6	0.0	82	239	71	67
224	30.764	0.135	0.045	1.93	93	-1.3	97	3.6	0.0	82	240	71	67
225	30.905	0.141	0.045	1.93	93	-0.79	102	3.6	0.0	82	238	71	67
226	31.041	0.136	0.045	1.93	93	-1.5	98	3.5	-0.1	82	247	71	67
227	31.179	0.138	0.045	1.93	93	-0.9	99	3.5	0.0	82	236	71	67
228	31.320	0.141	0.045	1.95	93	-0.89	102	3.5	0.0	82	241	71	67
229	31.455	0.135	0.045	1.92	93	-1.27	97	3.4	-0.1	82	245	71	67
230	31.596	0.141	0.045	1.95	93	-1.41	102	3.5	0.1	82	238	71	67
231	31.733	0.137	0.045	1.94	93	-1.25	99	3.4	-0.1	82	245	71	67
232	31.871	0.138	0.045	1.93	93	-1.3	99	3.4	0.0	82	241	71	67
233	32.011	0.140	0.045	1.95	93	-0.77	101	3.3	-0.1	82	234	71	67
234	32.147	0.136	0.045	1.93	94	-1	98	3.3	0.0	82	245	71	67
235	32.287	0.140	0.045	1.93	94	-0.94	101	3.3	0.0	82	239	71	67
236	32.423	0.136	0.045	1.94	94	-1.24	98	3.3	0.0	82	239	71	67
237	32.564	0.141	0.045	1.94	94	-0.96	102	3.2	-0.1	83	252	71	67
238	32.700	0.136	0.045	1.93	94	-1.32	98	3.2	0.0	82	243	71	67
239	32.838	0.138	0.045	1.95	94	-0.78	99	3.2	0.0	83	242	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
240	32.979	0.141	0.045	1.94	94	-1.11	102	3.2	0.0	83	249	71	67
241	33.114	0.135	0.045	1.95	94	-0.81	97	3.1	-0.1	82	237	71	67
242	33.256	0.142	0.045	1.94	94	-0.9	102	3.1	0.0	82	235	71	67
243	33.392	0.136	0.045	1.94	94	-0.83	98	3.1	0.0	82	237	71	67
244	33.529	0.137	0.045	1.93	94	-0.94	99	3.1	0.0	82	235	71	67
245	33.670	0.141	0.045	1.93	94	-0.81	101	3.0	-0.1	82	245	71	67
246	33.806	0.136	0.045	1.93	94	-0.94	98	3.0	0.0	82	242	71	67
247	33.946	0.140	0.045	1.95	94	-1.48	101	3.0	0.0	82	238	71	67
248	34.083	0.137	0.045	1.93	94	-1.01	99	3.0	0.0	83	246	71	67
249	34.222	0.139	0.045	1.93	94	-0.95	100	2.9	-0.1	82	236	71	67
250	34.360	0.138	0.045	1.94	94	-0.93	99	2.9	0.0	82	232	71	67
251	34.498	0.138	0.045	1.94	94	-1.02	99	2.8	-0.1	82	231	71	67
252	34.638	0.140	0.045	1.93	94	-0.9	101	2.9	0.1	82	237	71	67
253	34.773	0.135	0.045	1.93	94	-1.02	97	2.8	-0.1	83	244	71	67
254	34.915	0.142	0.045	1.94	94	-1.03	102	2.8	0.0	83	251	71	67
255	35.051	0.136	0.045	1.94	94	-1.39	98	2.8	0.0	82	239	71	67
256	35.188	0.137	0.045	1.94	94	-0.86	99	2.8	0.0	82	234	71	67
257	35.329	0.141	0.045	1.93	94	-0.81	102	2.7	-0.1	83	241	71	67
258	35.464	0.135	0.045	1.93	94	-1.33	97	2.8	0.1	82	236	71	67
259	35.605	0.141	0.045	1.95	94	-1.44	102	2.7	-0.1	83	242	71	67
260	35.742	0.137	0.045	1.93	94	-1.32	99	2.7	0.0	82	241	71	67
261	35.880	0.138	0.045	1.93	94	-1.1	99	2.6	-0.1	82	232	71	67
262	36.019	0.139	0.045	1.92	94	-1.36	100	2.6	0.0	82	240	71	67
263	36.156	0.137	0.045	1.94	94	-1.33	99	2.6	0.0	82	235	71	67
264	36.296	0.140	0.045	1.93	94	-0.85	101	2.6	0.0	82	230	71	67
265	36.431	0.135	0.045	1.95	94	-1.41	97	2.5	-0.1	82	244	71	67
266	36.572	0.141	0.045	1.93	94	-1.32	101	2.5	0.0	82	236	71	67
267	36.708	0.136	0.045	1.92	94	-0.85	98	2.5	0.0	82	238	71	67
268	36.845	0.137	0.045	1.94	94	-1.44	99	2.5	0.0	82	243	71	67
269	36.987	0.142	0.045	1.93	94	-1.21	102	2.6	0.1	82	230	71	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
270	37.120	0.133	0.045	1.93	94	-0.78	96	2.3	-0.3	82	232	71	67
271	37.262	0.142	0.045	1.94	94	-1.29	102	2.4	0.1	82	240	71	67
272	37.398	0.136	0.045	1.92	94	-1.19	98	2.4	0.0	82	239	71	67
273	37.535	0.137	0.045	1.94	94	-0.72	99	2.4	0.0	83	245	71	67
274	37.676	0.141	0.045	1.94	94	-1.26	101	2.3	-0.1	82	235	71	67
275	37.810	0.134	0.045	1.93	94	-1.32	96	2.3	0.0	82	222	71	67
276	37.951	0.141	0.045	1.95	94	-1.48	101	2.3	0.0	82	228	71	67
277	38.088	0.137	0.045	1.92	94	-0.79	99	2.3	0.0	82	235	71	67
278	38.225	0.137	0.045	1.93	94	-1.23	99	2.3	0.0	82	234	71	67
279	38.364	0.139	0.045	1.92	94	-1.36	100	2.2	-0.1	83	246	71	67
280	38.500	0.136	0.045	1.93	94	-1.38	98	2.2	0.0	82	241	71	67
281	38.640	0.140	0.045	1.92	94	-0.99	101	2.3	0.1	82	239	71	67
282	38.776	0.136	0.045	1.93	94	-1.25	98	2.0	-0.3	83	241	71	67
283	38.916	0.140	0.045	1.94	94	-0.84	101	2.1	0.1	82	236	71	67
284	39.052	0.136	0.045	1.93	94	-1	98	2.1	0.0	83	240	71	67
285	39.190	0.138	0.045	1.92	94	-0.81	99	2.0	-0.1	83	246	71	67
286	39.330	0.140	0.045	1.92	94	-1.11	101	2.1	0.1	83	239	71	67
287	39.464	0.134	0.045	1.92	94	-0.97	96	2.0	-0.1	83	244	71	67
288	39.606	0.142	0.045	1.94	94	-0.82	102	2.0	0.0	83	245	71	67
289	39.742	0.136	0.045	1.93	94	-1.21	98	2.0	0.0	83	236	71	67
290	39.878	0.136	0.045	1.93	94	-0.85	98	1.7	-0.3	83	240	71	67
291	40.019	0.141	0.045	1.94	94	-1.44	102	1.9	0.2	83	239	71	67
292	40.153	0.134	0.045	1.92	94	-1.15	96	1.9	0.0	83	242	71	67
293	40.294	0.141	0.045	1.93	94	-1.16	102	1.9	0.0	83	247	71	67
294	40.430	0.136	0.045	1.93	94	-0.74	98	1.8	-0.1	83	240	71	67
295	40.567	0.137	0.045	1.94	94	-0.79	99	1.8	0.0	83	240	71	67
296	40.707	0.140	0.045	1.94	94	-1.39	101	1.8	0.0	83	249	71	68
297	40.842	0.135	0.045	1.93	94	-0.95	97	1.8	0.0	83	238	71	68
298	40.982	0.140	0.045	1.94	94	-0.83	101	1.7	-0.1	83	238	71	67
299	41.119	0.137	0.045	1.92	94	-0.75	99	1.7	0.0	83	241	72	67

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
300	41.257	0.138	0.045	1.93	94	-0.81	99	1.7	0.0	83	237	72	68
301	41.395	0.138	0.045	1.93	94	-0.92	99	1.8	0.1	83	240	72	68
302	41.532	0.137	0.045	1.94	94	-1.33	99	1.6	-0.2	83	236	72	68
303	41.671	0.139	0.045	1.93	94	-1.42	100	1.6	0.0	83	236	72	68
304	41.806	0.135	0.045	1.93	95	-1.48	97	1.6	0.0	83	245	72	68
305	41.947	0.141	0.045	1.92	95	-1.09	101	1.6	0.0	83	238	72	68
306	42.083	0.136	0.045	1.92	95	-1.21	98	1.5	-0.1	83	245	72	68
307	42.220	0.137	0.045	1.95	95	-0.89	98	1.5	0.0	83	252	72	68
308	42.361	0.141	0.045	1.93	95	-1.28	101	1.5	0.0	83	245	72	68
309	42.495	0.134	0.045	1.92	95	-0.91	96	1.5	0.0	83	249	72	68
310	42.636	0.141	0.045	1.92	95	-0.95	101	1.4	-0.1	83	248	72	68
311	42.772	0.136	0.045	1.91	95	-1.28	98	1.4	0.0	83	242	72	68
312	42.909	0.137	0.045	1.93	95	-1.14	99	1.3	-0.1	84	249	72	68
313	43.049	0.140	0.045	1.91	95	-1.01	101	1.3	0.0	83	246	72	68
314	43.183	0.134	0.045	1.93	95	-1.17	96	1.3	0.0	83	241	72	68
315	43.324	0.141	0.045	1.92	95	-0.95	101	1.3	0.0	84	250	72	68
316	43.461	0.137	0.045	1.93	95	-1.22	98	1.3	0.0	83	245	72	68
317	43.598	0.137	0.045	1.91	95	-1.2	98	1.3	0.0	83	241	72	68
318	43.738	0.140	0.045	1.93	95	-1.35	101	1.2	-0.1	83	245	72	68
319	43.873	0.135	0.045	1.91	95	-1.53	97	1.2	0.0	83	239	72	68
320	44.013	0.140	0.045	1.92	95	-1.02	101	1.2	0.0	84	245	72	68
321	44.150	0.137	0.045	1.94	95	-0.81	98	1.1	-0.1	83	245	72	68
322	44.289	0.139	0.045	1.91	95	-0.87	100	1.1	0.0	83	238	72	68
323	44.426	0.137	0.045	1.93	95	-0.87	99	1.1	0.0	84	249	72	68
324	44.563	0.137	0.045	1.94	95	-1.06	98	1.0	-0.1	83	243	72	68
325	44.703	0.140	0.045	1.93	95	-1.19	101	1.1	0.1	83	239	72	68
326	44.838	0.135	0.045	1.94	95	-1.21	97	1.0	-0.1	84	246	72	68
327	44.979	0.141	0.045	1.92	95	-1.03	101	1.0	0.0	83	240	72	68
328	45.114	0.135	0.045	1.92	95	-0.8	97	0.8	-0.2	84	247	72	68
329	45.251	0.137	0.045	1.92	95	-1.18	99	1.0	0.2	84	243	72	68

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
330	45.392	0.141	0.045	1.91	95	-1.04	101	0.9	-0.1	84	239	72	68
331	45.525	0.133	0.045	1.92	95	-1.18	96	0.9	0.0	84	248	72	68
332	45.667	0.142	0.045	1.94	95	-1.1	102	0.8	-0.1	84	248	72	68
333	45.803	0.136	0.045	1.92	95	-0.93	98	0.8	0.0	84	245	72	68
334	45.940	0.137	0.045	1.92	95	-0.96	99	0.8	0.0	84	248	72	68
335	46.081	0.141	0.045	1.93	95	-0.9	101	0.8	0.0	83	245	72	68
336	46.215	0.134	0.045	1.93	95	-1.42	96	0.7	-0.1	84	249	72	68
337	46.355	0.140	0.045	1.93	95	-0.84	101	0.8	0.1	84	250	72	68
338	46.491	0.136	0.045	1.93	95	-1.3	98	0.7	-0.1	83	241	72	68
339	46.629	0.138	0.045	1.92	95	-1.45	99	0.6	-0.1	84	251	72	68
340	46.767	0.138	0.045	1.93	95	-1.47	99	0.6	0.0	84	253	72	68
341	46.904	0.137	0.045	1.93	95	-0.97	99	0.6	0.0	84	247	72	68
342	47.043	0.139	0.045	1.92	95	-0.86	100	0.6	0.0	85	256	72	68
343	47.179	0.136	0.045	1.92	95	-1.05	98	0.6	0.0	84	245	72	68
344	47.319	0.140	0.045	1.90	95	-1.03	101	0.5	-0.1	84	239	72	68
345	47.455	0.136	0.045	1.91	95	-1.49	98	0.5	0.0	84	245	72	68
346	47.593	0.138	0.045	1.94	95	-1.57	99	0.5	0.0	84	242	72	68
347	47.732	0.139	0.045	1.91	95	-1.15	100	0.4	-0.1	84	244	72	68
348	47.867	0.135	0.045	1.92	95	-1.28	97	0.4	0.0	84	247	72	68
349	48.007	0.140	0.045	1.91	95	-0.98	101	0.4	0.0	84	243	72	68
350	48.143	0.136	0.045	1.90	95	-1.06	98	0.4	0.0	84	247	72	68
351	48.280	0.137	0.045	1.92	95	-1.49	99	0.4	0.0	84	241	72	68
352	48.421	0.141	0.045	1.91	95	-1.14	101	0.3	-0.1	84	235	72	68
353	48.554	0.133	0.045	1.92	95	-1.29	96	0.3	0.0	84	247	72	68
354	48.696	0.142	0.045	1.92	95	-0.9	102	0.2	-0.1	84	251	72	68
355	48.831	0.135	0.045	1.91	95	-1.28	97	0.3	0.1	84	250	72	68
356	48.968	0.137	0.045	1.93	95	-1.44	99	0.2	-0.1	84	252	72	68
357	49.109	0.141	0.045	1.90	95	-1.01	101	0.2	0.0	84	242	72	68
358	49.242	0.133	0.045	1.92	95	-0.85	96	0.1	-0.1	84	251	72	68
359	49.383	0.141	0.045	1.92	95	-0.85	101	0.1	0.0	84	250	72	68

BOX A TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC	Job #: 18-405	High Burn End Time (min): 60
Model: 5770	Tracking #: 0001	Medium Burn End Time (min): 180
Run #: 3	Technician: SJB	Total Sampling Time (min): 360
Beginning Time: 9:34	Date: 2/8/2018	Recording Interval (min): 1
Ambient Vol (L): 1687.391	Pellet Fuel MC (%DB): 3.1	
Meter Box Y Factor: 0.995 (A)	Post-Test Leak Check (A): 0.000 cfm @ -19 in. Hg	
0.997 (Amb)	Post-Test Leak Check (Amb): 0.000 cfm @ -14 in. Hg	

Elapsed Time (min)	Particulate Sampling Data							Fuel Weight (lb)		Temperature Data (°F)			
	Gas Meter (ft ³)	Sample Rate (cfm)	Dilution Tunnel dP (in H ₂ O)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Scale Reading	Weight Change	Dilution Tunnel	Flue	Filter	Ambient
360	49.520	0.137	0.045	1.91	95	-1.44	99	0.0	-0.1	84	249	72	68
Avg/Tot	49.520	0.138	0.045	1.94	89	-1.05	100			84	261	71	66

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
0	0.000		0.00	66	1		66	0.000	6.01	0.07
1	0.107	0.107	2.03	66	1.74	83	68	-0.040	6.82	0.05
2	0.243	0.136	2.02	66	1.67	106	69	-0.040	2.67	0.28
3	0.382	0.139	2.01	66	1.05	108	69	-0.040	3.43	0.22
4	0.517	0.135	2.01	66	2.16	105	69	-0.040	6.62	0.03
5	0.651	0.134	2.00	66	1.68	104	70	-0.040	7.65	0.04
6	0.790	0.139	2.00	66	2.01	108	70	-0.040	5.83	0.04
7	0.922	0.132	1.99	66	1.95	103	70	-0.040	5.23	0.07
8	1.060	0.138	1.99	67	1.18	107	70	-0.050	4.70	0.10
9	1.194	0.134	1.98	67	1.41	104	71	-0.040	5.84	0.06
10	1.328	0.134	1.99	67	1.81	104	71	-0.040	5.70	0.04
11	1.464	0.136	1.98	67	0.86	105	71	-0.040	4.83	0.09
12	1.597	0.133	1.98	67	2.15	103	71	-0.040	4.73	0.08
13	1.729	0.132	1.96	68	1.61	102	71	-0.040	5.85	0.05
14	1.866	0.137	1.96	68	1.67	106	71	-0.030	6.61	0.02
15	1.997	0.131	1.97	68	1.67	101	71	-0.040	4.95	0.13
16	2.132	0.135	1.96	69	1.25	104	72	-0.040	4.11	0.15
17	2.267	0.135	1.97	69	0.93	104	72	-0.040	5.28	0.07
18	2.398	0.131	1.95	69	2	101	72	-0.040	5.80	0.05
19	2.535	0.137	1.97	70	2.02	106	72	-0.040	6.81	0.03
20	2.666	0.131	1.95	70	1.6	101	72	-0.040	5.10	0.10
21	2.800	0.134	1.93	70	1.63	103	72	-0.040	4.31	0.12
22	2.935	0.135	1.95	71	2.16	104	72	-0.040	5.02	0.09
23	3.068	0.133	1.96	71	1.17	102	72	-0.040	6.87	0.04
24	3.201	0.133	1.95	71	1.59	102	72	-0.030	3.80	0.16
25	3.338	0.137	1.95	72	1.59	105	73	-0.040	4.10	0.10
26	3.469	0.131	1.95	72	2.06	101	73	-0.030	4.80	0.08
27	3.604	0.135	1.95	72	1.54	104	73	-0.040	5.05	0.10
28	3.738	0.134	1.94	73	1.6	103	73	-0.030	6.53	0.04
29	3.870	0.132	1.94	73	1.97	101	73	-0.030	3.75	0.13
30	4.006	0.136	1.95	73	1.61	104	73	-0.040	5.26	0.07

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 3Technician: SJBDate: 2/8/2018Meter Box Y Factor: 1.000 (B)Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
31	4.140	0.134	1.94	74	1.36	103	73	-0.040	3.70	0.19
32	4.273	0.133	1.95	74	1.2	102	73	-0.030	5.07	0.05
33	4.409	0.136	1.95	74	2.1	104	73	-0.030	3.61	0.15
34	4.542	0.133	1.93	75	1.18	102	73	-0.030	4.51	0.11
35	4.675	0.133	1.92	75	2.17	102	73	-0.040	3.93	0.13
36	4.812	0.137	1.94	75	0.92	105	73	-0.040	6.41	0.04
37	4.942	0.130	1.91	76	2.16	99	73	-0.040	6.00	0.08
38	5.080	0.138	1.94	76	1.74	105	73	-0.040	3.28	0.19
39	5.212	0.132	1.92	76	1.95	101	73	-0.040	5.46	0.10
40	5.346	0.134	1.95	77	0.93	102	73	-0.040	5.76	0.04
41	5.481	0.135	1.93	77	2.11	103	73	-0.030	6.16	0.04
42	5.615	0.134	1.92	77	1.1	102	73	-0.040	6.29	0.05
43	5.747	0.132	1.93	78	1.75	100	74	-0.040	5.12	0.09
44	5.884	0.137	1.92	78	1.05	104	74	-0.040	6.61	0.04
45	6.016	0.132	1.92	78	1.47	100	74	-0.040	3.73	0.21
46	6.153	0.137	1.92	78	1.63	104	74	-0.040	5.82	0.05
47	6.286	0.133	1.93	79	1.36	101	74	-0.030	5.76	0.06
48	6.420	0.134	1.92	79	1.5	102	74	-0.040	3.67	0.17
49	6.556	0.136	1.94	79	0.88	103	74	-0.040	5.78	0.05
50	6.690	0.134	1.92	79	2.06	102	74	-0.030	3.90	0.16
51	6.823	0.133	1.92	80	1.42	101	74	-0.030	4.53	0.12
52	6.960	0.137	1.92	80	1.16	104	74	-0.040	8.15	0.02
53	7.091	0.131	1.93	80	0.9	99	74	-0.040	4.90	0.11
54	7.229	0.138	1.91	80	1.94	105	74	-0.040	3.83	0.15
55	7.362	0.133	1.92	81	2.09	101	74	-0.030	3.85	0.13
56	7.496	0.134	1.93	81	2.13	101	74	-0.030	4.63	0.08
57	7.632	0.136	1.91	81	0.97	103	74	-0.040	6.13	0.05
58	7.767	0.135	1.94	81	2.16	102	74	-0.040	4.41	0.14
59	7.900	0.133	1.92	82	1.06	100	74	-0.040	6.02	0.05
60	8.038	0.138	1.93	82	1.59	104	74	-0.030	4.80	0.11
61	8.169	0.131	1.91	82	1.78	99	74	-0.040	4.67	0.10

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
62	8.307	0.138	1.93	82	1.19	104	74	-0.040	6.79	0.04
63	8.440	0.133	1.93	82	1.15	100	74	-0.040	5.72	0.04
64	8.574	0.134	1.93	83	0.95	100	74	-0.030	6.05	0.02
65	8.712	0.138	1.93	83	2.13	103	74	-0.030	2.28	0.12
66	8.844	0.132	1.93	83	2.13	99	74	-0.030	3.01	0.04
67	8.980	0.136	1.93	83	1.35	102	73	-0.030	3.79	0.02
68	9.116	0.136	1.92	83	1.23	102	73	-0.040	2.31	0.07
69	9.249	0.133	1.92	84	1.62	99	73	-0.030	4.52	0.01
70	9.386	0.137	1.92	84	1.49	102	73	-0.030	2.84	0.05
71	9.521	0.135	1.92	84	2.23	101	73	-0.030	3.59	0.03
72	9.654	0.133	1.93	84	1.19	99	73	-0.030	4.40	0.02
73	9.792	0.138	1.92	84	1.81	103	73	-0.030	2.36	0.07
74	9.925	0.133	1.92	84	1.76	99	73	-0.030	3.08	0.04
75	10.062	0.137	1.93	85	2.15	102	73	-0.020	2.76	0.05
76	10.196	0.134	1.93	85	1.7	99	73	-0.020	1.47	0.09
77	10.331	0.135	1.90	85	1.66	100	72	-0.020	3.27	0.03
78	10.467	0.136	1.92	85	0.84	101	72	-0.020	2.92	0.04
79	10.602	0.135	1.92	85	1.5	100	72	-0.020	1.75	0.12
80	10.736	0.134	1.92	85	0.94	99	72	-0.020	4.84	0.02
81	10.874	0.138	1.93	85	0.91	102	72	-0.020	2.29	0.10
82	11.007	0.133	1.92	86	2.27	98	72	-0.020	3.45	0.03
83	11.144	0.137	1.92	86	1.58	101	72	-0.020	3.62	0.03
84	11.279	0.135	1.91	86	1.68	100	72	-0.020	2.51	0.06
85	11.412	0.133	1.90	86	2.01	98	72	-0.030	2.83	0.05
86	11.551	0.139	1.92	86	1.99	103	72	-0.030	4.15	0.02
87	11.684	0.133	1.92	86	0.95	98	72	-0.020	1.90	0.10
88	11.820	0.136	1.92	86	1.28	101	72	-0.030	4.19	0.02
89	11.955	0.135	1.92	86	2.12	100	72	-0.030	2.83	0.06
90	12.090	0.135	1.90	86	1.87	100	72	-0.030	4.25	0.02
91	12.227	0.137	1.91	87	2.09	101	72	-0.030	5.00	0.02
92	12.362	0.135	1.92	87	1.48	100	72	-0.020	2.36	0.10

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
93	12.496	0.134	1.93	87	1.39	99	72	-0.030	3.46	0.04
94	12.633	0.137	1.92	87	1.75	101	71	-0.030	3.24	0.03
95	12.767	0.134	1.92	87	1.37	99	71	-0.030	2.29	0.06
96	12.904	0.137	1.93	87	1.56	101	71	-0.020	4.94	0.02
97	13.039	0.135	1.92	87	0.98	100	71	-0.020	3.12	0.07
98	13.173	0.134	1.92	87	0.98	99	71	-0.030	2.34	0.07
99	13.311	0.138	1.91	87	2.24	102	71	-0.020	3.95	0.01
100	13.444	0.133	1.92	87	1.29	98	71	-0.020	1.57	0.13
101	13.582	0.138	1.92	88	1.68	102	71	-0.030	3.15	0.04
102	13.716	0.134	1.93	88	1.44	99	71	-0.020	5.48	0.02
103	13.851	0.135	1.91	88	1.91	100	71	-0.020	1.51	0.19
104	13.988	0.137	1.91	88	1.82	101	71	-0.030	2.18	0.05
105	14.123	0.135	1.92	88	2.15	100	71	-0.020	3.97	0.01
106	14.258	0.135	1.91	88	2.11	100	71	-0.020	1.96	0.08
107	14.394	0.136	1.91	88	1.32	100	71	-0.030	3.08	0.03
108	14.529	0.135	1.92	88	1.53	100	71	-0.020	4.73	0.01
109	14.666	0.137	1.93	88	1.83	101	71	-0.030	2.55	0.06
110	14.801	0.135	1.91	88	1.09	100	71	-0.020	3.33	0.03
111	14.935	0.134	1.91	88	1	99	71	-0.020	1.84	0.09
112	15.074	0.139	1.91	88	1.54	102	71	-0.020	3.16	0.03
113	15.206	0.132	1.91	89	1.55	97	71	-0.020	4.18	0.02
114	15.345	0.139	1.92	89	1.99	102	71	-0.030	2.00	0.12
115	15.479	0.134	1.90	89	1.76	99	71	-0.020	3.13	0.03
116	15.613	0.134	1.92	89	2.22	99	70	-0.020	3.15	0.03
117	15.752	0.139	1.91	89	1.83	102	70	-0.020	1.38	0.13
118	15.885	0.133	1.90	89	2.22	98	70	-0.020	2.65	0.04
119	16.022	0.137	1.92	89	2.06	101	70	-0.020	3.78	0.02
120	16.158	0.136	1.92	89	0.97	100	70	-0.020	2.55	0.05
121	16.292	0.134	1.92	89	2.2	99	70	-0.020	4.00	0.03
122	16.429	0.137	1.91	89	1.59	101	70	-0.020	1.78	0.11
123	16.565	0.136	1.93	89	1	100	70	-0.020	2.05	0.05

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
124	16.699	0.134	1.92	89	1.18	99	70	-0.020	4.49	0.02
125	16.837	0.138	1.93	89	1.36	101	70	-0.020	2.15	0.09
126	16.971	0.134	1.91	89	2.18	99	70	-0.030	2.91	0.04
127	17.108	0.137	1.92	89	1.01	101	70	-0.020	4.39	0.02
128	17.243	0.135	1.91	89	1.76	99	70	-0.020	2.46	0.06
129	17.378	0.135	1.92	89	2.04	99	70	-0.030	4.30	0.02
130	17.516	0.138	1.91	89	1.92	101	70	-0.020	4.07	0.02
131	17.649	0.133	1.91	89	1.72	98	70	-0.030	2.37	0.08
132	17.787	0.138	1.91	89	2.15	102	70	-0.020	3.75	0.03
133	17.921	0.134	1.90	89	2.15	99	70	-0.020	2.12	0.10
134	18.056	0.135	1.91	89	1.71	99	70	-0.020	1.57	0.11
135	18.194	0.138	1.92	89	2.04	102	70	-0.030	4.85	0.01
136	18.328	0.134	1.92	89	1.29	99	70	-0.020	3.13	0.05
137	18.464	0.136	1.92	89	0.95	100	70	-0.030	3.53	0.03
138	18.600	0.136	1.91	89	1.06	100	70	-0.030	5.26	0.01
139	18.734	0.134	1.92	89	0.91	99	70	-0.020	2.40	0.07
140	18.872	0.138	1.92	89	1.94	102	70	-0.020	3.53	0.02
141	19.007	0.135	1.90	89	1.65	99	70	-0.030	3.43	0.02
142	19.141	0.134	1.91	89	1.14	99	71	-0.030	1.63	0.16
143	19.280	0.139	1.89	89	1.58	102	71	-0.020	2.23	0.06
144	19.413	0.133	1.92	89	2.06	98	71	-0.020	3.13	0.02
145	19.550	0.137	1.91	89	1.44	101	71	-0.020	1.65	0.07
146	19.685	0.135	1.91	89	2.13	99	71	-0.030	2.79	0.03
147	19.819	0.134	1.89	89	1.94	99	71	-0.020	4.00	0.02
148	19.958	0.139	1.90	89	1.81	102	71	-0.020	1.91	0.10
149	20.091	0.133	1.92	89	1.45	98	71	-0.020	4.30	0.02
150	20.228	0.137	1.92	89	1.47	101	71	-0.020	2.50	0.09
151	20.363	0.135	1.91	90	1.09	99	71	-0.020	2.30	0.05
152	20.499	0.136	1.92	90	2.22	100	71	-0.020	3.85	0.01
153	20.635	0.136	1.90	90	2.09	100	71	-0.020	2.39	0.07
154	20.770	0.135	1.91	90	1.41	99	71	-0.030	3.47	0.04

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
155	20.906	0.136	1.91	90	2.22	100	71	-0.030	5.27	0.01
156	21.042	0.136	1.92	90	0.96	100	71	-0.020	2.14	0.11
157	21.176	0.134	1.91	90	1.5	98	71	-0.030	2.70	0.07
158	21.314	0.138	1.91	90	1.68	101	71	-0.020	5.16	0.01
159	21.448	0.134	1.90	90	1.54	98	71	-0.030	2.32	0.08
160	21.583	0.135	1.91	90	1.77	99	71	-0.030	4.33	0.02
161	21.721	0.138	1.89	90	0.99	101	71	-0.020	2.64	0.06
162	21.853	0.132	1.90	90	1.73	97	71	-0.020	1.13	0.14
163	21.992	0.139	1.90	90	1.64	102	71	-0.030	4.07	0.02
164	22.127	0.135	1.91	90	1.24	99	71	-0.020	2.48	0.09
165	22.261	0.134	1.92	90	0.91	98	71	-0.020	2.65	0.04
166	22.399	0.138	1.90	90	1.88	101	71	-0.020	3.79	0.03
167	22.532	0.133	1.90	90	1.48	98	71	-0.020	1.77	0.11
168	22.669	0.137	1.90	90	1.53	101	71	-0.030	2.71	0.03
169	22.805	0.136	1.91	90	1.21	100	71	-0.020	4.77	0.02
170	22.939	0.134	1.91	90	1.41	98	71	-0.020	2.61	0.07
171	23.076	0.137	1.90	90	1.56	101	71	-0.030	3.57	0.04
172	23.212	0.136	1.92	90	2.07	100	71	-0.020	2.94	0.06
173	23.346	0.134	1.90	90	2.02	98	71	-0.030	1.46	0.13
174	23.484	0.138	1.92	90	2.18	101	71	-0.030	4.66	0.01
175	23.617	0.133	1.91	90	2.23	98	71	-0.030	2.57	0.07
176	23.754	0.137	1.91	90	1.43	101	71	-0.030	1.67	0.12
177	23.890	0.136	1.91	90	1.34	100	71	-0.030	5.39	0.01
178	24.024	0.134	1.91	90	1.84	98	71	-0.030	2.32	0.09
179	24.162	0.138	1.90	90	1.96	101	71	-0.020	4.26	0.02
180	24.295	0.133	1.91	90	2.24	98	71	-0.030	3.71	0.04
181	24.433	0.138	1.89	90	1.02	101	71	-0.030	2.78	0.04
182	24.567	0.134	1.90	90	1.23	99	71	-0.030	4.22	0.01
183	24.703	0.136	1.90	90	1.73	100	71	-0.020	2.92	0.07
184	24.840	0.137	1.91	90	1.61	101	71	-0.020	2.87	0.05
185	24.974	0.134	1.91	90	1.39	99	71	-0.020	3.69	0.02

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
186	25.110	0.136	1.90	90	1.81	100	71	-0.020	1.92	0.07
187	25.246	0.136	1.90	90	2.08	100	71	-0.020	2.82	0.04
188	25.380	0.134	1.90	90	1.77	99	71	-0.030	4.44	0.02
189	25.518	0.138	1.91	90	1.09	101	71	-0.020	1.10	0.16
190	25.652	0.134	1.90	90	1.63	99	71	-0.020	2.87	0.03
191	25.786	0.134	1.90	90	2.19	98	71	-0.030	2.93	0.05
192	25.925	0.139	1.89	90	2.21	102	71	-0.030	2.77	0.04
193	26.057	0.132	1.89	90	1.07	97	71	-0.020	4.57	0.01
194	26.195	0.138	1.91	90	1.77	101	71	-0.020	2.12	0.09
195	26.330	0.135	1.90	90	1.45	99	71	-0.020	3.40	0.03
196	26.464	0.134	1.90	90	1.96	98	71	-0.020	2.65	0.05
197	26.602	0.138	1.89	90	2.27	101	71	-0.020	1.76	0.06
198	26.735	0.133	1.88	90	2.04	98	71	-0.030	2.70	0.05
199	26.872	0.137	1.90	91	2.03	100	71	-0.020	3.54	0.03
200	27.008	0.136	1.90	91	1.57	100	72	-0.030	3.51	0.02
201	27.142	0.134	1.91	91	0.9	98	72	-0.020	5.99	0.01
202	27.279	0.137	1.90	91	1.22	100	72	-0.020	2.18	0.14
203	27.414	0.135	1.87	91	2.23	99	72	-0.030	3.01	0.04
204	27.548	0.134	1.91	91	1.12	98	72	-0.020	4.68	0.02
205	27.686	0.138	1.89	91	1.57	101	72	-0.020	1.77	0.12
206	27.819	0.133	1.89	91	1.55	98	72	-0.030	3.09	0.05
207	27.956	0.137	1.90	91	1.64	100	72	-0.020	4.10	0.02
208	28.092	0.136	1.89	91	1.57	100	72	-0.020	1.26	0.17
209	28.225	0.133	1.89	91	2.12	98	72	-0.020	2.94	0.04
210	28.364	0.139	1.90	91	2.19	102	72	-0.030	3.65	0.02
211	28.497	0.133	1.91	91	1.44	98	72	-0.020	2.17	0.05
212	28.634	0.137	1.90	91	1.36	100	72	-0.020	4.28	0.01
213	28.769	0.135	1.90	91	2.19	99	72	-0.020	3.12	0.03
214	28.904	0.135	1.88	91	1.21	99	72	-0.030	2.20	0.05
215	29.040	0.136	1.90	91	1.77	100	72	-0.030	4.34	0.01
216	29.175	0.135	1.90	91	1.78	99	72	-0.030	2.86	0.07

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
217	29.310	0.135	1.90	91	1.13	99	72	-0.030	3.45	0.05
218	29.447	0.137	1.90	91	1.08	101	72	-0.030	4.39	0.01
219	29.580	0.133	1.89	91	2.05	98	72	-0.020	2.60	0.06
220	29.717	0.137	1.90	91	2.23	101	72	-0.030	2.93	0.04
221	29.853	0.136	1.90	91	1.72	100	72	-0.020	4.31	0.02
222	29.987	0.134	1.91	91	1.36	98	72	-0.030	1.84	0.09
223	30.125	0.138	1.91	91	1.98	101	72	-0.020	2.78	0.03
224	30.257	0.132	1.90	91	1.26	97	72	-0.020	3.97	0.01
225	30.395	0.138	1.88	91	2.06	101	72	-0.020	2.43	0.08
226	30.529	0.134	1.89	91	2.24	98	72	-0.020	3.33	0.03
227	30.664	0.135	1.89	91	2.07	99	72	-0.020	3.47	0.03
228	30.801	0.137	1.90	91	1.2	101	72	-0.020	2.01	0.09
229	30.935	0.134	1.89	91	1.67	98	72	-0.030	4.59	0.01
230	31.071	0.136	1.89	91	1.16	100	72	-0.020	2.48	0.07
231	31.207	0.136	1.90	91	2.24	100	72	-0.020	3.20	0.03
232	31.341	0.134	1.91	91	1.52	98	72	-0.020	4.27	0.02
233	31.477	0.136	1.89	91	2.13	100	72	-0.020	1.95	0.09
234	31.613	0.136	1.89	91	1.76	100	72	-0.030	2.84	0.05
235	31.746	0.133	1.90	91	1.51	98	72	-0.020	4.82	0.00
236	31.884	0.138	1.89	91	2.04	101	72	-0.020	2.01	0.12
237	32.017	0.133	1.89	91	1.5	98	72	-0.020	4.10	0.02
238	32.154	0.137	1.89	91	1.15	101	72	-0.020	4.15	0.02
239	32.289	0.135	1.88	91	1.86	99	72	-0.030	1.80	0.12
240	32.424	0.135	1.91	91	1.69	99	72	-0.020	3.82	0.01
241	32.560	0.136	1.88	91	2.2	100	72	-0.020	2.73	0.04
242	32.695	0.135	1.90	91	2.14	99	72	-0.020	1.65	0.09
243	32.830	0.135	1.90	91	1.34	99	72	-0.020	2.87	0.03
244	32.966	0.136	1.89	91	1.34	100	72	-0.020	2.61	0.04
245	33.100	0.134	1.89	91	1.88	98	72	-0.030	3.15	0.04
246	33.237	0.137	1.89	91	1.76	101	72	-0.020	5.53	0.01
247	33.372	0.135	1.90	91	1.53	99	72	-0.030	2.27	0.11

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
248	33.506	0.134	1.90	91	1.96	98	72	-0.030	3.35	0.03
249	33.644	0.138	1.89	91	1.11	101	72	-0.020	4.23	0.03
250	33.776	0.132	1.90	91	2.05	97	72	-0.030	1.32	0.13
251	33.914	0.138	1.89	91	1.99	101	72	-0.020	2.07	0.04
252	34.048	0.134	1.89	91	1.05	98	72	-0.030	3.97	0.02
253	34.183	0.135	1.89	91	2.11	99	72	-0.030	3.73	0.01
254	34.319	0.136	1.88	91	1.81	100	72	-0.030	4.78	0.02
255	34.454	0.135	1.89	91	1.37	99	72	-0.020	2.86	0.06
256	34.588	0.134	1.87	91	1.92	98	72	-0.030	1.39	0.12
257	34.725	0.137	1.89	91	1.6	101	72	-0.020	3.24	0.02
258	34.859	0.134	1.88	91	1.13	98	72	-0.030	2.81	0.04
259	34.995	0.136	1.90	91	1.95	100	72	-0.030	2.42	0.05
260	35.130	0.135	1.89	92	1.38	99	72	-0.020	4.96	0.01
261	35.264	0.134	1.89	92	2.1	98	72	-0.020	1.63	0.16
262	35.402	0.138	1.89	92	2.2	101	72	-0.030	2.68	0.07
263	35.535	0.133	1.88	92	1.96	97	72	-0.020	4.28	0.03
264	35.672	0.137	1.89	92	1.78	100	72	-0.020	1.80	0.08
265	35.806	0.134	1.90	92	2	98	72	-0.030	3.58	0.02
266	35.941	0.135	1.90	92	1.08	99	72	-0.030	4.38	0.02
267	36.077	0.136	1.89	92	1.68	100	72	-0.030	2.63	0.06
268	36.212	0.135	1.88	92	1.6	99	72	-0.030	3.43	0.04
269	36.345	0.133	1.89	92	2.27	97	72	-0.020	2.49	0.05
270	36.484	0.139	1.89	92	2.01	102	72	-0.030	1.38	0.09
271	36.616	0.132	1.88	92	2.11	97	72	-0.020	4.62	0.01
272	36.753	0.137	1.89	92	1.54	100	72	-0.030	2.70	0.05
273	36.888	0.135	1.89	92	2.17	99	72	-0.030	3.98	0.02
274	37.022	0.134	1.88	92	2.14	98	72	-0.020	4.11	0.01
275	37.159	0.137	1.88	92	1.1	100	72	-0.020	0.97	0.19
276	37.292	0.133	1.88	92	1.71	97	72	-0.020	1.51	0.06
277	37.429	0.137	1.87	92	2.26	100	72	-0.020	3.94	0.01
278	37.564	0.135	1.89	92	2.09	99	72	-0.020	3.17	0.02

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
279	37.698	0.134	1.88	92	2.32	98	72	-0.030	3.85	0.02
280	37.835	0.137	1.89	92	1.09	100	72	-0.030	5.26	0.02
281	37.969	0.134	1.88	92	1.47	98	72	-0.020	2.31	0.10
282	38.103	0.134	1.87	92	1.51	98	72	-0.030	3.14	0.01
283	38.240	0.137	1.87	92	1.06	100	72	-0.030	2.77	0.04
284	38.372	0.132	1.88	92	1.99	97	72	-0.030	2.76	0.01
285	38.511	0.139	1.89	92	1.43	102	72	-0.030	4.48	0.00
286	38.644	0.133	1.88	92	1.08	98	72	-0.030	2.69	0.09
287	38.779	0.135	1.88	92	1.09	99	73	-0.030	2.57	0.05
288	38.915	0.136	1.88	92	1.95	100	72	-0.020	5.34	0.01
289	39.049	0.134	1.88	92	2.32	98	73	-0.020	1.80	0.13
290	39.185	0.136	1.88	92	1.09	100	73	-0.020	2.41	0.05
291	39.321	0.136	1.89	92	1.21	100	73	-0.020	4.44	0.01
292	39.454	0.133	1.87	92	2.27	98	73	-0.030	2.08	0.07
293	39.590	0.136	1.89	92	1.06	100	73	-0.020	4.69	0.01
294	39.725	0.135	1.88	92	1.84	99	73	-0.020	3.04	0.03
295	39.859	0.134	1.87	92	1.59	98	73	-0.030	2.58	0.04
296	39.996	0.137	1.88	92	1.24	100	73	-0.030	4.21	0.02
297	40.129	0.133	1.90	92	1.5	98	73	-0.020	2.45	0.11
298	40.266	0.137	1.88	92	2.3	100	73	-0.030	2.43	0.06
299	40.401	0.135	1.87	92	1.28	99	73	-0.020	3.86	0.01
300	40.534	0.133	1.88	92	2.22	98	73	-0.020	2.41	0.07
301	40.671	0.137	1.88	92	1.2	100	73	-0.020	2.71	0.03
302	40.806	0.135	1.86	92	1.08	99	73	-0.020	4.39	0.02
303	40.939	0.133	1.88	92	1.86	98	73	-0.030	1.99	0.10
304	41.077	0.138	1.89	92	1.66	101	73	-0.030	3.39	0.02
305	41.209	0.132	1.87	92	2.1	97	73	-0.020	4.13	0.01
306	41.347	0.138	1.88	92	1.86	101	73	-0.030	2.61	0.06
307	41.480	0.133	1.87	92	2.24	98	73	-0.030	5.19	0.01
308	41.615	0.135	1.88	92	2.22	99	73	-0.030	3.72	0.03
309	41.752	0.137	1.88	92	1.83	100	73	-0.020	2.44	0.06

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB

Date: 2/8/2018

Meter Box Y Factor: 1.000 (B)

Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
310	41.885	0.133	1.88	92	1.06	98	73	-0.030	4.41	0.01
311	42.020	0.135	1.88	92	1.05	99	73	-0.030	2.29	0.04
312	42.156	0.136	1.89	92	2.16	100	73	-0.030	2.67	0.04
313	42.289	0.133	1.86	92	1.75	98	73	-0.020	4.93	0.01
314	42.426	0.137	1.87	92	1.78	100	73	-0.020	2.21	0.09
315	42.561	0.135	1.88	92	1.01	99	73	-0.030	3.26	0.02
316	42.694	0.133	1.87	92	2.23	98	73	-0.030	4.48	0.01
317	42.832	0.138	1.88	92	1.59	101	73	-0.020	2.46	0.09
318	42.964	0.132	1.88	92	2.15	97	73	-0.030	3.42	0.03
319	43.101	0.137	1.87	92	2.18	100	73	-0.030	2.60	0.04
320	43.235	0.134	1.88	92	1.61	98	73	-0.030	2.59	0.05
321	43.369	0.134	1.88	92	2.03	98	73	-0.030	4.57	0.00
322	43.505	0.136	1.87	92	1.31	100	73	-0.020	1.74	0.12
323	43.640	0.135	1.87	92	1.76	99	73	-0.020	3.50	0.02
324	43.773	0.133	1.87	92	1.45	98	73	-0.030	4.40	0.02
325	43.911	0.138	1.87	92	2.15	101	73	-0.030	2.47	0.08
326	44.043	0.132	1.87	92	1.04	97	73	-0.030	2.68	0.03
327	44.181	0.138	1.88	92	2.25	101	73	-0.020	3.84	0.01
328	44.314	0.133	1.87	92	2.23	98	73	-0.030	2.89	0.04
329	44.449	0.135	1.88	92	2.29	99	73	-0.020	4.83	0.01
330	44.585	0.136	1.87	93	1.16	100	73	-0.030	1.87	0.15
331	44.719	0.134	1.87	93	1.34	98	73	-0.030	3.09	0.03
332	44.854	0.135	1.88	93	2.09	99	73	-0.030	5.42	0.01
333	44.990	0.136	1.87	93	1.98	100	73	-0.020	2.65	0.04
334	45.123	0.133	1.87	93	1.94	97	73	-0.030	2.80	0.04
335	45.259	0.136	1.89	93	2.25	100	73	-0.030	4.55	0.02
336	45.394	0.135	1.86	93	2.23	99	73	-0.030	2.51	0.04
337	45.527	0.133	1.89	93	1.27	97	73	-0.030	5.27	0.01
338	45.665	0.138	1.86	93	2.12	101	73	-0.020	2.36	0.07
339	45.797	0.132	1.86	93	1.6	97	73	-0.030	2.70	0.05
340	45.933	0.136	1.87	93	1.99	100	73	-0.020	5.92	0.01

BOX B TEST DATA - ASTM E2779 / ASTM E2515

Client: USSCJob #: 18-405Model: 5770Tracking #: 0001Run #: 3Technician: SJBDate: 2/8/2018Meter Box Y Factor: 1.000 (B)Post-Test Leak Check (B): 0.000 cfm @ -14 in. Hg

Elapsed Time (min)	Particulate Sampling Data							Flue Gas Data		
	Gas Meter (ft ³)	Sample Rate (cfm)	Orifice dH (in H ₂ O)	Meter Temp (°F)	Meter Vacuum (in Hg)	Pro. Rate (%)	Filter (°F)	Flue Draft (in H ₂ O)	CO ₂ (%)	CO (%)
341	46.068	0.135	1.86	93	1.77	99	73	-0.020	2.32	0.09
342	46.202	0.134	1.87	93	2.26	98	73	-0.030	3.10	0.03
343	46.338	0.136	1.88	93	1.18	100	73	-0.020	4.62	0.01
344	46.473	0.135	1.87	93	1.44	99	73	-0.020	1.30	0.17
345	46.606	0.133	1.87	93	1.79	97	73	-0.030	3.08	0.02
346	46.743	0.137	1.88	93	1.2	100	73	-0.030	3.65	0.01
347	46.875	0.132	1.87	93	1.08	97	73	-0.030	2.73	0.06
348	47.012	0.137	1.87	93	1.76	100	73	-0.030	4.42	0.01
349	47.146	0.134	1.86	93	2.32	98	73	-0.030	2.52	0.07
350	47.280	0.134	1.86	93	1.22	98	73	-0.030	3.49	0.02
351	47.416	0.136	1.86	93	2.29	100	73	-0.030	4.36	0.01
352	47.551	0.135	1.85	93	2.26	99	73	-0.020	2.14	0.07
353	47.684	0.133	1.87	93	1.14	97	73	-0.030	2.49	0.05
354	47.822	0.138	1.86	93	1.38	101	73	-0.030	5.30	0.01
355	47.953	0.131	1.87	93	1.79	96	73	-0.030	3.85	0.02
356	48.091	0.138	1.88	93	1.54	101	73	-0.020	4.47	0.01
357	48.224	0.133	1.85	93	1.71	97	73	-0.030	2.13	0.09
358	48.359	0.135	1.86	93	2	99	74	-0.030	2.55	0.04
359	48.494	0.135	1.86	93	1.98	99	74	-0.030	4.79	0.00
360	48.628	0.134	1.87	93	2.12	98	74	-0.030	2.68	0.06
Avg/Tot	48.628	0.135	1.90	87	1.66	100			3.54	0.06

LAB SAMPLE DATA - ASTM E2779 / ASTM E2515

Client: USSC
 Model: 5770
 Run #: 3

Job #: 18-405
 Tracking #: 0001
 Technician: SJB
 Date: 2/8/2018

TRAIN A (1st Hour)

Sample Component	Sample Type	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3193	118.4	117.4	1.0
B. Rear filter catch	Filter				0.0
C. Probe catch*	Probe				0.0
D. O-Ring catch*	O-Ring				0.0

Sub-Total Total Particulate, mg: 1.0

TRAIN A (Post 1st hour)

Sample Component	Sample Type	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3194	121.6	119	2.6
B. Rear filter catch	Filter	3195	118.6	118.6	0.0
C. Probe catch*	Probe	11A	117034.5	117034.4	0.1
D. O-Ring catch*	O-Ring	1A	3574.5	3573.8	0.7

Sub-Total Total Particulate, mg: 3.4

Train A Aggregate Total Particulate, mg: **4.4**

TRAIN B

Sample Component	Reagent	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Front filter catch	Filter	3196	120.7	117.5	3.2
B. Rear filter catch	Filter	3197	118.3	118.1	0.2
C. Probe catch*	Probe	11B	116673.7	116673.6	0.1
D. O-Ring catch*	O-Ring	1B	3552.6	3552.1	0.5

Total Particulate, mg: **4.0**

AMBIENT

Sample Component	Reagent	Filter, Probe, or O-Ring #	Weights		
			Final, mg	Tare, mg	Particulate, mg
A. Filter catch*	Filter	3198	117.4	117.6	-0.2
B. O-Ring Catch	O-Ring	1 AMB	2463.5	2463.3	0.2

Total Particulate, mg: **0.0**

*Particulate catch that results in a negative number, is assumed to be zero for probes and O-rings, negative numbers for filters are assumed to be part of the O-Ring weight.

ASTM E2779 Pellet Heater Run Sheets

Client: United States Stove Company Job Number: 18-405
 Model: 5770 Run Number: 3 Test Date: 2/8/2018

Pellet Heater Run Notes

Pellet Heater Control Settings

High Burn Rate Settings: Heat Setting #5, Air inlet damper set to half open.

Medium Burn Rate Settings: Heat Setting #1, Air inlet damper set to fully closed.

Low Burn Rate Settings: Heat Setting #1, Air inlet damper set to fully closed.

Preburn Notes

Preburn Start Time: 8:28

Time	Notes
49 min	Added 26.1 lbs of pellets to hopper

Test Notes

Test Burn Start Time: 9:34

Time	Notes
60 min	Changed 1-hour filter, set to medium burn rate setting. Medium burn rate setting is the same as low burn rate setting, no change made. End of Test.
180 min	
360 min	


Test Burn End Time: 15:34

Background Filter Volume (L): 1687.391

Filter Data

Train	A	A	A	A	A	B	B	B	B	AMB	AMB
Element	Front Filter (First Hour)	Front Filter (Remainder)	Rear Filter	Probe	O-Ring Pair	Front Filter	Rear Filter	Probe	O-Ring Pair	Filter	O-Ring Pair
ID #	3193	3194	3195	11A	1A	3196	3197	11B	1B	3198	1AMB
Tare (mg)	117.4	119.0	118.6	117034.4	3573.8	117.5	118.1	116673.6	3552.1	117.6	2463.3
Final Weight (mg)	118.4	121.6	118.6	117034.5	3574.5	120.7	118.3	116673.7	3552.6	117.4	2463.5

Sample Train Leak Check: A: 0.001 @ -19 "Hg B: 0.000 @ -14 "Hg

Technician Signature: 

Date: 3/19/2018

ASTM E2779 Pellet Heater Run Sheets

Client: United States Stove Company Job Number: 18-405
 Model: 5770 Run Number: 3 Test Date: 2/8/2018

Flue Gas Concentration Measurement

Calibration Gas Values: Span Gas CO₂ (%): 17.06 CO (%): 4.25
 Mid Gas CO₂ (%): 10.02 CO (%): 2.52

Calibration Results:

	Pre Test			Post Test		
	Zero	Mid	Span	Zero	Mid	Span
Time	8:45	8:49	8:47	15:44	15:48	15:42
CO ₂	0.00	10.15	17.06	0.12	10.05	17.00
CO	0.000	2.494	4.251	-0.017	2.454	4.221

Flue Gas Probe Leak Check: Initial: No Leakage Final: No Leakage

Dilution Tunnel Flow

Pitot Tube Leak Test: Initial: No Leakage Final: No Leakage

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Center
dP (inH₂O):	0.044	0.045	0.045	0.044	0.043	0.046	0.046	0.048	0.045
Temp (°F):	94	94	94	94	94	94	94	94	94

Dilution Tunnel Static Pressure (inH₂O): -0.120

Supplemental Data

Room Air Velocity (ft/min): Initial: <50 Final: <50

Scale Audit (lbs): Initial: 10 Final: 10

Stack Diameter (in): 3

Induced Draft (in H₂O): 0

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series: Date: 2/2/2018

	Initial	Middle	Ending
P _b (inHg)	30.15	30.11	30.08
RH (%)	39.7	38.9	41.8

Technician Signature: 

Date: 3/19/2018

FILTER TARE WEIGHT													
FILTER #	Into Desiccator		DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	Comments	
	Date	Time											
3161	8/8	11:30	8/16	11:00	0.1166	11/7	14:35	0.1167	✓	11/8	9:45	0.1166	EPA2 ^{AR} Lodera JHP
3162					0.1183			0.1183	✓			0.1184	BF
3163					0.1177			0.1184				0.1184	BR
3164					0.1169			0.1170				0.1169	AMB
3165					0.1183			0.1183				0.1183	1hr
3166					0.1192			0.1189				0.1189	AF EPA3
3167					0.1178			0.1179				0.1179	AR
3168					0.1192			0.1193				0.1192	BF
3169					0.1185			0.1186				0.1188	BR
3170					0.1179			0.1180				0.1182	AMB
3171					0.1185			0.1186				0.1185	1hr
3172	11/7	14:35	11/8	8:26	0.1193	11/8	16:55	0.1191		11/9	08:25	0.1192	AF EPA4 JHP
3173	11				0.1189			0.1188				0.1189	AR
3174					0.1179			0.1179				0.1179	BF
3175					0.1176			0.1176				0.1176	BR
3176					0.1185			0.1181				0.1181	AMB
3177					0.1172			0.1172				0.1171	AF
3178					0.1191 0.1186			0.1185		11/21	14:30	0.1187	
3179					0.1188			0.1189				0.1188	
3180					0.1179			0.1180				0.1180	
3181	11/8	11:40	11/21	14:3	0.1180	2/5	9:30	0.1182					USSC#1 AF
3182					0.1178			0.1178					1hr
3183					0.1186			0.1187					AR
3184					0.1185			0.1185					BF
3185					0.1192			0.1193					AR
3186	11/21	14:30			0.1195								AMB
3187			2/5	13:45	0.1182	2/6	9:30	0.1183					USSC #2 AF

FILTER POST-TEST WEIGHT														comment
Tare Wt-Grams	FILTER #	Name & Run #	Into Desiccator		DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	
			Date	Time										
0.1166	3161	EPA 2 Load	11/8	1800	11/15	09:26	0.1167	9-13	08:30	0.1167	11/15/17	14:00	0.1166 ✓	IHP
0.1184	3162						0.1248			0.1249			0.1249 ✓	
0.1184	3163						0.1184			0.1187			0.1188 ✓	
0.1169	3164						0.1169			0.117			0.1169 ✓	
0.1183	3165						0.1185			0.1185			0.1185 ✓	
0.1189	3166	EPA 3	11/8	1800			0.1212			0.1212			0.1211 ✓	
0.1179	3167						0.1179			0.1178			0.1177 ✓	
0.1192	3168						0.1202			0.1203			0.1203 ✓	
0.1188	3169						0.1186			0.1187	11/15/17	14:00	0.1184 ✓	11/16/17 16:00 0.1185 ✓
0.1182	3170						0.1186			0.1181	11/15/17	14:00	0.1181 ✓	
0.1185	3171						0.1187			0.1185			0.1184 ✓	
0.1192	3172	EPA 4	11/9	1490			0.1216			0.1217			0.1215 ✓	
0.1189	3173						0.1186			0.1186			0.1186 ✓	
0.1179	3174						0.1202			0.1197			0.1198 ✓	
0.1176	3175						0.1177			0.1175			0.1175 ✓	
0.1181	3176						0.1185			0.1183			0.1182 ✓	
0.1171	3177						0.1175			0.1174			0.1174 ✓	
	3178													
	3179													
	3180													
	3181													
	3182													
	3183													
	3184													
	3185													
	3186													
0.1183	3187	VSSC # 2	2/6	16.90	2/12	8:00	0.1193	2/13	8:00	0.1192 ✓				

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O-Ring TARE WEIGHTS												
O-Ring #	Into Desiccator		DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	Comments
	DATE	TIME										
7A	5/10	16:05	5/24/17	15:15	3.5885	8/17	9:20	3.5875	9/26	14:15	3.5877	R1 Ladera
7B					3.5425			3.5416			3.5418	↓
7 Amb					1.6703			1.6698			1.6698	↓
8A					3.5136			3.5128	10/10	10:20	3.5128	RIA Ladera
8B					3.5530			3.5522			3.5522	↓
8 Amb					1.6462			1.6455			1.6455	↓
1A					3.5697			3.5689			3.5689	EPA1
1B					3.5347			3.5341			3.5340	↓
1 Amb					1.6809			1.6803			1.6802	↓
2A					3.5745			3.5738			3.5737	EPA1 Ladera
2B					3.5101			3.5095			3.5093	EPA1 Ladera
2 Amb					1.6529			1.6524			1.6525	EPA1
5A	8/1	15:00	8/17	09:30	3.5263	9/26	14:00	3.5261			3.5261	EPA2
5B					3.5486			3.5483			3.5484	↓
5AMB					1.6586	9/26	14:00	1.6584			1.6584	↓
6A					3.5609			3.5603			3.5605	EPA3
6B					3.5621			3.5619			3.5619	EPA3
6AMB					1.6797			1.6796			1.6796	EPA3
9A					3.5652			3.5647			3.5647	EPA4 *
9B					3.5764			3.5759			3.5759	
9AMB					1.6779			1.6776			1.6777	
3A					3.5309			3.5305			3.5306	US Store #1
3B					3.5555			3.5550			3.5551	↓
3AMB					1.6711			1.6710			1.6710	↓
4A					3.5306			3.5302			3.5302	USSC #2
4B					3.5497			3.5494			3.5495	↓
4AMB					1.6796			1.6795			1.6795	↓

DirigoLaboratories, Inc.

O-Ring TARE WEIGHTS

O-Ring #	Into Desiccator		DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	Comments
	DATE	TIME										
1 A	11/7	14:30	11/8		3.5746	11-21	14:45	3.5737	2/7	11:2	3.5738	VSSC #3
1 B					3.5524			3.5520	2/7	↓	3.5521	↓
1 AMB					2.4644			2.4634	2/7	↓	2.4633	↓
2 A												
2 B												
2 AMB												
7 A	11/7	11:10	11/8	8:30	3.5723	11-21	14:45	3.5707				
7 B					3.5173			3.5168				
7 AMB					1.7035			1.7018				
8 A	11/7	14:00			3.5884			3.5877				
8 B					3.5786			3.5771				
8 AMB					1.6704			1.6698				

91
92
93

DirigoLaboratories, Inc.

IHP
Laduca
US STAINES

O-Ring POST-TEST WIEGHTS														
O-Ring #	Tare Wt	Name & Run #	Into Desiccator		DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	DATE	TIME	WEIGHT	Comments
			Date	Time										
2A	3.5737	EPA 1	11/7	17:00	11/10	09:00	3.5751	9-13	0830	3.5743	11/15/17	14:00	3.5742 ✓	
2B	3.5093	↓	↓	↓	↓	↓	3.5113			3.5106	↓	↓	3.5103	
2AMB	1.6525	↓	↓	↓	↓	↓	1.6532			1.6527	↓	↓	1.6525 ✓	
5A	3.5261	EPA 2	11/8	12:00			3.5279			3.5275	11/16/17	16:00	3.5270	11/17/17 10:45 3.5269 ✓
5B	3.5484	↓	↓	↓	↓	↓	3.5504			3.550	11/15/17	14:00	3.5498 ✓	
5AMB	1.6584	↓	↓	↓	↓	↓	1.6590			1.6588	↓	↓	1.6586 ✓	
6A	3.5605	EPA 3	11/8	19:00			3.5631			3.5627			3.5621	11/14/17 16:30 3.5619 ✓
6B	3.5619	↓	↓	↓	↓	↓	3.5644			3.5640			3.5635	↓ 3.5634 ✓
6AMB	1.6796	↓	↓	↓	↓	↓	1.6801			1.680			1.6799 ✓	
9A	3.5647	EPA 4	11/9	14:00			3.5670			3.5666			3.5661	11/14/17 16:30 3.5659 ✓
9B	3.5759	↓	↓	↓	↓	↓	3.5788			3.5782			3.5780 ✓	
9AMB	1.6777	↓	↓	↓	↓	↓	1.6784			1.6781	↓	↓	1.6779 ✓	
3A	3.5306	US EPA 1	TEST Run Aborted											
3B	3.5551		TEST Run Aborted											
AMB	1.6710		TEST Run Aborted											
4A	3.5802	EPA # 2	2/6	1620	2/12	8:00	3.531.1	2/13	8:00	3.531.2 ✓				
4B	3.5495	↓	↓	↓	↓	↓	3.550.3			3.550.1 ✓				
4AMB	1.6795	↓	↓	↓	↓	↓	1.679.6			1.679.5 ✓				
1A	3.5756	EPA # 3	2/8	16:00			3.574.4			3.574.5 ✓				
1B	3.5521	↓	↓	↓	↓	↓	3.552.4			3.552.6 ✓				
1AMB	2.4633	↓	↓	↓	↓	↓	2.463.4			2.463.5 ✓				



Twin Ports Testing, Inc.
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 Superior, WI 54880
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 p: 800-373-2562
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 www.twinportstesting.com

Report No: USR:W218-0155-01
Issue No: 1

Analytical Test Report

Client: PFS-TECO
 11785 SE Hwy 212
 Clackamas, OR 97015
Attention: Sebastian Button
PO No: S. Button

Signed: *Stephen Sundeen*
 Stephen Sundeen
 Chemistry Laboratory Manager
 Date of Issue: 2/27/2018
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details
Sample Log No: W218-0155-01 **Sample Date:**
Sample Designation: Presto Log - Pure Western Conife **Sample Time:**
Sample Recognized As: Wood Pellets **Arrival Date:** 2/15/2018

Test Results

	METHOD	UNITS	MOISTURE FREE	AS RECEIVED
Moisture Total	ASTM E871	wt. %		3.03
Ash	ASTM D1102	wt. %	0.20	0.19
Volatile Matter	ASTM D3175	wt. %		
Fixed Carbon by Difference	ASTM D3172	wt. %		
Sulfur	ASTM D4239	wt. %	0.006	0.006
SO ₂	Calculated	lb/mmbtu		0.013
Net Cal. Value at Const. Pressure	ISO 1928	GJ/tonne	19.07	18.42
Net Cal. Value at Const. Pressure	ISO 1928	J/g	19075	18424
Gross Cal. Value at Const. Vol.	ASTM E711	J/g	20397	19780
Gross Cal. Value at Const. Vol.	ASTM E711	Btu/lb	8770	8504

Carbon	ASTM D5373	wt. %	50.57	49.04
Hydrogen*	ASTM D5373	wt. %	6.08	5.89
Nitrogen	ASTM D5373	wt. %	< 0.20	< 0.19
Oxygen*	ASTM D3176	wt. %	> 42.95	> 41.65

*Note: As received values do not include hydrogen and oxygen in the total moisture.

Chlorine	ASTM D6721	mg/kg		
Fluorine	ASTM D3761	mg/kg		
Mercury	ASTM D6722	mg/kg		

Bulk Density	ASTM E873	lbs/ft ³		
Fines (Less than 1/8")	TPT CH-P-06	wt. %		
Durability Index	Kansas State	PDI		
Sample Above 1.50"	TPT CH-P-06	wt. %		
Maximum Length (Single Pellet)	TPT CH-P-06	inch		
Diameter, Range	TPT CH-P-05	inch		to
Diameter, Average	TPT CH-P-05	inch		
Stated Bag Weight	TPT CH-P-01	lbs		
Actual Bag Weight	TPT CH-P-01	lbs		

Comments