TEST REPORT

REPORT NUMBER: 101665917PRT-001
REPORT DATE: December 15, 2014

EVALUATION CENTER

Intertek Testing Services NA Inc.
22887 NE Townsend Way
Fairview Oregon 97024

RENDERED TO

Hearth & Home Technologies
1445 North Hwy
Colville Washington 99114

PRODUCT EVALUATED:

Explorer III WOOD FIRED ROOM HEATER

Report of Testing Model Explorer III Wood fired Room Heater for compliance as an "Affected Facility" with the applicable requirements of the following criteria: EPA Method 28 "Certification and Auditing of Wood Heaters" and EPA Method 5G "Determination of Particulate Matter Emissions from Wood Heaters".

TABLE OF CONTENTS

I. INTRODUCTION 4
I.A. PURPOSE OF TEST 4
I.B. LABORATORY 4
I.C. DESCRIPTION OF UNIT 4
I.D. REPORT ORGANIZATION 4

II. SUMMARIZATION 5
II.A PRETEST INFORMATION 5
II.B INFORMATION LOG 5
II.C SUMMARY OF INFORMATION 5
II.D SUMMARY OF OTHER DATA 6

III. PROCESS DESCRIPTION 8
III.A TEST SET UP DESCRIPTION 8
III.B AIR SUPPLY SYSTEM 8

IV. SAMPLING SYSTEM 8
IV.A SAMPLING LOCATIONS 8
IV.A.1 DILUTION TUNNEL 9
IV.B. OPERATIONAL DRAWINGS 10
IV.B.1 STACK GAS SAMPLE TRAIN 10
IV.B.2 DILUTION TUNNEL SAMPLE SYSTEM 11

V. SAMPLING METHODS 12
V.A. PARTICULATE SAMPLING 12

VI. QUALITY ASSURANCE 12
VI.A. INSTRUMENT CALIBRATION 12
VI.A.1 DRY GAS METERS 12
VI.B. TEST METHOD PROCEDURES 13
VI.B.1 LEAK CHECK PROCEDURES 13
VI.B.2 TUNNEL VELOCITY/FLOW MEASUREMENT 13
VI.B.3 PM SAMPLING PROPORTIONALITY 13

VII. CONCLUSION 14
VII.A RESULTS & OBSERVATIONS 14

I. INTRODUCTION

Intertek Testing Services NA (Intertek) has conducted testing for Hearth & Home Technologies, on model Explorer III Wood Fired Solid Fuel Room Heater, to evaluate all applicable performance requirements included in EPA Method 28 "Certification and auditing of wood heaters" and Method 5G "Determination of particulate matter emissions from wood heaters." Method 5G2 was used to evaluate emission rates from the Explorer III Wood stove. 5G2 utilizes a Method 5H sample train that extracts samples from a Dilution Tunnel. This method does not require results be corrected to obtain an EPA adjusted emission result.

I.A PURPOSE OF TEST

The test was conducted to determine if the unit is in accordance with U.S EPA requirements under 40 CGR 60 SUBPART AAA, NSPS for Residential Wood Heaters. This evaluation was conducted on October 28, 2014

I.B LABORATORY

The test on the Explorer III Wood fired Solid Fuel Room Heater was conducted at the client facility located at 1445 North Highway, Colville Washington. The facility elevation is 1635 feet above sea level. Intertek Portland is accredited by the U.S. EPA, Certificate Number 8. The test was conducted by Bruce Davis.

I.C DESCRIPTION OF UNIT

The model Explorer III Solid Fuel Room Heater fire box is constructed of carbon steel, a cast iron shell is bolted to the exterior.
The firebox inside dimensions is 17.3 inches deep, 13 inches high, and 22.2 inches wide across the back. The unit has a door located on the front with a viewing glass for loading the fuel. Combustion air is controlled by a handle located on the front of the appliance. A second control located on the front of the appliance activates a timer providing additional air to the lower primary air orifice for a predetermined length of time. This same control can be pushed in and set to allow additional air to the lower primary air orifice bypassing the timer. Secondary air is supplied by a third opening that has no user control.

(See product drawings.)

I.D REPORT ORGANIZATION

This report includes summaries of all data necessary to determine compliance with the regulations. Raw data, calibration records, intermediate calculations,

drawings, specifications and other supporting information are contained in appendices to this report.

II. SUMMARIZATION

II.A PRETEST INFORMATION

A sample was submitted to Intertek directly from the client at the Hearth & Home test facility, the sample was not independently selected for testing. The test unit was received at the client facility on October 27, 2014. The unit was inspected upon receipt and found to be in good condition. The unit was set up following the manufacturer's instructions without difficulty.

Following assembly, the unit was placed on the test stand and instrumented with thermocouples in the specified locations. Prior to beginning the emissions tests the unit had been operated in excess of 10 hours during research and development tests conducted by Hearth & Home personnel.

Prior to testing the unit's chimney system and laboratory dilution tunnels was cleaned using standard wire brush chimney cleaning equipment.

II.B INFORMATION LOG

TEST STANDARD

From October 28 through October 31, 2014 the unit was tested for EPA emissions using test method 5G2. A sample train described in EPA method 5H was used to extract a proportionate sample from the dilution tunnel. A heated front filter, four Impingers and a rear filter made up the sample train.

Deviation from Standard Method

No deviations from the standards were performed, however, only the applicable sections from each standard were used during all testing.

II.C SUMMARY OF TEST RESULTS

RUN #1 October 28, 2014: Test fuel was loaded by 45 seconds, the door was open for 50 seconds, and then closed. Primary air control was at a test setting of 0.85" from full closed for entire test. Timed air was activated by 60 seconds. Burn time was 470 minutes with a category 2 burn rate of 0.96 kg/hr. The fan was off for the first 30 minutes then set to high for the remainder of the test.

RUN #2 October 29, 2014: Test fuel was loaded by 50 seconds, the door was open for 60 seconds, and then closed. Primary air control was at a test setting

of 0.95" from full closed for entire test. Timed air was activated at zero minutes. Burn time was 400 minutes with a category 2 burn rate of 1.16 kg/hr. Fan was turned off for the first 30 minutes then turned to high for the remainder of the test.

RUN #3 October 30, 2014: Test fuel was loaded by 50 seconds, the door was open for 65 seconds, and then closed. Primary air control was fully open for the entire test, boost air was locked open. Burn time was 150 minutes with a category 4 burn rate of 2.35 kg/hr. The fan was operated on high for the entire test.

RUN #4 October 30, 2014: Test fuel was loaded by 55 seconds, the door was open for 65 seconds, and then closed. Primary air control was set to 1.25 inches from full closed for the entire test. Timed air was activated at zero minutes. Burn time was 330 minutes with a category 3 burn rate of 1.50 kg/hr. The fan was off for the first 30 minutes then set to high for the remainder of the test.

RUN #5 October 31, 2014: Test fuel was loaded by 45 seconds, the door was open for 55 seconds, and then closed. Primary air control was set to 0.85" inches from full closed the entire test. Timed air was activated at zero minutes. Burn time was 410 minutes with a category 2 burn rate of 1.24 kg/hr. The fan was off for the entire test.

II.D SUMMARY OF OTHER DATA

EMISSIONS

Run Number	Test Date	Burn Rate (kg/hr)	Emission Rate (g/hr)	Heating Efficiency* (%LHV)	Heating Efficiency* (% HHV)
1	**10/28/14**	**[1]0.96**	**3.02**	**75.4**	**69.8**
2	**10/29/14**	**1.10**	**1.16**	**74.7**	**69.1**
3	**10/30/14**	**3.17**	**2.35**	**71.6**	**66.2**
4	**10/30/14**	**1.33**	**1.50**	**75.4**	**69.7**
5	**9/14/13**	**1.05**	**1.24**	**76.1**	**70.4**

**Efficiency determined per CSA B415.1-2010.*

1. A category I burn rate was not obtained, tests 1 and 5 were conducted at the appliance minimum burn rate setting. There are no additional controls available to the end user to generate a slower burn rate.

WEIGHTED AVERAGE CALCULATION

Test No.	Burn Rate	(E) Average Emission Rate g/hr	Heat Output [1](Btu/hr)	Probability	(K) Weighting Factor	(KxE)
1	0.96	3.02	12,678	0.3384	0.4600	1.3892
2	1.10	1.16	14,527	0.4600	0.3020	0.3503
4	1.33	1.50	17,565	0.6404	0.5270	0.7905
3	3.17	2.35	41,865	0.9870	0.3596	0.8451
				Totals:	1.6486	3.3751
				Weighted average emission rate:		2.05

[1] Based on a 69% HHV efficiency generated from B415.1 results.
Run number 5 was a fan confirmation test and not used in the weighted average.
→ X 1.088

TEST FACILITY CONDITIONS

Run	Room Temp. °F before	Room Temp °F after	Baro. Pres. In. Hg before	Baro. Pres. In. Hg after	Air Vel. Ft/min before	Air Vel. Ft/min after
1	75	73	28.52	28.54	<50	<50
2	76	78	28.66	28.61	<50	<50
3	82	83	28.66	28.48	<50	<50
4	77	76	28.61	28.59	<50	<50
5	76	74	28.23	28.20	<50	<50

DILUTION TUNNEL FLOW RATE MEASUREMENTS AND SAMPLING DATA (5G-2)

Run No.	Burn Time (min)	Velocity (ft/sec)	Volumetric Flow Rate (dscf/min)	Total Temp. (°R)	Volume of Sample	Particulate Catch (mg)
1	470	14.85	153.03	552.5	253.793	83.77
2	400	14.53	148.39	559.4	215.471	28.16
3	150	15.24	139.10	624.6	80.347	22.72
4	330	14.48	145.71	567.1	178.551	30.70
5	410	14.71	148.86	556.0	218.929	30.46

GENERAL SUMMARY OF RESULTS

Run No.	Burn Rate (kg/hr)	Change In Surface Temp (°F)	Initial Draft (in/H_2O)	Average Draft (in/H_2O)
1	0.96	91.0	-0.025	-0.033
2	1.10	111.6	-0.030	-0.036
3	3.17	124.6	-0.062	-0.072
4	1.33	104.0	-0.033	-0.044
5	1.05	93.4	-0.035	-0.043

III. PROCESS DESCRIPTION

III.A TEST SET-UP DESCRIPTON

A standard 6" diameter single wall pipe and insulated chimney system was installed to 15' above floor level. The unit controls were adjusted to achieve the four individual burn rates. Rate of combustion was observed by monitoring fuel weight consumption displayed by a platform scale. All sampling equipment was built and maintained as described in EPA Methods 28 and 5H.

III.B AIR SUPPLY SYSTEM

Combustion air enters the firebox through an opening on the bottom of the firebox. This air is controlled by a sliding damper, which covers the inlet hole. A second air control at located on the lower right front of the appliance controls both a timer and a boost air control. Pushing the control in opens an additional air source to the lower front of the firebox. Pulling the lever back out activates a timer that automatically closes the opening over a time period of approximately 23 minutes. All gases exit through a 6" flue outlet.

IV. SAMPLING SYSTEMS

IV.A. SAMPLING LOCATIONS

Particulate samples are collected from the vertical sample section of the dilution tunnel. The tunnel has two elbows and two mixing baffles in the system ahead of the sampling section. The sampling section is a continuous section of 6 inch diameter pipe straight over its entire length. Tunnel velocity pressure is determined by a standard Pitot tube located a minimum of 4 feet upstream of the sample location. The dry bulb thermocouple is located six inches downstream from the Pitot tube. Actual tunnel used was verified to meet EPA specifications and is similar to that shown in figure 1.

Actual gas sample collection train was similar to that shown in figure 2.

An emissions sample train similar to that shown in figure 3 was used; a glass probe was used in place of a heated probe and button hook nozzle.

IV.A.(1) DILUTION TUNNEL

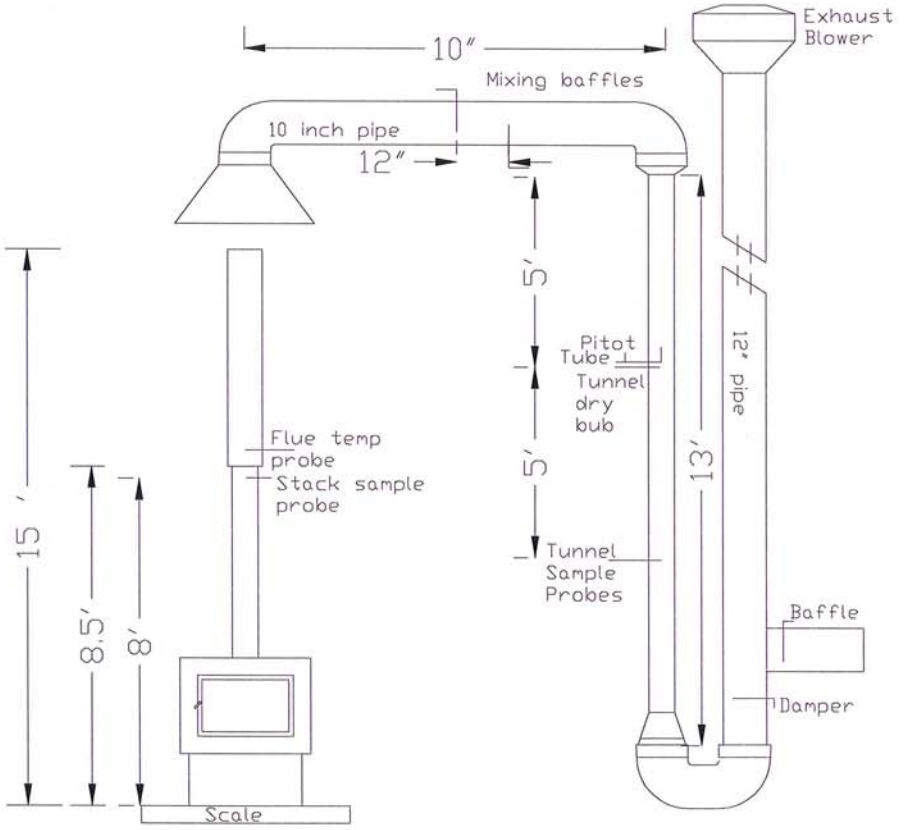
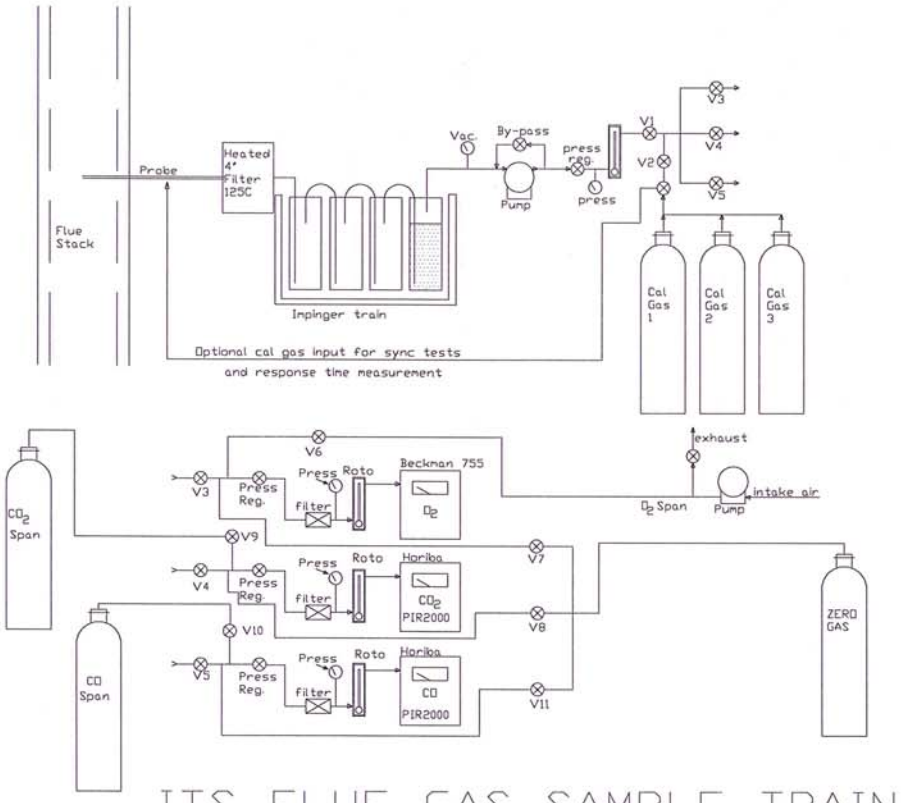


FIGURE 1

IV.B.OPERATIONAL DRAWINGS

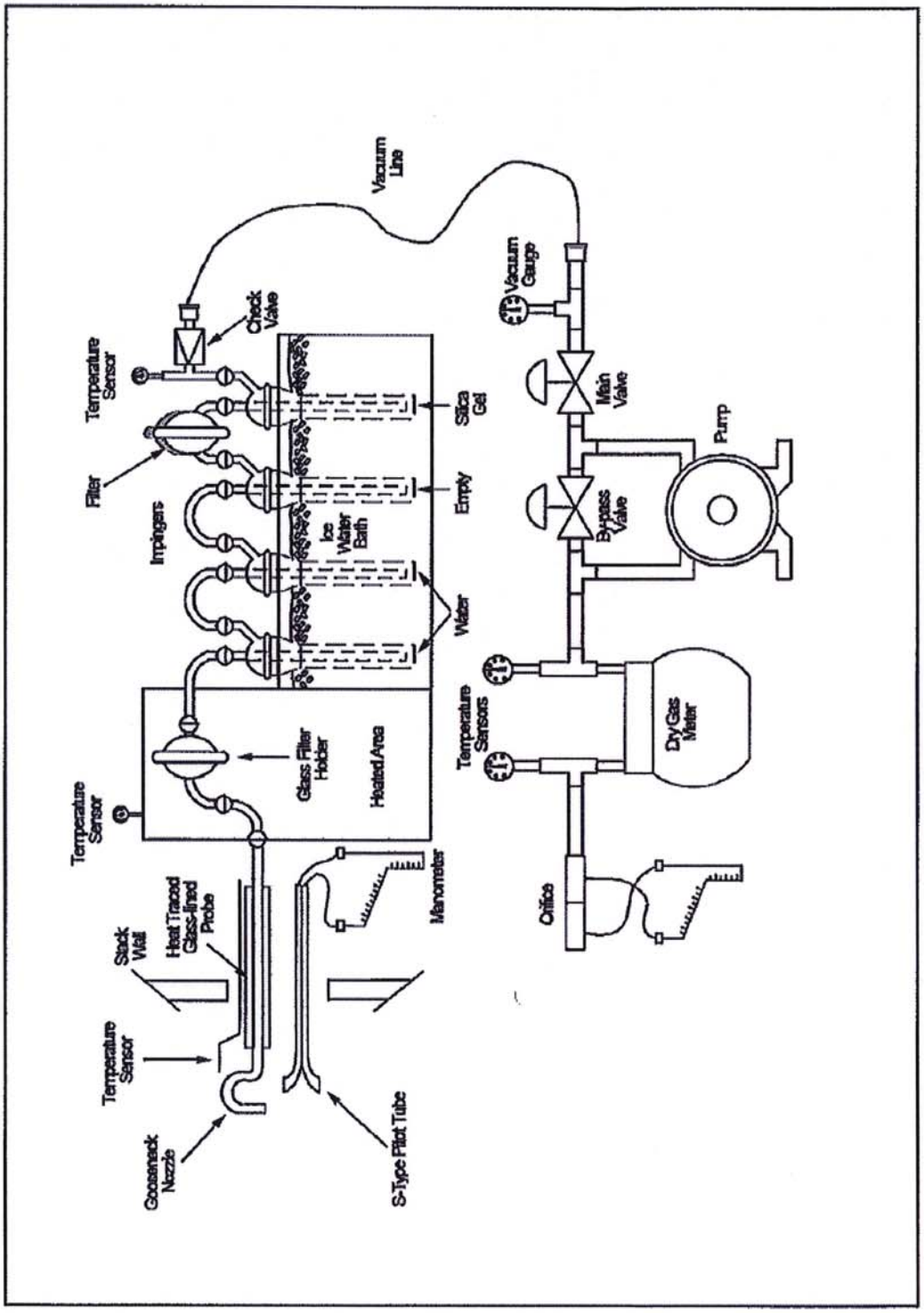
IV.B.(1) STACK GAS SAMPLE TRAIN



ITS FLUE GAS SAMPLE TRAIN

FIGURE 2

IV.B.(2). DILUTION TUNNEL SAMPLE SYSTEMS



V. SAMPLING METHODS

V.A. PARTICULATE SAMPLING

Particulates were sampled in strict accordance with EPA Method 5G-2 and 5H. A 5H sample train was used to extract particulate samples proportionally from a dilution tunnel. A glass probe was inserted into the tunnel and sample was drawn across a heated 110mm filter. After the heated front filter, gasses entered a set of four Impingers, a rear 55mm filter was placed between number three and four Impingers. Sample analysis consisted of a front and back half acetone rinse. Impinger water was subjected to a Dichloromethane extraction to separate organics prior to oven drying.

VI. QUALITY ASSURANCE

VI.A. INSTRUMENT CALIBRATION

VI.A. (1) DRY GAS METERS

At the conclusion of each test program the dry gas meters are checked against our standard dry gas meter. Three runs are made on each dry gas meter used during the test program. The average calibration factors obtained are then compared with the six-month calibration factor and, if within 5%, the six-month factor is used to calculate standard volumes. Results of this calibration are contained in Appendix D.

An integral part of the post test calibration procedure is a leak check of the pressure side by plugging the system exhaust and pressurizing the system to 10" W.C. The system is judged to be leak free if it retains the pressure for at least 10 minutes.

The standard dry gas meter is calibrated every 12 months using an accredited calibration agency. All calibration values are verified to be within EPA specifications.

VI.B. TEST METHOD PROCEDURES

VI.B.(1). LEAK CHECK PROCEDURES

Before and after each test, each sample train is tested for leaks. Leakage rates are measured and must not exceed 0.02 CFM or 4% of the sampling rate. Leak checks are performed checking the entire sampling train, not just the dry gas meters. Pre-test leak checks are conducted with a vacuum of 10 inches of mercury. Vacuum is monitored during each test and the highest vacuum reached is then used for the post test vacuum value. If leakage limits are not met, the test run is rejected. During, these tests the vacuum was typically less than 2 inches of mercury. Thus, leakage rates reported are expected to be much higher than actual leakage during the tests.

VI.B.(2). TUNNEL VELOCITY/FLOW MEASUREMENT

The tunnel velocity is calculated from a center point Pitot tube signal multiplied by an adjustment factor. This factor is determined by a traverse of the tunnel as prescribed in EPA Method 1. Final tunnel velocities and flow rates are calculated from EPA Method 2, Equation 6.9 and 6.10. (Tunnel cross sectional area is the average from both lines of traverse.)

Pitot tubes are cleaned before each test and leak checks are conducted after each test.

VI.B.(3). PM SAMPLING PROPORTIONALITY (5G)

Proportionality was calculated in accordance with EPA Method 5G. The data and results are included in Appendix F.

VII. CONCLUSION

Results of this test show the Explorer III when operated following guidelines specified in EPA method 28 does meet emissions limits regulating an affected facility in the EPA New Source Performance Standards with a weighted average of 2.17 grams per hour.

VII.A RESULTS AND OBSERVATIONS

The Model Explorer III Wood fired Solid Fuel Room Heater has been found to be in compliance with the applicable performance and construction requirements of the following criteria: EPA Method 28 "Certification and auditing of wood heaters" and Method 5G Determination of particulate matter emissions from wood heaters."

INTERTEK TESTING SERVICES NA

Reported by: _____
Bruce S Davis
Test Engineer

Reviewed by: _____
Jared T. Sorenson
Engineering Manager

Appendix F
Test Data

Hearth & Home Technologies

Explorer III

G101665917

Front View

Side View

EPA NSPS WEIGHTED AVERAGE CALCULATION

V 1.1

8/27/2010

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID No: PRT1410241418-001-001

Weighted Average

Type of Stove: 2
1=cat
2=noncat
3=pellet

Test No.	Burn Rate	(E) Ave. Emission Rate g/hr	HHV (OHE)	Heat Output (BTU/HR)	Prob.	(K) Weighting Factor	(KxE)	KxOHE
1	0.96	3.02	69.80	12678.34	0.3384	0.4600	1.3892	32.11
2	1.10	1.16	69.10	14527.26	0.4600	0.3020	0.3503	20.87
4	1.33	1.50	69.70	17564.78	0.6404	0.5270	0.7905	36.73
3	3.17	2.35	66.20	41864.92	0.9870	0.3596	0.8451	23.81
				0.00	1.0000	0.0000	0.0000	0.00
				0.00	1.0000	0.0000	0.0000	0.00
				0.00	1.0000	0.0000	0.0000	0.00
				0.00	1.0000	0.0000	0.0000	0.00
				0.00	1.0000	0.0000	0.0000	0.00
						0.0000	0.0000	0.00
Fan confirmation								
5	1.05	1.24	70.40		Totals:	1.6486	3.3751	113.51

75.3
74.6
75.3
71.50 LHV

Weighted average emissions rate:	**2.0472**
Weighted Average OHE:	**68.85**

1st
107,385
67,652 @ 63
82,136 LHV

Intertek

TEST RESULTS
EPA METHOD 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 28-Oct-14
Test Run Number: 1

Dry Burn-Rate, kg/hr:		**0.96**
Emission-Rate, g/hr:		**3.02**
Duration of Test, Minutes	470	
Dry Gas Meter Standardization	Train A	
Dry Gas Meter Beginning Reading, ft^3	863.403	
Dry Gas Meter Ending Reading, ft^3	1138.22	
Barometric Pressure Correction Factor	0.954	
Dry Gas Meter Calibration Factors (γ factors)	0.977	
Dry Gas Meter Temperature Factors	0.992	
Dry Gas Meter Delta-H Correction Factors	1.002	
Dry Gas Meter STD Volume Sampled, ft^3	**254.543**	
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**153.026**	
Total Tunnel Volume, scf	**71922.250**	
Emission Caclulations	Train A	
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	282.555	
Sample Particulate Mass, mg	83.8	
Total Emissions, grams	23.669	
Emission-Rate, g/hr	3.02	
Adjusted Emission Rates, g/hr	**4.56**	
Operating Parameters	Train A	
Max Filter Temperature, °F	133	
Post-Test Leak Check, cfm @ in. Hg vac.	0	
Average Firebox Surface Temperture delta-T, °F	91	
Maximum Ambient Temperture, °F	78	
Mimimum Ambient Temperature, °F	72	
Fuel Properties		
Wet Fuel Load Weight, lb.	20.20	
Dry-Basis Fuel Load Moisture Content, %	21.65	
Wet-Basis Fuel Load Moisture Content, %	17.80	

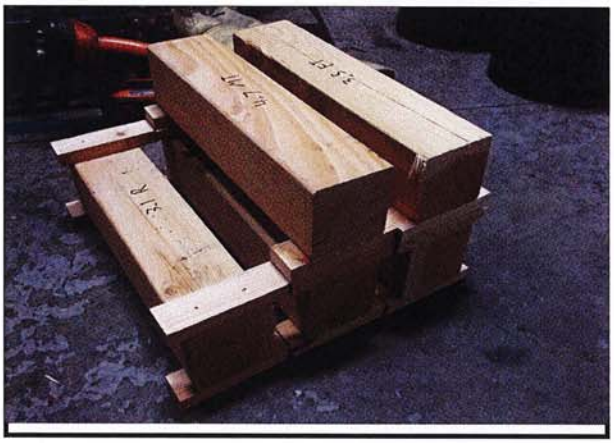
Test Engineer: _____ Date: 12/15/14

Intertek

Run Notes
EPA Methods 28 and 5G-3

PROJECT / TEST INFORMATION	
Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	28-Oct-14
Test Run Number:	1
Date tunnel cleaned:	10/27/2014
Purpose of Test	Certification

Appliance Information		
Appliance Type:	2	1 - Catalytic 2 - Non - Catalytic 3 - Pellet 4 - Hydronic
Firebox Volume, ft^3:	3.01	N/A for pellet type
Convection Blower	2	1 - No Fan 2 - Fan Optional 3 - Fan Standard



Test Settings	
Primary Air:	Air set at 0.85" from full closed
Secondary Air:	Fixed
Control Board:	NA
Blower/Fan:	On high during pretest.

Pre- Burn Activities

Time	Activity
	At 45 minutes raked coals.
	At 61 minutes raked coals

Start-Up Procedure	
Loading of fuel, sec. :	Test fuel loaded by 45 seconds.
Fuel-loading door :	Door closed by 50 seconds.
Primary air:	Air at test setting full 5 minutes.
Secondary air:	fixed
Control board:	NA
Blower / fan:	Fan off for first 30 minutes then turned to high.

Other Notes

By 60 seconds timed air was activated.

Test Engineer: _____ Date: 12/15/14

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	28-Oct-14
Test Run Number:	1

Firebox Volume, ft^3:	3.01

Calibration Reference ID		
Set meter to Species 1		
Set Temperature to 70F	12%	**12.0**
Set pin setting to 444	22%	**22.0**

PRE-BURN FUEL PROPERTIES

Eq. ID No.:		Time:	9:30	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	**24.00**		**22.1**	**19.9**	**21.7**
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total Weight		**0.0**	Average, %db		**21.2**

Allowable Fuel Load Range: **19.0** to **23.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:			Time:	9:30	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	**15.50**		**20.20**	**18.1**	**23.2**	**20.2**
2				**18.9**	**19.3**	**22.7**
3				**24.2**	**23.1**	**22.6**
4				**19.3**	**20.6**	**25.9**
5				**22.3**	**20.1**	**24.3**
6						
7						
8						
Totals		0.0	20.2			
% of Weight		0	100			
Total weight, wet, lb.		**20.20**		Average Moisture, dry		**21.65**
Total weight, dry, kg		7.53		Average Moisture, wet		17.80

Test Engineer: _____

Date: 12/14/15

Intertek

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	28-Oct-14
Test Run Number:	1

EPA Method 28
Pre Burn Data

Coal Bed Range	4.1	to	5.0

Average Firebox Temp, °F	319.6

Final Coal Bed Wt, lb	5

	Temperature Data												
Duration, Minutes	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom		Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	76	140	437	459	581	586	596	561	556.6		-0.062	7.40	2.40
10	75	106	324	394	563	560	571	564	530.4		-0.052	6.60	0.80
20	75	98	283	323	520	516	504	538	480.2		-0.047	6.10	0.50
30	74	96	269	274	480	475	475	505	441.8		-0.042	5.60	0.50
40	74	94	244	248	455	450	406	482	408.2		-0.038	5.40	0.20
50	74	96	224	220	426	422	328	462	371.6		-0.032	5.20	0.20
60	72	90	196	192	394	389	273	439	337.4		-0.03	5.10	0.10
62	72	92	196	179	376	371	251	421	319.6		-0.03	5.00	0.10

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID No:	PRT1410241418-001-001
Test Date:	28-Oct-14
Test Run No:	1

Temperature Data

Firebox Temp Start	319.6
Firebox Temp End	228.6
Firebox Delta-T	**91.0**

Max Filter Temps	
Train A	
133	

Interval	10	Duration of Test, Min	**470**

Time		Temperature Data												
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom	Catalyst Outlet	Train A Filter	Impinger Exit	Train A DGM	
0	0	75	92	196	179	376	371	251	421		133	79	70	
1	10	74	109	415	225	346	339	302	390		132	49	70	
2	20	75	132	540	360	345	339	418	372		132	47	70	
3	30	72	109	362	440	363	357	476	360		132	47	71	
4	40	74	106	336	332	369	350	329	353		132	47	71	
5	50	74	104	333	313	374	340	296	343		132	49	71	
6	60	74	102	321	296	377	334	285	333		132	50	71	
7	70	74	102	343	284	374	332	311	320		132	51	72	
8	80	74	104	364	307	381	338	354	308		132	52	72	
9	90	73	104	362	327	388	347	390	299		132	53	72	
10	100	74	105	373	340	395	357	405	291		132	54	73	
11	110	75	104	352	340	402	367	421	282		132	55	73	
12	120	75	102	325	313	407	375	431	278		132	56	73	
13	130	74	98	283	283	408	382	429	277		132	57	73	
14	140	76	95	246	242	400	377	411	277		132	58	73	
15	150	76	94	235	226	394	371	388	277		132	59	73	
16	160	75	93	221	207	382	362	360	276		132	59	73	
17	170	77	91	208	193	371	351	342	275		132	58	74	
18	180	76	90	202	181	360	342	328	273		132	58	73	
19	190	75	89	195	171	350	333	317	271		132	58	73	
20	200	75	89	191	164	340	326	308	269		132	58	73	
21	210	75	88	186	159	332	322	300	266		132	58	73	
22	220	76	88	186	155	325	320	298	264		132	57	73	
23	230	75	88	186	153	321	320	296	263		132	57	73	
24	240	74	87	187	153	324	318	289	262		132	56	73	
25	250	75	87	189	154	330	317	283	265		132	55	73	
26	260	74	87	187	154	338	316	282	268		132	55	73	
27	270	75	87	184	154	343	312	279	271		132	55	73	
28	280	75	87	187	154	342	307	273	275		132	56	73	
29	290	75	86	187	154	344	305	270	279		132	56	73	
30	300	75	87	187	154	347	304	271	285		132	56	73	
31	310	77	87	182	155	348	302	267	290		132	57	73	
32	320	77	87	182	153	343	300	263	295		132	57	73	
33	330	78	87	182	154	339	301	263	299		132	58	73	
34	340	78	86	179	152	334	299	261	304		132	59	73	
35	350	78	86	176	151	330	297	258	308		132	59	73	
36	360	78	86	173	149	325	295	254	312		132	60	73	
37	370	78	86	171	147	319	294	249	312		132	60	72	
38	380	77	86	168	145	311	292	248	310		132	60	72	
39	390	76	86	166	143	306	290	246	307		132	61	72	
40	400	75	85	165	141	299	287	244	303		132	61	72	
41	410	75	85	165	140	294	284	238	299		132	61	72	
42	420	75	85	163	140	290	282	231	296		132	62	72	
43	430	75	84	158	137	285	278	227	294		132	63	72	
44	440	75	84	158	135	278	274	220	290		132	63	72	
45	450	75	84	154	132	272	267	216	287		132	63	72	
46	460	73	84	154	129	269	262	212	285		132	64	72	
47	470	73	84	153	127	266	259	209	282		132	64	72	

Test Engineer: _____

Date: 11/19/14

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	28-Oct-14
Test Run Number:	1

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	28.52		Meter Box (A)	0.977
End	28.54			
Duration of Test, Min		470		

Leak Check, cfm @ in Hg	
Train A	.008@6

Maximum Vacuum	
Train A	
0.00	

	Particulate Sampling Data										
Time	Tunnel Delta-P	Train A Delta-H		Flue Draft	Fuel Weight	Weight Loss	Train A Volume		Train A Proportional Rate		Train A Vacuum, In. Hg	
0	0.048	1.00		-0.025	20.20	20.20	863.403		99.99		0.00	
10	0.048	1.00		-0.068	19.00	1.20	869.570		107.52		0.00	
20	0.048	1.00		-0.075	16.90	2.10	875.020		96.92		0.00	
30	0.048	1.00		-0.060	15.30	1.60	881.000		104.07		0.00	
40	0.048	1.00		-0.053	14.20	1.10	886.580		96.85		0.00	
50	0.048	1.00		-0.051	13.10	1.10	892.450		101.70		0.00	
60	0.048	1.00		-0.050	12.20	0.90	898.240		100.14		0.00	
70	0.048	1.00		-0.052	11.00	1.20	904.070		100.64		0.00	
80	0.048	1.00		-0.056	9.80	1.20	909.950		101.68		0.00	
90	0.048	1.00		-0.056	8.60	1.20	915.705		99.52		0.00	
100	0.048	1.00		-0.058	7.40	1.20	921.640		102.53		0.00	
110	0.048	1.00		-0.052	6.30	1.10	927.480		100.80		0.00	
120	0.048	1.00		-0.050	5.60	0.70	933.270		99.76		0.00	
130	0.048	1.00		-0.042	5.10	0.50	938.970		97.86		0.00	
140	0.048	1.00		-0.042	4.60	0.50	944.856		100.78		0.00	
150	0.048	1.00		-0.035	4.40	0.20	950.912		103.60		0.00	
160	0.048	1.00		-0.032	4.20	0.20	956.960		103.37		0.00	
170	0.048	1.00		-0.030	4.10	0.10	962.500		94.34		0.00	
180	0.048	1.00		-0.030	3.90	0.20	968.370		100.06		0.00	
190	0.048	1.00		-0.030	3.80	0.10	974.190		99.11		0.00	
200	0.048	1.00		-0.025	3.70	0.10	980.080		100.30		0.00	
210	0.048	1.00		-0.025	3.50	0.20	986.170		103.62		0.00	
220	0.048	1.00		-0.025	3.40	0.10	992.050		100.04		0.00	
230	0.048	1.00		-0.025	3.20	0.20	997.980		100.89		0.00	
240	0.048	1.00		-0.025	3.00	0.20	1003.940		101.31		0.00	
250	0.048	1.00		-0.026	2.80	0.20	1009.640		96.89		0.00	
260	0.048	1.00		-0.026	2.70	0.10	1015.650		102.16		0.00	
270	0.048	1.00		-0.025	2.50	0.20	1021.320		96.38		0.00	
280	0.048	1.00		-0.025	2.40	0.10	1027.180		99.61		0.00	
290	0.048	1.00		-0.025	2.20	0.20	1032.950		97.99		0.00	
300	0.048	1.00		-0.023	2.00	0.20	1038.990		102.67		0.00	
310	0.048	1.00		-0.023	1.90	0.10	1044.700		97.06		0.00	
320	0.048	1.00		-0.022	1.70	0.20	1050.456		97.84		0.00	
330	0.048	1.00		-0.022	1.60	0.10	1056.610		104.61		0.00	
340	0.048	1.00		-0.022	1.40	0.20	1062.190		94.77		0.00	
350	0.048	1.00		-0.022	1.30	0.10	1068.070		99.86		0.00	
360	0.048	1.00		-0.021	1.20	0.10	1073.980		100.37		0.00	
370	0.048	1.00		-0.020	1.10	0.10	1079.750		98.18		0.00	
380	0.048	1.00		-0.020	1.00	0.10	1085.550		98.69		0.00	
390	0.048	1.00		-0.020	0.80	0.20	1091.500		101.24		0.00	
400	0.048	1.00		-0.020	0.70	0.10	1097.630		104.21		0.00	
410	0.048	1.00		-0.020	0.60	0.10	1103.100		92.99		0.00	
420	0.048	1.00		-0.020	0.50	0.10	1108.970		99.79		0.00	
430	0.048	1.00		-0.020	0.40	0.10	1115.110		104.28		0.00	
440	0.048	1.00		-0.020	0.30	0.10	1120.750		95.79		0.00	
450	0.048	1.00		-0.020	0.20	0.10	1126.530		98.17		0.00	
460	0.048	1.00		-0.019	0.10	0.10	1132.430		100.20		0.00	
470	0.048	1.00		-0.019	0.00	0.10	1138.220		98.34		0.00	

Test Engineer: _____

Date: 11/05/14

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 28-Oct-14
Test Run Number: 1

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0440	95	0.2098
A2	0.0480	95	0.2191
A3	0.0540	95	0.2324
A4	0.0460	95	0.2145
A Center	0.0480	95	0.2191
B1	0.0420	95	0.2049
B2	0.0500	95	0.2236
B3	0.0420	95	0.2049
B4	0.0380	95	0.1949
B Center	0.0480	95	0.2191
Averages	0.046	95	0.2130

Tunnel Diameter	**6.000**	inches
Tunnel Static	**-0.440**	in. H2O
Tunnel Area	0.19635	Ft2
Pitot Correction	0.9723	factor
Baro. Pressure	28.52	
Pitot Factor	**0.99**	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	14.890	Ft/ Sec
Initial Flow	**152.65**	Ft3/min

Test Engineer: _____ Date: 12/5/14

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 28-Oct-14
Test Run Number: 1

Intertek Equipment No.'s 19683, 19684

SAMPLE COMPONET	REAGENT	FILTER # OR	WEIGHTS			
			FINAL, mg	TARE, mg	BLANK, mg/ml	PARTICULATE, mg
FRONT FILTER CATCH	FILTER	474	779.3	740.2		39.10
REAR FILTER CATCH	FILTER	487	130.4	130.5		-0.10
RINSE OF PROBE &	ACETONE	50	104468.1	104465.5	0.007	2.25
RINSE OF IMPINGER SET	WATER	205	103701.2	103684.4	0.0035	16.08
RINSE OF IMPINGER SET	METHANE	150	95111.9	95089	0.0007	22.79
RINSE OF FILTER ASSEMBLY & GAS TRAIN -	ACETONE	80	107227.4	107223.2	0.007	3.64
					TOTAL:	83.77

EQUATIONS

FRONT FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
REAR FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
RINSE OF PROBE & FILTER ASSEMBLY - FRONT	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF IMPINGER SET	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF FILTER ASSEMBLY & GAS TRAIN - BACK	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

Test Engineer: _____ Date: 12/15/14

Intertek

TEST RESULTS
EPA METHOD 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 29-Oct-14
Test Run Number: 2

Dry Burn-Rate, kg/hr:		**1.10**
Emission-Rate, g/hr:		**1.16**
Duration of Test, Minutes	400	
Dry Gas Meter Standardization	Train A	
Dry Gas Meter Beginning Reading, ft^3	138.604	
Dry Gas Meter Ending Reading, ft^3	373.491	
Barometric Pressure Correction Factor	0.957	
Dry Gas Meter Calibration Factors (γ factors)	0.977	
Dry Gas Meter Temperature Factors	0.982	
Dry Gas Meter Delta-H Correction Factors	1.002	
Dry Gas Meter STD Volume Sampled, ft^3	**216.135**	
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**148.391**	
Total Tunnel Volume, scf	**59356.473**	
Emission Caclulations	Train A	
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	274.627	
Sample Particulate Mass, mg	28.2	
Total Emissions, grams	7.734	
Emission-Rate, g/hr	1.16	
Adjusted Emission Rates, g/hr	**2.06**	
Operating Parameters	Train A	
Max Filter Temperature, °F	133	
Post-Test Leak Check, cfm @ in. Hg vac.	0	
Average Firebox Surface Temperture delta-T, °F	111.6	
Maximum Ambient Temperture, °F	78	
Mimimum Ambient Temperature, °F	76	
Fuel Properties		
Wet Fuel Load Weight, lb.	19.50	
Dry-Basis Fuel Load Moisture Content, %	20.65	
Wet-Basis Fuel Load Moisture Content, %	17.11	

Test Engineer: _____

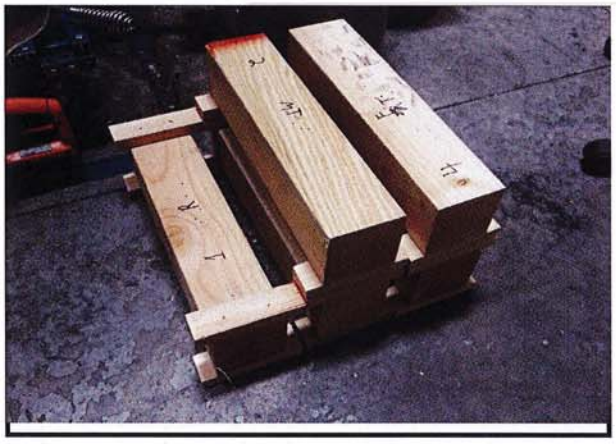
Date: 12/8/14

Intertek

Run Notes
EPA Methods 28 and 5G-3

PROJECT / TEST INFORMATION	
Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	29-Oct-14
Test Run Number:	2
Date tunnel cleaned:	10/27/2014
Purpose of Test	Certification

Appliance Information		
Appliance Type:	2	1 - Catalytic 2 - Non - Catalytic 3 - Pellet 4 - Hydronic
Firebox Volume, ft^3:	3.01	N/A for pellet type
Convection Blower	2	1 - No Fan 2 - Fan Optional 3 - Fan Standard



Test Settings	
Primary Air:	Set at 0.95" from full closed
Secondary Air:	Fixed
Control Board:	NA
Blower/Fan:	On high during pre test.

Pre- Burn Activities

Time	Activity
	At 45 minutes raked coals.

Start-Up Procedure	
Loading of fuel, sec. :	Fuel loaded by 50 seconds.
Fuel-loading door :	Closed by 60 seconds
Primary air:	At test setting the entire test.
Secondary air:	Fixed
Control board:	NA
Blower / fan:	Off for the first 30 minutes then turned to high.

Other Notes

Timed air pushed at zero minutes

Test Engineer: _____ Date: 12/05/14

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	29-Oct-14
Test Run Number:	2

Firebox Volume, ft^3:	3.01

Calibration Reference ID		
Set meter to Species 1		
Set Temperature to 70F	12%	**12.0**
Set pin setting to 444	22%	**22.0**

PRE-BURN FUEL PROPERTIES

Eq. ID No.:		Time:	9:10	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	**24.00**		**19.7**	**18.6**	**20.6**
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total Weight		**0.0**	Average, %db		**19.6**

Allowable Fuel Load Range: **19.0** to **23.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:			Time:	9:10	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	**15.50**		**19.50**	**19.7**	**19.3**	**20.0**
2				**22.0**	**22.7**	**22.1**
3				**21.9**	**19.8**	**21.3**
4				**21.9**	**19.8**	**21.7**
5				**18.8**	**19.8**	**18.9**
6						
7						
8						
Totals		0.0	19.5			
% of Weight		0	100			
Total weight, wet, lb.		**19.50**		Average Moisture, dry		**20.65**
Total weight, dry, kg		7.33		Average Moisture, wet		17.11

Test Engineer: _____ Date: 11/15/14

Intertek

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	29-Oct-14
Test Run Number:	2

EPA Method 28
Pre Burn Data

Coal Bed Range	3.9	to	4.8

Average Firebox Temp, °F	333.6

Final Coal Bed Wt, lb	4.5

	Temperature Data												
Duration, Minutes	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom		Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	79	187	596	516	529	560	594	488	537.4		-0.08	7.80	3.30
10	76	121	391	438	541	553	560	500	518.4		-0.062	6.50	1.30
20	76	111	338	365	519	519	522	480	481		-0.05	5.80	0.70
30	76	107	321	322	501	493	499	460	455		-0.049	5.10	0.70
40	76	100	264	271	468	456	392	432	403.8		-0.039	4.90	0.20
50	76	101	250	244	446	437	348	416	378.2		-0.037	4.70	0.20
60	75	96	221	211	411	405	298	394	343.8		-0.032	4.50	0.20
65	75	95	215	202	400	395	285	386	333.6		-0.03	4.50	0.00

Test Engineer: _____

Date: 11/15/17

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID No:	PRT1410241418-001-001
Test Date:	29-Oct-14
Test Run No:	2

Temperature Data

Firebox Temp Start	332.2
Firebox Temp End	220.6
Firebox Delta-T	111.6

Max Filter Temps	
Train A	
133	

Interval	10	Duration of Test, Min	400

Time		Temperature Data												
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom	Catalyst Outlet	Train A Filter	Impinger Exit	Train A DGM	
0	0	76	95	214	202	398	393	283	385		132	73	73	
1	10	76	136	558	296	366	359	354	364		132	54	73	
2	20	77	154	620	470	374	362	487	352		133	54	74	
3	30	77	130	452	534	392	382	556	347		132	54	74	
4	40	77	121	418	410	406	381	389	343		132	55	75	
5	50	78	119	408	378	418	378	376	335		133	56	76	
6	60	78	117	394	364	428	381	392	326		133	56	76	
7	70	77	113	375	345	433	383	399	318		133	57	76	
8	80	78	111	371	331	433	385	413	310		132	58	77	
9	90	78	111	378	330	438	390	437	304		132	58	77	
10	100	78	109	356	324	445	400	450	300		132	60	77	
11	110	77	107	334	306	441	403	451	297		133	61	77	
12	120	77	102	290	278	433	404	439	296		132	62	78	
13	130	77	99	261	247	424	397	417	295		132	65	78	
14	140	77	98	251	227	415	387	378	295		132	66	78	
15	150	77	97	240	208	409	377	345	293		132	67	78	
16	160	77	96	232	199	406	369	328	292		132	68	78	
17	170	77	95	228	192	402	363	314	291		132	54	78	
18	180	77	94	219	185	395	355	303	289		132	49	79	
19	190	77	93	211	178	385	346	288	287		132	49	79	
20	200	77	93	205	171	375	335	280	285		132	49	79	
21	210	78	93	203	167	365	327	274	284		132	49	79	
22	220	77	92	202	165	357	325	268	386		132	50	79	
23	230	77	92	201	162	349	325	268	291		132	50	79	
24	240	77	91	195	159	342	321	264	295		132	50	79	
25	250	77	90	193	156	335	315	252	296		132	51	79	
26	260	77	90	188	154	327	310	244	296		132	51	79	
27	270	77	90	186	151	320	306	239	297		132	52	79	
28	280	77	90	184	150	315	302	235	297		132	52	79	
29	290	77	89	179	146	308	296	229	295		132	52	79	
30	300	77	89	175	142	300	291	225	292		132	52	79	
31	310	77	89	172	140	294	287	221	289		132	52	80	
32	320	77	88	170	137	286	282	217	285		132	52	80	
33	330	77	88	170	136	282	281	220	283		132	52	80	
34	340	78	88	171	135	280	281	220	281		132	52	79	
35	350	78	88	168	135	278	280	220	277		132	53	79	
36	360	77	88	166	134	273	277	214	273		132	53	79	
37	370	77	88	164	133	268	272	209	270		132	53	79	
38	380	77	87	163	131	263	267	206	267		132	53	79	
39	390	78	87	160	130	259	264	204	265		132	52	79	
40	400	78	87	157	129	253	259	199	263		132	53	78	

Test Engineer: _____

Date: 12/03/14

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	29-Oct-14
Test Run Number:	2

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	28.66		Meter Box (A)	0.977
End	28.61			
Duration of Test, Min		400		

Leak Check, cfm @ in Hg	
Train A	.008@8

Maximum Vacuum	
Train A	
0.00	

	Particulate Sampling Data										
Time	Tunnel Delta-P	Train A Delta-H		Flue Draft	Fuel Weight	Weight Loss	Train A Volume		Train A Proportional Rate		Train A Vacuum, In. Hg
0	0.048	1.00		-0.030	19.50	19.50	138.604		99.99		0.00
10	0.048	1.00		-0.078	17.70	1.80	144.630		106.91		0.00
20	0.048	1.00		-0.080	15.40	2.30	150.270		101.37		0.00
30	0.048	1.00		-0.068	13.50	1.90	156.140		103.42		0.00
40	0.048	1.00		-0.062	12.10	1.40	162.050		103.13		0.00
50	0.048	1.00		-0.060	10.70	1.40	167.930		102.24		0.00
60	0.048	1.00		-0.060	9.30	1.40	173.670		99.63		0.00
70	0.048	1.00		-0.056	8.20	1.10	179.720		104.65		0.00
80	0.048	1.00		-0.057	7.20	1.00	185.380		97.55		0.00
90	0.048	1.00		-0.057	6.10	1.10	191.220		100.65		0.00
100	0.048	1.00		-0.053	5.20	0.90	197.030		99.96		0.00
110	0.048	1.00		-0.050	4.60	0.60	202.820		99.44		0.00
120	0.048	1.00		-0.042	4.10	0.50	208.760		101.38		0.00
130	0.048	1.00		-0.040	3.80	0.30	214.670		100.60		0.00
140	0.048	1.00		-0.037	3.60	0.20	220.420		97.79		0.00
150	0.048	1.00		-0.035	3.40	0.20	226.280		99.57		0.00
160	0.048	1.00		-0.032	3.20	0.20	232.090		98.63		0.00
170	0.048	1.00		-0.032	3.00	0.20	237.940		99.22		0.00
180	0.048	1.00		-0.032	2.90	0.10	243.840		99.79		0.00
190	0.048	1.00		-0.030	2.70	0.20	249.750		99.87		0.00
200	0.048	1.00		-0.029	2.50	0.20	255.750		101.39		0.00
210	0.048	1.00		-0.029	2.40	0.10	261.570		98.35		0.00
220	0.048	1.00		-0.029	2.20	0.20	267.400		98.43		0.00
230	0.048	1.00		-0.029	2.10	0.10	273.280		99.27		0.00
240	0.048	1.00		-0.027	1.90	0.20	279.200		99.86		0.00
250	0.048	1.00		-0.025	1.80	0.10	285.150		100.27		0.00
260	0.048	1.00		-0.023	1.70	0.10	291.110		100.44		0.00
270	0.048	1.00		-0.022	1.50	0.20	296.950		98.42		0.00
280	0.048	1.00		-0.022	1.40	0.10	303.070		103.14		0.00
290	0.048	1.00		-0.021	1.30	0.10	308.750		95.64		0.00
300	0.048	1.00		-0.021	1.20	0.10	314.680		99.85		0.00
310	0.048	1.00		-0.021	1.10	0.10	320.540		98.48		0.00
320	0.048	1.00		-0.020	0.90	0.20	326.440		99.07		0.00
330	0.048	1.00		-0.020	0.80	0.10	332.260		97.72		0.00
340	0.048	1.00		-0.020	0.70	0.10	338.250		100.76		0.00
350	0.048	1.00		-0.020	0.50	0.20	344.170		99.59		0.00
360	0.048	1.00		-0.020	0.40	0.10	350.160		100.76		0.00
370	0.048	1.00		-0.020	0.30	0.10	355.970		97.74		0.00
380	0.048	1.00		-0.020	0.20	0.10	361.910		99.83		0.00
390	0.048	1.00		-0.020	0.10	0.10	367.670		96.81		0.00
400	0.048	1.00		-0.020	0.00	0.10	373.491		98.01		0.00

Test Engineer: _____

Date: 12/15/14

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 29-Oct-14
Test Run Number: 2

	Dilution Tunnel		Square Root
	Delta P In. H2O	Temp,°F	
A1	0.0440	96	0.2098
A2	0.0500	96	0.2236
A3	0.0360	96	0.1897
A4	0.0280	96	0.1673
A Center	0.0460	96	0.2145
B1	0.0400	96	0.2000
B2	0.0480	96	0.2191
B3	0.0520	96	0.2280
B4	0.0420	96	0.2049
B Center	0.0480	96	0.2191
Averages	0.0434	96	0.2053

Tunnel Diameter	**6.000**	inches
Tunnel Static	**-0.380**	in. H2O
Tunnel Area	0.19635	Ft2
Pitot Correction	0.9471	factor
Baro. Pressure	28.66	
Pitot Factor	**0.99**	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	14.329	Ft/ Sec
Initial Flow	**147.36**	Ft3/min

Test Engineer: _____ Date: 12/15/14

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 29-Oct-14
Test Run Number: 2

Intertek Equipment No.'s 19683, 19684

SAMPLE COMPONET	REAGENT	FILTER # OR	WEIGHTS			
			FINAL, mg	TARE, mg	BLANK, mg/ml	PARTICULATE, mg
FRONT FILTER CATCH	FILTER	475	771.6	760		11.60
REAR FILTER CATCH	FILTER	488	126.9	127		-0.10
RINSE OF PROBE &	ACETONE	55	98819	98814.5	0.007	4.12
RINSE OF IMPINGER SET	WATER	225	100630	100624.8	0.0035	4.41
RINSE OF IMPINGER SET	METHANE	150	108425	108417.1	0.0007	7.79
RINSE OF FILTER ASSEMBLY & GAS TRAIN -	ACETONE	80	108637.9	108637	0.007	0.34
					TOTAL:	28.16

EQUATIONS

FRONT FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
REAR FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
RINSE OF PROBE & FILTER ASSEMBLY - FRONT	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF IMPINGER SET	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF FILTER ASSEMBLY & GAS TRAIN - BACK	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

Test Engineer: BG

Date: 12/15/14

Intertek

TEST RESULTS
EPA METHOD 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 3

Dry Burn-Rate, kg/hr:		**3.17**
Emission-Rate, g/hr:		**2.35**
Duration of Test, Minutes	150	
Dry Gas Meter Standardization	Train A	
Dry Gas Meter Beginning Reading, ft^3	373.8	
Dry Gas Meter Ending Reading, ft^3	461.57	
Barometric Pressure Correction Factor	0.955	
Dry Gas Meter Calibration Factors (γ factors)	0.977	
Dry Gas Meter Temperature Factors	0.982	
Dry Gas Meter Delta-H Correction Factors	1.002	
Dry Gas Meter STD Volume Sampled, ft^3	**80.592**	
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**139.096**	
Total Tunnel Volume, scf	**20864.433**	
Emission Caclulations	Train A	
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	258.891	
Sample Particulate Mass, mg	22.7	
Total Emissions, grams	5.881	
Emission-Rate, g/hr	2.35	
Adjusted Emission Rates, g/hr	**3.70**	
Operating Parameters	Train A	
Max Filter Temperature, °F	133	
Post-Test Leak Check, cfm @ in. Hg vac.	0	
Average Firebox Surface Temperture delta-T, °F	124.6	
Maximum Ambient Temperture, °F	85	
Mimimum Ambient Temperature, °F	79	
Fuel Properties		
Wet Fuel Load Weight, lb.	21.40	
Dry-Basis Fuel Load Moisture Content, %	22.59	
Wet-Basis Fuel Load Moisture Content, %	18.43	

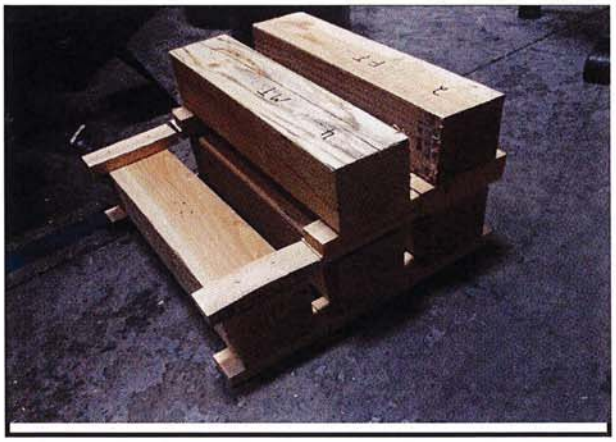
Test Engineer: _____ Date: 12/15/14

Intertek

Run Notes
EPA Methods 28 and 5G-3

PROJECT / TEST INFORMATION	
Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	3
Date tunnel cleaned:	10/27/2014
Purpose of Test	Certification

Appliance Information		
Appliance Type:	2	1 - Catalytic 2 - Non - Catalytic 3 - Pellet 4 - Hydronic
Firebox Volume, ft^3:	3.01	N/A for pellet type
Convection Blower	2	1 - No Fan 2 - Fan Optional 3 - Fan Standard



Test Settings	
Primary Air:	Full open, boost air locked open.
Secondary Air:	fixed
Control Board:	NA
Blower/Fan:	On high

Pre- Burn Activities

Time	Activity
	At 53 minutes (5.7 pounds) raked coals.

Start-Up Procedure	
Loading of fuel, sec. :	Fuel loaded by 50 seconds.
Fuel-loading door :	Door closed by 65 seconds.
Primary air:	Fully open entire test.
Secondary air:	Fixed
Control board:	NA
Blower / fan:	On high the entire test.

Other Notes

Boost air locked open.

Test Engineer: _____ Date: 12/15/14

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	3

Firebox Volume, ft^3:	3.01

Calibration Reference ID		
Set meter to Species 1		
Set Temperature to 70F	12%	**12.0**
Set pin setting to 444	22%	**22.0**

PRE-BURN FUEL PROPERTIES

Eq. ID No.:		Time:	9:30	Temp.,°F:	70
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	**96.00**		**22.7**	**26.5**	**22.8**
2	**96.00**		**18.8**	**22.6**	**18.9**
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total Weight		**0.0**	Average, %db		**22.1**

Allowable Fuel Load Range: **19.0** to **23.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:			Time:	9:30	Temp.,°F:	70
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	**14.50**		**21.40**	**22.1**	**22.7**	**24.5**
2				**22.3**	**22.2**	**24.5**
3				**22.2**	**23.4**	**22.0**
4				**20.8**	**22.0**	**22.0**
5				**22.3**	**23.8**	**22.1**
6						
7						
8						
Totals		0.0	21.4			
% of Weight		0	100			
Total weight, wet, lb.		**21.40**		Average Moisture, dry		**22.59**
Total weight, dry, kg		7.92		Average Moisture, wet		18.43

Test Engineer: _____ Date: 12/15/14

Intertek

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	3

EPA Method 28
Pre Burn Data

Coal Bed Range	4.3	to	5.3

Average Firebox Temp, °F	539.4

Final Coal Bed Wt, lb	4.3

	Temperature Data												
Duration, Minutes	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom		Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	80	189	673	454	598	597	597	586	566.4		-0.085	21.20	16.90
10	81	200	773	521	562	562	492	596	546.6		-0.09	17.60	3.60
20	82	202	757	570	554	544	607	590	573		-0.09	13.90	3.70
30	82	199	749	583	570	552	752	584	608.2		-0.087	10.10	3.80
40	84	187	705	583	598	575	742	587	617		-0.081	7.40	2.70
50	83	168	609	505	620	604	770	598	619.4		-0.078	6.10	1.30
60	83	176	540	451	634	616	635	602	587.6		-0.07	4.70	1.40
70	83	150	474	400	606	597	578	583	552.8		-0.063	4.40	0.30
72	82	147	459	385	596	587	555	574	539.4		-0.062	4.30	0.10

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID No:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run No:	3

Temperature Data

Firebox Temp Start	534.6
Firebox Temp End	410
Firebox Delta-T	124.6

Max Filter Temps	
Train A	
133	

Interval	5	Duration of Test, Min	150

Time		Temperature Data												
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom	Catalyst Outlet	Train A Filter	Impinger Exit	Train A DGM	
0	0	82	146	456	379	592	583	549	570		132	87	75	
1	5	82	174	669	357	567	556	456	554		133	60	75	
2	10	83	196	750	409	544	525	434	535		133	57	75	
3	15	83	204	758	480	539	509	435	513		133	57	75	
4	20	83	205	747	517	546	506	442	494		133	57	76	
5	25	84	204	736	525	555	511	442	478		133	57	76	
6	30	84	200	719	527	562	524	450	462		133	57	76	
7	35	84	194	690	520	571	540	547	445		133	57	77	
8	40	85	189	665	504	575	553	464	435		133	57	77	
9	45	84	182	643	483	580	567	470	425		133	57	77	
10	50	84	180	635	466	579	576	472	417		133	58	77	
11	55	82	180	643	457	576	583	482	412		133	58	78	
12	60	82	182	669	457	576	587	508	409		133	58	78	
13	65	82	185	679	458	580	588	567	407		133	58	78	
14	70	82	182	658	458	586	590	615	406		133	59	78	
15	75	83	179	646	454	587	591	630	406		133	59	78	
16	80	83	169	577	441	588	593	616	410		133	59	79	
17	85	83	162	546	418	584	596	590	416		133	60	79	
18	90	82	157	522	400	579	594	588	420		133	60	79	
19	95	81	150	496	369	568	585	583	432		133	60	79	
20	100	81	148	485	352	559	577	567	437		133	60	79	
21	105	80	142	460	327	544	562	541	450		133	60	79	
22	110	80	140	446	316	535	554	527	456		133	61	79	
23	115	80	138	439	306	528	545	513	460		133	61	79	
24	120	80	135	424	290	517	530	502	465		133	61	79	
25	125	80	134	422	281	510	521	492	465		133	61	79	
26	130	79	132	409	275	503	513	471	464		133	61	79	
27	135	80	130	401	266	495	502	448	462		133	61	79	
28	140	80	129	391	258	484	489	429	458		132	63	79	
29	145	81	128	385	250	476	482	420	455		133	63	79	
30	150	83	128	382	244	468	475	412	451		133	63	79	

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	3

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	28.66		Meter Box (A)	0.977
End	28.48			
Duration of Test, Min		150		

Leak Check, cfm @ in Hg	
Train A	.005@6

Maximum Vacuum	
Train A	
0.00	

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H		Flue Draft	Fuel Weight	Weight Loss	Train A Volume		Train A Proportional Rate		Train A Vacuum, In. Hg	
0	0.052	1.00		-0.062	21.40	21.40	373.800		100.00		0.00	
5	0.052	1.00		-0.085	20.20	1.20	376.710		100.72		0.00	
10	0.052	1.00		-0.088	18.70	1.50	379.580		101.05		0.00	
15	0.052	1.00		-0.088	17.00	1.70	382.480		102.72		0.00	
20	0.052	1.00		-0.085	15.50	1.50	385.380		102.61		0.00	
25	0.052	1.00		-0.085	14.00	1.50	388.250		101.47		0.00	
30	0.052	1.00		-0.085	12.50	1.50	391.170		102.93		0.00	
35	0.052	1.00		-0.082	11.20	1.30	394.200		106.12		0.00	
40	0.052	1.00		-0.080	10.10	1.10	397.210		105.02		0.00	
45	0.052	1.00		-0.079	9.10	1.00	400.080		99.59		0.00	
50	0.052	1.00		-0.078	8.20	0.90	403.020		101.86		0.00	
55	0.052	1.00		-0.078	7.30	0.90	405.880		98.90		0.00	
60	0.052	1.00		-0.078	6.40	0.90	408.680		96.98		0.00	
65	0.052	1.00		-0.080	5.40	1.00	411.630		102.41		0.00	
70	0.052	1.00		-0.080	4.50	0.90	414.570		101.83		0.00	
75	0.052	1.00		-0.078	3.80	0.70	417.380		97.10		0.00	
80	0.052	1.00		-0.073	3.30	0.50	420.400		103.34		0.00	
85	0.052	1.00		-0.070	2.80	0.50	423.510		105.83		0.00	
90	0.052	1.00		-0.070	2.50	0.30	426.230		92.19		0.00	
95	0.052	1.00		-0.068	2.10	0.40	429.210		100.42		0.00	
100	0.052	1.00		-0.068	1.90	0.20	432.160		99.25		0.00	
105	0.052	1.00		-0.065	1.60	0.30	435.210		102.11		0.00	
110	0.052	1.00		-0.060	1.40	0.20	438.300		103.27		0.00	
115	0.052	1.00		-0.060	1.20	0.20	440.940		88.09		0.00	
120	0.052	1.00		-0.060	1.00	0.20	444.010		102.18		0.00	
125	0.052	1.00		-0.060	0.90	0.10	446.950		97.77		0.00	
130	0.052	1.00		-0.060	0.70	0.20	449.850		96.27		0.00	
135	0.052	1.00		-0.058	0.60	0.10	452.800		97.77		0.00	
140	0.052	1.00		-0.055	0.40	0.20	455.720		96.69		0.00	
145	0.052	1.00		-0.054	0.20	0.20	458.650		96.94		0.00	
150	0.052	1.00		-0.053	0.00	0.20	461.570		96.61		0.00	

Test Engineer: _____

Date: 12/13/14

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 3

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0400	159	0.2000
A2	0.0440	159	0.2098
A3	0.0480	159	0.2191
A4	0.0460	159	0.2145
A Center	0.0540	159	0.2324
B1	0.0420	159	0.2049
B2	0.0480	159	0.2191
B3	0.0420	159	0.2049
B4	0.0360	159	0.1897
B Center	0.0520	159	0.2280
Averages	0.0452	159	0.2078

Tunnel Diameter	**6.000**	inches
Tunnel Static	**-0.390**	in. H2O
Tunnel Area	0.19635	Ft2
Pitot Correction	0.9025	factor
Baro. Pressure	28.66	
Pitot Factor	**0.99**	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	15.299	Ft/ Sec
Initial Flow	**141.32**	Ft3/min

Test Engineer: _____ Date: 12/13/14

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 3

Intertek Equipment No.'s 19683, 19684

SAMPLE COMPONET	REAGENT	FILTER # OR	WEIGHTS			
			FINAL, mg	TARE, mg	BLANK, mg/ml	PARTICULATE, mg
FRONT FILTER CATCH	FILTER	476	778.7	763.5		15.20
REAR FILTER CATCH	FILTER	489	129.9	130.2		-0.30
RINSE OF PROBE &	ACETONE	70	97398.2	97395.3	0.007	2.41
RINSE OF IMPINGER SET	WATER	230	101178.8	101176.4	0.0035	1.60
RINSE OF IMPINGER SET	METHANE	150	97907.3	97904	0.0007	3.20
RINSE OF FILTER ASSEMBLY & GAS TRAIN -	ACETONE	55	107982.4	107981.4	0.007	0.62
					TOTAL:	22.72

EQUATIONS

FRONT FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
REAR FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
RINSE OF PROBE & FILTER ASSEMBLY - FRONT	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF IMPINGER SET	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF FILTER ASSEMBLY & GAS TRAIN - BACK	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

Test Engineer: _____ Date: 11/13/14

Intertek

TEST RESULTS
EPA METHOD 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 4

Dry Burn-Rate, kg/hr:	**1.33**	
Emission-Rate, g/hr:	**1.50**	
Duration of Test, Minutes	330	
Dry Gas Meter Standardization	Train A	
Dry Gas Meter Beginning Reading, ft^3	462.204	
Dry Gas Meter Ending Reading, ft^3	657.334	
Barometric Pressure Correction Factor	0.956	
Dry Gas Meter Calibration Factors (γ factors)	0.977	
Dry Gas Meter Temperature Factors	0.980	
Dry Gas Meter Delta-H Correction Factors	1.002	
Dry Gas Meter STD Volume Sampled, ft^3	**179.088**	
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**145.714**	
Total Tunnel Volume, scf	**48085.603**	
Emission Caclulations	Train A	
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	268.503	
Sample Particulate Mass, mg	30.7	
Total Emissions, grams	8.242	
Emission-Rate, g/hr	1.50	
Adjusted Emission Rates, g/hr	**2.55**	
Operating Parameters	Train A	
Max Filter Temperature, °F	133	
Post-Test Leak Check, cfm @ in. Hg vac.	0	
Average Firebox Surface Temperture delta-T, °F	104	
Maximum Ambient Temperture, °F	80	
Mimimum Ambient Temperature, °F	76	
Fuel Properties		
Wet Fuel Load Weight, lb.	19.60	
Dry-Basis Fuel Load Moisture Content, %	21.27	
Wet-Basis Fuel Load Moisture Content, %	17.54	

Test Engineer: _____

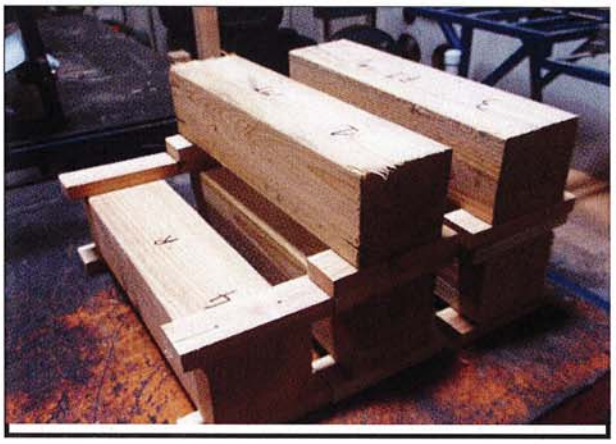
Date: 12/15/14

Intertek

Run Notes
EPA Methods 28 and 5G-3

PROJECT / TEST INFORMATION	
Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	4
Date tunnel cleaned:	10/27/2014
Purpose of Test	Certification

Appliance Information		
Appliance Type:	2	1 - Catalytic 2 - Non - Catalytic 3 - Pellet 4 - Hydronic
Firebox Volume, ft^3:	3.01	N/A for pellet type
Convection Blower	2	1 - No Fan 2 - Fan Optional 3 - Fan Standard



Test Settings	
Primary Air:	1.25" from full closed.
Secondary Air:	Fixed
Control Board:	NA
Blower/Fan:	On high

Pre- Burn Activities

Time	Activity
	At 41 minutes removed .5 pounds of fuel.

Start-Up Procedure	
Loading of fuel, sec. :	loaded by 55 seconds
Fuel-loading door :	Closed by 65 seconds
Primary air:	At test setting for entire test
Secondary air:	Fixed
Control board:	NA
Blower / fan:	Off for the first 30 minutes then turned to high

Other Notes

Timed air set at zero minutes

Test Engineer: _____ Date: 12/13/14

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	4

Firebox Volume, ft^3:	3.01

Calibration Reference ID		
Set meter to Species 1		
Set Temperature to 70F	12%	**12.0**
Set pin setting to 444	22%	**22.0**

PRE-BURN FUEL PROPERTIES

Eq. ID No.:		Time:	15:30	Temp.,°F:	75
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	**24.00**		**24.2**	**23.8**	**24.5**
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total Weight		**0.0**	Average, %db		**24.2**

Allowable Fuel Load Range: **19.0** to **23.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:			Time:	15:30	Temp.,°F:	75
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	**15.50**		**19.60**	**20.0**	**23.3**	**21.9**
2				**19.4**	**18.3**	**21.0**
3				**20.5**	**20.6**	**20.4**
4				**21.9**	**22.8**	**21.9**
5				**25.2**	**22.1**	**19.8**
6						
7						
8						
Totals		0.0	19.6			
% of Weight		0	100			
Total weight, wet, lb.		**19.60**		Average Moisture, dry		**21.27**
Total weight, dry, kg		7.33		Average Moisture, wet		17.54

Test Engineer: BD

Date: 12/15/14

Intertek

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	4

EPA Method 28
Pre Burn Data

Coal Bed Range	4.0	to	4.9

Average Firebox Temp, °F	356.2

Final Coal Bed Wt, lb	4.8

	Temperature Data												
Duration, Minutes	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom		Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	83	174	540	536	562	607	611	569	577		-0.075	8.20	3.40
10	80	130	407	445	568	588	601	562	552.8		-0.062	7.10	1.10
20	79	119	368	371	546	550	538	538	508.6		-0.055	6.50	0.60
30	78	114	355	327	523	521	515	512	479.6		-0.05	5.90	0.60
40	77	108	303	392	499	497	423	490	460.2		-0.042	5.60	0.30
50	76	104	265	246	456	455	338	468	392.6		-0.04	5.00	0.60
60	77	101	250	221	428	425	305	448	365.4		-0.035	4.90	0.10
65	77	101	244	214	418	415	294	440	356.2		-0.033	4.80	0.10

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID No:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run No:	4

Temperature Data

Firebox Temp Start	354.8
Firebox Temp End	250.8
Firebox Delta-T	104.0

Max Filter Temps	
Train A	
133	

Interval	10	Duration of Test, Min	330

Time		Temperature Data												
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom	Catalyst Outlet	Train A Filter	Impinger Exit	Train A DGM	
0	0	77	101	243	213	417	413	292	439		132	77	76	
1	10	79	145	605	301	378	371	358	409		132	65	76	
2	20	79	158	619	472	391	377	473	392		133	59	77	
3	30	80	135	487	516	408	395	518	381		132	57	77	
4	40	78	132	474	420	421	406	380	372		133	57	78	
5	50	79	130	466	399	433	417	362	362		133	59	78	
6	60	79	127	447	389	451	427	377	353		133	60	78	
7	70	79	124	426	367	470	431	403	346		133	60	78	
8	80	79	121	411	349	481	435	421	340		133	61	79	
9	90	79	118	396	333	485	435	438	335		133	62	79	
10	100	79	114	367	316	482	438	456	332		133	62	79	
11	110	78	109	318	288	471	439	452	330		133	62	79	
12	120	78	105	301	258	458	428	416	328		133	62	79	
13	130	78	103	281	231	444	413	378	325		133	62	79	
14	140	78	102	275	223	437	407	365	324		132	62	79	
15	150	78	100	269	211	426	396	343	321		132	62	79	
16	160	78	100	262	202	420	388	329	317		132	62	79	
17	170	78	98	254	194	414	380	324	315		133	62	79	
18	180	78	98	252	189	402	370	325	313		132	62	79	
19	190	79	99	254	186	394	364	344	316		132	62	79	
20	200	77	97	249	184	388	362	349	321		132	61	79	
21	210	77	97	250	183	386	362	348	325		132	61	79	
22	220	77	97	247	182	385	362	346	326		132	60	79	
23	230	77	97	247	181	383	365	337	329		132	60	79	
24	240	77	96	245	179	375	363	323	323		132	60	79	
25	250	77	96	241	177	370	359	307	346		132	60	79	
26	260	77	95	231	174	363	352	295	347		132	60	79	
27	270	77	95	224	168	353	343	282	347		132	61	79	
28	280	77	94	219	163	345	336	271	345		132	61	79	
29	290	76	93	210	158	335	327	253	341		133	61	79	
30	300	76	92	206	153	326	319	242	334		133	61	79	
31	310	76	92	200	148	316	312	231	328		133	61	79	
32	320	76	91	193	147	306	303	220	320		133	62	79	
33	330	76	91	187	139	296	296	210	313		133	62	79	

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	30-Oct-14
Test Run Number:	4

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	28.61		Meter Box (A)	0.977
End	28.59			
Duration of Test, Min		330		

Leak Check, cfm @ in Hg	
Train A	.006@6

Maximum Vacuum	
Train A	
0.00	

	Particulate Sampling Data										
Time	Tunnel Delta-P	Train A Delta-H		Flue Draft	Fuel Weight	Weight Loss	Train A Volume		Train A Proportional Rate		Train A Vacuum, In. Hg	
0	0.052	1.00		-0.033	19.60	19.60	462.204		99.99		0.00	
10	0.052	1.00		-0.080	17.90	1.70	468.120		103.84		0.00	
20	0.052	1.00		-0.080	15.50	2.40	473.950		103.23		0.00	
30	0.052	1.00		-0.070	13.80	1.70	479.760		100.95		0.00	
40	0.052	1.00		-0.070	12.10	1.70	485.590		100.85		0.00	
50	0.052	1.00		-0.068	10.50	1.60	491.440		101.02		0.00	
60	0.052	1.00		-0.063	9.10	1.40	497.270		100.42		0.00	
70	0.052	1.00		-0.063	7.80	1.30	503.170		101.37		0.00	
80	0.052	1.00		-0.062	6.70	1.10	509.120		101.78		0.00	
90	0.052	1.00		-0.060	5.70	1.00	515.020		100.66		0.00	
100	0.052	1.00		-0.052	4.90	0.80	521.220		105.41		0.00	
110	0.052	1.00		-0.050	4.40	0.50	526.780		94.12		0.00	
120	0.052	1.00		-0.045	4.00	0.40	532.750		100.70		0.00	
130	0.052	1.00		-0.042	3.70	0.30	539.120		107.26		0.00	
140	0.052	1.00		-0.040	3.40	0.30	544.760		94.88		0.00	
150	0.052	1.00		-0.038	3.10	0.30	550.550		97.23		0.00	
160	0.052	1.00		-0.038	2.90	0.20	556.370		97.74		0.00	
170	0.052	1.00		-0.038	2.70	0.20	562.350		100.24		0.00	
180	0.052	1.00		-0.035	2.50	0.20	568.250		98.90		0.00	
190	0.052	1.00		-0.035	2.20	0.30	574.240		100.50		0.00	
200	0.052	1.00		-0.035	2.00	0.20	580.170		99.32		0.00	
210	0.052	1.00		-0.035	1.80	0.20	586.020		97.98		0.00	
220	0.052	1.00		-0.035	1.60	0.20	591.960		99.48		0.00	
230	0.052	1.00		-0.035	1.30	0.30	597.880		99.15		0.00	
240	0.052	1.00		-0.034	1.20	0.10	603.870		100.23		0.00	
250	0.052	1.00		-0.034	1.00	0.20	609.850		100.06		0.00	
260	0.052	1.00		-0.032	0.80	0.20	615.760		98.80		0.00	
270	0.052	1.00		-0.031	0.70	0.10	621.810		101.14		0.00	
280	0.052	1.00		-0.030	0.50	0.20	627.550		95.88		0.00	
290	0.052	1.00		-0.029	0.40	0.10	633.710		102.80		0.00	
300	0.052	1.00		-0.029	0.30	0.10	639.650		99.04		0.00	
310	0.052	1.00		-0.027	0.20	0.10	645.510		97.70		0.00	
320	0.052	1.00		-0.027	0.10	0.10	651.560		100.78		0.00	
330	0.052	1.00		-0.023	0.00	0.10	657.334		96.18		0.00	

Test Engineer: _____

Date: 12/15/14

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 4

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0460	101	0.2145
A2	0.0500	101	0.2236
A3	0.0440	101	0.2098
A4	0.0340	101	0.1844
A Center	0.0520	101	0.2280
B1	0.0360	101	0.1897
B2	0.0480	101	0.2191
B3	0.0520	101	0.2280
B4	0.0300	101	0.1732
B Center	0.0520	101	0.2280
Averages	0.0444	101	0.2053

Tunnel Diameter	**6.000**	inches
Tunnel Static	**-0.388**	in. H2O
Tunnel Area	0.19635	Ft2
Pitot Correction	0.9002	factor
Baro. Pressure	28.61	
Pitot Factor	**0.99**	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	14.404	Ft/ Sec
Initial Flow	**146.55**	Ft3/min

Test Engineer: _____ Date: 12/15/14

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 30-Oct-14
Test Run Number: 4

Intertek Equipment No.'s 19683, 19684

SAMPLE COMPONET	REAGENT	FILTER # OR	WEIGHTS			
			FINAL, mg	TARE, mg	BLANK, mg/ml	PARTICULATE, mg
FRONT FILTER CATCH	FILTER	477	770.8	757.3		13.50
REAR FILTER CATCH	FILTER	490	135.9	135.9		0.00
RINSE OF PROBE &	ACETONE	50	97871.4	97868.4	0.007	2.65
RINSE OF IMPINGER SET	WATER	225	106933.5	106928.1	0.0035	4.61
RINSE OF IMPINGER SET	METHANE	150	104990.6	104981.9	0.0007	8.60
RINSE OF FILTER ASSEMBLY & GAS TRAIN -	ACETONE	80	109122.7	109120.8	0.007	1.34
					TOTAL:	30.70

EQUATIONS

FRONT FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
REAR FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
RINSE OF PROBE & FILTER ASSEMBLY - FRONT	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF IMPINGER SET	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF FILTER ASSEMBLY & GAS TRAIN - BACK	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

Test Engineer: _____

Date: 12/15/14

Intertek

TEST RESULTS
EPA METHOD 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 31-Oct-14
Test Run Number: 5

Dry Burn-Rate, kg/hr:		**1.05**
Emission-Rate, g/hr:		**1.24**
Duration of Test, Minutes	410	
Dry Gas Meter Standardization	Train A	
Dry Gas Meter Beginning Reading, ft^3	657.702	
Dry Gas Meter Ending Reading, ft^3	898.397	
Barometric Pressure Correction Factor	0.943	
Dry Gas Meter Calibration Factors (γ factors)	0.977	
Dry Gas Meter Temperature Factors	0.988	
Dry Gas Meter Delta-H Correction Factors	1.002	
Dry Gas Meter STD Volume Sampled, ft^3	**219.571**	
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**148.863**	
Total Tunnel Volume, scf	**61033.752**	
Emission Caclulations	Train A	
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	277.969	
Sample Particulate Mass, mg	30.5	
Total Emissions, grams	8.466	
Emission-Rate, g/hr	1.24	
Adjusted Emission Rates, g/hr	**2.17**	
Operating Parameters	Train A	
Max Filter Temperature, °F	133	
Post-Test Leak Check, cfm @ in. Hg vac.	0	
Average Firebox Surface Temperture delta-T, °F	93.4	
Maximum Ambient Temperture, °F	78	
Mimimum Ambient Temperature, °F	74	
Fuel Properties		
Wet Fuel Load Weight, lb.	19.20	
Dry-Basis Fuel Load Moisture Content, %	21.40	
Wet-Basis Fuel Load Moisture Content, %	17.63	

Test Engineer: _____

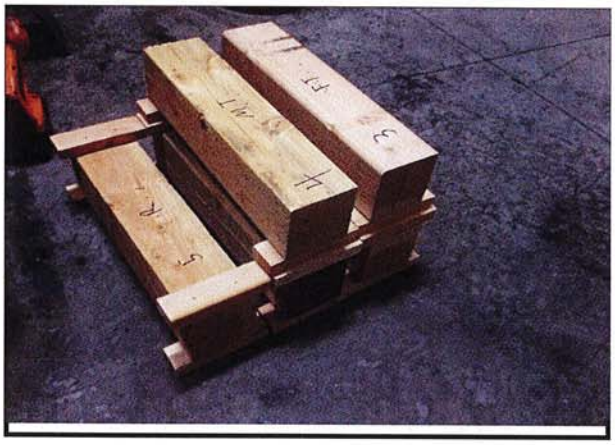
Date: 12/15/14

Intertek

Run Notes
EPA Methods 28 and 5G-3

PROJECT / TEST INFORMATION	
Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	31-Oct-14
Test Run Number:	5
Date tunnel cleaned:	10/27/2014
Purpose of Test	Certification

Appliance Information		
Appliance Type:	2	1 - Catalytic 2 - Non - Catalytic 3 - Pellet 4 - Hydronic
Firebox Volume, ft^3:	3.01	N/A for pellet type
Convection Blower	2	1 - No Fan 2 - Fan Optional 3 - Fan Standard



Test Settings	
Primary Air:	0.85" from full closed.
Secondary Air:	Fixed
Control Board:	NA
Blower/Fan:	Off, fan confirmation test.

Pre- Burn Activities

Time	Activity
	At 45 minutes raked coals

Start-Up Procedure	
Loading of fuel, sec. :	Loaded by 45 seconds.
Fuel-loading door :	Closed by 55 seconds.
Primary air:	At test setting entire test.
Secondary air:	Fixed
Control board:	NA
Blower / fan:	Off, fan confirmation test

Other Notes

At zero minutes timed air was activated.

Test Engineer: _____ Date: 12/15/14

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	31-Oct-14
Test Run Number:	5

Firebox Volume, ft^3:	3.01

Calibration Reference ID		
Set meter to Species 1		
Set Temperature to 70F	12%	**12.0**
Set pin setting to 444	22%	**22.0**

PRE-BURN FUEL PROPERTIES

Eq. ID No.:		Time:	8:40	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	**24.00**		**19.8**	**20.1**	**20.0**
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
Total Weight		**0.0**	Average, %db		**20.0**

Allowable Fuel Load Range: **19.0** to **23.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:			Time:	8:40	Temp.,°F:	68
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	**15.50**		**19.20**	**21.2**	**21.7**	**19.0**
2				**20.3**	**22.3**	**22.7**
3				**24.5**	**23.0**	**25.7**
4				**18.9**	**22.6**	**20.3**
5				**18.9**	**19.9**	**20.0**
6						
7						
8						
Totals		0.0	19.2			
% of Weight		0	100			
Total weight, wet, lb.		**19.20**		Average Moisture, dry		**21.40**
Total weight, dry, kg		7.17		Average Moisture, wet		17.63

Test Engineer: _____

Date: 12/15/14

Intertek

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	31-Oct-14
Test Run Number:	5

EPA Method 28
Pre Burn Data

Coal Bed Range	3.9	to	4.8

Average Firebox Temp, °F	406.4

Final Coal Bed Wt, lb	4.7

	Temperature Data												
Duration, Minutes	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom		Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	80	149	459	558	564	590	709	581	600.4		-0.07	7.30	2.60
10	77	113	354	526	552	565	761	572	595.2		-0.058	6.50	0.80
20	76	107	332	471	523	528	742	541	561		-0.052	5.90	0.60
30	77	103	327	437	501	504	741	517	540		-0.05	5.30	0.60
40	76	100	292	407	481	483	667	492	506		-0.042	5.00	0.30
50	77	100	278	374	457	457	586	470	468.8		-0.041	4.80	0.20
60	76	94	251	337	424	421	511	443	427.2		-0.04	4.80	0.00
70	76	93	239	318	407	403	480	424	406.4		-0.035	4.70	0.10

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID No:	PRT1410241418-001-001
Test Date:	31-Oct-14
Test Run No:	5

Temperature Data

Firebox Temp Start	404.4
Firebox Temp End	311
Firebox Delta-T	**93.4**

Max Filter Temps	
Train A	
133	

Interval	10	Duration of Test, Min	410

Time		Temperature Data												
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Right	Firebox Left	Firebox Back	Firebox Bottom	Catalyst Outlet	Train A Filter	Impinger Exit	Train A DGM	
0	0	76	92	239	316	406	401	477	422		132	78	73	
1	10	76	118	478	315	374	366	420	399		132	56	73	
2	20	77	140	576	462	373	365	488	390		133	53	73	
3	30	76	114	399	516	396	381	536	387		132	53	73	
4	40	76	111	395	486	404	382	525	378		132	54	74	
5	50	76	111	409	490	411	385	543	367		132	55	74	
6	60	76	110	402	505	422	393	561	356		132	55	74	
7	70	77	109	396	498	431	400	572	345		132	57	74	
8	80	77	108	391	492	439	408	584	337		132	57	74	
9	90	77	109	397	494	448	415	597	331		132	58	74	
10	100	78	107	384	497	457	424	615	325		132	59	74	
11	110	78	105	369	486	460	430	630	322		132	59	74	
12	120	77	102	331	456	457	430	649	320		132	60	75	
13	130	77	100	315	416	451	428	645	319		132	61	75	
14	140	77	98	294	394	445	425	642	318		132	62	75	
15	150	76	96	276	370	436	415	625	318		132	62	75	
16	160	76	95	267	350	430	405	600	319		132	62	75	
17	170	76	94	258	334	425	397	583	319		132	63	75	
18	180	76	92	250	320	419	388	566	319		132	63	75	
19	190	75	92	244	306	409	375	552	319		132	64	75	
20	200	75	91	241	299	403	367	542	321		132	64	75	
21	210	76	90	236	390	397	359	531	323		132	65	75	
22	220	75	89	232	284	391	353	520	324		132	55	75	
23	230	75	90	232	280	387	350	512	325		132	48	75	
24	240	76	90	230	276	381	347	502	326		132	48	75	
25	250	75	89	228	274	377	346	497	326		132	49	75	
26	260	75	88	226	271	373	345	488	328		131	50	75	
27	270	75	89	226	268	370	344	476	330		132	51	75	
28	280	76	89	223	267	368	343	457	330		132	52	75	
29	290	75	88	221	264	368	341	446	330		132	52	75	
30	300	75	88	215	262	363	342	436	334		132	52	75	
31	310	75	88	213	259	356	341	428	339		132	53	75	
32	320	75	87	210	253	351	336	418	341		132	52	75	
33	330	75	87	208	250	347	334	414	342		132	52	75	
34	340	75	87	207	247	342	327	401	342		132	52	75	
35	350	75	87	206	244	339	321	400	341		132	53	75	
36	360	74	86	203	242	336	318	402	341		132	51	75	
37	370	74	86	201	240	332	313	399	341		132	51	75	
38	380	74	85	196	235	328	308	391	341		132	50	75	
39	390	75	85	195	233	325	302	386	339		132	50	75	
40	400	74	86	195	228	322	295	385	336		132	51	74	
41	410	74	86	193	226	320	292	385	332		132	51	74	

Test Engineer: _____

Date: 12/15/14

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	G101665917
Manufacturer:	Hearth & Home
Model:	Explorer III
Sample ID Number:	PRT1410241418-001-001
Test Date:	31-Oct-14
Test Run Number:	5

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	28.23		Meter Box (A)	0.977
End	28.20			
Duration of Test, Min		410		

Leak Check, cfm @ in Hg	
Train A	.004@8

Maximum Vacuum	
Train A	
0.00	

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H		Flue Draft	Fuel Weight	Weight Loss	Train A Volume		Train A Proportional Rate		Train A Vacuum, In. Hg	
0	0.050	1.00		-0.035	19.20	19.20	657.702		100.00		0.00	
10	0.050	1.00		-0.072	18.10	1.10	663.550		101.86		0.00	
20	0.050	1.00		-0.078	15.90	2.20	669.270		101.51		0.00	
30	0.050	1.00		-0.062	14.40	1.50	675.150		102.07		0.00	
40	0.050	1.00		-0.062	13.20	1.20	681.150		103.68		0.00	
50	0.050	1.00		-0.063	11.80	1.40	687.020		101.44		0.00	
60	0.050	1.00		-0.063	10.40	1.40	692.950		102.38		0.00	
70	0.050	1.00		-0.061	9.20	1.20	698.730		99.71		0.00	
80	0.050	1.00		-0.061	8.10	1.10	704.670		102.38		0.00	
90	0.050	1.00		-0.060	7.00	1.10	710.450		99.71		0.00	
100	0.050	1.00		-0.060	6.00	1.00	716.550		105.04		0.00	
110	0.050	1.00		-0.058	5.20	0.80	722.140		96.09		0.00	
120	0.050	1.00		-0.052	4.70	0.50	727.980		99.93		0.00	
130	0.050	1.00		-0.049	4.30	0.40	733.920		101.46		0.00	
140	0.050	1.00		-0.047	4.00	0.30	739.750		99.40		0.00	
150	0.050	1.00		-0.044	3.70	0.30	745.620		99.91		0.00	
160	0.050	1.00		-0.042	3.50	0.20	751.650		102.54		0.00	
170	0.050	1.00		-0.042	3.40	0.10	757.380		97.35		0.00	
180	0.050	1.00		-0.040	3.20	0.20	763.250		99.55		0.00	
190	0.050	1.00		-0.040	3.00	0.20	769.230		101.41		0.00	
200	0.050	1.00		-0.038	2.90	0.10	775.070		98.95		0.00	
210	0.050	1.00		-0.038	2.70	0.20	780.930		99.20		0.00	
220	0.050	1.00		-0.037	2.60	0.10	786.770		98.77		0.00	
230	0.050	1.00		-0.037	2.40	0.20	792.630		99.20		0.00	
240	0.050	1.00		-0.035	2.20	0.20	798.650		101.91		0.00	
250	0.050	1.00		-0.035	2.10	0.10	804.450		98.09		0.00	
260	0.050	1.00		-0.035	1.90	0.20	810.360		99.86		0.00	
270	0.050	1.00		-0.034	1.80	0.10	816.200		98.77		0.00	
280	0.050	1.00		-0.033	1.60	0.20	822.060		99.11		0.00	
290	0.050	1.00		-0.033	1.40	0.20	828.020		100.71		0.00	
300	0.050	1.00		-0.033	1.30	0.10	833.950		100.20		0.00	
310	0.050	1.00		-0.032	1.10	0.20	839.860		99.86		0.00	
320	0.050	1.00		-0.032	1.00	0.10	845.640		97.58		0.00	
330	0.050	1.00		-0.030	0.90	0.10	851.480		98.59		0.00	
340	0.050	1.00		-0.030	0.80	0.10	857.650		104.16		0.00	
350	0.050	1.00		-0.030	0.70	0.10	863.320		95.72		0.00	
360	0.050	1.00		-0.030	0.50	0.20	869.230		99.68		0.00	
370	0.050	1.00		-0.030	0.40	0.10	875.080		98.67		0.00	
380	0.050	1.00		-0.030	0.30	0.10	880.810		96.55		0.00	
390	0.050	1.00		-0.030	0.20	0.10	886.740		99.92		0.00	
400	0.050	1.00		-0.030	0.10	0.10	892.770		101.89		0.00	
410	0.050	1.00		-0.030	0.00	0.10	898.397		95.08		0.00	

Test Engineer: _____

Date: 12/15/14

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 31-Oct-14
Test Run Number: 5

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0400	94	0.2000
A2	0.0460	94	0.2145
A3	0.0480	94	0.2191
A4	0.0420	94	0.2049
A Center	0.0520	94	0.2280
B1	0.0480	94	0.2191
B2	0.0520	94	0.2280
B3	0.0480	94	0.2191
B4	0.0340	94	0.1844
B Center	0.0500	94	0.2236
Averages	0.046	94	0.2111

Tunnel Diameter	**6.000**	inches
Tunnel Static	**-0.380**	in. H2O
Tunnel Area	0.19635	Ft2
Pitot Correction	0.9350	factor
Baro. Pressure	28.23	
Pitot Factor	**0.99**	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	14.821	Ft/ Sec
Initial Flow	**150.67**	Ft3/min

Test Engineer: _____ Date: 11/05/14

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: G101665917
Manufacturer: Hearth & Home
Model: Explorer III
Sample ID Number: PRT1410241418-001-001
Test Date: 31-Oct-14
Test Run Number: 5

Intertek Equipment No.'s 19683, 19684

SAMPLE COMPONET	REAGENT	FILTER # OR	WEIGHTS			
			FINAL, mg	TARE, mg	BLANK, mg/ml	PARTICULATE, mg
FRONT FILTER CATCH	FILTER	478	773	760		13.00
REAR FILTER CATCH	FILTER	491	127	127.2		-0.20
RINSE OF PROBE &	ACETONE	55	106758.2	106755.4	0.007	2.42
RINSE OF IMPINGER SET	WATER	225	102114.4	102105.1	0.0035	8.51
RINSE OF IMPINGER SET	METHANE	150	108069	108062.5	0.0007	6.40
RINSE OF FILTER ASSEMBLY & GAS TRAIN -	ACETONE	95	110223.4	110222.4	0.007	0.34
					TOTAL:	30.46

EQUATIONS

FRONT FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
REAR FILTER CATCH	Final, mg - Tare, mg = Particulate, mg
RINSE OF PROBE & FILTER ASSEMBLY - FRONT	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF IMPINGER SET	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg
RINSE OF FILTER ASSEMBLY & GAS TRAIN - BACK	(Final, mg - Tare, mg) - (Blank, mg/ml x Volume, ml) = Particulate, mg

Test Engineer: _____

Date: 11/15/14