

Certification Test Report

Hearth and Home Technologies

Freestanding Wood Stove

Model: 4300 ACC

Prepared for: Hearth and Home Technologies
1445 North Highway
Colville, WA 99114

Prepared by: OMNI-Test Laboratories Inc.
5465 SW Western Avenue, Suite G
Beaverton, OR 97005
(503) 643-3788

Test Period: August 1, 2006 through August 22, 2006

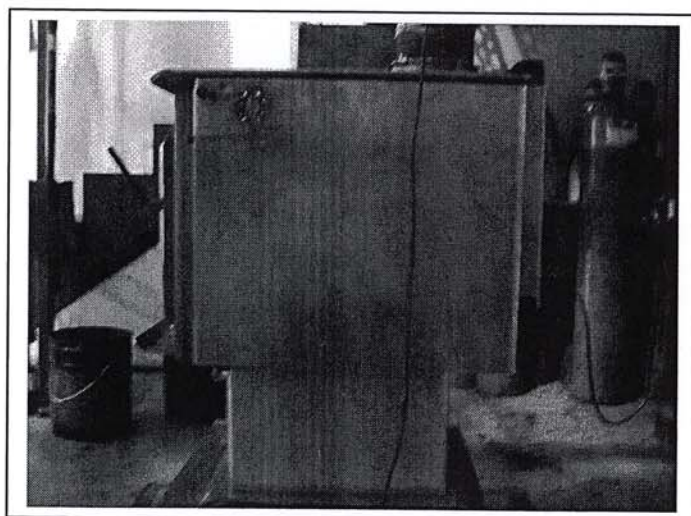
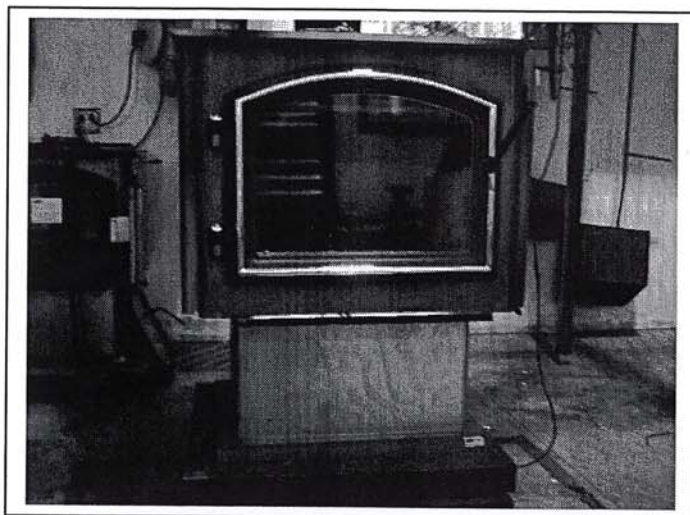
Report Date: September 2006

Project Number: 061-S-67-3

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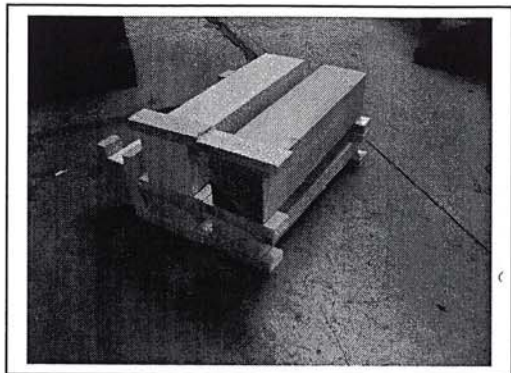
Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114

Hearth and Home Technologies
4300 ACC
Test Dates: August 1, 2006 through August 22, 2006

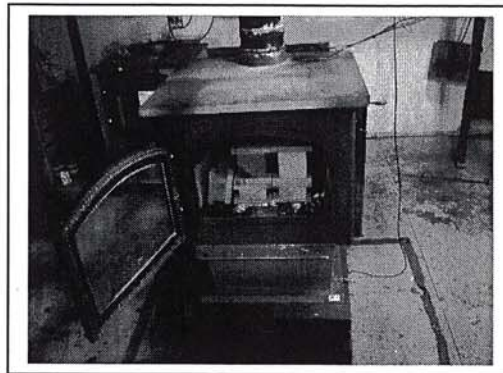


Hearth and Home Technologies
4300 ACC

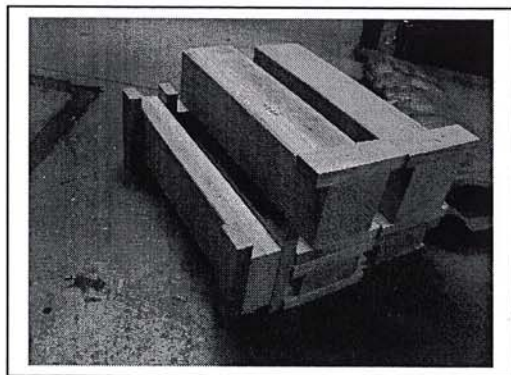
Run 1 – Fuel



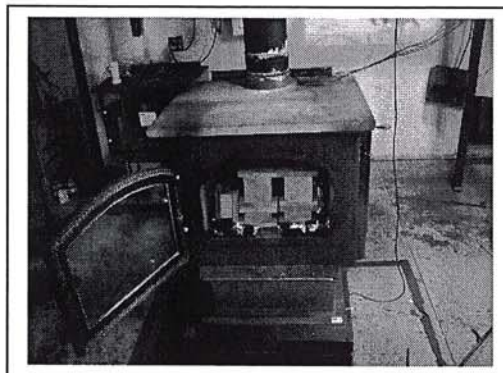
Run 1 - Newly Loaded Stove



Run 2 – Fuel



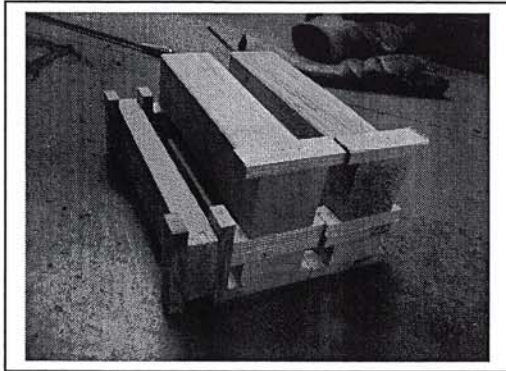
Run 2 - Newly Loaded Stove



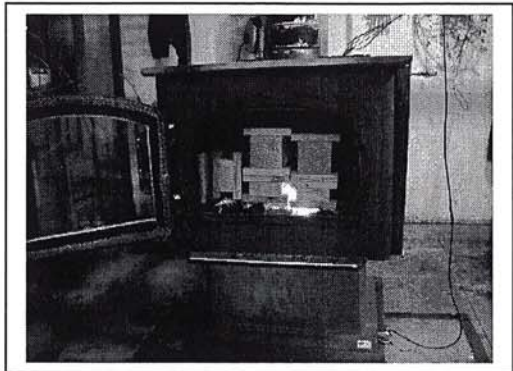
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Hearth and Home Technologies 4300 ACC

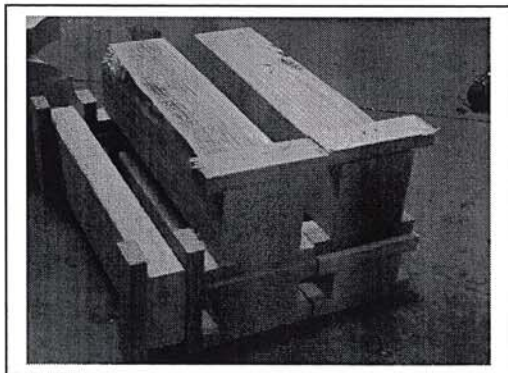
Run 3 – Fuel



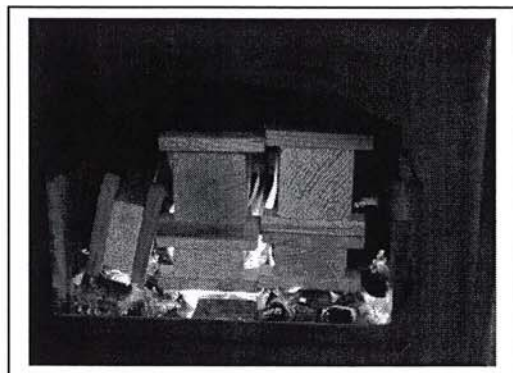
Run 3 - Newly Loaded Stove



Run 4 – Fuel



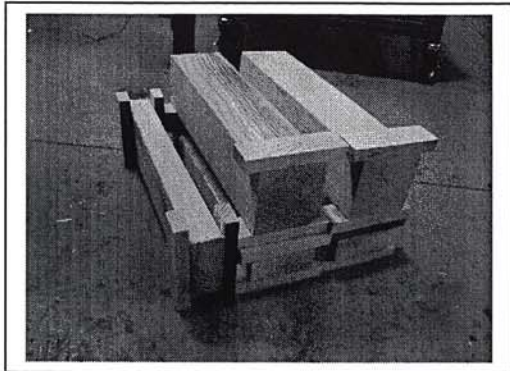
Run 4 - Newly Loaded Stove



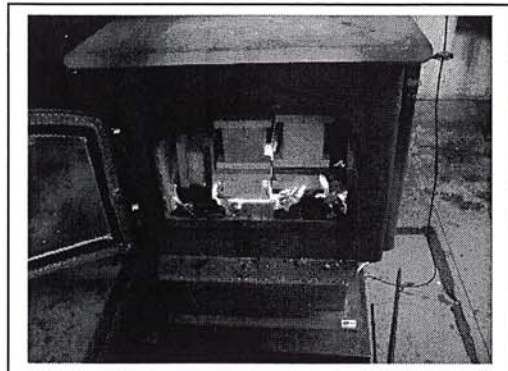
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Hearth and Home Technologies 4300 ACC

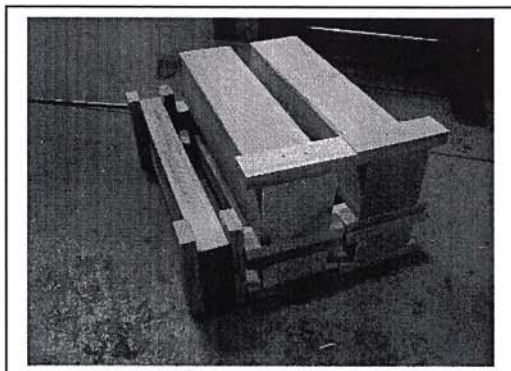
Run 5 – Fuel



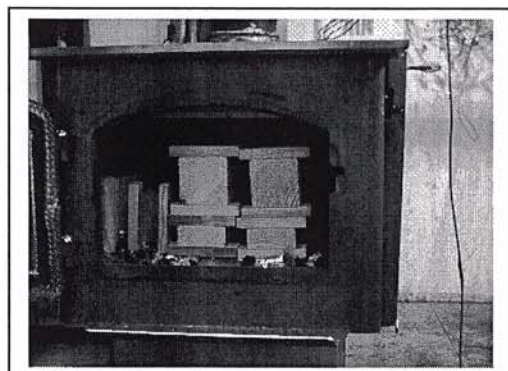
Run 5 - Newly Loaded Stove



Run 6 – Fuel

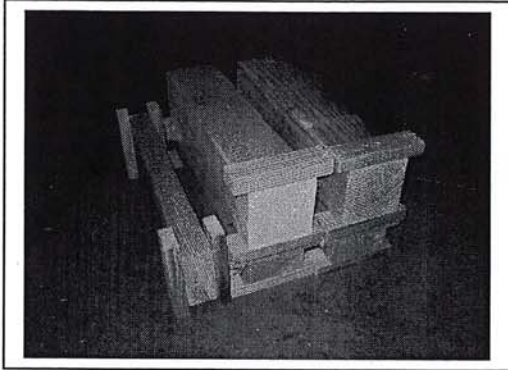


Run 6 - Newly Loaded Stove

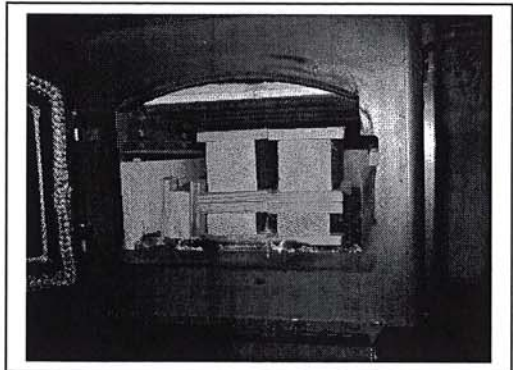


Hearth and Home Technologies 4300 ACC

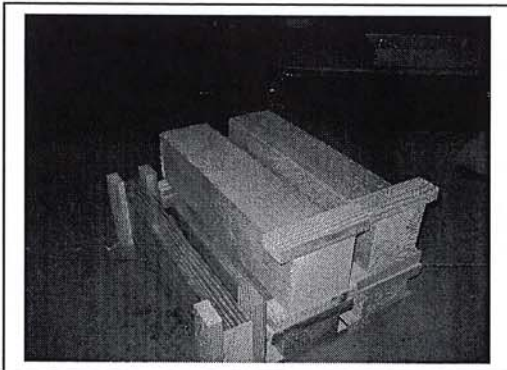
Run 7 – Fuel



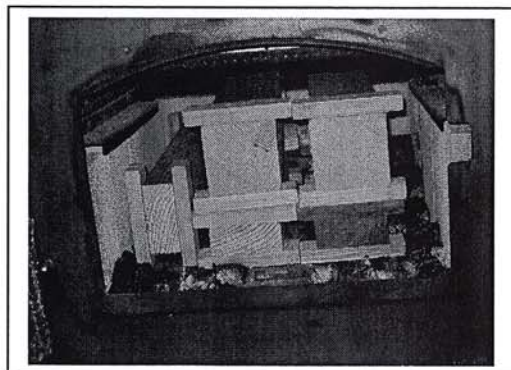
Run 7 - Newly Loaded Stove



Run 8 – Fuel



Run 8 - Newly Loaded Stove



*Model: 4300 ACC
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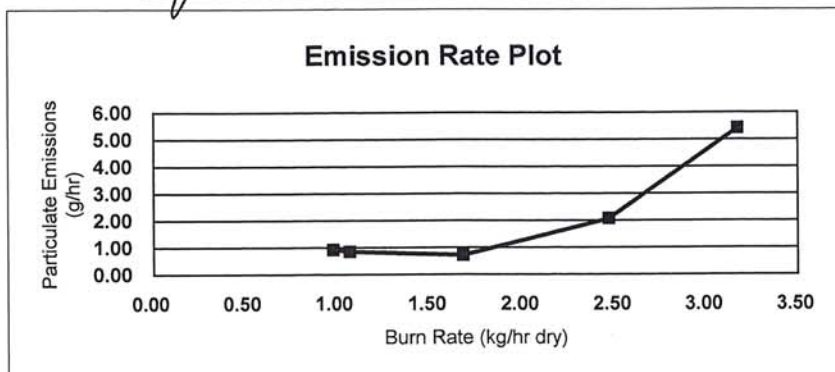
Section 4

Test Data by Run

EPA Weighted Average Emissions

EPA Method 28

Client: Hearth & Home Tech Status: Final
 Stove Model: 4300 ACC Stove Type: Non-Catalytic Stove
 Test Dates: August 1, 2006 through August 5, 2006
 Project Number: 061-S-67-3
 Tracking Number: 885
 Signature/Date: *[Signature]* 9-8-06

Weighted Average
 (g/hr)
1.0


Run # 8
 Burn Rate (dry kg/hr) 0.98
 Category 2
 Overall Efficiency (%) 63% *Low*
 Emissions (g/hr) 0.92
 Cap (g/hr) 15
 Weighting Factor 0.428 26.31%
 Heat Output (BTU/hr) 11842

Run # 4
 Burn Rate (dry kg/hr) 3.17
 Category 4
 Overall Efficiency (%) 63%
 Emissions (g/hr) 5.42
 Cap (g/hr) 18
 Weighting Factor 0.039 2.40%
 Heat Output (BTU/hr) 38305

Run # 1
 Burn Rate (dry kg/hr) 1.07
 Category 2
 Overall Efficiency (%) 63% *Low*
 Emissions (g/hr) 0.84
 Cap (g/hr) 15
 Weighting Factor 0.475 29.17%
 Heat Output (BTU/hr) 12929

Run # 5
 Burn Rate (dry kg/hr) 1.68
 Category 3
 Overall Efficiency (%) 63% *M Low*
 Emissions (g/hr) 0.72
 Cap (g/hr) 18
 Weighting Factor 0.533 32.73%
 Heat Output (BTU/hr) 20300

Run # 7
 Burn Rate (dry kg/hr) 2.47
 Category 4
 Overall Efficiency (%) 63% *M High*
 Emissions (g/hr) 2.07
 Cap (g/hr) 18
 Weighting Factor 0.153 9.40%
 Heat Output (BTU/hr) 29846

Low (2)

*Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114*

Run 1

Wood Heater Test Data
EPA Method 5H

[illegible]

Elapsed Time	Particulate Sampling System										Store Plus-Clue Conditions										Store Temperatures (°F)				Dilution Tunnel				Laboratory	
	Dry Or Moist Reading (cf)	Sample Rate (gph)	Oxide (cf)	Physical State (cf)	Simple Train Volume (inches Hg.)	Impinger Exit Temperature (°F)	Mat Box Temperature (°F)	Scale Reading (lbs)	Foot Weight	Store Plus-Clue Conditions				Store Temperatures (°F)				Dilution Tunnel				Laboratory								
										CO2 (%)	CO (ppm)	CO2 (ppm)	Air to Fuel Ratio (lb/lb)	Function Top	Function Bottom	Function Left	Function Right	Average Surface Temperature (°F)	Temperature (°F)	Flow Velocity (ft/min)	Static Pressure (inches Hg.)	CO2 (%)	Auxiliary							
0	0.000	0.417	0.34	0.85	72	0	84	229	14.3	14.3	179	14.2	229	432	304	421	327	331	89	0.033	-0.50	0.300	73							
10	4.167	0.837	0.78	0.88	73	1	55	229	13.3	-1.0	-0.052	8.0	11.0	324	372	9.6	328	108	108	0.033	-0.50	1.120	74							
20	9.338	0.937	0.76	0.88	74	5	54	229	11.9	-1.4	-0.062	8.3	11.5	329	364	9.3	328	113	113	0.033	-0.50	1.050	74							
30	14.509	0.475	0.56	0.92	75	5	59	229	10.5	-1.4	-0.050	8.6	11.2	340	9.8	329	328	108	108	0.033	-0.50	0.900	75							
40	18.672	0.428	0.42	0.94	77	4	63	230	9.2	-1.3	-0.051	7.6	12.4	324	8.7	334	369	293	109	0.033	-0.50	0.890	75							
50	22.214	0.364	0.45	0.94	77	3	66	230	8.3	-0.050	7.2	12.6	344	8.3	348	359	302	360	109	0.033	-0.50	0.910	76							
60	25.892	0.398	0.41	0.94	77	3	67	230	7.2	-1.1	-0.048	7.7	12.3	355	331	328	328	360	107	0.033	-0.50	0.930	76							
70	29.491	0.300	0.44	0.97	0	2	57	230	6.2	-1.0	-0.043	8.8	11.3	329	312	9.2	440	105	105	0.033	-0.50	0.790	76							
80	33.100	0.261	0.49	0.96	77	2	55	230	5.2	-1.0	-0.048	7.0	12.8	323	8.3	443	350	348	560	0.033	-0.50	0.850	77							
90	36.554	0.345	0.35	0.95	77	2	57	230	4.4	-0.8	-0.042	7.6	12.3	356	312	8.6	446	350	361	106	0.033	-0.50	0.770	77						
100	40.009	0.346	0.34	10.17	77	2	80	230	3.8	-0.6	-0.040	8.5	11.1	446	295	9.4	425	351	370	104	0.033	-0.50	0.680	77						
110	43.441	0.343	0.30	10.19	78	2	63	230	3.3	-0.5	-0.035	11.6	7.8	352	242	12.0	343	352	379	92	0.033	-0.50	0.470	77						
120	46.452	0.301	0.28	95.4	78	2	66	229	3.0	-0.3	-0.039	12.0	7.4	1.11	222	12.3	296	351	379	97	0.033	-0.50	0.430	77						
130	49.371	0.292	0.27	95.5	78	2	67	229	2.7	-0.3	-0.030	12.5	7.0	1.16	213	12.7	272	352	368	466	0.033	-0.50	0.400	77						
140	52.263	0.289	0.22	96.9	78	2	67	229	2.5	-0.2	-0.030	13.4	5.7	1.78	188	13.7	251	353	440	295	0.033	-0.50	0.300	76						
150	54.853	0.272	0.20	101.7	78	2	59	230	2.3	-0.2	-0.025	13.4	5.7	1.79	189	13.7	234	350	340	417	0.033	-0.50	0.250	77						
160	57.571	0.259	0.19	100.4	78	2	57	229	2.2	-0.1	-0.023	13.1	5.9	1.91	183	13.2	220	340	333	400	0.033	-0.50	0.200	77						
170	60.001	0.249	0.22	99.9	79	2	59	229	2.0	-0.2	-0.022	12.5	6.6	1.43	182	12.9	214	344	341	392	0.033	-0.50	0.340	77						
180	62.665	0.260	0.20	97.8	79	2	60	230	1.8	-0.2	-0.021	12.2	6.9	1.56	182	12.3	214	343	344	394	0.033	-0.50	0.340	77						
190	64.015	0.238	0.20	92.7	79	2	62	229	1.6	-0.2	-0.021	12.2	7.0	1.42	180	12.4	212	344	348	396	0.033	-0.50	0.350	77						
200	67.555	0.254	0.18	94.5	80	2	63	229	1.4	-0.2	-0.021	12.3	7.0	1.36	179	12.5	214	345	354	395	0.033	-0.50	0.330	78						
210	69.863	0.231	0.19	96.6	80	2	67	230	1.3	-0.1	-0.020	12.3	7.0	1.52	177	12.3	213	347	395	292	0.033	-0.50	0.340	71						
220	72.222	0.236	0.18	95.0	80	2	68	230	1.1	-0.2	-0.021	12.3	7.0	1.43	179	12.4	213	348	355	395	0.033	-0.50	0.330	80						
230	74.694	0.247	0.16	102.7	80	2	62	230	0.9	-0.2	-0.023	12.5	6.8	1.63	178	12.4	211	349	355	393	0.033	-0.50	0.310	80						
240	76.807	0.221	0.17	96.0	79	2	62	230	0.8	-0.1	-0.023	12.9	6.4	1.93	177	12.6	210	350	350	389	0.033	-0.50	0.300	79						
250	79.181	0.227	0.18	96.5	79	2	62	229	0.6	-0.2	-0.023	13.0	6.3	1.78	176	12.8	209	350	345	385	0.033	-0.50	0.300	80						
260	81.379	0.220	0.16	92.2	79	2	64	229	0.5	-0.1	-0.022	13.1	6.1	1.97	173	12.8	206	350	342	383	0.033	-0.50	0.300	80						
270	83.628	0.225	0.15	99.8	79	2	65	230	0.3	-0.2	-0.022	13.9	5.6	1.69	168	14.0	202	349	333	377	0.033	-0.50	0.260	81						
280	85.844	0.222	0.16	101.6	79	2	68	230	0.2	-0.1	-0.022	13.8	5.7	1.94	164	14.1	197	346	326	367	0.033	-0.50	0.260	81						
290	88.003	0.222	0.16	99.0	79	2	67	230	0.1	-0.1	-0.021	13.9	5.6	1.62	162	14.1	191	345	317	360	0.033	-0.50	0.260	79						
300	90.285	0.222	0.15	97.4	79	2	88	230	0.0	-0.1	-0.021	14.1	5.4	1.44	160	14.2	187	344	310	355	0.033	-0.50	0.240	78						
Total Sampling Time (minutes)	90.285	0.301	0.30	96.79	77.8	5.00	62.94	229.58	14.30	-0.48	-0.03	11.32	8.18	233.84	11.74	338.61	202.42	57	97.74	0.33	-0.50	0.50	77.03							

906-2-2011

Wood Heater Calculation Data EPA Method 5H

Run 1

Burn Rate (dry kg/hour) = 1.07

Manufacturer: Hearth and Home Tech

Model/Tracking No.: 4300 ACC

Test Date: 01-Aug-06

Project Number: 061-S-67-3

Emission Rate (grams/hour) = 0.84

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qt-new (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (discf)	Si * Volume Sampled	Proportional Sample Rate	dH new
0	12.6	1.10	10.7	130.4	7.6	0.132	3.827	0.506	100.0	0.953
10	12.9	1.06	10.7	128.3	12.7	0.079	4.931	0.388	86.8	0.755
20	12.9	1.08	14.4	127.7	11.3	0.088	4.352	0.385	90.2	0.583
30	12.9	1.09	14.9	128.3	9.9	0.101	3.913	0.393	94.1	0.419
40	12.9	1.06	12.6	128.2	8.5	0.118	3.314	0.392	94.9	0.454
50	12.9	1.05	8.4	128.2	8.8	0.114	3.347	0.381	93.4	0.407
60	12.9	1.04	10.4	128.4	8.3	0.120	3.275	0.393	97.0	0.437
70	12.8	1.03	10.1	128.6	8.6	0.116	3.284	0.381	94.6	0.396
80	12.9	1.06	9.2	128.5	8.2	0.122	3.143	0.383	95.6	0.349
90	12.9	1.06	7.6	128.5	7.7	0.130	3.144	0.408	101.7	0.341
100	12.8	1.09	6.3	128.7	7.6	0.131	3.123	0.409	101.9	0.301
110	12.8	1.11	6.7	129.3	7.2	0.140	2.734	0.381	95.4	0.284
120	12.7	1.11	4.1	129.5	7.0	0.144	2.650	0.381	95.5	0.272
130	12.7	1.10	4.3	129.8	6.8	0.147	2.626	0.385	96.9	0.218
140	12.7	1.12	3.1	130.0	6.1	0.164	2.469	0.405	101.7	0.202
150	12.7	1.12	3.1	130.1	5.9	0.170	2.349	0.400	100.4	0.189
160	12.7	1.12	1.5	130.2	5.7	0.176	2.260	0.398	99.9	0.215
170	12.7	1.14	2.9	130.2	6.1	0.165	2.360	0.389	97.8	0.197
180	12.7	1.12	2.8	130.2	5.8	0.172	2.302	0.390	98.5	0.178
190	12.7	1.12	2.8	130.2	5.9	0.169	2.087	0.378	95.6	0.190
200	12.7	1.11	2.8	130.1	5.5	0.181	2.134	0.374	95.0	0.178
210	12.7	1.10	1.4	129.9	5.7	0.175	2.236	0.405	102.7	0.164
220	12.7	1.10	2.8	129.9	5.5	0.181	2.001	0.378	96.0	0.172
230	12.7	1.09	2.8	129.9	5.3	0.189	2.060	0.379	96.5	0.178
240	12.7	1.08	1.4	130.0	5.4	0.184	1.992	0.361	92.2	0.162
250	12.7	1.09	2.9	129.9	5.5	0.181	2.038	0.387	98.8	0.148
260	12.7	1.09	1.4	129.9	5.3	0.190	2.008	0.398	101.6	0.157
270	12.7	1.08	3.1	129.9	5.0	0.198	2.010	0.388	99.1	0.163
280	12.7	1.09	1.6	129.9	5.2	0.193	2.013	0.381	97.4	0.146
290	12.7	1.08	1.6	130.0	5.3	0.189				
300	12.7	1.10	1.7	130.4	5.0	0.200				
Averages/Totals	12.8	1.09	5.3	129.5	6.9	0.153	2.737		96.8	0.300

Control No. P-SSI-0006 (5H Emission Calculations).xls, Effective Date: 7/11/2002

Page 1 of 1

Run 1 4300

4 - 5 0 F 4 - 6 6

Woodstove Type
Yhc=1=cat,2=rcat,3=pellet
EPA's Hydrocarbon Constant (%)

Fuel Data

Test Charge (as fired lbs)
Average Moisture (% dry basis)
Average Moisture (% wet basis)

Run Parameters

DGM initial reading (cf)
DGM final reading (cf)
Pb (inches Hg)
Tm (avg of)
dH (avg inches wc)
Vm (scf)
Qf by carbon balance (avg discf/minute)

Analytical Data

Probe/Front Wash (mg)
Front Filter (mg)
Impinger PM (mg)
Back Filter (mg)
Total Weight (mg)

Emission Results

Cs (g/discf)
ER (g/hour)

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 1
 Model: 4300 ACC Date: 08/01/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	M983	657.8	627.5		30.3
B. Rear filter catch	Filter	D267	158.7	147.0		11.7
C. Rinse of probe and filter assembly (FRONT)	Acetone	70	111058.8	111032.4	0.0050	26.1
D. Rinse of Impinger Set	Distilled Water	330	147560.0	147494.5	0.0010	65.2
E. Rinse of Impinger Set	Dichloromethane	150	116233.8	116197.8	0.0000	36.0
F. Rinse of filter assembly and gas train (BACK)	Acetone	130	110984.0	110936.8	0.0050	46.5
Total Particulate, mg :						215.8

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER		Weights		
IMPINGERS	Final, g	Initial, g	Net, g	
1	763.0	660.0	103.0	
2	675.0	659.8	15.2	
3	448.4	445.8	2.6	
4	880.6	864.7	15.9	
		TOTAL, g:	136.7	

Analyst: Date: 9-6-06

STOVE TEMPERATURE TEST DATA - METHOD 5G

Page 1 of 1

Client/Model: Hearth & Home Tech Project #: 061-S-67-3 Tracking #: 885

Date: 8-1-06 Test Crew: B Davis Run #: 1

OMNI Equipment ID #: _____

Preburn ☒		Coal Bed:		Range: 2-7-3.5		Actual:					
Test		Data:		0 = 0		Coal Bed: 3.5					
		TEMPERATURES (oF)									
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst
0	6.5	✓	-0.47	67	397	517	578	668	405	290	NA
10	5.7	0.8	-0.44	67	391	519	552	630	602	286	
20	5.0	0.7	-0.42	68	375	501	509	590	563	275	
30	4.2	0.8	-0.42	67	390	478	476	551	537	287	
40	3.7	0.5	-0.33	73	364	458	447	530	505	247	
50	3.6	0.1	-0.29	73	286	445	413	482	472	211	
60	3.5	0.1	-0.25	73	237	435	371	431	433	187	
70											
80											
90											
00											
10											
20											
30											
40											
50											
60											
70											
80											
90											
AVG											

Technician signature: B Davis Date: 8-17-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-1-06 Test Crew: B DAVIS Run #: 1

OMNI Equipment ID #:

FUEL LOAD PREPARED BY: B DAVIS

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL

MOISTURE CONTENT (METER -- DRY BASIS)

CALIBRATION: Cal Value (1) = 12% Actual Reading 12
Cal Value (2) = 22% Actual Reading 22

Piece	Length		Readings		Type
1	<u>241</u> ft	<u>19.0</u>	<u>21.9</u>	<u>19.7</u>	<u>2x4</u>
2	_____ ft	_____	_____	_____	_____
3	_____ ft	_____	_____	_____	_____

Length of cut pieces: 3e 8 inches

Pre-Burn Fuel Average Moisture: 20.20

Time (clock): 0830 Room Temperature (F): 70 Initials: BD

TEST FUEL

FUEL TYPE AND AMOUNT: 2 x 4 3 4 x 4 2

CALCULATED LOAD WEIGHT: _____ ACTUAL LOAD WEIGHT: 6.6 (2 x 4)

7.7 (4 x 4)

FUEL PIECE LENGTH: 15 14.3 Total

MOISTURE CONTENT (METER -- DRY BASIS)

PIECE	READINGS			TYPE
1	<u>22.0</u>	<u>21.9</u>	<u>22.0</u>	<u>2x4</u>
2	<u>18.9</u>	<u>19.0</u>	<u>19.5</u>	<u>2x4</u>
3	<u>15.8</u>	<u>18.9</u>	<u>19.3</u>	<u>2x4</u>
4	<u>21.7</u>	<u>22.4</u>	<u>23.8</u>	<u>4x4</u>
5	<u>23.2</u>	<u>23.4</u>	<u>19.8</u>	<u>4x4</u>
6	_____	_____	_____	_____
7	_____	_____	_____	_____
8	_____	_____	_____	_____
9	_____	_____	_____	_____
10	_____	_____	_____	_____

OVERALL TEST FUEL LOAD MOISTURE AVERAGE: 20.97

Time (clock): 0835 Room Temperature (F): 70 Initials: BD

Technician signature: B DAVIS Date: 8-17-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 1 Date: 8-1-06

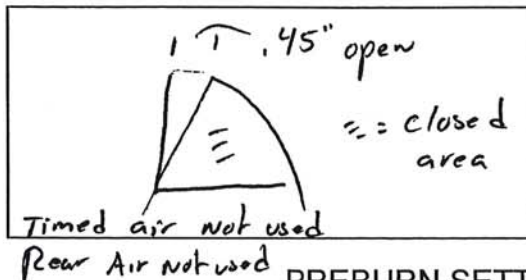
Test Crew: B. Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

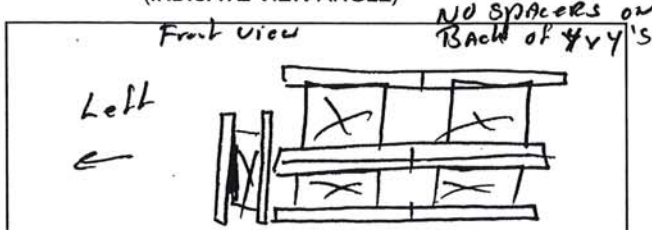
FAN: ON high

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0 50	Test setting				X	→

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS: NA

FUEL LOADING By 49 sec

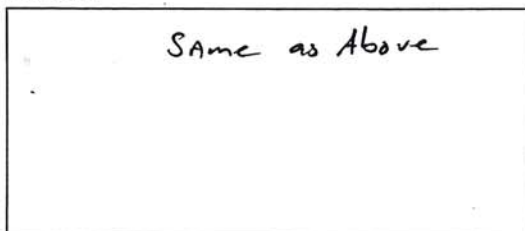
DOOR: closed by 65 sec

PRIMARY AIR: at test setting full 5:00

OTHER: Timed Air pushed after fuel loading. Rear air not used.

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

FAN: on High

Technician signature: B. Davis Date: 8-17-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-1-06

Run No.: 1

Booth: 1

Test Crew: R. Davis

Start Time: 11:05

Stop Time: 16:05

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.48 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.5</u>	<u>0.0</u>	<u>10.5</u>				
CO ₂	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>9.9</u>				
CO	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.26</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>-0.04</u>	<u>1.21</u>				

Stack Diameter (inches): 6"

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

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 3.2 Post: 0.0 @ 3.0

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BSR

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.44</u>	<u>28.38</u>	<u>28.37</u>
Room Temp (°F)	<u>73</u>	<u>77</u>	<u>78</u>

Technician signature: BSR Date: 8-17-06

*Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114*

Run 2

Wood Heater Calculation Data EPA Method 5H

Run 2

Burn Rate (dry kg/hour) = 1.06

Manufacturer: Hearth and Home Tech

Model/Tracking No.: 4300 ACC

Test Date: 02-Aug-06

Project Number: 061-S-67-3

Emission Rate (grams/hour) = 1.27

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qt-new (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (dscf)	Si • Volume Sampled	Proportional Sample Rate	dH new
0	12.6	1.10		130.3	7.9	0.127				
10	12.8	1.06	11.2	126.6	11.8	0.084	2.900	0.369	100.0	0.722
20	12.9	1.06	14.0	127.8	11.5	0.087	4.311	0.364	99.3	0.678
30	12.8	1.06	13.1	128.8	9.0	0.111	4.301	0.375	101.5	0.417
40	12.8	1.07	10.6	128.8	8.9	0.112	3.305	0.367	99.5	0.408
50	12.8	1.07	10.9	128.8	8.7	0.115	3.295	0.370	100.2	0.391
60	12.8	1.07	9.5	128.9	8.9	0.113	3.207	0.367	99.6	0.405
70	12.8	1.06	9.6	128.8	8.8	0.114	3.219	0.362	98.5	0.396
80	12.8	1.06	9.0	128.8	8.3	0.121	3.199	0.364	99.1	0.351
90	12.8	1.08	8.6	128.9	8.2	0.122	3.025	0.366	99.6	0.345
100	12.8	1.10	7.0	129.3	7.3	0.137	3.076	0.374	101.7	0.274
110	12.7	1.12	5.6	129.7	7.8	0.129	2.632	0.359	97.9	0.309
120	12.7	1.11	4.4	130.0	7.4	0.134	2.747	0.353	96.5	0.283
130	12.7	1.10	4.5	130.3	7.0	0.143	2.783	0.374	102.0	0.250
140	12.7	1.11	3.1	130.0	6.4	0.155	2.578	0.368	100.5	0.212
150	12.7	1.12	3.1	130.0	6.9	0.144	2.344	0.354	99.2	0.246
160	12.7	1.12	1.5	129.9	6.6	0.152	2.438	0.351	96.0	0.219
170	12.7	1.10	2.9	129.9	6.4	0.155	2.399	0.366	100.1	0.211
180	12.7	1.11	2.9	129.9	6.6	0.153	2.327	0.361	98.9	0.219
190	12.7	1.10	2.9	130.0	6.1	0.163	2.340	0.357	97.8	0.191
200	12.7	1.09	2.9	130.0	6.6	0.152	2.241	0.366	100.2	0.219
210	12.7	1.09	1.5	129.9	6.3	0.158	2.290	0.349	95.9	0.205
220	12.7	1.10	2.9	130.0	6.2	0.160	2.293	0.362	99.4	0.198
230	12.7	1.10	1.5	130.0	6.1	0.163	2.368	0.380	104.2	0.192
240	12.7	1.10	2.9	130.0	6.3	0.157	2.229	0.363	99.5	0.205
250	12.7	1.11	1.5	130.0	6.1	0.164	2.264	0.357	97.9	0.189
260	12.7	1.11	3.1	130.0	6.2	0.161	2.209	0.362	99.4	0.196
270	12.7	1.11	1.6	130.0	6.2	0.161	2.225	0.358	98.4	0.196
280	12.7	1.10	1.6	129.9	6.2	0.161	2.204	0.355	97.7	0.195
290	12.7	1.10	1.5	129.9	6.1	0.164	2.124	0.343	94.4	0.188
300	12.7	1.11	1.6	130.4	6.2	0.161	2.191	0.360	99.2	0.196
Averages/Totals	12.7	1.09	5.2	129.6	7.4	0.140	2.702		99.1	0.290

Control No. P-SSI-0006 (5H Emission Calculations).xls, Effective Date: 7/11/2002

Page 1 of 1

Run 2 4300

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 2
 Model: 4300 ACC Date: 08/02/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	M984	683.0	625.2		57.8
B. Rear filter catch	Filter	D268	181.8	145.9		35.9
C. Rinse of probe and filter assembly (FRONT)	Acetone	75	102047.6	102014.7	0.0050	32.5
D. Rinse of Impinger Set	Distilled Water	325	177770.6	177678.7	0.0010	91.6
E. Rinse of Impinger Set	Dichloromethane	150	108969.5	108929.0	0.0000	40.5
F. Rinse of filter assembly and gas train (BACK)	Acetone	125	105432.5	105362.9	0.0050	69.0
Total Particulate, mg :						327.3

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER

IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	769.9	660.0	109.9
2	662.0	655.2	6.8
3	446.9	446.2	0.7
4	893.4	877.9	15.5
TOTAL, g:			132.9

Analyst: ASDDate: 8-31-06

STOVE TEMPERATURE TEST DATA - METHOD 5G

Page 1 of 1

Client/Model: Health Home Tech 4300 Acc Project #: 061-s-67-3 Tracking #: 885

Date: 8-2-06 Test Crew: B Davis Run #: 2

OMNI Equipment ID #: _____

Preburn ☒		Coal Bed:		Actual:							
Test ☐		Data:		Coal Bed: <u>2.9</u>							
		0 = ☒		Range: <u>2.9-3.5</u>							
		TEMPERATURES (oF)									
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst
0	6.1	✓	-0.42	72	414	490	583	678	298	294	NA
10	5.1	1.0	-0.50	72	439	493	537	618	277	328	
20	4.4	0.7	-0.43	73	404	482	491	570	256	302	
30	3.7	0.7	-0.47	75	394	462	457	539	242	311	
40	3.2	0.5	-0.38	73	353	445	435	522	229	235	
50	3.0	0.2	-0.31	73	287	437	408	496	225	225	
60	2.9	0.1	-0.28	74	242	429	372	444	200	186	
70											
80											
90											
00											
10											
20											
30											
40											
50											
60											
70											
80											
90											
AVG											

Technician signature: B Davis Date: 8-17-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-2-06 Test Crew: B. Davis Run #: 2

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B. Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL

MOISTURE CONTENT (METER -- DRY BASIS)

CALIBRATION: Cal Value (1) = 12% Actual Reading 12
Cal Value (2) = 22% Actual Reading 22

Piece	Length	Readings	Type
1	<u>24"</u> ft	<u>20.5</u> <u>22.8</u> <u>20.4</u>	<u>2x4</u>
2	_____ ft	_____	_____
3	_____ ft	_____	_____

Length of cut pieces: 3 @ 8" inches Pre-Burn Fuel Average Moisture: 21.2

Time (clock): 0850 Room Temperature (F): 70 Initials: BA

TEST FUEL

FUEL TYPE AND AMOUNT: 2 x 4 3 4 x 4 2
CALCULATED LOAD WEIGHT: 15.6 ACTUAL LOAD WEIGHT: 6.5 (2 x 4)
7.8 (4 x 4)
FUEL PIECE LENGTH: 15" 14.3 Total

MOISTURE CONTENT (METER -- DRY BASIS)

PIECE	READINGS	TYPE
1	<u>22.0</u> <u>25.2</u> <u>22.6</u>	<u>4x4</u>
2	<u>19.3</u> <u>24.4</u> <u>24.2</u>	<u>4x4</u>
3	<u>21.7</u> <u>20.1</u> <u>20.4</u>	<u>2x4</u>
4	<u>23.0</u> <u>21.9</u> <u>23.8</u>	<u>2x4</u>
5	<u>18.7</u> <u>22.5</u> <u>20.3</u>	<u>2x4</u>
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

OVERALL TEST FUEL LOAD MOISTURE AVERAGE: 22.01

Time (clock): 0845 Room Temperature (F): 70 Initials: BA

Technician signature: B. Davis Date: 5-18-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 2 Date: 8-2-06

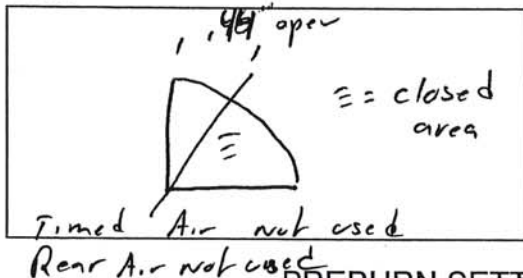
Test Crew: B Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

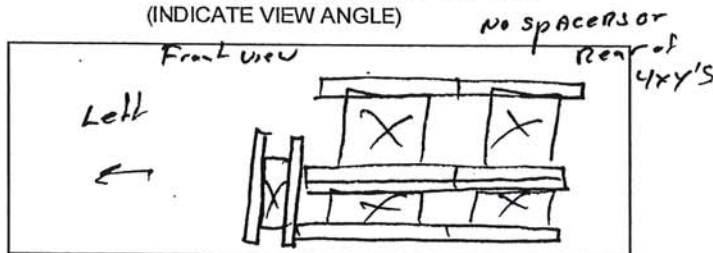
FAN: on High

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0	Test setting					
48					X	→

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS: NA

FUEL LOADING By 46 sec.

DOOR: closed by 59 sec

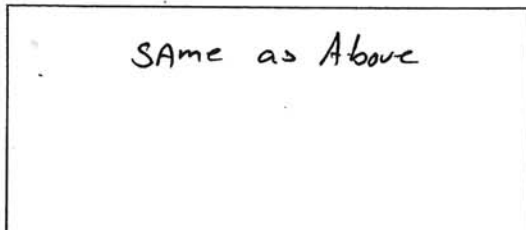
PRIMARY AIR: at test setting by 5:00

OTHER:

Timed Air pushed After fuel loading
Rear Air not used.

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

FAN: on high

Technician signature: B Davis Date: 8-17-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-2-06 Run No.: 2 Booth: 1

Test Crew: B Davis Start Time: 10:38 Stop Time: 15:38

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.48 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>0</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.4</u>	<u>0.0</u>	<u>10.4</u>				
CO ₂	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>9.7</u>				
CO	<u>0.00</u>	<u>1.25</u>	<u>0.01</u>	<u>1.22</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.23</u>				

Stack Diameter (inches): 6

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

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 3.0 Post: 0.0 @ 3.4

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BR

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.60</u>	<u>28.52</u>	<u>28.30</u>
Room Temp (°F)	<u>74</u>	<u>81</u>	<u>81</u>

Technician signature: B Davis Date: 8-17-06

*Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114*

Run 3

Wood Heater Test Data EPA Method 5H

Run Number 3

Manufacturer: 4300 ACC
 Show Model Tracking Number: 4300 ACC
 Show Type (e.g. road, or pelting): road
 Office #HQ: 081-5-67-3
 Plot Tube C/P: 03-Aug-06
 Average Barometric Pressure: 11.32
 Average Fuel Moisture (dry basis %): 10
 OMNI Equipment Numbers: 320

Test Meter Y: 2.081
 Office #HQ: 081-5-67-3
 Plot Tube C/P: 03-Aug-06
 Average Barometric Pressure: 11.32
 Average Fuel Moisture (dry basis %): 10
 OMNI Equipment Numbers: 320

Sample Rate Control Module Number: 322
 0.074
 2.081
 0.99
 28.44
 21.60

Division Tunnel Velocity Traverse Data												
	PK.1	PK.2	PK.3	PK.4	PK.5	PK.6	PK.7					
Initial SP	0.026	0.038	0.040	0.026	0.030	0.034	0.040					
Initial Temp	54	54	54	54	54	54	54					
							Signature/Date: _____					

Wood Heater Calculation Data EPA Method 5H

Run 3

Manufacturer: Hearth and Home Tech

Model/Tracking No.: 4300 ACC

Test Date: 03-Aug-06

Project Number: 061-S-67-3

Burn Rate (dry kg/hour) = 1.00

Emission Rate (grams/hour) = 2.04

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (dscf)	SI * Volume Sampled	Proportional Sample Rate	dH new
0	12.9	1.11	11.5	8.1	0.123	2.889	0.355	100.0	0.777
10	13.1	1.07	15.5	12.8	0.078	4.504	0.353	99.7	0.589
20	13.1	1.06	129.5	11.1	0.090	4.504	0.353	99.7	0.589
30	13.1	1.07	11.3	9.9	0.101	3.951	0.355	100.3	0.465
40	13.0	1.11	130.4	9.8	0.102	3.669	0.371	103.5	0.458
50	13.1	1.07	9.8	9.9	0.101	3.491	0.356	99.5	0.470
60	13.0	1.05	10.2	9.3	0.107	3.469	0.349	97.8	0.413
70	13.0	1.09	9.7	9.4	0.107	3.310	0.355	99.6	0.417
80	13.0	1.10	8.7	9.4	0.107	3.271	0.349	98.2	0.414
90	13.1	1.06	9.0	9.6	0.104	3.308	0.354	99.6	0.439
100	13.1	1.10	9.4	9.4	0.106	3.252	0.338	95.6	0.420
110	13.0	1.13	9.2	8.5	0.117	3.343	0.354	100.3	0.344
120	13.0	1.15	5.7	8.5	0.118	2.914	0.342	96.9	0.341
130	13.0	1.17	4.6	8.3	0.120	2.875	0.338	96.2	0.328
140	12.9	1.15	3.1	7.6	0.132	2.718	0.326	93.1	0.269
150	12.9	1.18	3.2	7.4	0.135	2.681	0.354	101.3	0.257
160	12.9	1.19	1.6	6.9	0.145	2.705	0.366	104.2	0.224
170	12.9	1.16	3.2	6.8	0.147	2.447	0.354	100.9	0.216
180	12.9	1.16	1.6	6.7	0.150	2.457	0.362	103.0	0.208
190	12.9	1.17	1.6	6.7	0.150	2.442	0.367	104.0	0.208
200	12.9	1.14	1.6	6.8	0.148	2.407	0.362	102.5	0.215
210	12.9	1.13	3.1	6.7	0.150	2.421	0.357	101.2	0.208
220	12.9	1.13	1.6	6.5	0.153	2.409	0.362	102.4	0.200
230	12.9	1.13	1.6	6.5	0.153	2.318	0.355	100.3	0.200
240	12.9	1.12	1.5	6.2	0.162	2.318	0.355	100.3	0.179
250	12.9	1.12	3.1	6.1	0.165	2.417	0.391	110.2	0.173
260	12.9	1.08	1.5	6.0	0.168	2.029	0.334	94.4	0.167
270	12.9	1.12	1.5	6.0	0.167	2.204	0.369	104.1	0.168
280	12.9	1.11	3.0	6.0	0.167	2.003	0.335	94.5	0.169
290	12.9	1.11	1.5	6.1	0.163	2.099	0.350	98.8	0.176
300	12.9	1.10	1.5	6.0	0.166	2.113	0.345	97.6	0.170
310	12.9	1.13	2.9	6.3	0.158	2.069	0.344	97.2	0.188
320	12.9	1.14	1.5	6.3	0.158	2.191	0.346	97.8	0.188
Averages/Totals	13.0	1.12	5.2	7.8	0.134	2.772	99.8	0.302	

Woodstove Type
Yucca-1-cat, 2=coal, 3=pellet
EPA's Hydrocarbon Constant (%)

Fuel Data
Test Charge (as fired lbs)
Average Moisture (% dry basis)
Average Moisture (% wet basis)

Run Parameters
DGM initial reading (cf)
DGM final reading (cf)
Pb (inches Hg)
Tm (avg of)
dH (avg inches wc)
Vm (scf)
Qf by carbon balance (avg dscf/minute)

Analytical Data
Probe/Front Wash (mg)
Front Filter (mg)
Impinger PM (mg)
Back Filter (mg)
Total Weight (mg)

Emission Results
Ca (g/dscf)
ER (g/hour)

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 3
 Model: 4300 ACC Date: 08/03/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N091	734.0	631.9		102.1
B. Rear filter catch	Filter	D269	209.8	148.7		61.1
C. Rinse of probe and filter assembly (FRONT)	Acetone	80	110205.9	110144.9	0.0050	60.6
D. Rinse of Impinger Set	Distilled Water	325	137369.4	137215.8	0.0010	153.3
E. Rinse of Impinger Set	Dichloromethane	150	112071.2	112003.9	0.0000	67.3
F. Rinse of filter assembly and gas train (BACK)	Acetone	150	109960.8	109822.1	0.0050	137.9
Total Particulate, mg :						582.3

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER

IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	777.4	662.1	115.3
2	663.2	651.7	11.5
3	448.5	446.5	2.0
4	841.8	816.4	25.4
TOTAL, g:			154.2

Analyst: WJDate: 8-31-06

STOVE TEMPERATURE TEST - JATA - METHOD 5G

Page 1 of 1

Client/Model: Heath & Home Tools 4300 Project #: 061-S-67-3 Tracking #: 885

Date: 8-3-06 Test Crew: B Davis Run #: 3

OMNI Equipment ID #: _____

Preburn ☒		Coal Bed:				Actual:					
Test ☐		Data: 0 = 0				Range: 2.9 - 3.5					
						Coal Bed: 3.2					
						TEMPERATURES (oF)					
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst
0	6.2	—	-0.45	77	466	524	628	749	466	341	NA
10	5.3	0.9	-0.47	76	443	531	588	692	479	299	
20	4.6	0.7	-0.40	75	387	511	517	608	442	266	
30	4.0	0.6	-0.41	74	367	482	469	551	407	267	
40	3.5	0.5	-0.32	75	363	457	442	529	388	259	
50	3.3	0.2	-0.30	75	308	442	412	493	367	216	
60	3.2	0.1	-0.25	76	251	429	373	442	313	188	
70											
80											
90											
00											
10											
20											
30											
40											
50											
60											
70											
80											
90											
AVG											

Technician signature: B Davis Date: 8-17-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-3-06 Test Crew: B Davis Run #: 3

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL					
MOISTURE CONTENT (METER -- DRY BASIS)					
CALIBRATION:	Cal Value (1) = 12%	Actual Reading <u>12</u>			
	Cal Value (2) = 22%	Actual Reading <u>22</u>			
Piece	Length	Readings			Type
1	<u>24"</u> ft	<u>24.7</u>	<u>20.2</u>	<u>23.8</u>	<u>2x4</u>
2	_____ ft	_____	_____	_____	_____
3	_____ ft	_____	_____	_____	_____
Length of cut pieces: <u>32 8"</u> inches		Pre-Burn Fuel Average Moisture: <u>22.9</u>			
Time (clock): <u>08:50</u>		Room Temperature (F): <u>72</u>	Initials: <u>BD</u>		

TEST FUEL				
FUEL TYPE AND AMOUNT:	<u>2 x 4</u>	<u>3</u>	<u>4 x 4</u>	<u>2</u>
CALCULATED LOAD WEIGHT:	<u>15.6</u>	ACTUAL LOAD WEIGHT:		<u>6.8</u> (2 x 4)
				<u>7.5</u> (4 x 4)
FUEL PIECE LENGTH:	<u>15"</u>			<u>14.3</u> Total
MOISTURE CONTENT (METER -- DRY BASIS)				
PIECE	READINGS			TYPE
1	<u>19.9</u>	<u>21.9</u>	<u>21.2</u>	<u>4x4</u>
2	<u>22.3</u>	<u>21.2</u>	<u>20.4</u>	<u>4x4</u>
3	<u>23.2</u>	<u>22.0</u>	<u>22.8</u>	<u>2x4</u>
4	<u>21.2</u>	<u>22.0</u>	<u>22.5</u>	<u>2x4</u>
5	<u>19.9</u>	<u>21.5</u>	<u>22.0</u>	<u>2x4</u>
6	_____	_____	_____	_____
7	_____	_____	_____	_____
8	_____	_____	_____	_____
9	_____	_____	_____	_____
10	_____	_____	_____	_____
OVERALL TEST FUEL LOAD MOISTURE AVERAGE: <u>21.6</u>				
Time (clock): <u>0855</u>		Room Temperature (F): <u>72</u>	Initials: <u>BD</u>	

Technician signature: BD Date: 8-17-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 3 Date: 8-3-06

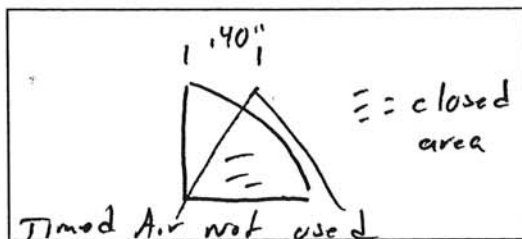
Test Crew: B. Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

FAN: on high

PREBURN SETTINGS AND ACTIVITIES

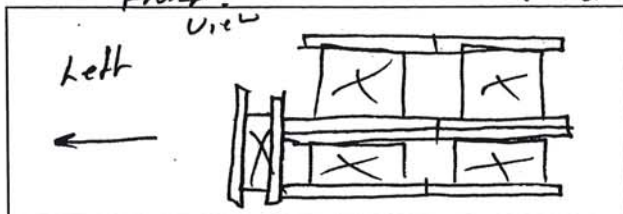
TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0 50	Test setting				x	→

TEST

TEST FUEL CONFIGURATION SKETCH

(INDICATE VIEW ANGLE)

Front view No top spacers on Rear of 4x4's



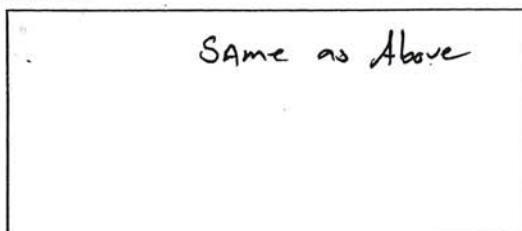
START UP PROCEDURES

BYPASS: NA
FUEL LOADING: By 55 sec
DOOR: closed by 70 sec.
PRIMARY AIR: at test setting for full 5:00

OTHER: Timed Air pushed After loading
Rear air not used

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

FAN: on high

Technician signature: B. Davis Date: 8-17-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-3-06

Run No.: 3

Booth: 1

Test Crew: B. Davis

Start Time: 11:32

Stop Time: 12:47 ^{B2} 16:52

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.44 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOR</u>					
O ₂	<u>10.4</u>	<u>0.0</u>	<u>0.0</u>	<u>10.4</u>				
CO ₂	<u>9.9</u>	<u>0.0</u>	<u>0.0</u>	<u>9.6</u>				
CO	<u>1.25</u>	<u>0.00</u>	<u>0.01</u>	<u>1.23</u>				
CO ₂ (DT)	<u>1.25</u>	<u>0.00</u>	<u>0.00</u>	<u>1.25</u>				

Stack Diameter (inches): 6

Air Velocity (ft/min): Initial: 250 ft/min Final: 250 ft/min

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100 %

Pitot Tube Leak Test: Pre: 0.0 @ 31 Post: 0.0 @ 3.2

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: Bre

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.51</u>	<u>28.44</u>	<u>28.36</u>
Room Temp (°F)	<u>76</u>	<u>81</u>	<u>81</u>

Technician signature: [Signature] Date: 9-7-06

Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114

Run 4

High

Wood Heater Calculation Data EPA Method 5H

Run	4
Manufacturer:	Hearth and Home Tech
Model/Tracking No.:	4300 ACC
Test Date:	04-Aug-08
Project Number:	081-S-67-3

Burn Rate (dry kg/hour) = 3.17

Emission Rate (grams/hour) = 5.42

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si) (scf/minute)	Volume Sampled (dscf)	Si * Volume Sampled	Proportional Sample Rate	dH new
0	14.4	1.21	139.6	17.9	0.056				
5	14.6	1.06	136.9	19.7	0.051	1.476	0.083	100.0	0.362
10	14.9	1.02	134.8	18.3	0.055	1.448	0.073	94.1	0.312
15	14.9	1.06	134.1	18.5	0.054	1.430	0.078	100.1	0.318
20	15.0	1.08	133.7	18.4	0.054	1.409	0.076	98.1	0.313
25	15.0	1.09	133.8	18.1	0.055	1.390	0.076	98.1	0.305
30	14.9	1.10	134.4	16.9	0.059	1.412	0.078	100.8	0.265
35	14.9	1.11	134.8	17.0	0.059	1.381	0.082	104.8	0.266
40	14.8	1.14	135.7	15.9	0.063	1.317	0.078	99.7	0.234
45	14.6	1.16	136.7	15.7	0.064	1.234	0.078	99.7	0.228
50	14.5	1.17	137.7	16.3	0.061	1.281	0.081	104.2	0.246
55	14.5	1.26	138.3	16.8	0.059	1.298	0.079	101.5	0.261
60	14.4	1.15	138.6	16.3	0.061	1.315	0.078	99.9	0.244
65	14.4	1.16	139.0	16.9	0.059	1.305	0.080	102.3	0.264
70	14.4	1.15	139.1	17.4	0.057	1.291	0.076	97.5	0.279
75	14.4	1.23	139.4	17.3	0.058	1.403	0.081	102.8	0.275
80	14.3	1.24	139.7	18.0	0.056	1.306	0.076	96.6	0.298
85	14.3	1.16	140.1	17.2	0.058	1.368	0.078	97.4	0.274
90	14.3	1.16	140.3	17.8	0.056	1.382	0.080	102.5	0.291
95	14.2	1.12	140.5	16.9	0.059	1.366	0.077	98.4	0.264
100	14.2	1.19	140.7	17.3	0.058	1.366	0.081	103.1	0.275
105	14.2	1.15	140.8	16.4	0.061	1.378	0.080	101.7	0.247
Test Completion	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
Averages/Totals	14.5	1.14	137.7	17.3	0.058	1.360		100.2	0.277

Woodstove Type

Yhc>1=cat,2=not, 3=pellet
EPA's Hydrocarbon Constant (%)

Fuel Data

Test Charge (as fired lbs)
Average Moisture (% dry basis)
Average Moisture (% wet basis)

Run Parameters

DGM initial reading (cf)
DGM final reading (cf)
Pb (inches Hg)
Tm (avg of)
dH (avg inches wc)
Vm (scf)
Qf by carbon balance (avg dscf/minute)

Analytical Data

Probe/Front Wash (mg)
Front Filter (mg)
Impinger PM (mg)
Back Filter (mg)
Total Weight (mg)

Emission Results

Cs (g/dscf)
ER (g/hour)

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 4
 Model: 4300 ACC Date: 08/03/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N092	712.0	637.3		74.7
B. Rear filter catch	Filter	D270	158.1	147.6		10.5
C. Rinse of probe and filter assembly (FRONT)	Acetone	125	105671.1	105637.2	0.0050	33.3
D. Rinse of Impinger Set	Distilled Water	275	123087.5	123069.4	0.0010	17.8
E. Rinse of Impinger Set	Dichloromethane	150	111050.8	111042.3	0.0000	8.5
F. Rinse of filter assembly and gas train (BACK)	Acetone	110	104984.9	104950.4	0.0050	34.0
Total Particulate, mg :						178.8

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER

IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	716.0	660.0	56.0
2	661.1	653.4	7.7
3	447.8	446.4	1.4
4	849.1	841.9	7.2
TOTAL, g:			72.3

Analyst: BODDate: 8-31-06

STOVE TEMPERATURE TEST DATA - METHOD 5G

Page 1 of 1

Client/Model: Health & Home Tech 4300 Acc Project #: 061-S-67-3 Tracking #: 885

Date: 8-4-06 Test Crew: B. Davis Run #: 4

OMNI Equipment ID #: _____

Preburn ☒		Coal Bed:						Actual:			
Test ☐		Data:		0 = ☐		Range: 3.0- 3.7		Coal Bed: 3.3			
		TEMPERATURES (oF)									
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst
0	17.8		-0.58	68	360	480	604	626	299	300	N/A
10	14.6	3.2	-0.78	70	652	490	565	577	310	626	
20	10.6	4.0	-0.78	71	758	494	555	651	328	632	
30	7.2	3.4	-0.76	71	778	504	565	720	338	607	
40	4.4	2.8	-0.71	73	773	525	604	798	354	580	
50	3.6	0.8	-0.60	75	591	544	644	787	351	441	
60	3.3	0.3	-0.50	75	420	556	592	688	302	363	
70											
80											
90											
00											
10											
20											
30											
40											
50											
60											
70											
80											
90											
AVG											

Technician signature: B. Davis Date: 8-17-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-4-06 Test Crew: B DAVIS Run #: 4

OMNI Equipment ID #:

FUEL LOAD PREPARED BY: B DAVIS

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL

MOISTURE CONTENT (METER -- DRY BASIS)

CALIBRATION: Cal Value (1) = 12% Actual Reading 12
Cal Value (2) = 22% Actual Reading 22

Piece	Length		Readings		Type
1	<u>8</u> ft	<u>22.5</u>	<u>20.4</u>	<u>19.9</u>	<u>2x4</u>
2	<u>8</u> ft	<u>19.8</u>	<u>21.6</u>	<u>19.2</u>	<u>2x4</u>
3	<u> </u> ft				

Length of cut pieces: 6e12 4e15 inches

Pre-Burn Fuel Average Moisture: 20.57

Time (clock): 0815 Room Temperature (F): 69 Initials: BD

TEST FUEL

FUEL TYPE AND AMOUNT: 2x4 3 4x4 2
CALCULATED LOAD WEIGHT: 15.6 ACTUAL LOAD WEIGHT: 6.8 (2x4)
8.0 (4x4)
FUEL PIECE LENGTH: 15' 19.8 Total

MOISTURE CONTENT (METER -- DRY BASIS)

PIECE		READINGS		TYPE
1	<u>21.0</u>	<u>20.8</u>	<u>22.2</u>	<u>2x4</u>
2	<u>20.4</u>	<u>22.2</u>	<u>21.7</u>	<u>2x4</u>
3	<u>22.0</u>	<u>20.9</u>	<u>20.3</u>	<u>2x4</u>
4	<u>19.1</u>	<u>19.2</u>	<u>20.1</u>	<u>4x4</u>
5	<u>22.6</u>	<u>22.5</u>	<u>21.2</u>	<u>4x4</u>
6				
7				
8				
9				
10				

OVERALL TEST FUEL LOAD MOISTURE AVERAGE: 21.08

Time (clock): 0820 Room Temperature (F): 69 Initials: BD

Technician signature: B DAVIS Date: 8-31-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 4 Date: 8-4-06

Test Crew: AS Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:

Full open
Timed Air Locked open
Rear Air open

SECONDARY: Fixed

TERTIARY: NA

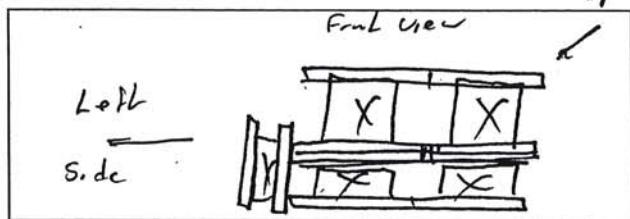
FAN: on high

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0 50	Test setting				x	

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS: NA
FUEL LOADING: by 38 sec.
DOOR: closed by 45 sec.
PRIMARY AIR: at test setting full 5:00
OTHER: Rear air open full 5:00
Timed Air Locked open

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

PRIMARY:

Same As Above

SECONDARY: Fixed

TERTIARY: NA

FAN: on High

Technician signature: AS Davis

Date: 8-17-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-4-06

Run No.: 4

Booth: 1

Test Crew: B Davis

Start Time: 09:51 Stop Time: 11:35

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Initial: good

Final: good

Dilution Tunnel (Method 5G Only):

Initial: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.44 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.4</u>	<u>0.0</u>	<u>10.4</u>				
CO ₂	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>9.7</u>				
CO	<u>0.00</u>	<u>1.25</u>	<u>0.02</u>	<u>1.29</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>-0.02</u>	<u>1.23</u>				

Stack Diameter (inches): 6

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

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 00 %Smoke Capture: 100 %

Pitot Tube Leak Test: Pre: 00 @ 3.4 Post: 0.0 @ 3.1

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BD

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.36</u>	<u>28.37</u>	<u>28.40</u>
Room Temp (°F)	<u>75</u>	<u>77</u>	<u>76</u>

Technician signature: BD Date: 8-17-06

Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA

Med Low

Run 5

Wood Heater Calculation Data EPA Method 5H

Run	5
Manufacturer:	Hearth and Home Tech
Model/Tracking No.:	4300 ACC
Test Date:	04-Aug-06
Project Number:	061-S-67-3

Burn Rate (dry kg/hour) = 1.68

Emission Rate (grams/hour) = 0.72

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qt-new (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (dscf)	Si * Volume Sampled	Proportional Sample Rate	dH new
0	13.0	1.12		129.1	12.4	0.081				
10	13.3	1.06	16.1	123.8	19.8	0.051	2.802	0.226	100.0	0.792
20	13.4	1.05	19.8	123.6	17.6	0.057	4.451	0.225	99.8	0.629
30	13.2	1.08	19.1	125.0	14.1	0.071	4.085	0.232	101.8	0.400
40	13.2	1.14	17.6	125.6	14.9	0.067	3.219	0.229	100.4	0.450
50	13.1	1.08	12.3	125.8	13.9	0.072	3.342	0.224	98.5	0.389
60	13.1	1.08	14.8	126.1	14.1	0.071	3.202	0.231	101.3	0.399
70	13.1	1.12	11.1	126.3	14.4	0.070	3.059	0.217	96.1	0.416
80	13.0	1.06	12.6	126.8	13.5	0.074	3.306	0.230	101.4	0.364
90	13.0	1.15	8.0	127.4	13.7	0.073	3.075	0.229	100.8	0.377
100	12.9	1.18	6.9	127.9	13.2	0.076	3.120	0.228	100.4	0.351
110	12.9	1.14	5.3	128.2	12.8	0.078	3.047	0.231	101.4	0.329
120	12.8	1.12	3.5	128.6	12.1	0.083	2.952	0.231	101.3	0.294
130	12.8	1.11	3.6	128.8	12.3	0.081	2.854	0.236	103.3	0.306
140	12.8	1.10	3.7	129.0	12.1	0.083	2.777	0.225	98.9	0.293
150	12.8	1.11	3.7	129.1	12.4	0.081	2.861	0.237	103.7	0.307
160	12.8	1.13	3.5	129.2	11.9	0.084	2.741	0.222	97.2	0.284
170	12.8	1.11	3.7	129.2	12.4	0.081	2.813	0.237	103.5	0.309
180	12.8	1.10	3.6	129.3	12.1	0.082	2.829	0.229	100.0	0.297
190	12.8	1.11	3.7	129.5	12.4	0.081	2.824	0.233	101.6	0.311
Test Completion	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
Averages/Totals	13.0	1.11	9.1	127.4	13.6	0.075	3.124		100.6	0.384

Woodstove Type	
Yhc>1=cat,2=nat, 3=pellet	2
EPA's Hydrocarbon Constant (%)	1.32
Fuel Data	
Test Charge (as fired lbs)	14.3
Average Moisture (% dry basis)	21.87
Average Moisture (% wet basis)	17.95
Run Parameters	
DGM initial reading (cf)	0.000
DGM final reading (cf)	66.199
Pb (inches Hg)	28.41
Tm (avg of F)	85.20
dH (avg inches wc)	0.38
Vm (scf)	59.351
Qf by carbon balance (avg dscf/minute)	9.08
Analytical Data	
Probe/Front Wash (mg)	10.4
Front Filter (mg)	19.4
Impinger PM (mg)	44.8
Back Filter (mg)	3.8
Total Weight (mg)	78.4
Emission Results	
Cs (g/dscf)	0.0013
ER (g/hour)	0.72

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 5
 Model: 4300 ACC _____ Date: 08/04/06
 Project No.: 061-S-67-3 _____
 Tracking No.: 885 _____

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N093	659.5	640.1		19.4
B. Rear filter catch	Filter	D271	149.2	145.4		3.8
C. Rinse of probe and filter assembly (FRONT)	Acetone	60	101833.8	101823.1	0.0050	10.4
D. Rinse of Impinger Set	Distilled Water	295	124024.1	124001.9	0.0010	21.9
E. Rinse of Impinger Set	Dichloromethane	150	109845.8	109835.2	0.0000	10.6
F. Rinse of filter assembly and gas train (BACK)	Acetone	120	102573.8	102560.9	0.0050	12.3
Total Particulate, mg :						78.4

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER

IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	735.2	660.9	74.3
2	660.0	653.1	6.9
3	448.3	446.2	2.1
4	866.4	848.7	17.7
TOTAL, g:			101.0

Analyst: B. J. J.Date: 8-31-06

STOVE TEMPERATURE TEST DATA - METHOD 5G

Page 1 of 1

Client/Model: Health & Home Tech 4300 Acc Project #: 061-S-67-3 Tracking #: 885

Date: 8-4-06 Test Crew: B Davis Run #: 5

OMNI Equipment ID #: _____

Preburn Test		Fuel Weight		Delta Weight	Stack Draft	Coal Bed:					Actual:							
[X]		[]				Data: 0 = 0					Range: 2.9 - 3.5				Coal Bed: 3.4			
						TEMPERATURES (oF)												
Time		Fuel Weight	Delta Weight	Stack Draft		Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst					
0		8.8		-0.68		85	754	524	611	814	429	548						
10		7.1	1.7	-0.60		84	643	532	586	754	410	429						
20		6.0	1.1	-0.55		84	591	528	551	684	387	405						
30		5.1	0.9	-0.52		84	530	520	524	652	369	393						
40		4.6	0.5	-0.48		84	427	514	490	613	343	301						
50		3.6	1.0	-0.37		82	337	512	458	565	303	269						
60		3.4	0.2	-0.34		83	293	502	429	515	281	258						
70																		
80																		
90																		
00																		
10																		
20																		
30																		
40																		
50																		
60																		
70																		
80																		
90																		
AVG																		

Technician signature: B Davis Date: 8-31-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-4-06 Test Crew: B Davis Run #: 5

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL					
MOISTURE CONTENT (METER -- DRY BASIS)					
CALIBRATION:	Cal Value (1) = 12%	Actual Reading	<u>12</u>		
	Cal Value (2) = 22%	Actual Reading	<u>22</u>		
Piece	Length	Readings			Type
1	<u>24" ft</u>	<u>22.1</u>	<u>21.9</u>	<u>25.5</u>	<u>2x4</u>
2	_____ ft	_____	_____	_____	_____
3	_____ ft	_____	_____	_____	_____
Length of cut pieces: <u>3 @ 8"</u> inches		Pre-Burn Fuel Average Moisture: <u>23.17</u>			
Time (clock): <u>13:05</u>		Room Temperature (F): <u>76</u>	Initials: <u>BD</u>		

TEST FUEL				
FUEL TYPE AND AMOUNT:	<u>2 x 4</u>	<u>3</u>	<u>4 x 4</u>	<u>2</u>
CALCULATED LOAD WEIGHT:	<u>15.6</u>	ACTUAL LOAD WEIGHT:	<u>7.9</u>	(2 x 4)
			<u>17.3</u>	(4 x 4)
FUEL PIECE LENGTH:	<u>15</u>			Total
MOISTURE CONTENT (METER -- DRY BASIS)				
PIECE	READINGS			TYPE
1	<u>19.9</u>	<u>20.5</u>	<u>20.8</u>	<u>4x4</u>
2	<u>19.7</u>	<u>24.7</u>	<u>24.7</u>	<u>4x4</u>
3	<u>22.3</u>	<u>21.9</u>	<u>23.9</u>	<u>2x4</u>
4	<u>21.4</u>	<u>22.0</u>	<u>21.9</u>	<u>2x4</u>
5	<u>21.1</u>	<u>22.0</u>	<u>21.2</u>	<u>2x4</u>
6	_____	_____	_____	_____
7	_____	_____	_____	_____
8	_____	_____	_____	_____
9	_____	_____	_____	_____
10	_____	_____	_____	_____
OVERALL TEST FUEL LOAD MOISTURE AVERAGE: <u>21.87</u>				
Time (clock): <u>13:10</u>	Room Temperature (F): <u>76</u>		Initials: <u>BD</u>	

Technician signature: B Davis Date: 8-31-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 5 Date: 8-4-06

Test Crew: B Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:

fully open

Timed Air not used
Rear Air not used

SECONDARY:

fixed

TERTIARY:

NA

FAN:

on high

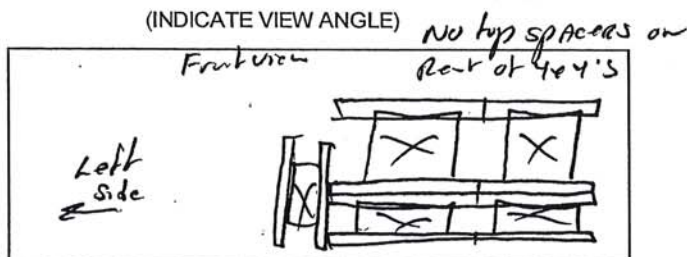
PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0	Test setting					
45				- 7		
50					x	

TEST

TEST FUEL CONFIGURATION SKETCH

(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS:

NA

FUEL LOADING by 47 sec.

DOOR: closed by 60 sec.

PRIMARY AIR: at test setting RIT 5:00

OTHER:

Timed Air pushed after
switching
Rear Air not used.

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

PRIMARY:

Same as Above

SECONDARY:

fixed

TERTIARY:

NA

FAN:

on High

Technician signature: B Davis

Date: 8-31-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-4-06

Run No.: 5

Booth: 1

Test Crew: B. Davis

Start Time: 14:42

Stop Time: 17:52

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.44 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.4</u>	<u>0.0</u>	<u>10.4</u>				
CO ₂	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>10.0</u>				
CO	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.27</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.25</u>				

Stack Diameter (inches): 6"

Air Velocity (ft/min): Initial: 250 ft/min Final: 250 ft/min

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 32 Post: 0.0 @ 30

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BD

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.37</u>	<u>28.41</u>	<u>28.43</u>
Room Temp (°F)	<u>82</u>	<u>84</u>	<u>80</u>

Technician signature: BD Date: 8-31-06

*Model: 4300 ACC
Hearth and Home Technologies
1445 North Highway
Colville, WA 99114*

Run 6

Health and Home Tech	Sample Rate Control Module Number:	Test Meter Y:	Office dHG:	Average Barometric Pressure:	Average Fuel Moisture (dry basis %):	OMNI Equipment Number:
4300 ACC						
not						
061-5-67-3						
05-Aug-06						
10.22						
10						
290						

Wood Heater Test Data
EPA Method 5H

322	
0.97	Test Meter Y:
2.06	Office dHq:
0.99	Pilot Tube Cp:
28.4	Average Barometric Pressure:
21.4	Average Fuel Moisture (dry basis %):
	OMNS Equipment Numbers:

Recording Interval (minutes):

Total Sampling Time (minutes):

Division	Initial/As-found Values			
	IAW (rule-min)	28.56	Ambient CO2 (%)	0.034
Tunnel	100 (%)	4.00	Preferred Initial Sampling Rate (cfm/minute)	0.31

Dilation Tunnel Velocity Traverse Data										Dilation Tunnel Velocity	
	P1.1	P1.2	P1.3	P1.4	P1.5	P1.6	P1.7	P1.8		Initial	Final
Initial GP	0.033	0.018	0.040	0.038	0.039	0.040	0.038	0.027			136.6
Initial Temp	89	92	92	92	92	92	92	92			at 4'

Signature/Date: _____

Post-Test Leak Check: $\text{cfm}@14\text{inHg}$

Elapsed Time	Particulate Sampling System										Stove Flue-Gas Conditions										Stove Temperatures (°F)				Exhaust Throat			Laboratory
	Dry Gas Meter Reading (lit)	Sample Rate (g/min)	Outlet dR (pounds wt)	Proportional Air (pounds wt)	Dry Gas Meter Temperature (°F)	Simple Train Volume (inches Hg)	Impinger Exit Temperature (°F)	Inlet Gas Temperature (°F)	Scale Reading (lbs)	Weight Change (lb)	Dust Pressure (inches wc)	O2 (%)	CO2 (%)	CO (%)	Temperature (°F)	Air to Fuel Ratio (lb/lb)	Flue Gas Top	Flue Gas Bottom	Flue Gas Back	Flue Gas Left	Flue Gas Right	Average Surface Temperature (°F)	Average Velocity (ft/min)	Static Pressure (inches wc)	CO2 (%)	Ambient Temperature (°F)		
0	0.000				71	0	77	230	14.6			14.1	5.6	1.00	213	15.3	361	448	476	488	368	428	92	0.026	-0.48	0.820	73	
10	3.177	0.818	0.84	100.0	71	1	64	229	13.2	-1.4	-0.091	8.3	11.9	0.35	431	8.0	539	438	410	444	343	435	110	0.036	-0.48	1.100	73	
20	6.831	0.825	0.68	98.2	72	1	60	229	11.4	-1.8	-0.092	8.3	11.9	0.34	434	8.0	695	409	429	391	375	456	110	0.036	-0.48	0.840	73	
30	13.007	0.867	0.66	101.6	72	1	64	229	9.9	-1.5	-0.096	7.2	12.6	0.30	392	8.5	660	365	413	520	387	479	108	0.036	-0.48	0.990	74	
40	17.446	0.835	0.68	86.8	73	1	65	230	8.6	-1.3	-0.097	6.8	13.2	0.25	384	8.2	683	387	424	549	357	490	106	0.036	-0.48	0.910	74	
50	21.510	0.806	0.57	101.7	74	1	62	230	7.2	-1.4	-0.097	8.1	12.0	0.33	393	8.9	683	377	443	586	412	500	105	0.036	-0.48	0.970	74	
60	25.687	0.818	0.66	99.4	74	1	62	229	6.0	-1.2	-0.093	8.4	12.0	0.30	381	8.9	676	370	460	623	422	510	103	0.036	-0.48	0.930	75	
70	30.217	0.853	0.62	100.3	75	1	62	229	4.9	-1.1	-0.092	9.0	10.8	0.56	359	9.6	635	368	474	636	426	502	103	0.036	-0.48	0.820	75	
80	34.933	0.872	0.63	109.0	76	1	65	229	3.9	-1.0	-0.090	10.1	9.7	0.23	337	15.8	584	369	484	634	429	504	100	0.036	-0.48	0.600	76	
90	38.386	0.845	0.43	93.7	76	1	66	230	3.4	-0.5	-0.093	11.8	7.7	0.82	309	12.6	558	370	502	615	428	495	98	0.036	-0.48	0.390	76	
100	41.126	0.874	0.36	101.0	76	1	66	229	3.0	-0.4	-0.09	12.8	6.5	0.88	272	13.8	476	373	507	872	412	468	95	0.036	-0.48	0.360	76	
110	45.750	0.862	0.35	107.0	77	1	61	230	2.7	-0.3	-0.092	13.2	6.0	1.28	283	14.1	423	379	503	535	396	447	93	0.036	-0.48	0.360	76	
120	49.221	0.847	0.48	102.6	77	1	62	229	2.4	-0.3	-0.031	14.0	5.1	1.27	236	15.7	386	374	480	502	374	425	95	0.036	-0.48	0.350	76	
130	52.718	0.850	0.34	91.4	78	1	62	230	2.3	-0.1	-0.030	13.8	5.4	1.32	225	15.0	358	373	472	474	365	406	94	0.036	-0.48	0.320	76	
140	56.020	0.830	0.37	100.0	78	1	62	230	2.1	-0.2	-0.030	13.7	5.3	1.35	219	15.2	343	371	463	460	346	397	91	0.036	-0.48	0.330	76	
150	59.301	0.828	0.33	84.9	78	1	62	229	1.9	-0.2	-0.028	13.7	5.5	1.44	215	14.6	333	370	457	449	338	389	90	0.036	-0.48	0.320	76	
160	62.597	0.830	0.39	102.2	79	1	63	229	1.7	-0.2	-0.028	13.6	5.7	1.38	211	14.4	325	368	452	443	332	384	90	0.036	-0.48	0.300	76	
170	66.210	0.861	0.28	101.6	80	1	61	228	1.6	-0.1	-0.028	13.9	5.5	1.25	209	15.0	321	366	448	438	329	390	90	0.036	-0.48	0.300	76	
180	69.198	0.859	0.29	99.2	80	1	59	230	1.4	-0.2	-0.028	14.1	5.2	1.37	209	15.3	319	367	439	434	334	377	90	0.036	-0.48	0.290	76	
190	72.260	0.866	0.29	99.8	80	1	60	230	1.3	-0.1	-0.028	14.2	5.0	1.38	206	15.9	315	368	427	420	316	371	90	0.036	-0.48	0.280	77	
200	75.320	0.868	0.24	99.8	81	1	61	228	1.2	-0.1	-0.027	14.5	4.8	1.25	205	16.4	312	358	414	419	308	362	91	0.036	-0.48	0.260	77	
210	78.208	0.869	0.29	102.7	81	1	62	230	1.0	-0.2	-0.026	14.7	4.6	1.34	200	16.7	306	366	403	407	302	357	90	0.036	-0.48	0.260	77	
220	81.223	0.862	0.36	98.2	81	1	61	229	0.9	-0.1	-0.024	14.8	4.5	1.35	197	16.9	299	364	396	397	298	351	90	0.036	-0.48	0.260	77	
230	84.705	0.848	0.41	101.8	82	1	61	229	0.8	-0.1	-0.024	14.8	4.7	1.25	192	16.6	293	361	397	390	295	347	89	0.036	-0.48	0.310	77	
240	88.342	0.864	0.36	98.8	82	1	61	230	0.8	-0.2	-0.023	14.6	4.7	1.27	191	16.6	289	359	400	389	295	346	89	0.036	-0.48	0.260	77	
250	91.830	0.849	0.32	102.1	82	1	62	230	0.5	-0.1	-0.023	14.6	4.6	1.32	191	16.7	286	359	402	388	294	346	88	0.036	-0.48	0.270	77	
260	96.084	0.825	0.33	100.9	82	1	62	230	0.4	-0.1	-0.021	14.9	4.5	1.33	189	16.9	283	358	403	387	293	345	88	0.036	-0.48	0.260	77	
270	98.439	0.835	0.38	101.7	82	1	63	230	0.3	-0.1	-0.021	14.7	4.7	1.37	187	16.4	279	358	404	384	293	344	88	0.036	-0.48	0.260	77	
280	101.783	0.834	0.29	97.7	82	1	64	230	0.1	-0.2	-0.021	14.5	4.8	1.60	169	16.6	279	357	407	395	294	344	89	0.036	-0.48	0.270	77	
290	105.164	0.840	0.35	109.8	82	1	65	229	0.0	-0.1	-0.021	14.8	4.4	1.39	187	17.0	278	354	407	384	293	343	89	0.036	-0.48	0.270	78	
290	105.164	0.840	0.35	109.8	82	1	65	229	0.0	-0.1	-0.021	14.8	4.4	1.39	187	17.0	278	354	407	384	293	343	89	0.036	-0.48	0.270	78	
Total Sampling Time (minutes)	105.164	0.363	0.42	100.36	77.8	1.00	62.90	229.50	14.60	-0.50	-0.04	12.53	9.96	1.02	206.53	13.85	420.57	373.47	438.87	471.73	348.17	95	94.70	0.04	-0.48	0.47	78.87	

9-7-06

Wood Heater Calculation Data EPA Method 5H

Run 6

Burn Rate (dry kg/hour) = 1.13

Manufacturer: Hearth and Home Tech

Model/Tracking No.: 4300 ACC

Test Date: 05-Aug-06

Project Number: 061-S-67-3

Emission Rate (grams/hour) = 0.75

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qt-new (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (dscf)	Si * Volume Sampled	Proportional Sample Rate	dH new
0	13.3	1.11		136.6	7.0	0.143				
10	13.4	1.04	13.9	134.1	12.0	0.083	2.931	0.418	100.0	0.940
20	13.5	1.04	17.9	133.9	10.2	0.098	4.855	0.403	98.2	0.976
30	13.4	1.07	14.2	134.4	10.1	0.099	4.301	0.421	101.6	0.962
40	13.4	1.06	11.9	134.4	8.9	0.112	4.009	0.396	96.8	0.916
50	13.4	1.05	13.8	134.5	9.4	0.106	3.737	0.418	101.7	0.969
60	13.4	1.03	11.9	134.8	10.1	0.099	3.835	0.408	99.4	0.956
70	13.4	1.07	11.7	134.8	9.8	0.102	4.180	0.412	100.3	0.922
80	13.3	1.10	12.0	135.1	8.2	0.122	4.322	0.439	106.0	0.931
90	13.3	1.13	7.0	135.4	8.2	0.122	3.156	0.385	93.7	0.935
100	13.3	1.15	6.1	135.7	7.5	0.134	3.420	0.416	101.0	0.958
110	13.2	1.15	4.7	136.0	7.4	0.135	3.313	0.443	107.0	0.954
120	13.3	1.18	5.3	135.7	8.5	0.118	3.167	0.426	102.6	0.949
130	13.3	1.15	1.7	135.9	7.2	0.138	3.192	0.377	91.4	0.935
140	13.2	1.18	3.4	136.2	7.7	0.131	3.007	0.415	100.6	0.975
150	13.2	1.14	3.3	136.4	7.1	0.140	2.988	0.390	94.9	0.925
160	13.2	1.13	3.2	136.4	7.8	0.127	3.002	0.421	102.2	0.993
170	13.2	1.13	1.7	136.4	6.6	0.151	3.285	0.419	101.6	0.980
180	13.2	1.14	3.4	136.4	6.8	0.148	2.711	0.409	99.2	0.991
190	13.2	1.17	1.8	136.4	6.8	0.148	2.778	0.411	99.8	0.991
200	13.2	1.16	1.8	136.2	6.2	0.162	2.776	0.411	99.8	0.942
210	13.2	1.16	3.7	136.4	6.7	0.148	2.615	0.424	102.7	0.990
220	13.2	1.16	1.9	136.4	7.5	0.133	2.730	0.405	98.2	0.959
230	13.2	1.13	1.9	136.5	8.1	0.124	3.154	0.420	101.8	0.914
240	13.2	1.16	3.7	136.5	7.5	0.134	3.288	0.407	98.8	0.956
250	13.2	1.18	1.9	136.6	7.1	0.142	3.153	0.421	102.1	0.916
260	13.2	1.14	1.9	136.6	7.2	0.139	2.941	0.417	100.9	0.931
270	13.2	1.13	1.8	136.6	7.5	0.133	3.033	0.420	101.7	0.956
280	13.2	1.13	3.5	136.5	6.8	0.148	3.023	0.403	97.7	0.990
290	13.2	1.17	1.9	136.5	7.4	0.136	3.074	0.455	109.8	0.945
Averages/Totals	13.3	1.12	5.9	135.8	8.0	0.128	3.309		100.4	0.923

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 6
 Model: 4300 ACC Date: 08/05/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N094	683.2	637.9		45.3
B. Rear filter catch	Filter	D272	160.2	145.6		14.6
C. Rinse of probe and filter assembly (FRONT)	Acetone	60	109574.9	109551.9	0.0050	22.7
D. Rinse of Impinger Set	Distilled Water	320	123326.8	123266.6	0.0010	59.9
E. Rinse of Impinger Set	Dichloromethane	150	92596.4	92574.2	0.0000	22.2
F. Rinse of filter assembly and gas train (BACK)	Acetone	120	94052.0	94013.5	0.0050	37.9
Total Particulate, mg :						202.6

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER		Weights		
IMPINGERS	Final, g	Initial, g	Net, g	
1	766.2	659.5	106.7	
2	671.5	651.7	19.8	
3	448.9	446.5	2.4	
4	880.3	863.0	17.3	
		TOTAL, g:	146.2	

Analyst: BDPDate: 8-31-06

STOVE TEMPERATURE TEST 1 ATA - METHOD 5G

Page 1 of 1

Client/Model: Health & Home Tech 4300 Acc Project #: 0615-67-3 Tracking #: 885

Date: 8-5-06 Test Crew: B. Davis Run #: 6

OMNI Equipment ID #: _____

Preburn Test		Fuel Weight		Delta Weight	Stack Draft	Coal Bed: Data: 0 = 0 Range: 3.0 - 3.6					Actual: Coal Bed: 3.4		
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst		
0	6.7	—	-0.056	74	596	524	626	790	512	357	NA		
10	5.6	1.1	-0.050	74	585	536	657	728	584	291			
20	4.8	0.8	-0.048	73	527	514	627	661	546	268			
30	4.2	0.6	-0.047	73	513	489	603	631	524	270			
40	3.7	0.5	-0.040	75	496	471	576	612	503	242			
50	3.5	0.2	-0.032	73	410	460	527	548	407	210			
60	3.4	0.1	-0.031	74	345	450	479	492	370	212			
70													
80													
90													
00													
10													
20													
30													
40													
50													
60													
70													
80													
90													
AVG													

Technician signature: B. Davis Date: 8-31-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3 Tracking #: 885

Date: 8-5-06 Test Crew: B. Davis Run #: 6

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B. Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL					
MOISTURE CONTENT (METER -- DRY BASIS)					
CALIBRATION:	Cal Value (1) = 12%	Actual Reading	<u>12</u>		
	Cal Value (2) = 22%	Actual Reading	<u>22</u>		
Piece	Length	Readings		Type	
1	<u>24" x</u>	<u>23.0</u>	<u>257</u>	<u>221</u>	<u>2x4</u>
2	_____ ft	_____	_____	_____	_____
3	_____ ft	_____	_____	_____	_____
Length of cut pieces: <u>308</u> inches		Pre-Burn Fuel Average Moisture: _____			
Time (clock): <u>0845</u>		Room Temperature (F): <u>71</u>	Initials: <u>BD</u>		

TEST FUEL				
FUEL TYPE AND AMOUNT:	<u>2 x 4</u>	<u>3</u>	<u>4 x 4</u>	<u>2</u>
CALCULATED LOAD WEIGHT:	<u>15.6</u>	ACTUAL LOAD WEIGHT:	<u>6.6</u>	(2 x 4)
			<u>8.0</u>	(4 x 4)
FUEL PIECE LENGTH:	<u>15"</u>		<u>14.6</u>	Total
MOISTURE CONTENT (METER -- DRY BASIS)				
PIECE	READINGS			TYPE
1	<u>24.2</u>	<u>20.8</u>	<u>23.8</u>	<u>4x4</u>
2	<u>21.9</u>	<u>22.2</u>	<u>20.2</u>	<u>4x4</u>
3	<u>23.1</u>	<u>18.7</u>	<u>23.8</u>	<u>2x4</u>
4	<u>20.9</u>	<u>18.9</u>	<u>21.4</u>	<u>2x4</u>
5	<u>18.7</u>	<u>23.0</u>	<u>20.3</u>	<u>2x4</u>
6	_____	_____	_____	_____
7	_____	_____	_____	_____
8	_____	_____	_____	_____
9	_____	_____	_____	_____
10	_____	_____	_____	_____
OVERALL TEST FUEL LOAD MOISTURE AVERAGE: <u>21.46</u>				
Time (clock): <u>0850</u>	Room Temperature (F): <u>71</u>		Initials: <u>BD</u>	

Technician signature: BD Date: 8-31-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300

Project #: 061-S-67-3

Tracking Number: 885

Run #: 6 Date: 8-5-06

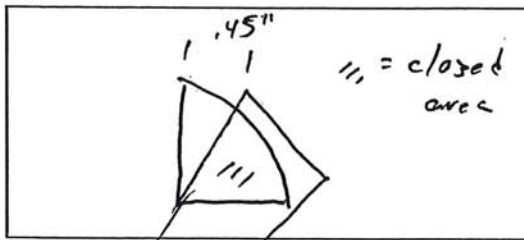
Test Crew: B. Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:



Timed Air not used
Rear Air not used

SECONDARY: fixed

TERTIARY: NA

FAN: off
FAN Confirmation

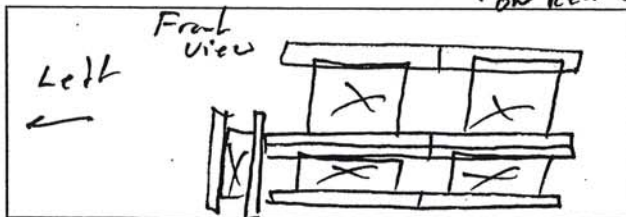
PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
05 47	Test setting				x	

TEST

TEST FUEL CONFIGURATION SKETCH

(INDICATE VIEW ANGLE) no top spacers on Rear of 4x4's



START UP PROCEDURES

BYPASS: NA

FUEL LOADING by 45 sec.

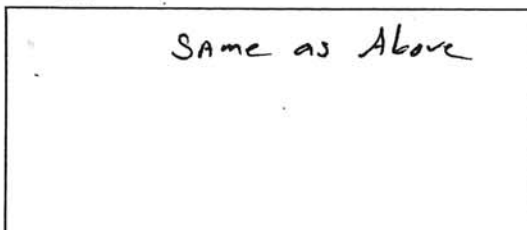
DOOR: closed by 58 sec

PRIMARY AIR: At test setting R/H 5:40

OTHER: Timed Air pushed After Fueling
Rear Air not used

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

PRIMARY:



SECONDARY: fixed

TERTIARY: NA

FAN: off

Technician signature: B. Davis

Date: 8-31-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-5-06 Run No.: 6 Booth: 1

Test Crew: BR Start Time: 10:22 Stop Time: 15:12

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.4 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.4</u>	<u>0.0</u>	<u>10.4</u>				
CO ₂	<u>0.0</u>	<u>9.9</u>	<u>0.0</u>	<u>9.7</u>				
CO	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.22</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.24</u>				

Stack Diameter (inches): 6

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

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 3.2 Post: 0.0 @ 3.2

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BR

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.51</u>	<u>28.48</u>	<u>28.46</u>
Room Temp (°F)	<u>73</u>	<u>76</u>	<u>78</u>

Technician signature: BR Date: 8-31-06

Run 7



Wood Heater Calculation Data EPA Method 5H

Run 7

Manufacturer: Hearth and Home Tech
Model/Tracking No.: 4300 ACC
Test Date: 22-Aug-06
Project Number: 061-S-67-3

Burn Rate (dry kg/hour) = 2.47

Emission Rate (grams/hour) = 2.07

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = Si

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qf-new (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (Si)	Volume Sampled (dscf)	Si * Volume Sampled	Proportional Sample Rate	dH new
0	14.1	1.21		132.3	17.9	0.056				
10	14.2	1.09	18.0	130.2	22.3	0.045	2.912	0.163	100.0	0.494
20	14.4	0.91	16.2	128.8	20.8	0.048	3.588	0.161	99.3	0.427
30	14.4	1.12	27.6	128.9	20.6	0.049	3.275	0.157	98.3	0.418
40	14.2	1.20	18.4	130.1	21.1	0.047	3.340	0.162	100.9	0.439
50	14.0	1.18	17.1	131.9	18.5	0.054	3.394	0.161	99.9	0.336
60	13.9	1.17	12.7	133.0	19.5	0.051	3.067	0.166	102.7	0.373
70	13.9	1.17	13.4	133.5	19.5	0.051	3.138	0.161	99.7	0.374
80	13.8	1.15	8.6	133.9	18.2	0.055	3.143	0.161	99.7	0.326
90	13.8	1.22	9.6	134.6	18.2	0.055	3.018	0.166	102.3	0.325
100	13.7	1.20	6.2	135.1	18.2	0.055	2.959	0.162	100.3	0.325
110	13.7	1.14	6.1	135.2	18.4	0.054	2.983	0.164	101.0	0.332
120	13.7	1.15	5.8	135.3	17.1	0.058	3.026	0.164	101.2	0.286
130	13.7	1.13	2.0	135.6	16.3	0.061	2.809	0.164	101.0	0.260
Test Completion	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
No Further Data Input	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet	No Data Yet
Averages/Totals	14.0	1.15	12.4	132.7	19.1	0.053	3.127		100.5	0.363

Woodstove Type

Yinc=1=cat,2=ncat, 3=pellet

EPA's Hydrocarbon Constant (%)

Fuel Data

Test Charge (as fired lbs)

Average Moisture (% dry basis)

Average Moisture (% wet basis)

Run Parameters

DGM initial reading (cf)

DGM final reading (cf)

Pb (inches Hg)

Tm (avg of)

dH (avg inches wc)

Vm (scf)

Qf by carbon balance (avg dscf/minute)

Analytical Data

Probe/Front Wash (mg)

Front Filter (mg)

Impinger PM (mg)

Back Filter (mg)

Total Weight (mg)

Emission Results

Cs (g/dscf)

ER (g/hour)

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 7
 Model: 4300 ACC _____ Date: 08/22/06
 Project No.: 061-S-67-3 _____
 Tracking No.: 885 _____

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N095	676.6	641.9		34.7
B. Rear filter catch	Filter	D273	155.7	145.7		10.0
C. Rinse of probe and filter assembly (FRONT)	Acetone	90	110927.1	110909.5	0.0050	17.2
D. Rinse of Impinger Set	Distilled Water	300	154998.9	154977.6	0.0010	21.0
E. Rinse of Impinger Set	Dichloromethane	150	110828.7	110820.3	0.0000	8.4
F. Rinse of filter assembly and gas train (BACK)	Acetone	105	111269.4	111247.5	0.0050	21.4
Total Particulate, mg :						112.6

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER

IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	712.9	660.0	52.9
2	671.5	658.2	13.3
3	448.4	445.1	3.3
4	827.8	813.2	14.6
TOTAL, g:			84.1

Analyst: JMWDate: 9-6-06

STOVE TEMPERATURE TEST, DATA - METHOD 5G

Page 1 of 1

4300 Acc

Client/Model: Health & Home Technologies Project #: 061-S-07-5 Tracking #: 885

Date: 8-22-06 Test Crew: B Davis Run #: 7

OMNI Equipment ID #: _____

Preburn [X]		Coal Bed:		Actual:							
Test	[]	Data:	0 = 0	Range: 2.9-3.6	Coal Bed: 3.0						
TEMPERATURES (oF)											
Time	Fuel Weight	Delta Weight	Stack Draft	Ambient	Top	Bottom	Back	Left	Right	Flue	Catalyst
0	20.3	—	-0.65	72	389	496	632	643	522	323	NA
10	17.3	3.0	-0.72	73	689	509	549	571	491	617	
20	13.8	3.5	-0.78	75	647	504	535	634	446	648	
30	10.3	3.5	-0.76	77	821	505	534	691	490	641	
40	7.7	2.5	-0.72	76	799	511	525	745	520	592	
50	5.8	1.9	-0.70	77	780	518	552	777	542	541	
60	5.2	0.6	-0.61	77	605	528	586	777	572	419	
70	4.1	1.1	-0.52	77	442	539	588	716	537	339	
80	3.7	0.4	-0.50	77	375	540	565	651	500	338	
81	3.6	0.1	-0.50	78	356	539	550	630	487	332	
00											
10											
20											
30											
40											
50											
60											
70											
80											
90											
AVG											

Technician signature: B Davis Date: 8-31-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300 ACC

Project #: 061-S-67-3 Tracking #: 885

Date: 8-22-06 Test Crew: B Davis Run #: 2

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL

MOISTURE CONTENT (METER -- DRY BASIS)

CALIBRATION: Cal Value (1) = 12% Actual Reading 12
Cal Value (2) = 22% Actual Reading 22

Piece	Length	Readings	Type
1	<u>8</u> ft	<u>20.2</u>	<u>2x1</u>
2	<u>8</u> ft	<u>19.5</u>	<u>2x1</u>
3	<u>7</u> ft	<u>20.4</u>	<u>2x1</u>

Length of cut pieces: 40 inches

Pre-Burn Fuel Average Moisture: 21.33

Time (clock): 0805 Room Temperature (F): 70 Initials: BD

TEST FUEL

FUEL TYPE AND AMOUNT: 2 x 4 3 4 x 4 2
CALCULATED LOAD WEIGHT: _____ ACTUAL LOAD WEIGHT: 6.2 (2 x 4)
8.3 (4 x 4)
FUEL PIECE LENGTH: 15 14.5 Total

MOISTURE CONTENT (METER -- DRY BASIS)

PIECE	READINGS	TYPE
1	<u>23.1</u> <u>22.4</u> <u>22.0</u>	<u>2x1</u>
2	<u>24.4</u> <u>24.5</u> <u>24.7</u>	<u>2x1</u>
3	<u>22.4</u> <u>24.5</u> <u>23.3</u>	<u>2x1</u>
4	<u>21.9</u> <u>19.2</u> <u>21.6</u>	<u>4x4</u>
5	<u>23.8</u> <u>18.6</u> <u>24.6</u>	<u>4x4</u>
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

OVERALL TEST FUEL LOAD MOISTURE AVERAGE: 22.73

Time (clock): 0950 Room Temperature (F): 72 Initials: BD

Technician signature: B Davis Date: 8-31-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300 ACC

Project #: 061-S-67-3

Tracking Number: 885

Run #: 7 Date: 8-22-06

Test Crew: B Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:

fully open
Rear Air open
Timed Air Locked open

SECONDARY:

fixed

TERTIARY:

NA

FAN:

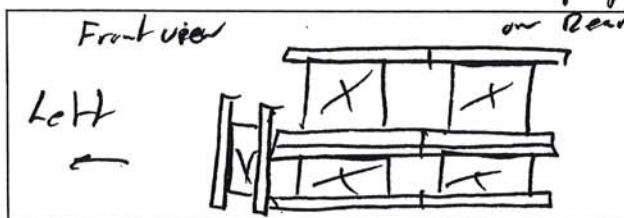
on high

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0	Test setting					
66				-.5		
75				x		

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS: NA

FUEL LOADING by 43 sec.

DOOR: closed by 60 sec

PRIMARY AIR: at test setting full 5:00

OTHER:

Rear Air Locked open
Timed Air Locked open

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

PRIMARY:

Same As Above

SECONDARY:

fixed

TERTIARY:

NA

FAN:

on high

Technician signature: B Davis

Date: 8-31-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300 ACC

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-22-06 Run No.: 7 Booth: 1

Test Crew: B. Davis Start Time: 09:48 Stop Time: 11:58

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.44 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span		N ₂ Span		N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>Ø</u>		<u>EOT</u>					
O ₂	<u>0.0</u>	<u>10.4</u>	<u>0.0</u>	<u>10.3</u>				
CO ₂	<u>0.0</u>	<u>10.0</u>	<u>0.0</u>	<u>9.6</u>				
CO	<u>0.00</u>	<u>1.24</u>	<u>0.00</u>	<u>1.25</u>				
CO ₂ (DT)	<u>0.00</u>	<u>1.25</u>	<u>0.00</u>	<u>1.24</u>				

Stack Diameter (inches): 6"

Air Velocity (ft/min): Initial: 250 ft/min Final: 250 ft/min

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 3.0 Post: 0.0 @ 3.2

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: DR

	Initial	Middle	Ending
Pb (in. Hg)	<u>28.38</u>	<u>28.39</u>	<u>28.40</u>
Room Temp (°F)	<u>76</u>	<u>79</u>	<u>80</u>

Technician signature: B. Davis Date: 8-31-06

Run 8

Low

Low

Wood Heater Calculation Data EPA Method 5H

Run 8

Manufacturer: Hearth and Home Tech

Model/Tracking No.: 4300 ACC

Test Date: 18-Aug-06

Project Number: 061-S-67-3

Burn Rate (dry kg/hour) = 0.98

Emission Rate (grams/hour) = 0.92

Note: When using the CO2 tracer-gas method, 1/Qf (by tracer gas) = S1

Elapsed Time (minutes)	Dilution Tunnel Velocity (feet/second actual)	Fo (1.00 to 1.12)	Qf by carbon balance (scf/minute)	Qf by tracer gas (scf/minute)	1/Qf by tracer gas (S1) (dscf)	Volume Sampled (dscf)	S1 • Volume Sampled	Proportional Sample Rate	dH new
0	13.6	1.14	13.1	8.9	0.112	3.082	0.347	100.0	0.894
10	13.8	1.07	137.5	14.6	0.068	3.082	0.347	100.0	0.894
20	13.9	1.08	136.8	12.4	0.081	4.665	1.19	95.8	0.644
30	13.9	1.01	137.2	12.1	0.083	4.180	1.37	100.8	0.609
40	13.9	1.06	137.0	10.3	0.097	3.997	0.331	99.3	0.441
50	13.9	1.02	137.0	10.7	0.093	3.486	0.40	101.6	0.476
60	13.9	1.05	136.8	9.7	0.104	3.565	1.33	99.6	0.388
70	13.9	1.07	136.9	10.1	0.099	3.257	0.337	100.7	0.420
80	13.9	1.08	137.0	10.2	0.098	3.413	0.440	100.3	0.433
90	13.9	1.10	137.1	11.0	0.091	3.375	1.31	98.5	0.498
100	13.9	1.16	137.2	9.8	0.102	3.607	0.329	101.7	0.429
110	13.8	1.11	136.0	10.2	0.098	3.345	0.341	101.0	0.389
120	13.7	1.13	136.5	9.7	0.103	3.441	1.38	103.3	0.365
130	13.7	1.09	136.7	9.4	0.107	3.360	0.447	98.7	0.347
140	13.7	1.12	136.0	9.1	0.109	3.107	0.331	104.0	0.295
150	13.7	1.11	139.0	8.4	0.119	3.200	1.50	104.6	0.296
160	13.7	1.07	139.1	8.4	0.118	2.980	1.53	101.4	0.284
170	13.7	1.13	139.1	8.3	0.121	2.870	0.340	103.1	0.312
180	13.7	1.12	139.2	8.3	0.121	2.844	1.43	104.2	0.377
190	13.7	1.07	139.2	8.7	0.116	2.882	1.49	91.5	0.299
200	13.6	1.09	139.3	9.5	0.105	3.060	0.354	108.4	0.288
210	13.6	1.14	139.5	8.5	0.118	2.942	1.09	100.8	0.289
220	13.6	1.07	139.5	8.3	0.120	3.116	1.68	103.5	0.293
230	13.6	1.12	139.6	8.6	0.116	2.810	0.338	103.3	0.349
240	13.6	1.11	139.6	8.3	0.120	2.957	0.442	98.6	0.306
250	13.6	1.04	139.6	8.4	0.119	2.928	1.52	105.1	0.351
260	13.6	1.14	139.6	9.1	0.109	2.946	0.352	99.2	0.350
270	13.6	1.16	139.7	8.6	0.117	3.069	0.336	99.4	0.359
280	13.6	1.10	139.8	9.2	0.109	3.066	1.58	98.9	0.310
290	13.6	1.12	139.8	9.1	0.109	3.085	1.38	100.5	0.325
300	13.6	1.18	139.8	9.3	0.108	3.098	0.339	100.8	0.289
310	13.6	1.17	140.0	8.6	0.116	3.120	1.37	103.3	0.349
320	13.6	1.16	140.0	8.8	0.113	3.036	1.53	98.9	0.310
330	13.6	1.19	140.1	9.3	0.108	3.012	0.342	100.9	0.387
Averages/Totals	13.7	1.10	138.7	9.5	0.107	3.240	1.00	100.9	0.387

Woodstove Type

Yhoc>1=cat,2=mcst, 3=pellet
EPA's Hydrocarbon Constant (%)

Fuel Data

Test Charge (gas fired lbs)
Average Moisture (% dry basis)
Average Moisture (% wet basis)

Run Parameters

DGM initial reading (cf)
DGM final reading (cf)
Pb (inches Hg)
Tm (avg of)
dH (avg inches wc)
Vm (scf)
Qf by carbon balance (avg dscf/minute)

Analytical Data

Probe/Front Wash (mg)
Front Filler (mg)
Impinger PM (mg)
Back Filler (mg)
Total Weight (mg)

Emission Results

Cs (g/dscf)
ER (g/hour)

Final Laboratory Report - Method 5H Dilution Tunnel Particulate Calculations

Client Name: Hearth & Home Technologies Equipment Numbers: _____ Run No.: 8
 Model: 4300 ACC Date: 08/22/06
 Project No.: 061-S-67-3
 Tracking No.: 885

PARTICULATE COMPONENTS

Sample Component	Reagent	Filter # or Volume, ml	Weights			
			Final, mg	Tare, mg	Blank, mg/ml	Particulate, mg
A. Front filter catch	Filter	N096	700.6	642.0		58.6
B. Rear filter catch	Filter	D274	173.0	144.9		28.1
C. Rinse of probe and filter assembly (FRONT)	Acetone	85	105584.2	105551.0	0.0050	32.8
D. Rinse of Impinger Set	Distilled Water	325	121612.4	121521.6	0.0010	90.5
E. Rinse of Impinger Set	Dichloromethane	150	101203.2	101171.2	0.0000	32.0
F. Rinse of filter assembly and gas train (BACK)	Acetone	105	95252.0	95190.5	0.0050	61.0
Total Particulate, mg :						302.9

Component	Equations:
A. Front filter catch	Final (mg) - Tare (mg) = Particulate, mg
B. Rear filter catch	Final (mg) - Tare (mg) = Particulate, mg
C. Rinse of probe and filter assembly (FRONT)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
D. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
E. Rinse of Impinger Set	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
F. Rinse of filter assembly and gas train (BACK)	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

CONDENSED WATER IMPINGERS	Weights		
	Final, g	Initial, g	Net, g
1	781.4	658.9	122.5
2	663.9	650.9	13.0
3	448.3	445.7	2.6
4	854.0	824.0	30.0
TOTAL, g:			168.1

Analyst: ABDDate: 9-1-06

STOVE TEMPERATURE TEST DATA - METHOD 5G

Page 1 of 1

Client/Model: Heath & Home Tech 43001ec Project #: 061-S-67-3 Tracking #: 885

Date: 8-22-06 Test Crew: B. Davis Run #: 8

OMNI Equipment ID #: _____

Preburn ☒		Coal Bed:		Data:		0 = ☒		Range: 2-9-35		Actual:		
Test ☐										Coal Bed: 35		
Time	Fuel Weight	Delta Weight	Stack Draft	TEMPERATURES (oF)								Catalyst
				Ambient	Top	Bottom	Back	Left	Right	Flue		
0	6.2	—	-0.41	85	353	520	545	622	488	286	NA	
10	5.5	0.7	-0.41	85	376	517	533	585	475	252		
20	4.9	0.6	-0.40	84	356	554	449	499	496	236		
30	4.4	0.5	-0.40	84	350	531	435	471	471	240		
40	4.0	0.4	-0.32	84	350	449	450	524	426	220		
50	3.7	0.3	-0.30	85	267	427	405	466	388	195		
60	3.5	0.2	-0.24	84	236	417	377	427	364	179		
62.70	3.5	0.0	-0.25	83	230	414	369	416	357	179		
80												
90												
00												
10												
20												
30												
40												
50												
60												
70												
80												
90												
AVG												

Technician signature: B. Davis Date: 8-31-06

FUEL DATA

Client: Hearth & Home Technologies

Model: 4300 ACC

Project #: 061-S-67-3 Tracking #: 885

Date: 8-22-06 Test Crew: B Davis Run #: 8

OMNI Equipment ID #: _____

FUEL LOAD PREPARED BY: B Davis

FUEL: DOUGLAS-FIR SPECIES, UNTREATED, AIR-DRIED, STANDARD GRADE OR BETTER,
DIMENSIONAL LUMBER.

PRE-BURN FUEL

MOISTURE CONTENT (METER -- DRY BASIS)

CALIBRATION: Cal Value (1) = 12% Actual Reading 12
Cal Value (2) = 22% Actual Reading 22

Piece	Length	Readings	Type
1	<u>24</u> ft	<u>20.7</u>	<u>2x7</u>
2	_____ ft	_____	_____
3	_____ ft	_____	_____

Length of cut pieces: 30-8" inches

Pre-Burn Fuel Average Moisture: 21.27

Time (clock): 14:05 Room Temperature (F): 75 Initials: BN

TEST FUEL

FUEL TYPE AND AMOUNT: 2 x 4 3 4 x 4 2
CALCULATED LOAD WEIGHT: _____ ACTUAL LOAD WEIGHT: 6.6 (2 x 4)

FUEL PIECE LENGTH: 15"
7.7 8.1 (4 x 4)
BN 14.3 Total
14.3

MOISTURE CONTENT (METER -- DRY BASIS)

PIECE	READINGS	TYPE
1	<u>21.4</u> <u>20.4</u> <u>19.2</u>	<u>2x7</u>
2	<u>20.4</u> <u>19.3</u> <u>20.3</u>	<u>2x7</u>
3	<u>20.8</u> <u>20.1</u> <u>21.1</u>	<u>2x7</u>
4	<u>19.4</u> <u>20.0</u> <u>22.3</u>	<u>4x7</u>
5	<u>20.2</u> <u>20.4</u> <u>20.9</u> <u>BN</u>	<u>4x7</u>
6	<u>19.5</u> <u>18.6</u> <u>22.8</u>	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____

OVERALL TEST FUEL LOAD MOISTURE AVERAGE: 20.37

Time (clock): 1415 Room Temperature (F): 75 Initials: BN

Technician signature: BN Date: 8-31-06

Run Notes

Client/Model: Hearth & Home Technologies

Model: 4300 ACC

Project #: 061-S-67-3

Tracking Number: 885

Run #: 8 Date: 8-28-06

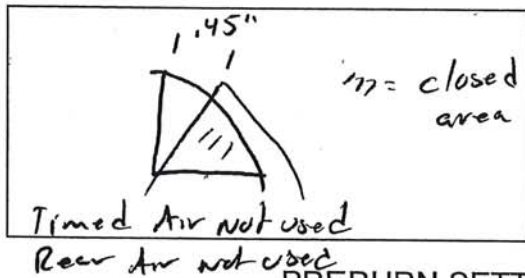
Test Crew: D. D. Davis

OMNI Equipment ID Numbers: _____

PREBURN

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

PRIMARY:



SECONDARY: Fixed

TERTIARY: NA

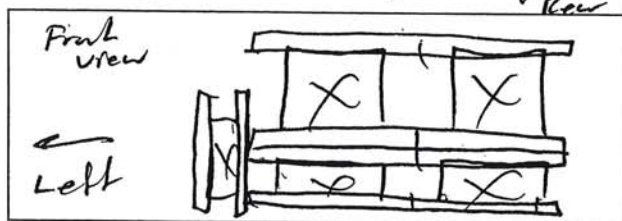
FAN: on high

PREBURN SETTINGS AND ACTIVITIES

TIME	AIR (THERMO) CHANGES PRIMARY/SECONDARY/TERTIARY	FAN SETTING CHANGE	ADD FUEL + WT.	ADD FUEL - WT.	RAKE COAL	COMMENT
0 4:37	Test setting			- .2	x	

TEST

TEST FUEL CONFIGURATION SKETCH
(INDICATE VIEW ANGLE)



START UP PROCEDURES

BYPASS: NA

FUEL LOADING: By 42 sec

DOOR: closed by 60 sec

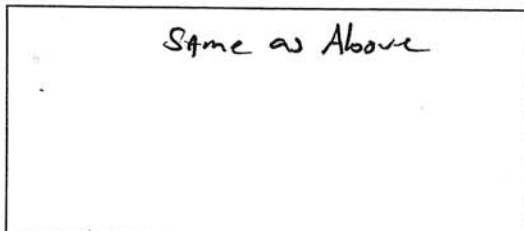
PRIMARY AIR: at test setting full 5:00

OTHER:

Timed Air pushed After loading
Rear Air not used

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

PRIMARY:



SECONDARY: Fixed

TERTIARY: NA

FAN: on high

Technician signature: D. D. Davis

Date: 8-31-06

Supplemental Data EPA 5G/5H

Client: Hearth & Home Technologies

Model: 4300 ACC

Project No.: 061-S-67-3

Tracking No.: 885

Date: 8-22-06

Run No.: 8 Booth: 1

Test Crew: B Davis

Start Time: 15:53 Stop Time: 21:23

OMNI Equipment #'s: _____

Gas Analyzer Train Leak Check:

Stack:

Dilution Tunnel (Method 5G Only):

Initial: good

Initial: good

Final: good

Final: good

Calibrations: Span Gas CO₂: 9.9 O₂: 10.44 CO: 1.25 CO₂(DT): 1.249

	N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span	N ₂ Span
Time	<u>0</u>	<u>EOT</u>					
O ₂	<u>0.0</u> <u>10.4</u>	<u>0.0</u> <u>10.4</u>					
CO ₂	<u>0.0</u> <u>9.9</u>	<u>0.0</u> <u>10.1</u>					
CO	<u>0.00</u> <u>1.25</u>	<u>0.00</u> <u>1.26</u>					
CO ₂ (DT)	<u>0.00</u> <u>1.25</u>	<u>0.00</u> <u>1.25</u>					

Stack Diameter (inches): 6

Air Velocity (ft/min): Initial: 250 ft/min Final: 250 ft/min

Scale Audit (lbs.): Pretest: 10.0 Post Test: 10.0

Induced Draft: 0.0 %Smoke Capture: 100%

Pitot Tube Leak Test: Pre: 0.0 @ 3.1 Post: 0.0 @ 3.0

Flue Pipe Cleaned Prior to First Test in Series: Date: 7-31-06 Initials: BR

	Initial	Middle	Ending
Pb. (in. Hg)	<u>28.33</u>	<u>28.33</u>	<u>28.32</u>
Room Temp (°F)	<u>83</u>	<u>84</u>	<u>78</u>

Technician signature: B Davis Date: 8-31-06