Certification Test Report

Hearth & Home Technologies
Freestanding Pellet Stove
Model: CB1200

Prepared for:	Hearth & Home Technologies 1445 North Highway Colville, WA 99114
Prepared by:	OMNI-Test Laboratories, Inc. 13327 NE Airport Way Portland, OR 97230 (503) 643-3788
Test Period:	2/18/14 – 2/25/14
Report Date:	March 2014
Report Number:	061-S-13-8.3

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AUTHORIZED SIGNATORIES

This report has been reviewed and approved by the following authorized signatories:

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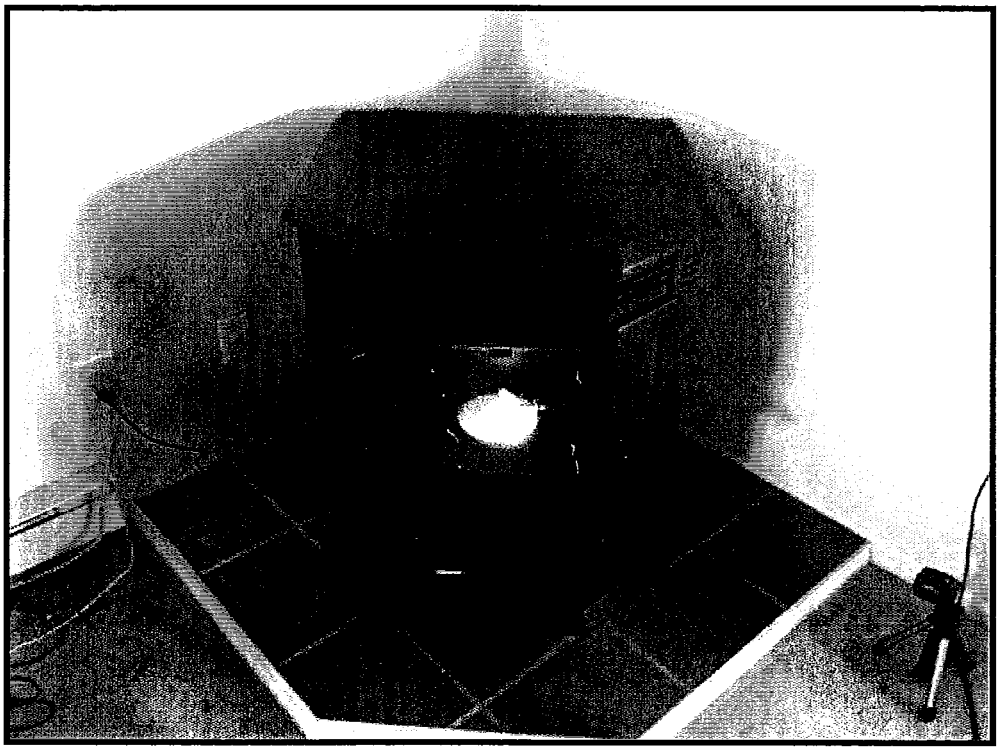
Aaron Kravitz, Technician
OMNI-Test Laboratories, Inc.

Hearth & Home Technologies

CB1200

Test Dates: 1/31/14-2/3/14



Hearth & Home Technologies
CB1200

WOOD HEATER DESCRIPTION

Appliance Manufacturer: Hearth & Home Technologies

Wood Stove Model: CB1200

Type: Freestanding, convective-type pellet room heater

PELLET HEATER INFORMATION

Materials of Construction: The unit is constructed primarily of mild steel. The feed door has three glass panels, one 14" by 11", and the other two 4" by 11", and ¾" rope gasket.

Air Introduction System: Air enters the firebox through the firepot via a combustion fan.

Combustion Control Mechanisms: Electronically controlled via a toggle switch on the side of the stove.

Combustor: N/A.

Internal Baffles: N/A

Other Features: N/A

Flue Outlet: The 3" diameter flue outlet is located in the rear of the unit.

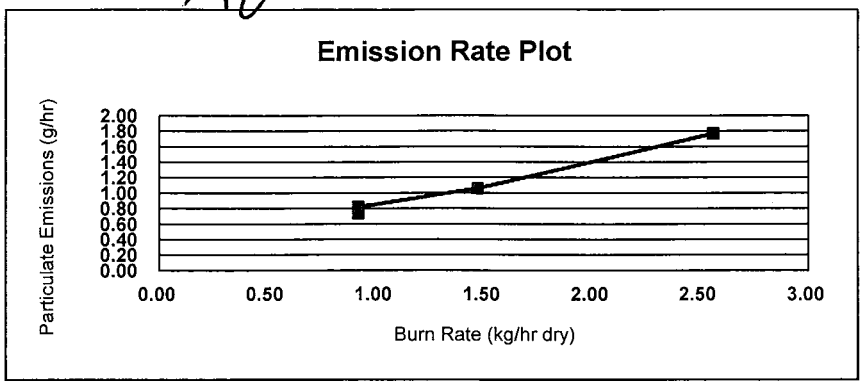
WOOD HEATER OPERATING INSTRUCTIONS

Specific Written Instructions: See Section 3 of this report. All markings and instruction materials were reviewed for content prior to printing.

EPA Weighted Average Emissions
EPA Method 28

Client:	Hearth & Home	Status:	Final
Stove Model:	CB1200	Stove Type:	Pellet Stove
Test Dates:	2/18/14 - 2/25/14		
Project Number:	061-S-13-8.3		
Tracking Number:	1931		
Signature/Date:	3/17/14		

Weighted Average (g/hr)
1.1



Run #	3	
Burn Rate (dry kg/hr)	0.92	
Category	2	
Overall Efficiency (%)	78%	
Emissions (g/hr)	0.74	
Cap (g/hr)	15.00	
Weighting Factor	0.311	18.77%
Heat Output (BTU/hr)	13526	

Run #	4	
Burn Rate (dry kg/hr)	0.92	
Category	2	
Overall Efficiency (%)	78%	
Emissions (g/hr)	0.82	
Cap (g/hr)	15.00	
Weighting Factor	0.422	25.46%
Heat Output (BTU/hr)	13526	

Run #	2	
Burn Rate (dry kg/hr)	1.47	
Category	3	
Overall Efficiency (%)	78%	
Emissions (g/hr)	1.06	
Cap (g/hr)	15.00	
Weighting Factor	0.658	39.67%
Heat Output (BTU/hr)	21613	

Run #	1	
Burn Rate (dry kg/hr)	2.56	
Category	4	
Overall Efficiency (%)	78%	
Emissions (g/hr)	1.77	
Cap (g/hr)	18.00	
Weighting Factor	0.267	16.10%
Heat Output (BTU/hr)	37639	

Run 1

Wood Heater Test Data - EPA Method 5G

Manufacturer: Hearth & Home
Model: CB 1200
Project No.: 061-S-13-8.3
Tracking No.: 1931
Run: 1
Test Date: 02/18/14

Burn Rate	**2.56 kg/hr dry**
Average Tunnel Temperature	119 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	12.7 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	7849.2 dscf/hour
Average Delta p	0.033 inches H20
Average Delta H	1.53 inches H20
Total Time of Test	120 minutes

	AVERAGE	SAMPLE TRAIN 1	SAMPLE TRAIN 2
Total Sample Volume - Vm	16.18 cubic feet	16.16 cubic feet	16.20 cubic feet
Average Gas Meter Temperature	67 degrees Fahrenheit	67 degrees Fahrenheit	68 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	16.2 dscf	16.3 dscf	16.2 dscf
Total Particulates - mn		2 mg	2 mg
Particulate Concentration (dry-standard)	0.00012 grams/dscf	0.00012 grams/dscf	0.00012 grams/dscf
Particulate Emission Rate	0.97 grams/hour	0.97 grams/hour	0.97 grams/hour
Adjusted Emissions	**1.77 grams/hour**	1.77 grams/hour	1.77 grams/hour
Difference from Average		0.00 grams/hour	0.00 grams/hour
7.5% of the average emission rate	0.13		
Weighted Average Emission Rate Limit	4.10 grams/hour		
7.5% of the weighted average emission rate limit	0.31		

Results Are Acceptable

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Run: 1

Manufacturer: Hearth & Home
Model: CB 1200
Tracking No.: 1931
Project No.: 061-S-13-8.3
Test Date: 18-Feb-14
Beginning Clock Time: 11:25
Recording Interval: 10 min.
Total Sampling Time: 120 min.

Velocity Traverse Data									
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	
Initial dP	0.030	0.036	0.038	0.032	0.034	0.022	0.038	0.036	"H2O
Initial Temp.	116	116	116	116	116	116	116	116	oF

OMNI Equipment Numbers: 23, 128, 131, 132, 209, 282, 283B, 288,343, 371, 372, 378, 410

PM Control Module: 371/372
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.56 lb/lb-mole
Dilution Tunnel H2O: 4.00 percent
Dilution Tunnel Static: -0.420 "H2O
Pitot Tube Cp: 0.99
Meter Box Y Factor: 1.002 (1) 0.999 (2)
Barometric Pressure: Begin 29.91, Middle 29.86, End 29.82, Average 29.86 "Hg

Signature/Date: 3/17/14

Tunnel Velocity: 12.72 ft/sec.
Intial Tunnel Flow: 130.7 scfm
Average Tunnel Flow: 130.8 scfm
Tunnel Area: 0.1963 ft2
Post-Test Leak Check (1): 0.014 cfm@"Hg
Post-Test Leak Check (2): 0.001 cfm@"Hg
Fuel Moisture (dry basis %): 6.31
Total Particulate (1): 2.0
Total Particulate (2): 2.0

Elapsed Time	Particulate Sampling Data														Fuel Weight, lb		Wood Heater Temperature Data, oF										Stack
	Gas Meter Cubic Feet (1)	Gas Meter Cubic Feet (2)	Sample Rate, cfm (1)	Sample Rate, cfm (2)	Orifice dH (1)	Orifice dH (2)	Meter oF (1)	Meter oF (2)	Meter Vac. In. Hg. (1)	Meter Vac. In. Hg. (2)	Dilution Tunnel Temp.	Dilution Tunnel dP	Pro. Rate (10%) (1)	Pro. Rate (10%) (2)	Scale Reading	Weight Change	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Exit	Average Surface	Stack	Filter (1)	Filter (2)	Impinger exit (1)	Impinger exit (2)	Ambient	Draft In. H2O
0	0.000	0.000			0.70	0.70	66	67	0.67	0.8	116	0.033			12.0		498	658	875	527	559	N/A	623.4	259	69	68	N/A	N/A	68	-0.075
10	1.341	1.325	0.13	0.13	1.62	1.36	66	66	0.32	0.8	118	0.033	100	99	11.1	-0.9	570	648	841	509	554	N/A	624.4	257	72	73	N/A	N/A	68	-0.075
20	2.684	2.656	0.13	0.13	1.61	1.36	65	66	0.33	0.8	117	0.033	101	99	10.1	-1	487	650	900	523	557	N/A	623.4	258	74	74	N/A	N/A	68	-0.074
30	4.028	3.989	0.13	0.13	1.59	1.35	66	66	0.31	0.7	118	0.033	101	100	9.1	-1	493	659	904	523	566	N/A	629.0	262	75	75	N/A	N/A	69	-0.074
40	5.376	5.322	0.13	0.13	1.61	1.34	66	67	0.32	0.7	118	0.033	101	100	8.2	-0.9	596	647	836	488	542	N/A	621.8	258	75	76	N/A	N/A	68	-0.073
50	6.723	6.658	0.13	0.13	1.61	1.35	66	67	0.31	0.7	119	0.033	101	100	7.1	-1.1	517	663	791	522	568	N/A	612.2	262	75	76	N/A	N/A	69	-0.074
60	8.071	7.994	0.13	0.13	1.60	1.35	67	68	0.31	0.7	119	0.033	101	100	6.1	-1	503	665	693	526	566	N/A	590.6	263	76	77	N/A	N/A	69	-0.074
70	9.420	9.334	0.13	0.13	1.60	1.41	67	68	0.31	0.7	119	0.033	101	100	5.0	-1.1	510	674	670	539	585	N/A	595.6	265	76	77	N/A	N/A	69	-0.075
80	10.768	10.707	0.13	0.14	1.60	1.41	67	68	0.31	0.7	120	0.033	101	103	4.1	-0.9	532	669	661	523	572	N/A	591.4	264	76	77	N/A	N/A	69	-0.074
90	12.116	12.081	0.13	0.14	1.60	1.41	68	69	0.31	0.7	121	0.033	101	102	3.1	-1	564	671	647	540	573	N/A	599.0	265	77	78	N/A	N/A	69	-0.074
100	13.464	13.455	0.13	0.14	1.59	1.40	68	69	0.31	0.7	119	0.033	101	102	2.1	-1	523	667	660	529	569	N/A	589.6	264	77	78	N/A	N/A	69	-0.074
110	14.812	14.828	0.13	0.14	1.59	1.40	68	69	0.3	0.7	120	0.033	101	102	1.0	-1.1	558	671	662	541	576	N/A	601.6	265	77	78	N/A	N/A	70	-0.074
120	16.160	16.202	0.13	0.14	1.59	1.41	68	69	0.31	0.7	120	0.033	101	102	0.0	-1	570	670	645	539	578	N/A	600.4	263	77	78	N/A	N/A	70	-0.074
Avg/Total	16.160	16.202	0.13	0.14	1.53	1.33	66.77	67.62			118.77	0.033	100.78	100.78									23		75.08	75.77	N/A	N/A		-0.074

Run Notes

Client: Hearth & Home
Model: CB1200
Project #: 061-S-13-8.3
Tracking #: 1931
Run #: 1 Date: 2/18/14
Test Crew: A. Krawitz
OMNI Equipment ID #(s): 371, 372

PREBURN

DESCRIBE OR SKETCH AIR OR THERMOMSTAT SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCABLE)

PRIMARY:

Control Board @ 2
FRAP @ Full Open
Toggle Switch @ High

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
39:00			11.9			

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)

Pellets

START UP PROCEDURES

BYPASS: N/A
FUEL LOADING N/A
DOOR: N/A
PRIMARY AIR: N/A

OTHER: N/A.

DESCRIBE OR SKETCH TEST SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCIBLE)
PRIMARY:

Control Board @ 2
Toggle Switch @ Full Open High
FRAP @ Full Open

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

Technician signature: [signature] Date: 2/18/14

OMNI-Test Laboratories, Inc.
Portland, OR

Supplemental Data EPA 5G/5H

Client: Hearth & Home

Model: CB1200 Project #: 061-S-13-8.3 Tracking #: 1931

Date: 2/18/14 Run #: 1 Booth: E2

Test Crew: A. Kravitz Start Time: 11:25 Stop Time: 13:25

OMNI Equipment #(s): 132, 209, 282, 284, 371, 372, 410, 414, 419, 378, 410

Stack Gas Leak Check:

Initial: Ø

Final: Ø

Dilution Tunnel Gas Leak Check (5H only):

Initial: NA

Final: NA

Calibrations: Span Gas CO_2: 16.75 O_2: 20.95 CO: 4.340 CO_2 (DT): NA

Mid Gas CO_2: 10.02 O_2: 10.51 CO: 2.533 CO_2 (DT): NA

F: .014
B: .001

	Pre Test			Post Test		
Time	Zero	Span	Mid	Zero	Span	Mid
	10:50	10:51	10:52	1:58	1:59	1:58
O_2	0.00	20.95	~~10.49~~ 10.60	0.03	20.92	10.61
CO_2	0.00	16.75	10.00	0.05	16.68	9.97
CO	0.000	4.340	2.534	0.000	4.300	2.513
CO_2 (DT)	NA			NA		

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

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: Ø Final: Ø

Stack Diameter (inches): 6

Induced Draft: Ø

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series:

Date: 2/17 Initials: AK

Tunnel Traverse	
dP (in H_2O)	T(°F)
.030	116
.036	
.038	
.032	
.022	
.034	
.038	
.036	
NA	NA
Static P:	-.42

	Initial	Middle	Ending
P_b (in/Hg)	29.91	29.86	29.82
Ambient (°F)	68	69	70

Technician signature: [signature]

Date: 2/18/14

Method 28 Preburn Data

Run Data

Client:	Hearth & Home	Test Run:	1
Model:	CB 1200	Date:	2/18/2014
Project Number:	061-S-13-8.3	Test Crew:	A. Kravitz
Tracking Number:	1931	Equipment:	288, 371, 372
Coal Bed Range (lb):	N/A (pellet)		

Logged Data

			Temperatures (F)								
Elapsed Time (min)	Scale (lb)	Stack Draft (in H2O)	Stack	Ambient	FB Top	FB Bottom	FB Back	FB Left	FB Right	Cat. In	Cat. Out
0	25.2	-0.063	180	64	362	258	486	226	288		
10	24	-0.074	244	65	578	535	857	457	470		
20	22.9	-0.076	256	67	605	631	922	524	562		
30	21.9	-0.077	255	68	605	648	891	520	546		
40	33	-0.075	254	68	599	643	827	507	536		
50	31.9	-0.076	260	68	536	660	886	536	566		
60	30.9	-0.076	259	68	498	657	874	527	558		
	Averages:	-0.074	244.00	66.86	540.43	576.00	820.43	471.00	503.71		

2/28/14

Run 2

Wood Heater Test Data - EPA Method 5G

Manufacturer: Hearth & Home
Model: CB 1200
Project No.: 061-S-13-8.3
Tracking No.: 1931
Run: 2
Test Date: 02/18/14

Burn Rate	**1.47 kg/hr dry**
Average Tunnel Temperature	102 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	12.5 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	7964.2 dscf/hour
Average Delta p	0.033 inches H20
Average Delta H	1.76 inches H20
Total Time of Test	120 minutes

	AVERAGE	SAMPLE TRAIN 1	SAMPLE TRAIN 2
Total Sample Volume - Vm	17.46 cubic feet	17.37 cubic feet	17.55 cubic feet
Average Gas Meter Temperature	67 degrees Fahrenheit	66 degrees Fahrenheit	68 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	17.5 dscf	17.5 dscf	17.6 dscf
Total Particulates - mn		1.2 mg	1.1 mg
Particulate Concentration (dry-standard)	0.00007 grams/dscf	0.00007 grams/dscf	0.00006 grams/dscf
Particulate Emission Rate	0.52 grams/hour	0.55 grams/hour	0.50 grams/hour
Adjusted Emissions	**1.06 grams/hour**	1.10 grams/hour	1.02 grams/hour
Difference from Average		0.04 grams/hour	0.04 grams/hour
7.5% of the average emission rate	0.08		
Weighted Average Emission Rate Limit	4.10 grams/hour		
7.5% of the weighted average emission rate limit	0.31		

Results Are Acceptable

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Run #: 2

Manufacturer: Hearth & Home
Model: CB 1200
Tracking No.: 1931
Project No.: 061-S-13-8.3
Test Date: 18-Feb-14
Beginning Clock Time: 14:27
Recording Interval: 10 min.
Total Sampling Time: 120 min.

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	
Initial dP	0.030	0.036	0.038	0.032	0.034	0.022	0.038	0.036	"H2O
Initial Temp.	116	116	116	116	116	116	116	116	oF

OMNI Equipment Numbers: 23, 128, 131, 132, 209, 282, 283B, 288,343, 371, 372, 378, 410

PM Control Module: 371/372
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.56 lb/lb-mole
Dilution Tunnel H2O: 4.00 percent
Dilution Tunnel Static: -0.420 "H2O
Pitot Tube Cp: 0.99
Meter Box Y Factor: 1.002 (1) 0.999 (2)
Barometric Pressure: Begin 29.82, Middle 29.85, End 29.88, Average 29.85 "Hg

Signature/Date: 3/17/14

Tunnel Velocity: 12.54 ft/sec.
Intial Tunnel Flow: 130.7 scfm
Average Tunnel Flow: 132.7 scfm
Tunnel Area: 0.1963 ft2
Post-Test Leak Check (1): 0.005 cfm@"Hg
Post-Test Leak Check (2): 0.002 cfm@"Hg
Fuel Moisture (dry basis %): 6.31
Total Particulate (1): 1.2
Total Particulate (2): 1.1

Elapsed Time	Particulate Sampling Data: Gas Meter Cubic Feet (1)	Gas Meter Cubic Feet (2)	Sample Rate, cfm (1)	Sample Rate, cfm (2)	Orifice dH (1)	Orifice dH (2)	Meter oF (1)	Meter oF (2)	Meter Vac. In. Hg. (1)	Meter Vac. In. Hg. (2)	Dilution Tunnel Temp.	Dilution Tunnel dP	Pro. Rate (10%) (1)	Pro. Rate (10%) (2)	Fuel Weight, lb: Scale Reading	Weight Change	Wood Heater Temperature Data, oF: Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Exit	Average Surface	Stack	Filter (1)	Filter (2)	Impinger exit (1)	Impinger exit (2)	Ambient	Stack: Draft In. H2O
0	0.000	0.000			0.70	0.70	68	69	0.76	0.8	116	0.033			6.9		477	528	542	383	424	N/A	470.8	217	71	71	N/A	N/A	69	-0.064
10	1.445	1.458	0.14	0.15	1.86	1.61	68	69	0.16	0.7	104	0.033	100	100	6.3	-0.6	479	527	497	373	419	N/A	459.0	219	73	74	N/A	N/A	69	-0.064
20	2.894	2.921	0.14	0.15	1.84	1.59	68	68	0.17	0.7	104	0.033	101	101	5.7	-0.6	482	533	519	379	430	N/A	468.6	219	74	75	N/A	N/A	69	-0.064
30	4.337	4.380	0.14	0.15	1.84	1.59	67	68	0.16	0.7	104	0.033	100	101	5.0	-0.7	482	538	530	374	424	N/A	469.6	219	74	75	N/A	N/A	68	-0.065
40	5.781	5.840	0.14	0.15	1.84	1.59	67	68	0.18	0.7	102	0.033	100	101	4.5	-0.5	465	523	524	369	417	N/A	459.6	216	74	75	N/A	N/A	68	-0.064
50	7.228	7.302	0.14	0.15	1.84	1.58	67	68	0.16	0.7	101	0.033	101	101	3.9	-0.6	467	522	535	371	416	N/A	462.2	215	74	75	N/A	N/A	68	-0.064
60	8.675	8.764	0.14	0.15	1.84	1.58	66	67	0.16	0.7	101	0.033	101	101	3.3	-0.6	452	513	535	355	403	N/A	451.6	213	74	74	N/A	N/A	68	-0.063
70	10.124	10.227	0.14	0.15	1.84	1.60	66	67	0.17	0.7	102	0.033	101	101	2.6	-0.7	472	525	510	364	424	N/A	459.0	217	73	74	N/A	N/A	68	-0.064
80	11.573	11.691	0.14	0.15	1.84	1.59	66	67	0.17	0.7	100	0.033	101	101	2.1	-0.5	428	493	564	341	385	N/A	442.2	207	73	74	N/A	N/A	68	-0.062
90	13.023	13.156	0.15	0.15	1.85	1.59	65	67	0.17	0.7	99	0.033	101	101	1.6	-0.5	421	488	575	336	384	N/A	440.8	206	72	73	N/A	N/A	67	-0.063
100	14.471	14.622	0.14	0.15	1.83	1.59	65	67	0.16	0.7	98	0.033	101	101	1.0	-0.6	406	472	487	330	374	N/A	413.8	202	72	73	N/A	N/A	67	-0.063
110	15.923	16.088	0.15	0.15	1.85	1.60	65	67	0.18	0.7	97	0.033	101	101	0.6	-0.4	380	447	531	314	351	N/A	404.6	197	72	73	N/A	N/A	67	-0.061
120	17.375	17.553	0.15	0.15	1.86	1.60	65	67	0.17	0.7	97	0.033	101	101	0.0	-0.6	426	469	444	313	378	N/A	406.0	202	72	72	N/A	N/A	67	-0.062
Total	17.375	17.553	0.14	0.15	1.76	1.52	66.38	67.62			101.92	0.033	100.69	100.68									65		72.92	73.69	N/A	N/A		-0.063

4-1 of 4-26

Run Notes

Client: Hearth & Home
Model: CB1200
Project #: 061-S-13-8.3
Tracking #: 1931
Run #: 2 Date: 2/18/14
Test Crew: A. Krawitz
OMNI Equipment ID #(s): 371, 372

PREBURN

DESCRIBE OR SKETCH AIR OR THERMOMSTAT SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCABLE)

PRIMARY:

Control Board @ 2
FRAP @ Full Open
Toggle Switch @ Low

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
	None					

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)

Pellets

START UP PROCEDURES

BYPASS: N/A
FUEL LOADING N/A
DOOR: N/A
PRIMARY AIR: N/A

OTHER: N/A

DESCRIBE OR SKETCH TEST SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCIBLE)
PRIMARY:

Control Board @ 2
Toggle Switch @ Low
FRAP @ Full Open

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

Technician signature: [signature] Date: 2/18/14

OMNI-Test Laboratories, Inc.
Portland, OR

Supplemental Data EPA 5G/5H

Client: Hearth & Home

Model: CB1200 Project #: 061-S-13-8.3 Tracking #: 1931

Date: 2/18/14 Run #: 2 Booth: E2

Test Crew: A. Kravitz Start Time: 14:27 Stop Time: 16:22

OMNI Equipment #(s): 132, 209, 282, 284, 371, 372, 410, 378, 419

Stack Gas Leak Check:

Initial: 0

Final: 0

Dilution Tunnel Gas Leak Check (5H only):

Initial: NA

Final: NA

Calibrations: Span Gas CO_2: 16.75 O_2: 20.95 CO: 4.340 CO_2 (DT): NA

Mid Gas CO_2: 10.02 O_2: 10.51 CO: 2.533 CO_2 (DT): NA

I: .005

R: .002

	Pre Test			Post Test		
Time	Zero	Span	Mid	Zero	Span	Mid
	1:58	1:54	1:55	4:37	4:39	4:38
O_2	0.08	20.92	10.61	0.03	21.01	10.63
CO_2	0.005	16.68	9.97	0.02	16.78	9.98
CO	0.000	4.306	2.513	-0.003	4.334	2.521
CO_2 (DT)	NA			NA		

Air Velocity (ft/min): Initial: 650 Final: 650

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: 0 Final: 0

Stack Diameter (inches): 6

Induced Draft: 0

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series:

Date: 2/17 Initials: AK

Tunnel Traverse	
dP (in H_2O)	T(°F)
.030	116
.036	
.038	
.032	
.022	
.034	
.038	
.036	
NA	NA
Static P:	-.42

	Initial	Middle	Ending
P_b (in/Hg)	29.82	29.85	29.88
Ambient (°F)	69	68	67

Technician signature: [signature]

Date: 2/18/14

Method 28 Preburn Data

Run Data

Client:	Hearth & Home	Test Run:	2
Model:	CB 1200	Date:	2/18/2014
Project Number:	061-S-13-8.3	Test Crew:	A. Kravitz
Tracking Number:	1931	Equipment:	288, 371, 372
	Coal Bed Range (lb): N/A (pellet)		

Logged Data

			Temperatures (F)								
Elapsed Time (min)	Scale (lb)	Stack Draft (in H2O)	Stack	Ambient	FB Top	FB Bottom	FB Back	FB Left	FB Right	Cat. In	Cat. Out
0	18.8	-0.074	264	70	569	670	664	542	578		
10	18.1	-0.068	235	69	535	600	563	442	482		
20	17.6	-0.065	223	70	493	553	590	403	437		
30	16.9	-0.066	223	69	489	548	525	396	443		
40	16.3	-0.063	214	69	461	517	575	373	406		
50	15.7	-0.065	219	69	485	532	531	380	421		
60	15.1	-0.065	217	69	477	529	540	382	423		
	Averages:	-0.067	227.86	69.29	501.29	564.14	569.71	416.86	455.71		

2/28/14

Run 3

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Manufacturer: Hearth & Home
Model: CB 1200
Project No.: 061-S-13-8.3
Tracking No.: 1931
Run: 3
Test Date: 02/14/14

Burn Rate	**0.92 kg/hr dry**
Average Tunnel Temperature	92 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	12.4 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	8072.0 dscf/hour
Average Delta p	0.033 inches H20
Average Delta H	1.79 inches H20
Total Time of Test	120 minutes

	AVERAGE	SAMPLE TRAIN 1	SAMPLE TRAIN 2
Total Sample Volume - Vm	17.52 cubic feet	17.48 cubic feet	17.57 cubic feet
Average Gas Meter Temperature	67 degrees Fahrenheit	66 degrees Fahrenheit	67 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	17.8 dscf	17.7 dscf	17.8 dscf
Total Particulates - mn		0.8 mg	0.7 mg
Particulate Concentration (dry-standard)	0.00004 grams/dscf	0.00005 grams/dscf	0.00004 grams/dscf
Particulate Emission Rate	0.34 grams/hour	0.36 grams/hour	0.32 grams/hour
Adjusted Emissions	**0.74 grams/hour**	0.79 grams/hour	0.70 grams/hour
Difference from Average		0.04 grams/hour	0.04 grams/hour
7.5% of the average emission rate	0.06		
Weighted Average Emission Rate Limit	4.10 grams/hour		
7.5% of the weighted average emission rate limit	0.31		

Results Are Acceptable

4-16 of 4-26

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Run: 3

Manufacturer: Hearth & Home
Model: CB 1200
Tracking No.: 1931
Project No.: 061-S-13-8.3
Test Date: 14-Feb-14
Beginning Clock Time: 14:27
Recording Interval: 10 min.
Total Sampling Time: 120 min.

Velocity Traverse Data

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	
Initial dP	0.026	0.032	0.040	0.034	0.036	0.028	0.036	0.034	"H2O
Initial Temp.	94	94	94	94	94	94	94	94	oF

OMNI Equipment Numbers: 23, 128, 131, 132, 209, 282, 283B, 288.343, 371, 372, 378, 410

PM Control Module: 371/372
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.56 lb/lb-mole
Dilution Tunnel H2O: 4.00 percent
Dilution Tunnel Static: -0.410 "H2O
Pitot Tube Cp: 0.99
Meter Box Y Factor: 1.002 (1) 0.999 (2)
Barometric Pressure: Begin 30.10, Middle 30.1, End 30.1, Average 30.10 "Hg

Signature/Date: 2/28/14

Tunnel Velocity: 12.37 ft/sec.
Intial Tunnel Flow: 134.0 scfm
Average Tunnel Flow: 134.5 scfm
Tunnel Area: 0.1963 ft2
Post-Test Leak Check (1): 0.008 cfm@"Hg
Post-Test Leak Check (2): 0.002 cfm@"Hg
Fuel Moisture (dry basis %): 6.31
Total Particulate (1): 0.8
Total Particulate (2): 0.7

Elapsed Time	Particulate Sampling Data														Fuel Weight, lb		Wood Heater Temperature Data, oF											Stack
	Gas Meter Cubic Feet (1)	Gas Meter Cubic Feet (2)	Sample Rate, cfm (1)	Sample Rate, cfm (2)	Orifice dH (1)	Orifice dH (2)	Meter oF (1)	Meter oF (2)	Meter Vac. In. Hg. (1)	Meter Vac. In. Hg. (2)	Dilution Tunnel Temp.	Dilution Tunnel dP	Pro. Rate (10%) (1)	Pro. Rate (10%) (2)	Scale Reading	Weight Change	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Exit	Average Surface	Stack	Filter (1)	Filter (2)	Impinger exit (1)	Impinger exit (2)	Ambient	Draft In. H2O
0	0.000	0.000			0.70	0.70	68	68	0.21	0.7	94	0.033			4.3		302	356	340	228	277	N/A	300.6	164	68	68	N/A	N/A	67	-0.053
10	1.448	1.448	0.14	0.14	1.89	1.62	67	67	0.18	0.7	92	0.033	100	100	3.9	-0.4	302	355	348	231	282	N/A	303.6	167	70	70	N/A	N/A	67	-0.054
20	2.901	2.906	0.15	0.15	1.88	1.60	66	67	0.17	0.7	92	0.033	101	100	3.5	-0.4	314	369	355	231	283	N/A	310.4	168	71	71	N/A	N/A	67	-0.054
30	4.353	4.363	0.15	0.15	1.88	1.61	66	66	0.18	0.7	92	0.033	101	101	3.1	-0.4	309	361	349	233	282	N/A	306.8	168	71	71	N/A	N/A	67	-0.054
40	5.802	5.823	0.14	0.15	1.88	1.60	66	67	0.17	0.7	92	0.033	100	101	2.8	-0.3	303	358	382	229	275	N/A	309.4	166	71	72	N/A	N/A	67	-0.054
50	7.257	7.286	0.15	0.15	1.87	1.59	66	67	0.17	0.7	92	0.033	101	101	2.4	-0.4	290	347	390	225	270	N/A	304.4	165	71	72	N/A	N/A	66	-0.054
60	8.713	8.752	0.15	0.15	1.89	1.59	67	67	0.18	0.7	91	0.033	101	101	2.1	-0.3	287	334	377	217	263	N/A	295.6	161	71	72	N/A	N/A	66	-0.052
70	10.174	10.219	0.15	0.15	1.89	1.59	67	68	0.16	0.7	91	0.033	101	101	1.8	-0.3	285	336	378	215	261	N/A	295.0	161	71	72	N/A	N/A	66	-0.052
80	11.634	11.686	0.15	0.15	1.89	1.61	67	68	0.18	0.7	91	0.033	101	101	1.4	-0.4	286	341	378	215	262	N/A	296.4	161	71	72	N/A	N/A	66	-0.052
90	13.095	13.155	0.15	0.15	1.88	1.61	66	68	0.18	0.7	91	0.033	101	101	1.1	-0.3	282	329	386	219	259	N/A	295.0	161	71	71	N/A	N/A	66	-0.053
100	14.557	14.626	0.15	0.15	1.87	1.61	66	67	0.17	0.7	92	0.033	101	101	0.6	-0.5	306	351	361	231	277	N/A	305.2	167	71	71	N/A	N/A	66	-0.054
110	16.018	16.097	0.15	0.15	1.89	1.62	66	67	0.16	0.6	91	0.033	101	101	0.3	-0.3	289	347	385	224	262	N/A	301.4	163	71	71	N/A	N/A	66	-0.052
120	17.479	17.568	0.15	0.15	1.87	1.60	66	67	0.17	0.7	90	0.033	101	101	0.0	-0.3	271	321	383	212	247	N/A	286.8	157	71	71	N/A	N/A	66	-0.051
Avg/Total	17.479	17.568	0.15	0.15	1.79	1.53	66.46	67.23			91.62	0.033	100.77	100.76									14		70.69	71.08	N/A	N/A		-0.053

Run Notes

Client: Hearth & Home
Model: CB1200
Project #: 061-S-13-8.3
Tracking #: 1931
Run #: 3 Date: 2/24/14
Test Crew: A. Krawiec
OMNI Equipment ID #(s): 371, 372

PREBURN

DESCRIBE OR SKETCH AIR OR THERMOMSTAT SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCABLE)

PRIMARY:

Control Board @ 1
FRAP @ Low
Toggle Switch @Low

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
	None					

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)

Pellets

START UP PROCEDURES

BYPASS: N/A
FUEL LOADING N/A
DOOR: N/A
PRIMARY AIR: N/A

OTHER: N/A

DESCRIBE OR SKETCH TEST SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCIBLE)
PRIMARY:

Control Board @ 1
Toggle Switch @Low
FRAP @ Low

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

Technician signature: [signature] Date: 2/24/14

OMNI-Test Laboratories, Inc.
Portland, OR

Supplemental Data EPA 5G/5H

Client: Hearth & Home

Model: CB1200 Project #: 061-S-13-8.3 Tracking #: 1931

Date: 2/18/14 Run #: 3 Booth: E2

Test Crew: A. Kravitz Start Time: 14:27 Stop Time: 16:27

OMNI Equipment #(s): 132, 209, 282, 288, 371, 372, 410, 378A, 419

Stack Gas Leak Check:
Initial: ∅
Final: ∅

Dilution Tunnel Gas Leak Check (5H only):
Initial: NA
Final: NA

Calibrations: Span Gas CO_2: 16.75 O_2: 20.95 CO: 4.34 CO_2 (DT): NA
Mid Gas CO_2: 10.02 O_2: 10.51 CO: 2.533 CO_2 (DT): NA

A: .008
B: .002

	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
Time	1:48	1:49	1:52	1630	1632	1631
O_2	0.00	20.94	10.5	0.02	20.92	10.58
CO_2	0.00	16.75	10.01	0.02	16.77	10.01
CO	0.00	4.34	2.53	-0.002	4344	2.528
CO_2 (DT)	NA			NA		

Air Velocity (ft/min): Initial: 650 Final: 650

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: ∅ Final: ∅

Stack Diameter (inches): 6

Induced Draft: ∅

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series:

Date: 2/17 Initials: AK

Tunnel Traverse	
dP (in H_2O)	T(°F)
.026	84
.032	
.040	
.034	
.028	
.036	
.036	
.034	
NA	NA
Static P:	-.41

	Initial	Middle	Ending
P_b (in/Hg)	30.10	30.10	30.10
Ambient (°F)	67	66	66

Technician signature: [signature]

Date: 2/24/14

Method 28 Preburn Data

Run Data

Client:	Hearth & Home	Test Run:	3
Model:	CB 1200	Date:	2/24/2014
Project Number:	061-S-13-8.3	Test Crew:	A. Kravitz
Tracking Number:	1931	Equipment:	288, 371, 372
Coal Bed Range (lb):	N/A (pellet)		

Logged Data

			Temperatures (F)								
Elapsed Time (min)	Scale (lb)	Stack Draft (in H2O)	Stack	Ambient	FB Top	FB Bottom	FB Back	FB Left	FB Right	Cat. In	Cat. Out
0	17.2	-0.034	91	64	102	102	154	83	105		
10	16.6	-0.052	154	63	281	260	315	159	227		
20	16.3	-0.05	152	64	274	310	331	186	238		
30	15.9	-0.05	154	65	269	321	351	199	251		
40	15.6	-0.05	156	66	276	327	357	208	253		
50	15.2	-0.053	164	66	297	354	327	222	276		
60	14.9	-0.053	164	67	302	356	340	228	277		
	Averages:	-0.049	147.86	65.00	257.29	290.00	310.71	183.57	232.43		

2/24/14

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Run 4

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Manufacturer: Hearth & Home
Model: CB 1200
Project No.: 061-S-13-8.3
Tracking No.: 1931
Run: 4
Test Date: 02/25/14

Burn Rate	**0.92 kg/hr dry**
Average Tunnel Temperature	95 degrees Fahrenheit
Average Gas Velocity in Dilution Tunnel - vs	12.3 feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	7992.7 dscf/hour
Average Delta p	0.033 inches H20
Average Delta H	1.79 inches H20
Total Time of Test	120 minutes

	AVERAGE	SAMPLE TRAIN 1	SAMPLE TRAIN 2
Total Sample Volume - Vm	17.58 cubic feet	17.48 cubic feet	17.68 cubic feet
Average Gas Meter Temperature	69 degrees Fahrenheit	68 degrees Fahrenheit	69 degrees Fahrenheit
Total Sample Volume (Standard Conditions) - Vmstd	17.8 dscf	17.7 dscf	17.8 dscf
Total Particulates - mn		0.9 mg	0.8 mg
Particulate Concentration (dry-standard)	0.00005 grams/dscf	0.00005 grams/dscf	0.00004 grams/dscf
Particulate Emission Rate	0.38 grams/hour	0.41 grams/hour	0.36 grams/hour
Adjusted Emissions	**0.82 grams/hour**	0.86 grams/hour	0.78 grams/hour
Difference from Average		0.04 grams/hour	0.04 grams/hour
7.5% of the average emission rate	0.06		
Weighted Average Emission Rate Limit	4.10 grams/hour		
7.5% of the weighted average emission rate limit	0.31		

Results Are Acceptable

OMNI-Test Laboratories, Inc.

Wood Heater Test Data - EPA Method 5G

Run: 4

Manufacturer: Hearth & Home
Model: CB 1200
Tracking No.: 1931
Project No.: 061-S-13-8.3
Test Date: 25-Feb-14
Beginning Clock Time: 09:09
Recording Interval: 10 min.
Total Sampling Time: 120 min.

Velocity Traverse Data									
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	
Initial dP	0.024	0.032	0.040	0.032	0.034	0.022	0.040	0.038	"H2O
Initial Temp.	94	94	94	94	94	94	94	94	oF

OMNI Equipment Numbers: 23, 128, 131, 132, 209, 282, 283B, 288,343, 371, 372, 378, 410

PM Control Module: 371/372
Dilution Tunnel MW(dry): 29.00 lb/lb-mole
Dilution Tunnel MW(wet): 28.56 lb/lb-mole
Dilution Tunnel H2O: 4.00 percent
Dilution Tunnel Static: -0.410 "H2O
Pitot Tube Cp: 0.99
Meter Box Y Factor: 1.002 (1) 0.999 (2)
Barometric Pressure: Begin 30.14, Middle 30.13, End 30.13, Average 30.13 "Hg

Signature/Date: 4/28/14
Tunnel Velocity: 12.30 ft/sec.
Intial Tunnel Flow: 132.6 scfm
Average Tunnel Flow: 133.2 scfm
Tunnel Area: 0.1963 ft2
Post-Test Leak Check (1): 0.003 cfm@"Hg
Post-Test Leak Check (2): 0.005 cfm@"Hg
Fuel Moisture (dry basis %): 6.31
Total Particulate (1): 0.9
Total Particulate (2): 0.8

Elapsed Time	Particulate Sampling Data														Fuel Weight, lb		Wood Heater Temperature Data, oF											Stack
	Gas Meter Cubic Feet (1)	Gas Meter Cubic Feet (2)	Sample Rate, cfm (1)	Sample Rate, cfm (2)	Orifice dH (1)	Orifice dH (2)	Meter oF (1)	Meter oF (2)	Meter Vac. In. Hg. (1)	Meter Vac. In. Hg. (2)	Dilution Tunnel Temp.	Dilution Tunnel dP	Pro. Rate (10%) (1)	Pro. Rate (10%) (2)	Scale Reading	Weight Change	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Exit	Average Surface	Stack	Filter (1)	Filter (2)	Impinger exit (1)	Impinger exit (2)	Ambient	Draft In. H2O
0	0.000	0.000			0.70	0.70	68	68	0.64	0.7	94	0.033			4.3		274	327	340	209	257	N/A	281.4	158	68	68	N/A	N/A	68	-0.050
10	1.441	1.463	0.14	0.15	1.89	1.64	68	68	0.16	0.7	96	0.033	100	100	4.0	-0.3	284	335	349	214	263	N/A	289.0	160	70	71	N/A	N/A	68	-0.051
20	2.893	2.932	0.15	0.15	1.88	1.63	67	68	0.16	0.7	97	0.033	101	101	3.6	-0.4	297	348	346	225	275	N/A	298.2	164	72	72	N/A	N/A	68	-0.051
30	4.345	4.400	0.15	0.15	1.88	1.62	68	68	0.17	0.7	95	0.033	100	101	3.3	-0.3	274	322	370	212	255	N/A	286.6	158	72	73	N/A	N/A	68	-0.050
40	5.798	5.869	0.15	0.15	1.88	1.62	68	69	0.17	0.7	96	0.033	101	101	2.9	-0.4	284	332	349	223	267	N/A	291.0	161	73	73	N/A	N/A	68	-0.051
50	7.255	7.341	0.15	0.15	1.88	1.62	68	69	0.16	0.7	98	0.033	101	101	2.5	-0.4	310	355	352	233	284	N/A	306.8	169	73	74	N/A	N/A	68	-0.053
60	8.712	8.815	0.15	0.15	1.87	1.62	69	70	0.17	0.7	96	0.033	101	101	2.1	-0.4	305	349	351	231	279	N/A	303.0	167	74	74	N/A	N/A	68	-0.052
70	10.171	10.291	0.15	0.15	1.89	1.62	69	70	0.17	0.6	94	0.033	101	101	1.8	-0.3	287	338	370	226	267	N/A	297.6	164	74	74	N/A	N/A	68	-0.053
80	11.630	11.768	0.15	0.15	1.88	1.62	69	70	0.17	0.6	94	0.033	101	101	1.5	-0.3	297	349	383	224	270	N/A	304.6	165	73	74	N/A	N/A	68	-0.053
90	13.092	13.245	0.15	0.15	1.86	1.62	68	70	0.15	0.6	94	0.033	101	101	1.1	-0.4	296	346	387	233	279	N/A	308.2	168	73	73	N/A	N/A	68	-0.053
100	14.552	14.723	0.15	0.15	1.89	1.62	68	69	0.16	0.6	93	0.033	101	101	0.7	-0.4	300	351	385	238	280	N/A	310.8	167	73	73	N/A	N/A	68	-0.054
110	16.015	16.204	0.15	0.15	1.88	1.62	68	69	0.15	0.6	93	0.033	101	101	0.4	-0.3	299	348	386	234	276	N/A	308.6	166	73	73	N/A	N/A	67	-0.054
120	17.477	17.683	0.15	0.15	1.88	1.63	67	69	0.16	0.6	92	0.033	101	101	0.0	-0.4	288	338	388	223	262	N/A	299.8	162	72	72	N/A	N/A	67	-0.052
Avg/Total	17.477	17.683	0.15	0.15	1.79	1.55	68.08	69.00			94.77	0.033	100.77	100.76									18		72.31	72.62	N/A	N/A		-0.052

Run Notes

Client: Hearth & Home
Model: CB1200
Project #: 061-S-13-8.3
Tracking #: 1931
Run #: 4 Date: 2/25/14
Test Crew: A. Krawitz
OMNI Equipment ID #(s): 371, 372

PREBURN

DESCRIBE OR SKETCH AIR OR THERMOMSTAT SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCABLE)

PRIMARY:

Control Board @ 1
FRAP @ Low
Toggle Switch @Low

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
	None					

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)

Pellets

START UP PROCEDURES

BYPASS: N/A
FUEL LOADING N/A
DOOR: NA
PRIMARY AIR: NA

OTHER: NA

DESCRIBE OR SKETCH TEST SETTINGS BELOW:
(SETTINGS MUST BE ACCURATE AND REPRODUCIBLE)
PRIMARY:

Control Board @1
Toggle Switch @ Low
FRAP @ Low

SECONDARY: N/A

TERTIARY: N/A

FAN: Auto

Technician signature: [signature] Date: 2/25/14

OMNI-Test Laboratories, Inc.
Portland, OR

Supplemental Data EPA 5G/5H

Client: Hearth & Home

Model: CB1200 Project #: 061-S-13-8.3 Tracking #: 1931

Date: 2/25/14 Run #: 4 Booth: E2

Test Crew: A. Kravitz Start Time: 9:09 Stop Time: 1609

OMNI Equipment #(s): 132, 209, 282, 284, 371, 372, 410, 377, 414

Stack Gas Leak Check:

Initial: ø

Final: ø

Dilution Tunnel Gas Leak Check (5H only):

Initial: NA

Final: NA

Calibrations: Span Gas CO_2: 16.75 O_2: 20.95 CO: 4.340 CO_2 (DT): NA

Mid Gas CO_2: 10.02 O_2: 10.51 CO: 2.533 CO_2 (DT): NA

A: .003
B: .005

Time	Pre Test			Post Test		
	Zero	Span	Mid	Zero	Span	Mid
	0845	0846	0847	1113	1115	1116
O_2	0.00	20.95	10.57	0.03	20.84	10.58
CO_2	0.00	16.75	10.02	0.03	16.73	10.03
CO	0.000	4.340	2.535	-0.001	4.322	2.524
CO_2 (DT)	NA			NA		

Air Velocity (ft/min): Initial: 450 Final: 450

Scale Audit (lbs): Initial: 10.0 Final: 10.0

Pitot Tube Leak Test: Initial: ø Final: ø

Stack Diameter (inches): 6

Induced Draft: ø

% Smoke Capture: 100

Flue Pipe Cleaned Prior to First Test in Series:

Date: 2/17 Initials: AK

Tunnel Traverse	
dP (in H_2O)	T(°F)
.024	94
.032	
.040	
.032	
.022	
.034	
.040	
.038	
NA	NA
Static P:	-.41

	Initial	Middle	Ending
P_b (in/Hg)	30.14	30.13	30.13
Ambient (°F)	68	68	67

Technician signature: [signature]

Date: 2/25/14

Method 28 Preburn Data

Run Data

Client:	Hearth & Home	Test Run:	4
Model:	CB 1200	Date:	2/25/2014
Project Number:	061-S-13-8.3	Test Crew:	A. Kravitz
Tracking Number:	1931	Equipment:	288, 371, 372
	Coal Bed Range (lb): N/A (pellet)		

Logged Data

			Temperatures (F)								
Elapsed Time (min)	Scale (lb)	Stack Draft (in H2O)	Stack	Ambient	FB Top	FB Bottom	FB Back	FB Left	FB Right	Cat. In	Cat. Out
0	10.4	-0.026	79	66	81	88	104	73	83		
10	9.8	-0.049	147	67	262	227	282	144	209		
20	9.5	-0.05	155	67	275	303	320	182	244		
30	9.1	-0.05	155	67	271	321	336	197	252		
40	8.8	-0.049	154	68	268	323	301	202	248		
50	8.5	-0.05	157	67	278	325	352	205	254		
60	8.1	-0.051	158	68	274	327	342	209	256		
	Averages:	-0.046	143.57	67.14	244.14	273.43	291.00	173.14	220.86		

AH 2/28/14