GreenTech Mfg.

2716 Crescent Drive,
International Falls, MN
56649

Model:
Crown Royal RS7300E
EPA Certification Testing
Project # 004-HHW-023-1

Prepared by Dirigo Laboratories, Inc.
May 5, 2014

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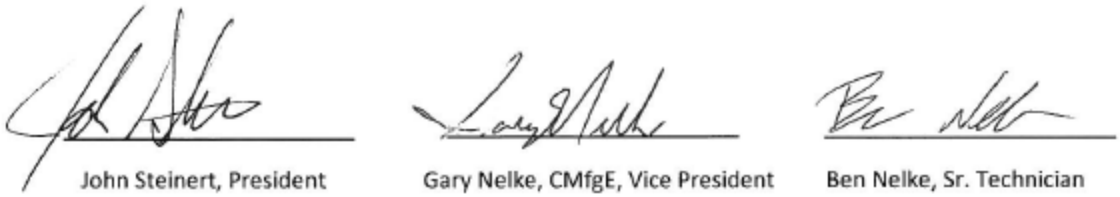
Contents

Affidavit:

All certification testing and associated procedures were conducted at Dirigo Laboratories, Inc. beginning 3/10/2014 and ending on 4/3/2014. GreenTech Mfg. is located at 2716 Crescent Dr. International Falls, MN 56649. All EPA protocols from Methods 1, 2, 3, 4, 5 and 28 WHH were followed in the testing, sampling, analysis, and calibrations for these tests and all results are based on these methods. Particulate sampling was performed per EPA Method 5G sampling option 3 and ASTM E2515 *Standard Test Method for Determination of Particulate Matter Emissions Collected in a Dilution Tunnel.* Efficiency was calculated using EPA Method 28 WHH and checked using CAN/CSA-B415.1-10 *Performance Testing of Solid-Fuel Burning Heating Appliances*.

Dirigo Laboratories is accredited by the U.S. Environmental Protection Agency for the certification of wood heaters pursuant to subpart AAA of 40 CFR Part 60, New Source Performance Standards For Residential Wood Heaters- Methods 28, 28A, 28 WHH, 5G, 5H. Certificate Numbers 9 and 9M (mobile). See Appendix H for Certification.

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



John Steinert, President | Gary Nelke, CMfgE, Vice President | Ben Nelke, Sr. Technician

Introduction:

GreenTech Manufacturing Inc. contracted with Dirigo Laboratories, Inc. to perform EPA certification testing on the Crown Royal RS7300E wood fired hydronic heater per the newly revised WHH voluntary wood fired hydronic heater program. Efficiency testing was also performed per CSA B-415.1-10 "Performance Testing of Solid-Fuel Burning Heating Appliances". All test results apply solely to the GreenTech model Crown Royal RS7300E. This test report shall not be reproduced except in full, without the written approval of Dirigo Laboratories, Inc.

Technician Notes:

Testing began on 03/11/2014

- Set up and calibration of test equipment occurred on March 10, 2014 and March 10, 2014.
- Conditioning occurred on March 10, 2014 -(over 10 hours at a medium draw).
- Prior to start of testing, the dilution tunnel was cleaned with a steel chimney brush.
- Run #1 (Cat. 4) began on March 12, 2014
- Run #2 (Cat. 1) began on March 13, 2014
- Run #3 (Cat. 2) began on March 14, 2014
- Run #4 (Cat. 3) began on March 15, 2014
- Run #5 (Cat. 2) began on April 2, 2014
- Run #6 (Cat. 2) began on April 3, 2014

Wood Heater Identification:

- Appliance Tested: *Model - Crown Royal RS7300E*
- Serial Number: *3011E*
- Manufacturer*: GreenTech Mfg.*
- Address: *2716 Crescent Drive, International Falls, MN 56649*
- Catalyst: *No*
- Heat exchange blower: *N/A*
- Type: *Hydronic Heater*
- Dry Weight = 2,353 Lbs.
- Wet Weight = 4,630 Lbs.
- Style: *Outdoor*
- Date Received: *March 4, 2014*
- Wood Heater Aging: March 10, 2014
- Testing Period – Start: *March 11, 2014* Finish: April 3, 2014
- Test Location: Dirigo Laboratories, Inc. 11785 SE Highway 212, Suite 305- Clackamas, OR 97015
- Elevation: *30 Feet above sea level*
- Test Technician(s): *Gary Nelke*, Ben Nelke, John Steinert
- Test Observer(s): Ryan Horne

The GreenTech Mfg. Model - Crown Royal RS7300E is manufactured by GreenTech Mfg. of International Falls, MN. The unit is a manually fed outdoor wood fired hydronic heater and was tested to EPA Method 28 WHH protocol. All testing was conducted by Gary Nelke, Ben Nelke and John Steinert of Dirigo Laboratories, Inc.

Statement of Estimated Uncertainty:

The combined estimated uncertainty of measurement is ± 10% for emissions results and ± 4% for efficiency results. The precision of the testing procedure cannot be specified because of differences in fueling protocols between appliances and the appliances themselves.

Test Procedures and Equipment:

All test procedures used followed EPA Methods 1, 2, 3, 4, 5g option 3, 28 WHH, ASTM 2515 and CSA B-415.1-10. See Figures 1, 2, for equipment used. See Appendix F for detailed calibration data.

Equipment List:

1. Flow Meter - Omega FTB-1421, 0.6 – 3.0 GPM – Load side.
2. Flow Meter - Omega FTB-1424, 3.0 – 30.0 GPM – Load side.
3. Flow Meter - Omega FTB-1425, 5.0-50.0 GPM – Boiler Side.
4. Flow Meter – Omega FTB-602B-T, 0.3 – 9 LPM- Load Side
5. Analyzer -California Analytical ZRE CO2/CO/O2 IR ANALYZER.
6. Delmhorst J-2000 Wood Moisture Meter.
7. Dayton 4c121 Blower for dilution tunnel -Emissions Booth #1.
8. ScienTech Balance Scale.
9. 10 lb Calibration Weight.
10. DigiWeigh Bench Shipping Scale.
11. APEX XC-60 Digital Emissions Sampling Box A.
12. APEX XC-60 Digital Emissions Sampling Box B.
13. Gast MOA-P122-AA Vacuum Pump -Analyzer.
14. Rice Lake 4'x7' floor scale w/digital weight indicator.
15. APEX AK 6000 Ambient Sampling Box.
16. Delta T- 20 junction Thermopile.

Figure 1: Sample Boxes

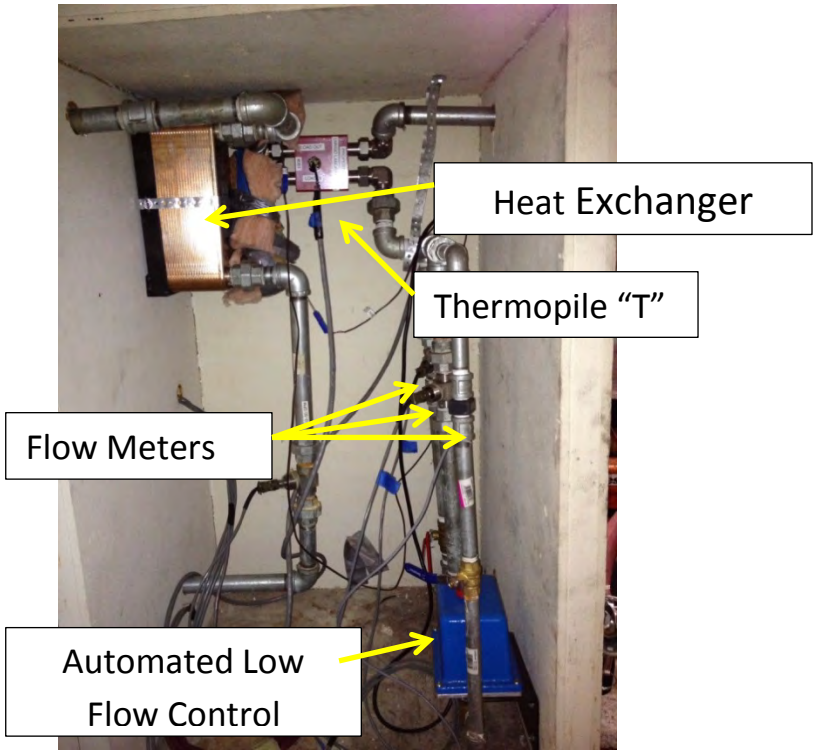


Figure 2: HEX, Flow Meters, Thermopile

Data Summary:

See Tables 1, and 2 below for individual run summary and Appendix D for run information. Drawings, operator's manual, and full EPA and CSA B415.10 run information can be found in separate electronic folders provided with this report. Hang tag information can be found in Table 3 and Weighted averages can be found in Table 4.

Table 1: Part A

Data Summary Part A

						θ	W_{fuel}	MC_{ave}	Q_{in}	Q_{out}
Category	Run No	Load% Capacity	Target Load	Actual Load	Actual Load	Test Duration	Wood Weight as-fired	Wood Moisture	Heat Input	Heat Output
			Btu/hr	Btu/hr	% of max	hrs	lb	% DB	Btu	Btu
I	2	≤ 15% of max	≤ 30,750	28,134	13.72	12.3	108.1	20.6	770,862	346,892
II	Avg. 5&6	16-24% of max	32,800 to 49,200	45,252	22.07	9.3	105.6	21.9	744,929	422,356
III	4	25-50% of max	51,250 to 102,500	95,259	46.47	5.0	109.1	21.2	774,142	476,295
IV	1	Max capacity	205,000	189,599	92.49	3.3	112.2	20.9	798,114	631,365

Table 2: Part B

Data Summary Part B

			T2 Min	E_T	E	E	$E_{g/hr}$	$E_{g/kg}$	η_{del}	η_{SLM}
Category	Run No	Load% Capacity	Min Return H_2O Temp	Total PM Emissions	PM Output Based	PM Output Based	PM Rate	PM Factor	Delivered Efficiency	Stack Loss Efficiency
			°F	g	lbs/MMBtu Output	g/MJ	g/hr	g/kg	%	%
I	2	≤ 15% of max	166.0	59.43	0.3776	0.1624	4.82	1.46	45.0	69.4
II	Avg. 5&6	16-24% of max	165.0	50.80	0.2649	0.11395	5.44	1.29	56.7	71.6
III	4	25-50% of max	154.0	41.43	0.1918	0.0825	8.29	1.01	61.5	72.7
IV	1	Max capacity	120.6	33.17	0.1157	0.0498	9.95	0.79	79.2	76.20

Table 3: Hang Tag

Hang Tag Information:

Manufacturer:	GreenTech Mfg.		
Model Number:	Crown Royal RS7300E		
Max Output Rating		189,599	Btu/hr
8-Hour Output Rating:	$Q_{out\text{-}8hr}$	60,612	Btu/hr
8-Hour Average Efficiency:	$\eta_{avg\text{-}8hr}$	58%	**(Using higher heating value)**
		63%	(Using lower heating value)
Annual Efficiency Rating:	η_{avg}	54%	**(Using higher heating value)**
		58%	(Using lower heating value)
Particle Emissions:	E_{avg}	6.18	Grams/hr (average)
		0.29	Lbs/Million Btu Output

Table 4: Weighted Average

Year Round Use Weighting:

Category	Run No.	Weighting Factor (Fi)	$\eta_{del,i} \times F_i$	$\eta_{del\text{-}LHV,i} \times F_i$	$E_{g/MJ,i} \times F_i$	$E_{g/kg,i} \times F_i$	$E_{lb/MMBtu,i} \times F_i$	$E_{g/hr,i} \times F_i$
I	2	0.437	19.66937	21.17702	0.0709688	0.6387192	0.1650112	2.10634
II	5&6	0.238	13.49341	14.52633	0.0271201	0.307496	0.0630462	1.295196
III	4	0.275	16.92075	18.216	0.0226875	0.2790425	0.052745	2.27876
IV	1	0.050	3.9595	4.2625	0.00249	0.039395	0.005785	0.4975
Totals:		**1.000**	**54.0**	**58.2**	**0.1233**	**1.26**	**0.29**	**6.18**

Stack Loss vs. Delivered Efficiency Discussion

The category 4 test run had a higher delivered efficiency than that of the CSA B415-10 stack loss method efficiency. We believe that this is attributed to the constant heat draw from the unit and the change in temperature from the beginning to the end of the test run. This results in a high heat transfer versus the lower burn rate categories which cycle and have lower temperature changes during the test runs. We believe that this could be the reason for the higher overall efficiencies typically seen in the category 4 runs.

Test Condition Summary:

All testing conditions for runs 1,2,4,5 and 6 fell within allowable specifications of Method – 28 WHH. Due to poor performance during the run #3-category 2 burn, the client opted to perform 2 additional Category 2 runs. These were runs 5&6 and an average of the results data was taken for the data summaries and hang tag.

Description:

Dimensions, air flow, firebox configuration, air supply locations, air introduction locations, and baffle locations of the wood heater are referenced below in Figures 3 through 7. The total useable firebox dimensions 10.6 Cubic Ft. Detailed firebox drawings can be found in Appendix C.

Appliance Views:

Figure 3: Airflow

CBI

Figure 4: Firebox

Firebox Dimensions: Front

CBI

Firebox Dimensions: Rear

CBI

Figure 5: Front

Figure 6: Left Side

Figure 7: Right Side

Figure 8: Rear

Process Operations:

The appliance was operated according to procedures as described in the Operations Manual. Aquastat settings, fuel bed adjustments are as described below in Table 5. All exterior draft measurements around the unit for all 4 runs were less than 1 ft^3 per minute. Test fuel configuration and loading density can be viewed in figures 12-15. See Appendix D for detailed run information.

Table 5

	Burn Category	Target BTU	Fuel Bed Adjustments		Comments
			Pre-Burn	Test Run	
Run 1	4	205,000	Added 50lbs @ 16 min.	Door open <5 minutes	Flow meter Calibrations performed every 60-120 minutes
Run 2	1	<37,500	Added 10 lbs @130 min	Door open <5 minutes	
Run 3	2	32,800-49,200	No Additions	Door open <5 minutes	
Run 4	3	51,250-102,500	Added 7 lbs. @ 175 min	Door open <5 minutes	
Run 5	2	32,800-49,200	No Additions	Door open <5 minutes	
Run 6	2	32,800-49,200	Added 15 lbs., 12 lbs. , 28 lbs.	Door open <5 minutes	

Fuel Loads

All fuel loads were calculated per EPA Method 28 WHH – Section 12.2.3

Test Fuel Properties:

All Fuel consisted of 4x4 rough sawn white oak that had been air dried to a moisure content that was within allowable limits. All test fuel charges consisted of 10 pieces of 4”x4”x23” pieces and were assembled per Method 28 WHH specifications. Figures 11 through 16 detail the fuel charges. All fuel crib moisture content and temperatures were within allowable limits. See Appendix D for detailed fuel load information.

Fuel load & Positioning

Figure 11: Category 4 - Run #1

Figure 12: Category 1 - Run #2

Figure 13: Category 2 - Run #3 –*Thrown Out*

Figure 14: Category 3 - Run #4

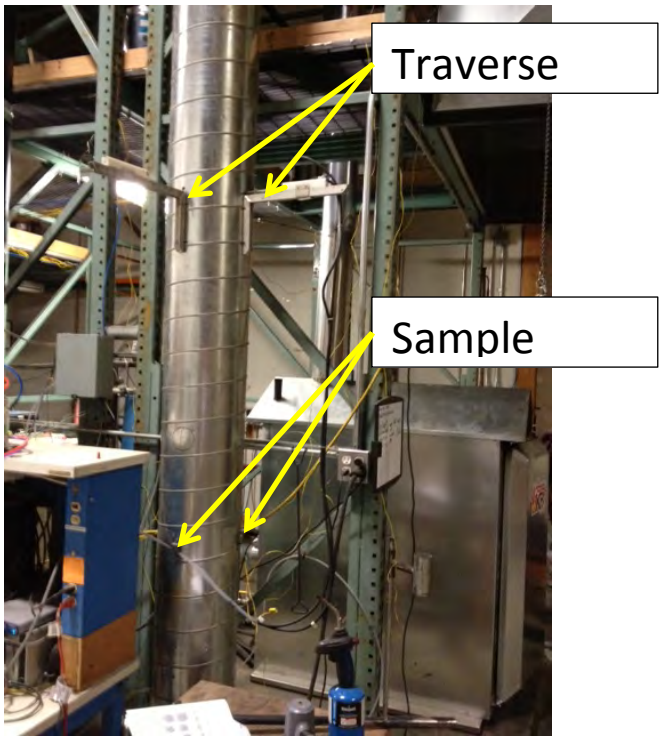
Figure 15: Category 2 – Run 5

Figure 16: Category 2 – Run 6

Sampling Locations:

Sample ports are located 16.5 feet downstream from any disturbances and 4 feet upstream from any disturbances. Flow rate traverse data was collected 12 feet downstream from any disturbances and 5.5 feet upstream from any disturbances. (See figure 17).

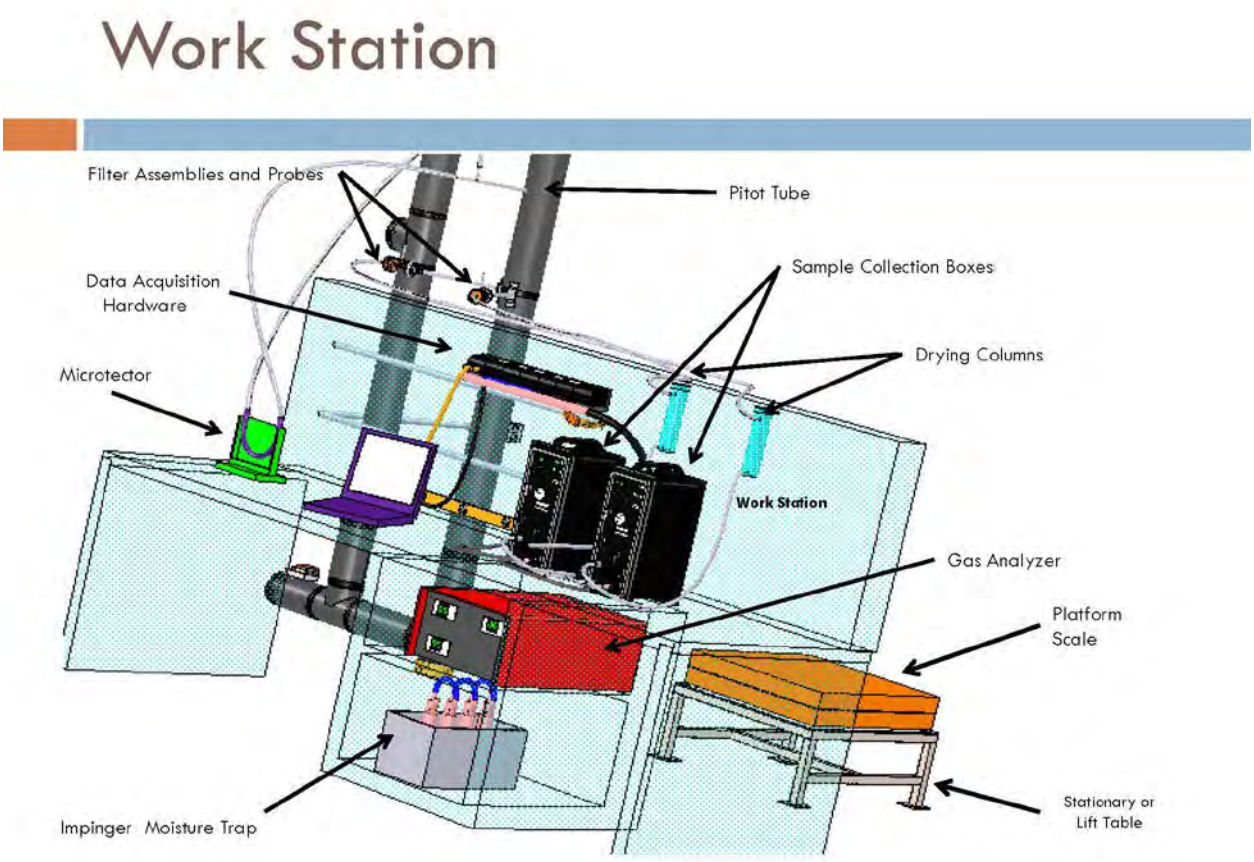
Figure 17: Sample & Traverse Points



Sampling Methods:

A dual filter dry sampling train system (ASTM 2515-10 / 5G sample option 3) was used in collecting particulate samples. The dilution tunnel is 12 inches in diameter. All particulate sampling conditions per ASTM 2515-10 and method 5G option 3 were followed.

System Schematic:



Sampling and Analytical Procedures:

All sampling and analytical procedures used followed EPA Methods 1, 2, 3, 4, 5 and 28, ASTM 2515-10, and CSA B-415.1-10. See Figure 17 for sample port locations.

Analytical Methods Description:

All sample recovery and analysis procedures followed EPA Method 5 procedures. At the end of each test run, filters were removed from their housings, dessicated for 24 hours, and then weighed to a constant weight per Method 5 section 11.0.

Quality Control and Assurance Procedures and Results:

Calibration procedures and results were conducted per ASTM 2515-10, EPA Method 1 through 5 and Method 28WHH. Calibration certificates and results can be found in Appendix F.

Test method quality control procedures (leak checks, volume meter checks, stratification checks, proportionality results) followed the procedures outlined in Method 5.

Appendices:

Appendix A: Sampling and Analytical Procedures

All Sampling and Analytical Procedures were performed by Gary Nelke, Ben Nelke and John Steinert. All procedures used were directly from ASTM 2515-10, EPA Methods 1, 2, 3, 4, 5 and 28WHH. Stack loss efficiency testing was performed to CSA B-415.1-10.

Appendix B: Alternate Procedures

Per Section 12.6 of EPA Method 28WHH, client requested two additional category 2 runs for a total of three runs. Two thirds (runs 5 & 6) were averaged and used in the calculation of the weighted average emission rate.

Appendix C: Run Information

Conditioning:

41708 Preburn

ET	SCALE	FLUE	LS TEMP	RS TEMP	BACK	TOP	BOTTOM	AVG T	FLUE	AMB
0	21.1	-0.027	6023	6024	6026	6024	6024	6024	333	66
10	18.1	-0.027	6023	6024	6026	6024	6024	6024	322	67
20	15.1	-0.027	6023	6024	6026	6024	6024	6024	290	69
30	35	-0.032	6022	6023	6025	6023	6023	6023	324	67
40	29.1	-0.034	6021	6022	6024	6022	6023	6023	332	67
50	24.1	-0.029	6021	6022	6024	6022	6022	6022	327	66
60	18.1	-0.03	6023	6024	6026	6024	6024	6024	322	67
70	15.1	-0.024	6023	6024	6026	6024	6024	6024	298	68

41708 Eval Run

ET	VOL A	Rate	Tunnel	Orifice	VAC	PR	Scale	WT CHG	Tunnel	Flue
0	0	0	0.045	0.07	-0.07	0	120.1	0	87	252
10	1.343	0	0.047	1.99	-0.84	0	113.1	0	94	334
20	2.72	0	0.045	2.02	0	0	105	0	98	342
30	4.108	0	0.046	2	-1.32	0	93.6	0	97	315
40	5.5	0	0.045	1.98	-1.39	0	81.7	0	97	312
50	6.895	0	0.045	1.97	-1.45	0	69.6	0	97	307
60	8.293	0	0.042	1.96	-0.66	0	61.1	0	96	308

41709 Eval #2 Preburn

ET	SCALE	FLUE	LS TEMP	RS TEMP	BACK	TOP	BOTTOM	AVG T	FLUE	AMB
0	52.1	-0.018	6013	6014	6016	6014	6015	6014	212	61
10	51.1	-0.01	6013	6014	6016	6014	6014	6014	197	61
20	56.5	-0.011	6013	6014	6016	6014	6015	6015	190	61
30	31.2	-0.035	6013	6014	6016	6014	6015	6014	291	61
40	25	-0.029	6014	6014	6017	6014	6015	6015	284	61
50	32.7	-0.041	6014	6015	6017	6015	6015	6015	328	62
60	25.5	-0.043	6014	6015	6017	6015	6015	6015	331	61
70	21	-0.028	6014	6015	6017	6015	6015	6015	316	60
80	23.8	-0.04	6014	6015	6017	6015	6015	6015	352	61
90	14.8	-0.031	6014	6014	6017	6014	6015	6015	331	61
100	26.9	-0.039	6014	6014	6017	6014	6015	6015	348	61
110	19.1	-0.042	6013	6014	6016	6014	6014	6014	348	59
120	14.1	-0.04	6011	6012	6014	6012	6013	6013	350	58
130	45.4	-0.041	6012	6013	6015	6013	6013	6013	339	57
140	39.1	-0.038	6010	6010	6013	6010	6011	6011	364	56
150	31.1	-0.032	6012	6013	6015	6013	6013	6013	368	60
160	25.1	-0.035	6014	6015	6017	6015	6016	6015	371	65
170	21.1	-0.037	6017	6017	6019	6017	6018	6018	347	67

41709 Eval #2

ET	VOL A	Rate	Tunnel	Orifice	VAC	PR	Scale	WT CHG	Tunnel	Flue
0	0	0	0.041	0.04	-0.04	0	109.1	0	102	354
10	1.366	0	0.042	1.98	0	0	102.1	0	106	368
20	2.735	0	0.041	2	-1.38	0	91.1	0	110	377
30	4.106	0	0.044	2.03	0	0	79.3	0	110	360
40	5.489	0	0.043	2	-2.15	0	70.1	0	110	375
50	6.879	0	0.043	1.99	-2.23	0	59.6	0	105	366
60	8.277	0	0.048	1.99	-0.84	0	51.4	0	103	368
70	9.679	0	0.046	2	-0.27	0	45.1	0	102	364
80	11.082	0	0.043	1.99	-1.02	0	37.1	0	100	362

90	12.492	0	0.043	1.99	-1.53	0	30.6	0	100	365
100	13.902	0	0.045	2.02	-2.36	0	23	0	98	355
110	15.321	0	0.041	2.04	0	0	17.8	0	97	349
120	16.736	0	0.047	2.03	-1.12	0	13	0	94	326
130	18.162	0	0.044	2.04	-0.09	0	9.1	0	94	326
140	19.574	0	0.047	1.97	-2.08	0	5.1	0	91	299
150	20.988	0	0.043	1.97	-1.12	0	1	0	89	281
160	22.396	0	0.046	1.99	0	0	0	0	89	276

41710 Eval #3 Preburn

ET	SCALE	FLUE	LS TEMP	RS TEMP	BACK	TOP	BOTTOM	AVG T	FLUE	AMB
0	33.1	-0.026	6015	6016	6018	6016	6017	6017	282	63
10	25.2	-0.035	6016	6017	6019	6016	6017	6017	314	63
20	24.1	-0.017	6016	6017	6019	6017	6017	6017	221	62
30	24.1	-0.009	6016	6017	6019	6017	6017	6017	182	63
40	24.1	-0.006	6017	6017	6019	6017	6018	6018	166	63
50	24.1	-0.004	6017	6018	6020	6018	6018	6018	153	65
60	24.1	0	6019	6019	6022	6019	6020	6020	142	67
70	24.1	-0.002	6020	6020	6022	6020	6021	6021	135	67
80	25.1	0.001	6020	6021	6023	6021	6022	6021	130	68
90	24.1	-0.014	6021	6022	6024	6022	6022	6022	161	68
100	21.4	-0.028	6021	6022	6024	6022	6023	6023	298	68
110	17.1	-0.021	6022	6023	6025	6022	6023	6023	333	69
120	17.1	-0.014	6022	6023	6025	6023	6024	6023	218	69
130	17.1	-0.011	6022	6023	6025	6023	6024	6024	185	69
140	17.1	-0.007	6023	6024	6026	6024	6024	6024	166	70

41710 EPA Run1 Preburn

ET	SCALE	FLUE	LS TEMP	RS TEMP	BACK	TOP	BOTTOM	AVG T	FLUE	AMB
0	32.1	-0.03	6021	6022	6024	6022	6023	6022	294	66
10	27.1	-0.031	6021	6022	6024	6022	6022	6022	309	66
20	72.1	-0.037	6021	6022	6024	6021	6022	6022	350	65
30	65.1	-0.035	6019	6020	6022	6020	6021	6021	345	63
40	56.9	-0.033	6018	6019	6021	6019	6019	6019	350	63
50	50.5	-0.037	6017	6018	6020	6018	6019	6018	331	62
60	45.1	-0.038	6016	6017	6019	6017	6017	6017	334	61
70	35.1	-0.041	6017	6017	6020	6017	6018	6018	405	61
80	29.1	-0.044	6016	6016	6018	6016	6017	6017	399	61
90	24.1	-0.04	6016	6017	6019	6017	6017	6017	383	64
100	18.1	-0.034	6019	6020	6022	6020	6020	6020	394	67
110	11.1	-0.033	6021	6022	6024	6022	6022	6022	324	68

Run 1 Fuel Load:

Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	3/12/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run # EPA#1

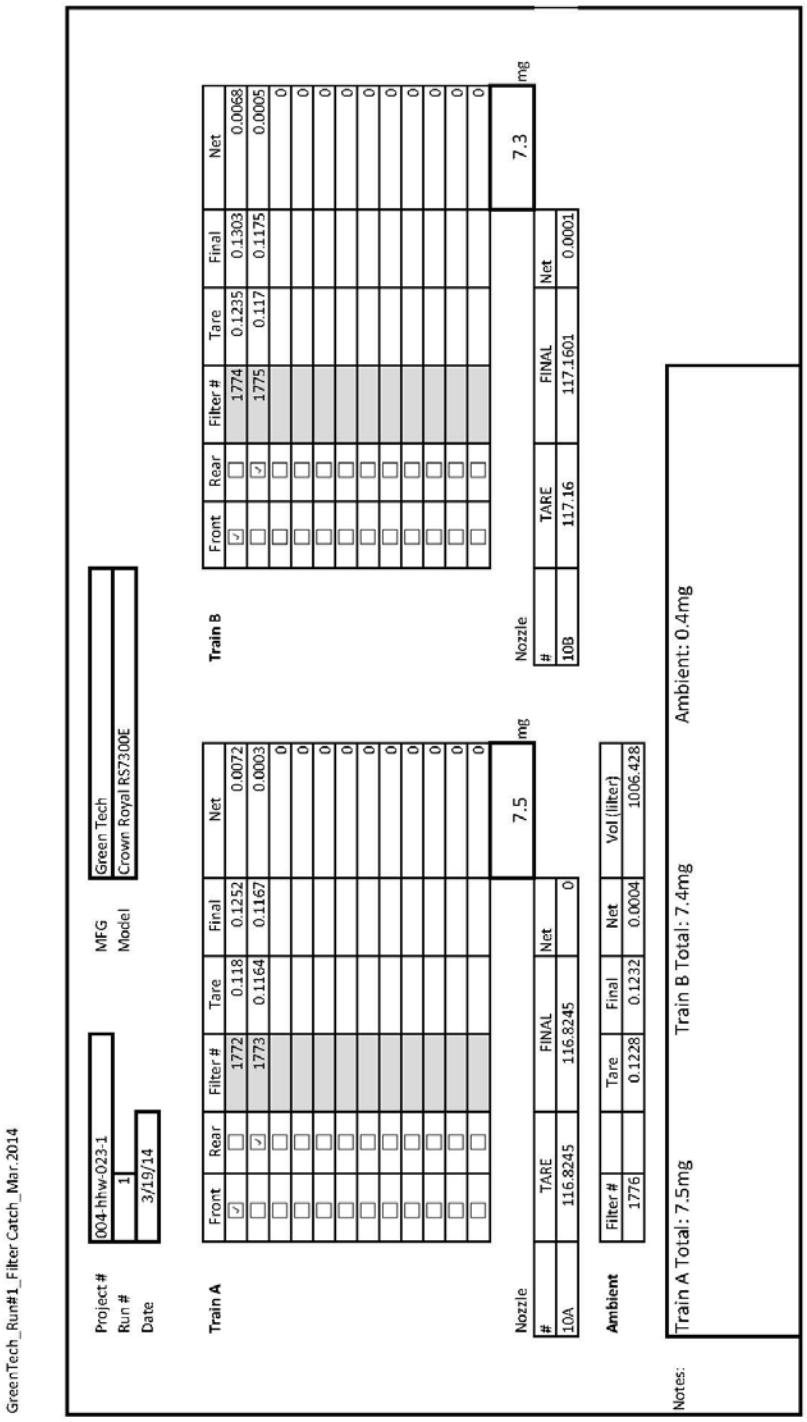
Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	18.8	20.0	20.4	20.3	19.6			19.8		
2	22.4	18.7	22.3	21.9	23.2			21.7		
3	23.4	23.6	19.3	22.5	20.0			21.8		
4	18.7	19.6	19.7	19.3	18.6			19.2		
5	21.4	18.8	22.7	22.6	22.7			21.6		
6	19.5	19.8	20.2	19.0	21.3			20.0		
7	25.0	23.7	25.0	25.0	25.0			24.7		
8	20.9	21.0	19.0	20.0	18.5			19.9		
9	21.7	20.7	19.5	20.4	18.5			20.2		
10	20.7	21.2	19.3	21.0	18.5			20.1		
11										
12										
13										
14										
15										
					Fuel Average			20.9		

Signature _____ Date _____

\\RECEPTION-PC\Reception-Common\Projects\GreenTech - Northland Dist\GreenTech\CrownRoyal_RS7300E_Mar.2014\GreenTech_FuelInfo_Mar.2014\GreenTech_EPA#1 _Fuel Load Info_Mar.2014.xlsx

Run 1 Filter Catch Summary:



GreenTech_Run#1_Filter Catch_Mar.2014

Project # 004-hhw-023-1
Run # 1
Date 3/19/14

MFG Green Tech
Model Crown Royal RS7300E

Train A

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1772	0.118	0.1252	0.0072
☐	☑	1773	0.1164	0.1167	0.0003
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

7.5 mg

Nozzle

#	TARE	FINAL	Net
10A	116.8245	116.8245	0

Ambient

Filter #		Tare	Final	Net	Vol (liter)
1776		0.1228	0.1232	0.0004	1006.428

Train B

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1774	0.1235	0.1303	0.0068
☐	☑	1775	0.117	0.1175	0.0005
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

7.3 mg

Nozzle

#	TARE	FINAL	Net
10B	117.16	117.1601	0.0001

Notes: Train A Total: 7.5mg Train B Total: 7.4mg Ambient: 0.4mg

Run 2 Fuel Load:

Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	3/13/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run # EPA#2

Test Run Fuel Moisture (db) — Hydronic Heater — Weight (Lbs)

Piece	S1	S2	S3	S4	S5	S6	AVG (%)		Fuel	
1	20.2	19.0	20.4	20.9	18.5			19.8		
2	18.5	20.4	20.3	20.4	19.8			19.9		
3	22.5	23.1	19.0	20.3	18.8			20.7		
4	18.0	19.9	20.3	20.6	19.3			19.6		
5	21.2	23.3	18.5	22.9	22.9			21.8		
6	20.7	19.7	19.5	18.7	20.5			19.8		
7	19.0	19.7	22.5	22.3	19.8			20.7		
8	21.9	19.6	20.4	20.5	24.0			21.3		
9	20.2	20.8	20.4	23.5	23.3			21.6		
10	18.4	22.2	20.4	21.9	19.6			20.5		
11										
12										
13										
14										
15										
					Fuel Average			20.6		

Signature _____ Date _____

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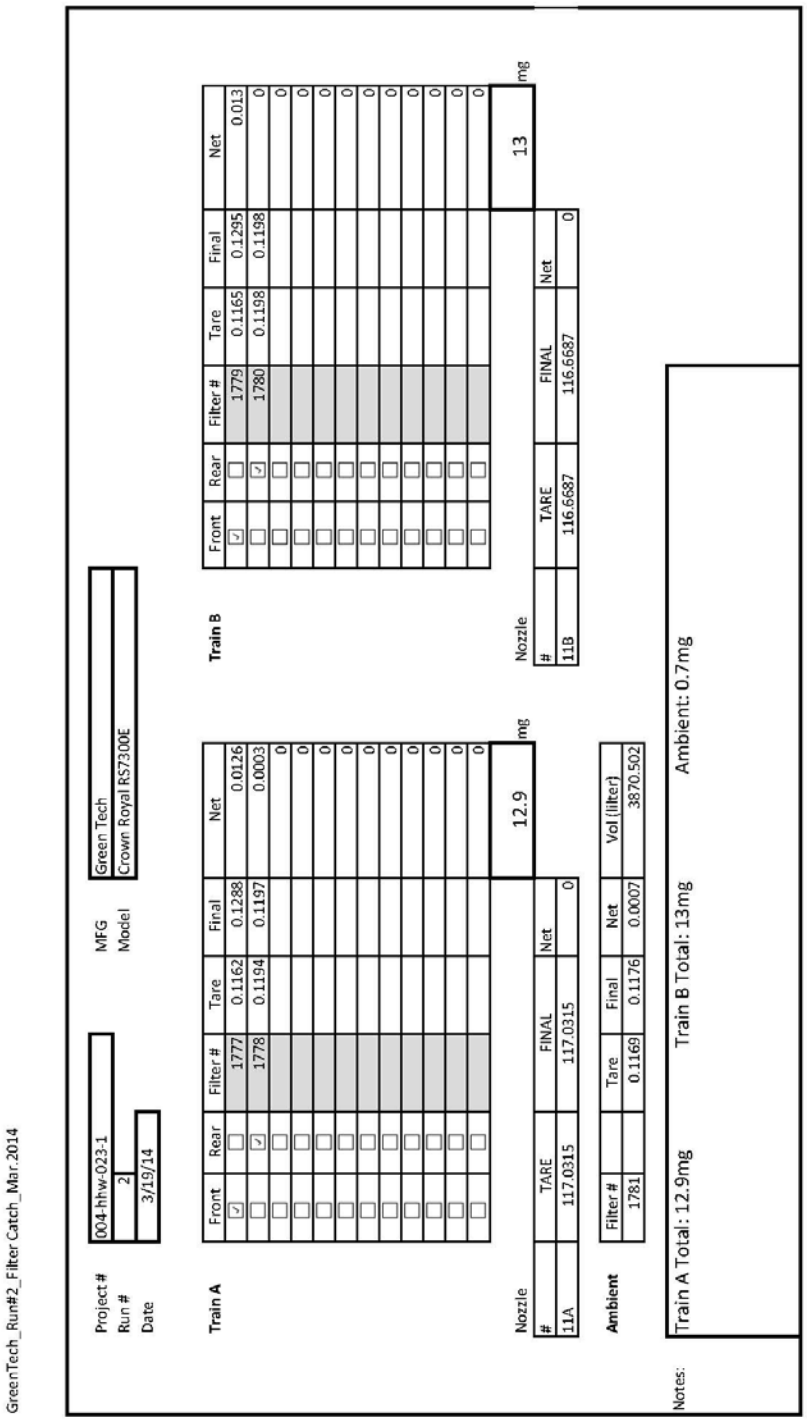
Run 2 Filter Catch Summary



GreenTech_Run#2_Filter Catch_Mar.2014

Project # 004-hhw-023-1
Run # 2
Date 3/19/14

MFG Green Tech
Model Crown Royal RS7300E

Train A

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1777	0.1162	0.1288	0.0126
☐	☑	1778	0.1194	0.1197	0.0003
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

12.9 mg

Nozzle

#	TARE	FINAL	Net
11A	117.0315	117.0315	0

Ambient

Filter #		Tare	Final	Net	Vol (liter)
1781		0.1169	0.1176	0.0007	3870.502

Train B

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1779	0.1165	0.1295	0.013
☐	☑	1780	0.1198	0.1198	0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

13 mg

Nozzle

#	TARE	FINAL	Net
11B	116.6687	116.6687	0

Notes: Train A Total: 12.9mg Train B Total: 13mg Ambient: 0.7mg

Run 3 Fuel Load:

Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	3/14/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run # EPA#3

Test Run Fuel Moisture (db) — Hydronic Heater — Weight (Lbs)

Piece	S1	S2	S3	S4	S5	S6	AVG (%)	Fuel	
1	22.7	22.5	23.6	23.7	22.5		23.0		
2	21.3	24.4	20.7	21.9	23.4		22.3		
3	22.8	20.4	20.9	20.2	24.9		21.8		
4	18.4	21.0	22.3	24.7	22.2		21.7		
5	23.5	24.3	21.5	23.6	23.6		23.3		
6	19.7	22.6	24.7	22.9	21.2		22.2		
7	20.2	20.9	21.9	22.6	22.7		21.7		
8	20.5	20.7	20.5	18.5	24.1		20.9		
9	23.5	18.7	20.0	21.9	22.7		21.4		
10	22.3	21.9	21.0	20.4	22.3		21.6		
11									
12									
13									
14									
15									
					Fuel Average		22.0		

Signature _____ Date _____

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Run 4 Fuel Load:

Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	3/15/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run # EPA#4

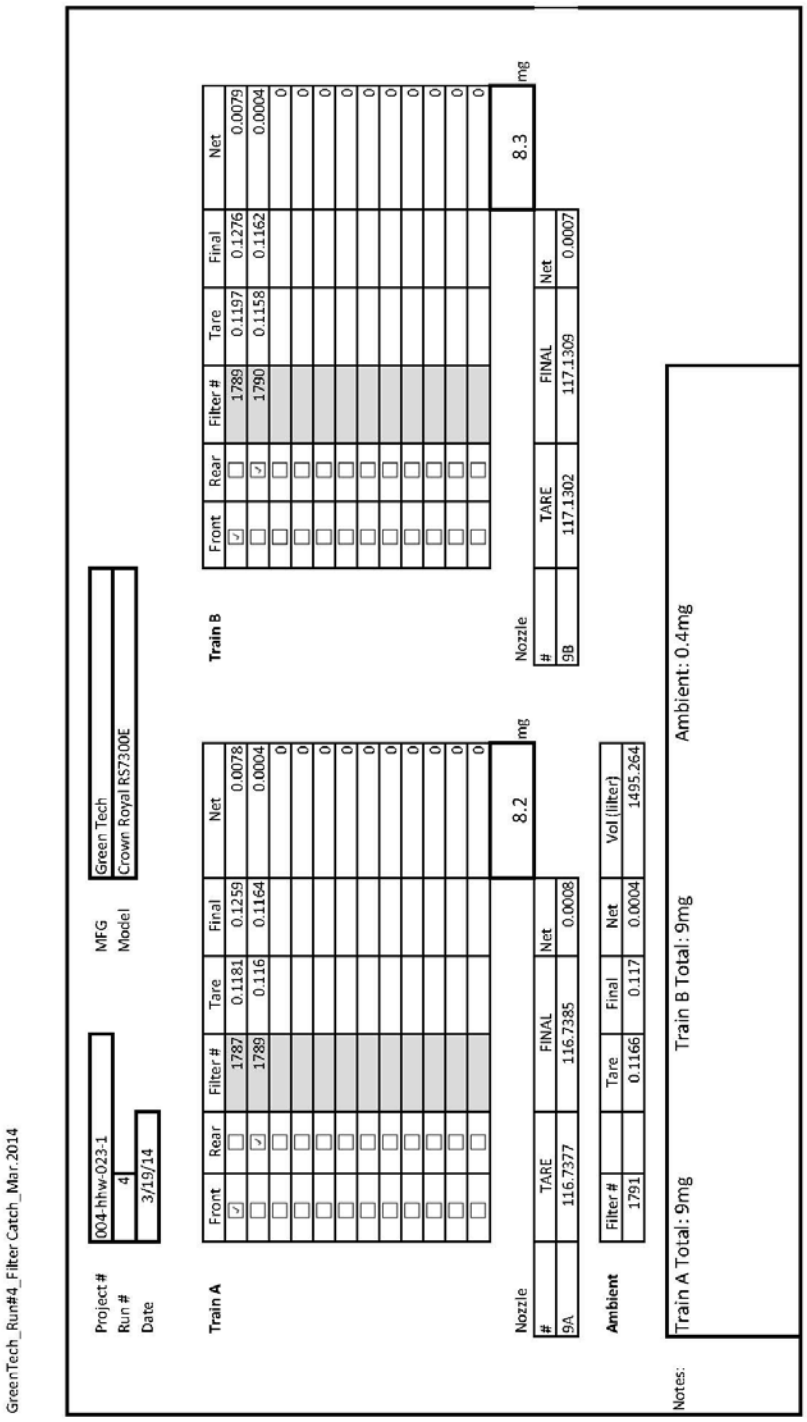
Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	19.4	18.4	23.2	23.7	24.6			**21.9**		
2	19.3	21.9	18.9	23.2	20.0			**20.7**		
3	22.2	23.3	21.3	22.5	22.3			**22.3**		
4	18.0	21.0	19.3	20.2	19.3			**19.6**		
5	18.7	19.4	18.8	19.0	19.4			**19.1**		
6	21.3	25.0	24.3	20.0	22.3			**22.6**		
7	21.9	23.2	18.2	23.7	24.5			**22.3**		
8	18.0	19.5	19.7	20.8	19.0			**19.4**		
9	25.0	22.3	23.4	24.8	25.0			**24.1**		
10	21.9	20.5	20.7	18.5	20.5			**20.4**		
11										
12										
13										
14										
15										
					Fuel Average			**21.2**		

Signature Date

\\RECEPTION-PC\Reception-Common\Projects\GreenTech - Northland Dist\GreenTech\CrownRoyal_RS7300E_Mar.2014\Green Tech Reports\Run 4\GreenTech_EPA#4_Fuel Load Info_Mar.2014.xlsx

Run 4 Filter Catch Summary:



GreenTech_Run#4_Filter Catch_Mar.2014

Project # 004-hhw-023-1
Run # 4
Date 3/19/14

MFG Green Tech
Model Crown Royal RS7300E

Train A

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1787	0.1181	0.1259	0.0078
☐	☑	1789	0.116	0.1164	0.0004
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

8.2 mg

Nozzle

#	TARE	FINAL	Net
9A	116.7377	116.7385	0.0008

Ambient

Filter #		Tare	Final	Net	Vol (liter)
1791		0.1166	0.117	0.0004	1495.264

Train B

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1789	0.1197	0.1276	0.0079
☐	☑	1790	0.1158	0.1162	0.0004
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

8.3 mg

Nozzle

#	TARE	FINAL	Net
9B	117.1302	117.1309	0.0007

Notes: Train A Total: 9mg Train B Total: 9mg Ambient: 0.4mg

Run 5 Fuel Load:

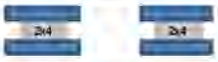
Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	4/2/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run # EPA#5

Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	22.3	25.0	24.2	24.1	24.5			24.0		
2	21.4	20.4	21.2	18.0	21.2			20.4		
3	24.2	20.2	21.9	23.4	23.6			22.7		
4	24.9	24.8	24.8	23.7	21.9			24.0		
5	22.5	18.4	21.4	18.5	23.7			20.9		
6	21.4	20.4	24.1	24.5	20.4			22.2		
7	19.0	18.0	20.7	20.5	21.9			20.0		
8	24.6	24.9	24.6	25.0	24.8			24.8		
9	23.4	24.2	22.9	22.9	23.2			23.3		
10	20.4	18.4	22.4	21.9	19.6			20.5		
11										
12										
13										
14										
15										
					Fuel Average			22.3		

Signature _____ Date _____

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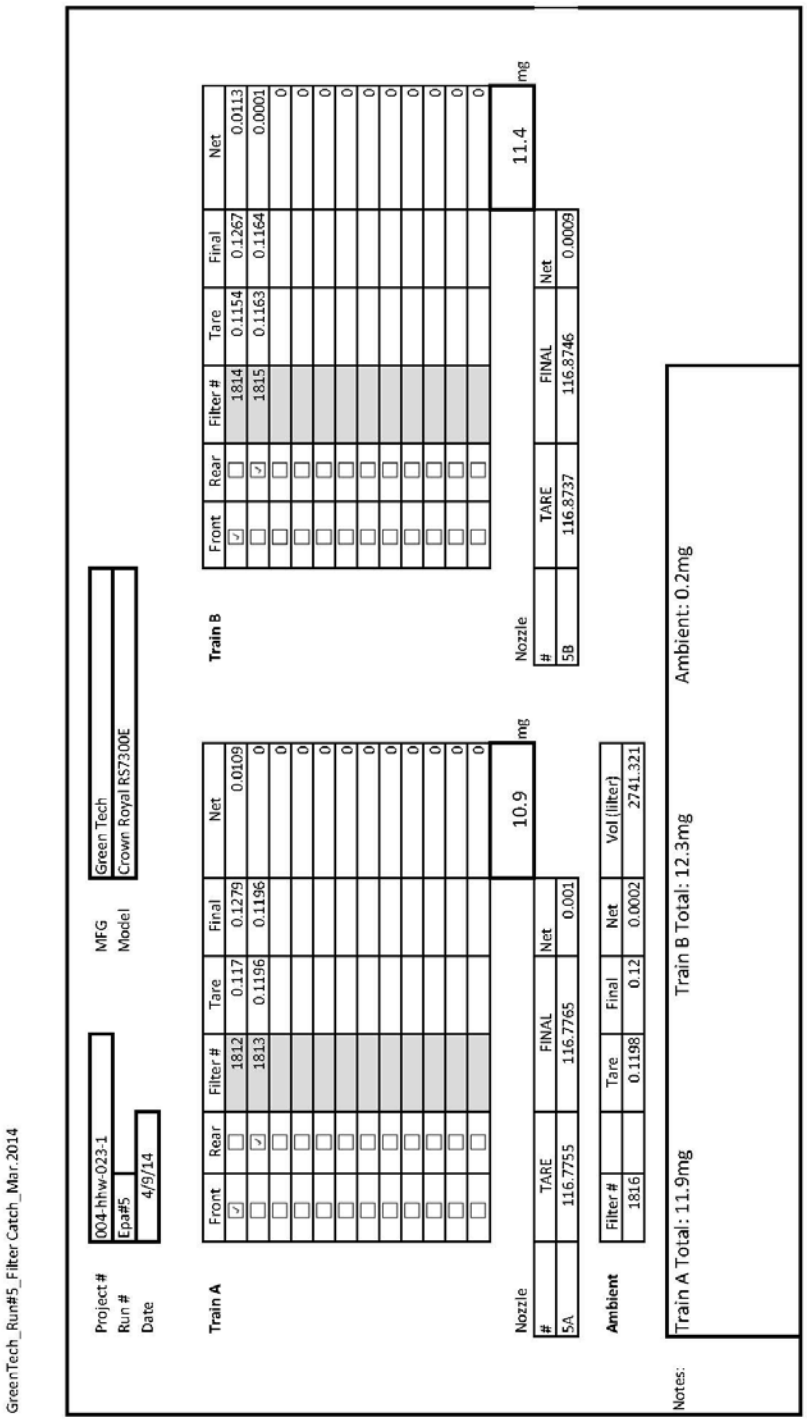
Run 5 Filter Catch Summary:



GreenTech_Run#5_Filter Catch_Mar.2014

Project # 004-hhw-023-1
Run # Epa#5
Date 4/9/14

MFG Green Tech
Model Crown Royal RS7300E

Train A

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1812	0.117	0.1279	0.0109
☐	☑	1813	0.1196	0.1196	0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

10.9 mg

Nozzle

#	TARE	FINAL	Net
5A	116.7755	116.7765	0.001

Ambient

Filter #		Tare	Final	Net	Vol (liter)
1816		0.1198	0.12	0.0002	2741.321

Train B

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1814	0.1154	0.1267	0.0113
☐	☑	1815	0.1163	0.1164	0.0001
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

11.4 mg

Nozzle

#	TARE	FINAL	Net
5B	116.8737	116.8746	0.0009

Notes: Train A Total: 11.9mg Train B Total: 12.3mg Ambient: 0.2mg

Run 6 Fuel Load:

Fuel Load Information

Project Number	Client	Date
004-hhw-023-1	Green Tech	4/3/2014

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
Fuel Piece Length	23.00 Inches	

Run #EPA#6

Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	19.4	20.4	18.0	20.4	18.9			19.4		
2	22.9	21.9	20.4	22.4	25.0			22.5		
3	24.1	24.5	23.7	22.4	20.3			23.0		
4	22.2	22.9	18.0	22.3	21.2			21.3		
5	20.5	21.9	23.6	25.0	22.6			22.7		
6	19.0	19.3	22.7	21.5	23.5			21.2		
7	20.7	19.6	19.2	20.2	21.4			20.2		
8	19.0	18.4	20.2	19.0	20.3			19.4		
9	22.8	20.7	24.5	25.0	22.9			23.2		
10	20.4	21.2	20.0	22.4	19.8			20.8		
11										
12										
13										
14										
15										
					Fuel Average			21.4		

Signature _____ Date _____

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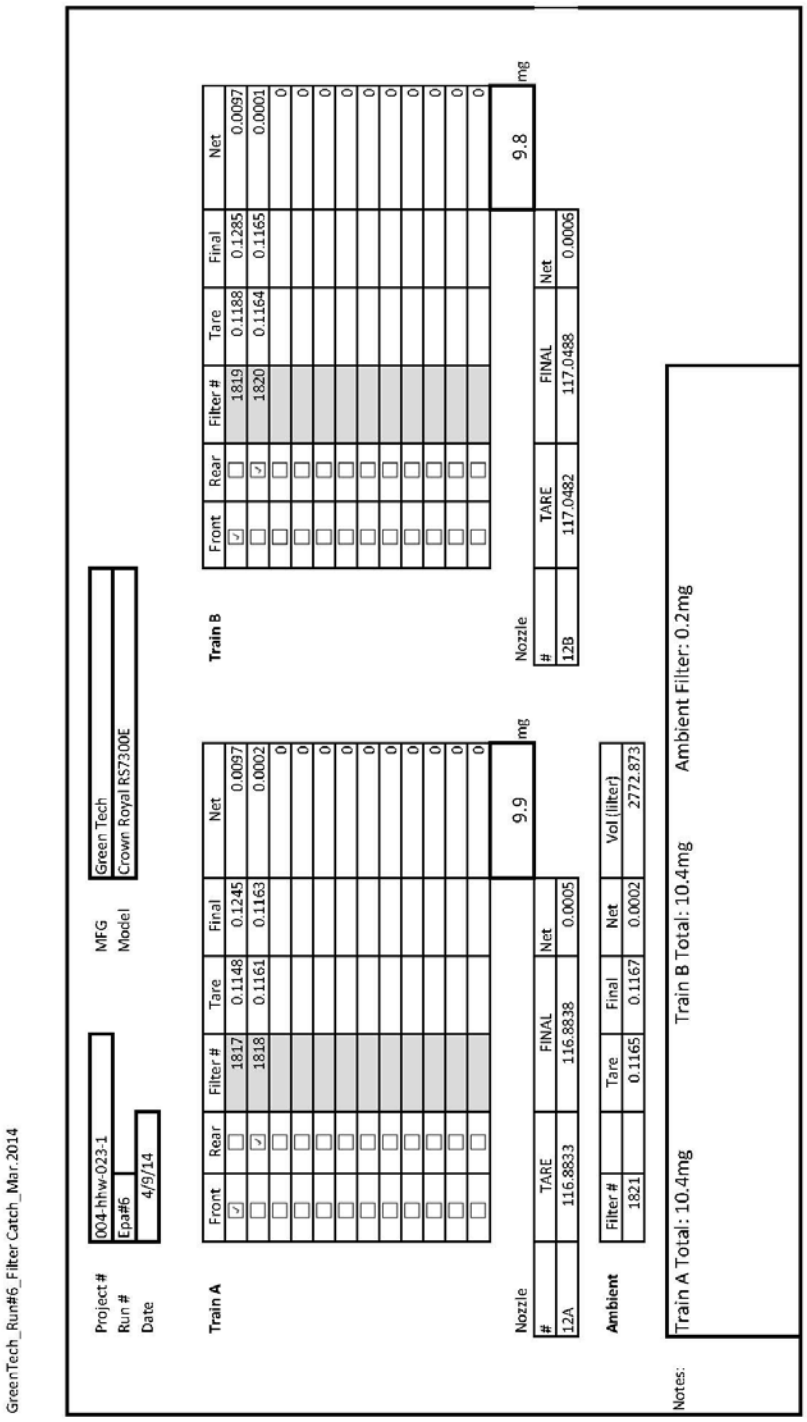
Run 6 Filter Catch Summary:



GreenTech_Run#6_Filter Catch_Mar.2014

Project # 004-hhw-023-1
Run # Epa#6
Date 4/9/14

MFG Green Tech
Model Crown Royal RS7300E

Train A

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1817	0.1148	0.1245	0.0097
☐	☑	1818	0.1161	0.1163	0.0002
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

Nozzle

#	TARE	FINAL	Net
12A	116.8833	116.8838	0.0005

9.9 mg

Ambient

Filter #		Tare	Final	Net	Vol (liter)
1821		0.1165	0.1167	0.0002	2772.873

Train B

Front	Rear	Filter #	Tare	Final	Net
☑	☐	1819	0.1188	0.1285	0.0097
☐	☑	1820	0.1164	0.1165	0.0001
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0
☐	☐				0

Nozzle

#	TARE	FINAL	Net
12B	117.0482	117.0488	0.0006

9.8 mg

Notes: Train A Total: 10.4mg Train B Total: 10.4mg Ambient Filter: 0.2mg

Appendix D: Supporting Data and Notes

Fuel Load Information

Project Number	Client	Date
	Green Tech	3/12/14

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length	23.00 Inches	

Run # 1 EPA #1 w/out cleats

Test Run Fuel Moisture (db) — Hydronic Heater — Weight (Lbs)

Piece	S1	S2	S3	S4	S5	S6	AVG (%)		Fuel	
1	18.8	20	20.4	20.3	19.6		19.8		11.57	
2	22.4	18.7	22.3	21.9	23.2		21.7		10.58	
3	23.4	23.6	19.3	22.5	20		21.8		10.93	
4	18.7	19.6	19.7	19.3	18.6		19.2		11.27	
5	21.4	18.8	22.7	22.6	22.7		21.6		11.57	
6	19.5	19.8	20.2	19	21.3		20		10.74	
7	25	23.7	25	25	25		24.7		11.27	
8	20.9	21	19	20	18.5		19.9		10.19	
9	21.7	20.7	19.5	20.4	18.5		20.2		10.98	
10	20.7	21.2	19.3	21	18.5		20.1		9.68	
11										
12										
13										
14										
15										
					Fuel Average		20.9	#DIV/0!		

113 lbs

Signature

Date

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Fuel Load Information

Project Number	Client	Date
	Green Tech	3/19/14

Firebox Volume (ft^3)		R & D	Y (N)

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length	23.00 Inches	

Run # 8 EPA 2 w/out cleats

Test Run Fuel Moisture (db) — Hydronic Heater — Weight (Lbs)

Piece	S1	S2	S3	S4	S5	S6	AVG (%)		Fuel	
1	20.2	19	20.4	20.9	18.5		19.8		10.43	
2	18.5	20.4	20.3	20.4	19.8		19.9		10.87	
3	22.5	23.1	19	20.3	18.8		20.7		10.69	
4	18	19.9	20.3	20.6	19.3		19.6		10.98	
5	21.2	23.3	18.5	22.9	22.9		21.8		10.67	
6	20.7	19.7	19.5	18.7	20.5		19.8		9.90	
7	19	19.7	22.5	22.3	19.8		20.7		10.30	
8	21.9	19.6	20.4	20.5	24		21.3		10.76	
9	20.2	20.8	20.4	23.5	23.3		21.6		10.3	
10	18.4	22.2	20.4	21.9	19.6		20.5		9.94	
11										
12										
13										
14										
15										
					Fuel Average		20.6	#DIV/0!		

108 lbs

Signature _____ Date _____

\\RECEPTION-PC\Reception-Common\Document Templates\Fuel Load Information Template

Fuel Load Information

Project Number	Client	Date
		3/14/14

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length: 23 Inches		

Run # EPA 3

Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	22.7	22.5	23.6	23.7	22.5		23		10.96	
2	21.3	24.4	20.7	21.9	23.4		22.3		10.63	
3	22.8	20.4	20.9	20.2	24.1		21.8		10.74	
4	18.4	21	22.3	24.7	22.2		21.7		10.67	
5	23.5	24.3	21.5	23.6	23.6		23.3		10.89	
6	19.7	22.6	24.7	22.9	21.2		22.2		10.71	
7	20.2	20.9	21.9	22.6	22.7		21.7		10.54	
8	20.5	20.7	20.5	18.5	24.1		20.9		10.14	
9	23.5	18.7	20	21.9	22.7		21.4		10.89	
10	22.3	21.9	21	20.4	22.3		21.6		9.19	
11										
12										
13										
14										
15										
Fuel Average							22	#DIV/0!		

108 lbs

Signature

Date

\\RECEPTION-PC\Reception-Common\Document Templates\Fuel Load Information Template

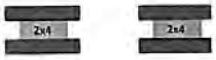
Fuel Load Information

Project Number	Client	Date
	Green Tech	3/15/14

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length	23 Inches	

Run # EPA #4

Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	19.4	18.4	23.2	23.7	21.6		21.9		10.80	
2	19.3	21.9	18.9	23.2	20		20.7		10.98	
3	22.2	23.3	21.3	22.5	22.3		22.3		10.21	
4	18	21	19.3	20.2	19.3		19.6		10.96	
5	18.7	19.4	18.8	19	19.4		19.1		10.96	
6	21.3	25	24.5	20	22.3		22.6		9.77	
7	21.9	23.2	18.2	23.7	24.5		22.3		10.49	
8	18	19.5	19.7	20.8	19		19.4		10.08	
9	25	22.3	23.4	24.8	25		24.1		10.87	
10	21.9	20.5	20.7	18.5	20.5		20.4		10.65	
11										
12										
13										
14										
15										
Fuel Average							21.2	#DIV/0!		

110.00 lbs w/ cleats

Signature

Date

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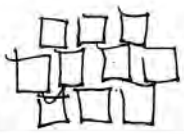
Fuel Load Information

Project Number	Client	Date
	Green Tech	4/2/14

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length	23 Inches	

Run # EPA ~~#5~~ w/o cleats

Test Run Fuel Moisture (db) — Weight (Lbs)

Piece	S1	S2	S3	S4	Hydronic Heater S5	S6	AVG (%)		Fuel	
1	22.3	25	24.2	24.1	24.5		24		10.82	
2	21.4	20.4	21.2	18	21.2		20.4		10.56	
3	24.2	20.2	21.9	23.4	23.6		22.7		11.13	
4	24.9	24.8	24.8	23.7	21.9		24		9.83	
5	22.5	18.4	21.4	18.5	23.7		20.9		9.57	
6	21.4	20.4	24.1	24.5	20.4		22.2		8.93	
7	19	18	20.7	20.5	~~21.9~~		20		10.58	
8	24.6	24.9	24.6	25	24.8		24.8		11.05	
9	23.4	24.2	22.9	22.9	23.2		23.3		10.74	
10	20.4	18.4	22.4	21.9	19.6		20.5		10.67	
11										
12										
13										
14										
15										
Fuel Average							22.3	#DIV/0!		

107 Cs

Signature

Date

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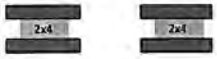
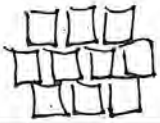
Fuel Load Information

Project Number	Client	Date
	Green Tech	4/3/14

Firebox Volume (ft^3)		R & D	Y / N

Longest useable measurement parallel or perpendicular to front of unit.	

Test Fuel Charge Range	-
Coal bed range (lbs)	-

Vol ≤ 1.5 ft^3	Vol > 1.5 ≤ 3.0 ft^3	Vol > 3.0 ft^3
		
		
Fuel Piece Length	23 Inches	

Run # EPA #6

s/o cleats

Test Run Fuel Moisture (db)

Piece	S1	S2	S3	S4	Hydronic Heater S5	Hydronic Heater S6	AVG (%)		Weight (Lbs) Fuel	
1	19.4	20.4	18	20.4	18.9		19.4		9.66	
2	22.9	21.9	20.4	22.4	25		22.5		10.16	
3	24.1	24.5	23.7	22.4	20.3		23		9.92	
4	22.2	22.9	18	22.8	21.2		21.3		9.17	
5	20.5	21.9	23.6	25	22.6		22.7		9.72	
6	19	19.3	22.7	21.5	23.5		21.2		10.08	
7	20.7	19.6	18.2	20.2	21.4		20.2		9.92	
8	19	18.4	20.2	19	20.3		19.4		10.54	
9	22.8	20.7	24.5	25	22.9		23.2		10.65	
10	20.4	21.2	20	22.4	19.8		20.8		10.67	
11										
12										
13										
14										
15										
					Fuel Average		21.4	#DIV/0!		

104 lbs

Signature

Date

\\RECEPTION-PC\Reception-Common\Document Templates\Fuel Load Information Template

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day | April | 3 | 2014 | View | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	51 °F	50 °F	
Max Temperature	58 °F	59 °F	77 °F (2004)
Min Temperature	44 °F	42 °F	30 °F (1964)
Degree Days			
Heating Degree Days	14	14	
Month to date heating degree days	44	44	
Since 1 July heating degree days	3826	3624	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Moisture			
Dew Point	42 °F		
Average Humidity	68		
Maximum Humidity	89		
Minimum Humidity	47		
Precipitation			
Precipitation	0.02 in	0.11 in	0.68 in (1993)
Month to date precipitation	0.16	0.31	
Year to date precipitation	15.50	12.53	
Sea Level Pressure			
Sea Level Pressure	29.99 in		
Wind			
Wind Speed	10 mph (SE)		
Max Wind Speed	26 mph		
Max Gust Speed	32 mph		
Visibility	10 miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/4/3/DailyHistory.html 4/11/2014

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day | March | 12 | 2014 | View | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	49 °F	48 °F	
Max Temperature	65 °F	56 °F	70 °F (1994)
Min Temperature	33 °F	39 °F	24 °F (1954)
Degree Days			
Heating Degree Days	16	17	
Month to date heating degree days	188	220	
Since 1 July heating degree days	3466	3278	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Moisture			
Dew Point	35 °F		
Average Humidity	65		
Maximum Humidity	100		
Minimum Humidity	30		
Precipitation			
Precipitation	0.00 in	0.13 in	1.03 in (2012)
Month to date precipitation	3.26	1.54	
Year to date precipitation	11.08	10.08	
Sea Level Pressure			
Sea Level Pressure	30.28 in		
Wind			
Wind Speed	3 mph (NW)		
Max Wind Speed	12 mph		
Max Gust Speed	14 mph		
Visibility	10 miles		
Events	Fog		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/3/12/DailyHistory.html?req_ci... 4/11/2014

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day | March | 13 | 2014 | View | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	48 °F	48 °F	
Max Temperature	60 °F	56 °F	71 °F (1979)
Min Temperature	35 °F	35 °F	24 °F (1944)
Degree Days			
Heating Degree Days	17	17	
Month to date heating degree days	205	237	
Since 1 July heating degree days	3503	3285	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Moisture			
Dew Point	38 °F		
Average Humidity	71		
Maximum Humidity	100		
Minimum Humidity	42		
Precipitation			
Precipitation	T in	0.12 in	1.02 in (1961)
Month to date precipitation	3.26	1.66	
Year to date precipitation	11.08	10.20	
Sea Level Pressure			
Sea Level Pressure	30.13 in		
Wind			
Wind Speed	2 mph (NNE)		
Max Wind Speed	7 mph		
Max Gust Speed	9 mph		
Visibility	10 miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/3/13/DailyHistory.html 4/11/2014

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day March 14 2014 View Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	54 °F	48 °F	
Max Temperature	63 °F	57 °F	74 °F (1947)
Min Temperature	44 °F	39 °F	28 °F (1953)
Degree Days			
Heating Degree Days	11	17	
Month to date heating degree days	216	254	
Since 1 July heating degree days	3514	3312	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Growing Degree Days	4 (Base 50)		
Moisture			
Dew Point	44 °F		
Average Humidity	66		
Maximum Humidity	93		
Minimum Humidity	39		
Precipitation			
Precipitation	0.22 in	0.12 in	0.83 in (1967)
Month to date precipitation	3.48	1.78	
Year to date precipitation	11.30	10.32	
Sea Level Pressure			
Sea Level Pressure	30.17 in		
Wind			
Wind Speed	8 mph (SSW)		
Max Wind Speed	17 mph		
Max Gust Speed	22 mph		
Visibility	10 miles		
Events	Rain		

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/3/14/DailyHistory.html 4/11/2014

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day | March 15 2014 View | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	53 °F	48 °F	
Max Temperature	65 °F	57 °F	77 °F (1947)
Min Temperature	40 °F	40 °F	26 °F (1955)
Degree Days			
Heating Degree Days	12	17	
Month to date heating degree days	228	271	
Since 1 July heating degree days	3528	3329	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Growing Degree Days	2 (Base 50)		
Moisture			
Dew Point	43 °F		
Average Humidity	66		
Maximum Humidity	88		
Minimum Humidity	46		
Precipitation			
Precipitation	0.00 in	0.12 in	0.88 in (1946)
Month to date precipitation	3.48	1.90	
Year to date precipitation	11.30	10.44	
Sea Level Pressure			
Sea Level Pressure	30.31 in		
Wind			
Wind Speed	7 mph (SSE)		
Max Wind Speed	16 mph		
Max Gust Speed	21 mph		
Visibility	10 miles		
Events			

T = Trace of Precipitation, MM = Missing Value Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/3/15/DailyHistory.html 4/11/2014

Weather History for Portland, OR | Weather Underground Page 1 of 1

« Previous Day | April | 2 | 2014 | View | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	52 °F	50 °F	
Max Temperature	59 °F	59 °F	79 °F (1992)
Min Temperature	44 °F	42 °F	30 °F (1972)
Degree Days			
Heating Degree Days	13	15	
Month to date heating degree days	30	30	
Since 1 July heating degree days	3512	3510	
Cooling Degree Days	0	0	
Month to date cooling degree days	0	0	
Year to date cooling degree days	0	0	
Growing Degree Days	2 (Base 50)		
Moisture			
Dew Point	42 °F		
Average Humidity	70		
Maximum Humidity	92		
Minimum Humidity	47		
Precipitation			
Precipitation	0.00 in	0.10 in	0.80 in (1988)
Month to date precipitation	0.14	0.20	
Year to date precipitation	15.48	12.42	
Sea Level Pressure			
Sea Level Pressure	30.03 in		
Wind			
Wind Speed	3 mph (NE)		
Max Wind Speed	8 mph		
Max Gust Speed	10 mph		
Visibility	10 miles		
Events			

T = Trace of Precipitation, MM = Missing Value

Source: NWS Daily Summary

http://www.wunderground.com/history/airport/KPDX/2014/4/2/DailyHistory.html?req_cit... 4/11/2014

Appendix E: Calibration

During testing, the calibration certificate on the reference standard had expired. The DGM meters that were used during testing were current with their calibration having absolutely no effect on the test results. Also, upon calibrating the reference standard, the DGM was returned remaining within the calibration parameters -no adjustments were made to the DGM during calibration.

DICK MUNNS COMPANY
MASS GAS FLOW CALIBRATION

ISO 17025 ACCREDITED

CERTIFICATE OF CALIBRATION

CUSTOMER:	**DIRIGO LABORATORIES INC.** CLACKAMAS OR	**CALIBRATION DATE:**	03/21/13
PO NUMBER:	47	**CALIBRATION DUE:**	03/21/14
INST. MANUFACTURER:	APEX	**PROCEDURE:**	NAVAIR 17-20MG-02
INST. DESCRIPTION:	DIGITAL DGM STANDARD	**CALIBRATION FLUID:**	AIR @ 14.7 PSIA 70 F
MODEL NUMBER:	SK25DA	**STANDARD(S) USED:**	A4, A24, A322 DUE 02-2014
SERIAL NUMBER:	1101001	**NIST TRACE #' S:**	1361269184, 1360578741, 1360586185
RATED UNCERTAINTY:	+/- .5 % RD.	**AMBIENT CONDITIONS:**	759 mm HGA 55 % RH 70 F
UNCERTAINTY GIVEN:	FLOW measurement uncertainty: +/- .099 % RD.; K=2	**CERTIFICATE FILE #:**	449362.13

NOTES: AS RECEIVED/AS LEFT WITHIN SPECS. REFERENCE CONDITIONS ARE: 760 mm HGA 70 F

TEST POINT NUMBER	UUT INDICATED SLPM	DM.STD. ACTUAL SLPM	CORRECTION SLPM	K FACTOR
1	5.0082	5.0000	0.99837	60.098
2	10.0154	10.0000	0.99847	60.092
3	30.0496	30.0000	0.99835	60.099
4	50.0885	50.0000	0.99823	60.106
5	70.1368	70.0000	0.99805	60.117
6	90.1668	90.0000	0.99815	60.111
		AVERAGE (Y)=	0.998269	

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

Dick Munns Company • 10572 Calle Lee #138 • Los Alamitos, CA 90720
Phone (714) 827-1215 • Fax (714) 827-0823

Date: 3/21/2013 Approved By: Calibration Technician: Jaime Acosta

Page 1 of 1

CERTIFICATE OF CALIBRATION

CUSTOMER:	**DIRIGO LABORATORIES INC.** CLACKAMAS OR	**CALIBRATION DATE:**	04/17/14
PO NUMBER:		**CALIBRATION DUE:**	04/17/15
INST. MANUFACTURER:	APEX	**PROCEDURE:**	NAVAIR 17-20MG-02
INST. DESCRIPTION:	DIGITAL DGM STANDARD	**CALIBRATION FLUID:**	AIR @ 14.7 PSIA 70 F
MODEL NUMBER:	SK25DA	**STANDARD(S) USED:**	A4, A24, A321 DUE 08-2014
SERIAL NUMBER:	1101001	**NIST TRACE #' S:**	1331545884, 1390386562, 1390378403
RATED UNCERTAINTY:	+/- .5 % RD.	**AMBIENT CONDITIONS:**	758 mm HGA 55 % RH 70 F
UNCERTAINTY GIVEN:	FLOW measurement uncertainty: +/- .099 % RD.; K=2	**CERTIFICATE FILE #:**	449362.14

NOTES: AS RECEIVED/AS LEFT WITHIN SPECS. REFERENCE CONDITIONS ARE: 760 mm HGA 70 F

TEST POINT NUMBER	UUT INDICATED SLPM	DM.STD. ACTUAL SLPM	CORRECTION SLPM	K FACTOR
1	5.0078	5.007	0.99985	60.009
2	10.0165	10.014	0.99975	60.015
3	30.0531	29.991	0.99793	60.124
4	50.0935	49.986	0.99785	60.129
5	70.1379	70.032	0.99849	60.091
6	90.1879	89.967	0.99755	60.147
		AVERAGE (Y)=	0.99857060	

All instruments used in the performance of the shown calibration have traceability to the National Institute of Standards and Technology (NIST). The uncertainty ratio between the calibration standards (DM.STD.) used and the unit under test (UUT) is a minimum of 4:1, unless otherwise noted. Calibration has been performed per the shown procedure number, in accordance with ISO 10012:2003, ISO 17025:2005, ANSI/NCSL-Z-540.3, and/or MIL-STD-45662A. Test methods: API2530-92 & ASME MFC-3M-1989.

Dick Munns Company • 10572 Calle Lee #138 • Los Alamitos, CA 90720
Phone (714) 827-1215 • Fax (714) 827-0823

Date: 4/17/2014 Approved By: Calibration Technician:

Page 1 of 1

DIRIGO LABORATORIES INC

EPA Method 5 Dry Gas Meter Calibration for Y and ΔH@

Manufacturer / Model: Apex - AK 6000
ID: Ambient Box
Serial Number: 810016
Equipment No.: Dirigo 055
Calibration Date: 10/8/2013
Next Calibration Due: 4/9/2014
Barometric Pressure: 30.06 inHg
Signature/Date: 10/9/13

Average DGM y factor = 1.020

Average Meter Orifice ΔH@ = 78.810

	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	53.161	53.997	53.324
Standard Ave. Meter Temperature (°F), (Tstd)	70.0	72.0	72.0
DGM Initial Volume (cuft)	0.000	0.000	0.000
DGM Final Volume (cuft)	1.896	1.906	1.883
DGM Average Temperature (°F), (T_{DGM})	92.0	90.0	92.0
Time (min)	10.0	10.0	10.0
Orifice ΔH ("H2O)	5.00	5.10	5.00
Vacuum ("H2O)	0.00	0.00	0.00
Total Volume for Standard DGM (Vstd) (cuft)	1.877	1.907	1.883
Total Volume for DGM (V_{DGM}) (cuft)	1.896	1.906	1.883
Dry Gas Meter y Factor	1.017	1.020	1.023
y Factor Deviation From Average	0.003	0.000	0.003
Meter Orifice ΔH@	78.787	78.806	78.898
Orifice ΔH@ Deviation From Average	0.043	0.024	0.068

Standard Meter Data

Date	3/18/2013
y Factor	0.998
Model	SK25DA
Serial Number	1101001

Pre-Calibration Data

Date	1/3/2013
y Factor	0.999
ΔH@	76.374
Tolerance (5%)	0.049
Deviation	0.031

Pass

DGM Calibration Data

y Deviation Tolerance	0.020
Maximum y Deviation	0.003
ΔH@ Deviation Tolerance	0.200
Maximum dH@ Deviation	0.068

Pass

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. $y = (V_{Std} \times (Std\ y\ factor) \times (P_{Bar}) \times (T_{DGM} + 460)) / (V_{DGM} \times (Tstd + 460) \times (Pbar + (dH / 13.6)))$
3. $\Delta H@ = 0.0319 \times \Delta H \times (((T_{DGM} + 460) \times (Time^2)) / (P_{Bar} \times (y\ factor^2) \times (V_{DGM}^2)))$

Measurement of uncertainty = +/- 0.14 cfm

DIRIGO LABORATORIES INC.

EPA Method 5 Dry Gas Meter Calibration for γ and ΔH@

Manufacturer / Model: Apex - XC - 60ED
ID: Box - A
Serial Number 1902130
Equipment No.: Dirigo 053
Calibration Date: 10/9/2013
Next Calibration Due: 4/9/2014
Barometric Pressure: 30.06 inHg
Signature/Date: 10/9/2013

Average DGM γ factor = 0.995

Average Meter Orifice ΔH@ = 1.860

	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	130.499	136.276	134.354
Standard Ave. Meter Temperature (°F), (Tstd)	71.6	72.0	72.0
DGM Initial Volume (cuft)	0.000	0.000	0.000
DGM Final Volume (cuft)	4.693	4.956	4.936
DGM Average Temperature (°F), (TDGM)	87.0	88.0	90.0
Time (min)	30.0	35.0	40.0
Orifice ΔH ("H2O)	2.50	2.00	1.50
Vacuum ("H2O)	0.00	0.00	0.00
Total Volume for Standard DGM (Vstd) (cuft)	4.609	4.813	4.745
Total Volume for DGM (VDGM) (cuft)	4.693	4.956	4.936

Dry Gas Meter γ Factor	1.002	0.994	0.988
γ Factor Deviation From Average	0.008	0.001	0.006
Meter Orifice ΔH@	59.013	58.764	58.964
Orifice ΔH@ Deviation From Average	0.133	0.117	0.016

Standard Meter Data

Date	3/18/2013
γ Factor	0.998
Model	SK25DA
Serial Number	1101001

Pre-Calibration Data

Date	3/27/2013
γ Factor	1.007
ΔH@	57.646
Tolerance (5%)	0.050
Deviation	0.012

Pass

DGM Calibration Data

γ Deviation Tolerance	0.020
Maximum γ Deviation	0.008
ΔH@ Deviation Tolerance	0.200
Maximum dH@ Deviation	0.133

Pass

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. γ = (Vstd x (Std γ factor) x (Pbar) x (TDGM + 460) / (VDGM x (Tstd + 460) x (Pbar + (dH / 13.6)))
3. ΔH@ = 0.0319 x ΔH (((TDGM+ 460) x (Time^2)) / (Pbar x (γ factor^2) x (VDGM^2)))

Measurement of uncertainty = +/- 0.14 cfm

DIRIGO LABORATORIES INC.

EPA Method 5 Dry Gas Meter Calibration for γ and ΔH@

Manufacturer / Model: Apex-XC-60-ED
ID: Box B
Serial Number: 1902133
Equipment No.: Dirigo 054
Calibration Date: 10/9/2013
Next Calibration Due: 4/9/2014
Barometric Pressure: 30.06 inHg
Signature/Date: 10/9/2013

Average DGM γ factor = 0.974

Average Meter Orifice ΔH@ = 1.178

	Run 1	Run 2	Run 3
Standard DGM Initial Volume (L)	0.000	0.000	0.000
Standard DGM Final Volume (L)	129.025	133.666	133.557
Standard Ave. Meter Temperature (°F), (Tstd)	69.0	71.0	73.0
DGM Initial Volume (cuft)	0.000	0.000	0.000
DGM Final Volume (cuft)	4.760	5.002	4.992
DGM Average Temperature (°F), (T_{DGM})	86.0	89.0	92.0
Time (min)	30.0	35.0	40.0
Orifice ΔH ("H2O)	2.51	1.98	1.51
Vacuum ("H2O)	0.00	0.00	0.00
Total Volume for Standard DGM (Vstd) (cuft)	4.556	4.720	4.717
Total Volume for DGM (V_{DGM}) (cuft)	4.760	5.002	4.992

Dry Gas Meter γ Factor	0.980	0.969	0.973
γ Factor Deviation From Average	0.006	0.005	0.001
Meter Orifice ΔH@	60.132	60.127	59.976
Orifice ΔH@ Deviation From Average	0.053	0.049	0.102

Standard Meter Data

Date	3/18/2013
γ Factor	0.998
Model	SK25DA
Serial Number	1101001

Pre-Calibration Data

Date	3/27/2013
γ Factor	0.985
ΔH@	60.272
Tolerance (5%)	0.049
Deviation	0.011

Pass

DGM Calibration Data

γ Deviation Tolerance	0.020
Maximum γ Deviation	0.006
ΔH@ Deviation Tolerance	0.200
Maximum dH@ Deviation	0.102

Pass

Calculations:

1. Deviation = |Average value for all runs - current run value|
2. γ = (V_{std} x (Std γ factor) x (P_{Bar}) x (T_{DGM} + 460) / (V_{DGM} x (T_{std} + 460) x (Pbar + (dH / 13.6)))
3. ΔH@ = 0.0319 x ΔH (((T_{DGM}+ 460) x ($Time^2$)) / (P_{Bar} x (γ factor^2) x (V_{DGM}^2)))

Measurement of uncertainty = +/- 0.14 cfm

Report and Certificate of Calibration

CAL-CERT

by

Cal-Cert

6709 S.E. Lake Road Milwaukie, OR 97222 (800)356-4662 Fax (503)654-9670

ACCREDITED

Report #:	45655-D-01
Customer Name:	Dirigo Laboratories
Customer Address:	11785 SE Highway 212, Suite 305
City:	Clackamas **State:** OR **Zip:** 97015
Contact:	John Steinert
Service Address:	11785 SE Highway 212, Suite 305, Clackamas, OR 97015

Calibration Standards

1-LB-00380 Troemner Weight Set S/N: D1261, A066 Cal Date: 7/24/12 Due Date: 7/24/14 Vendor: QCS Range: 50 lbs NIST#: 20121555
14-RH1-00192 Comark Temp/Humidity Meter S/N: 062171500049 Cal Date: 6/18/13 Due Date: 6/18/14 Vendor: CC NIST#: 45359-C-01

Instrument Data

Calibration Date:	July 10, 2013	**Reference:**	ASTM E-898
Calibration Due Date:	July 10, 2014	**Number of Ranges:**	One
Calibration Frequency:	12 Months	**Indicating System:**	Digital
Manufacturer:	Scientech	**Temperature:**	71 °F
Model Number:	ZSA 210	**Humidity:**	46% RH
Type:	Digital Balance	**Asset #:**	Dirigo #048
Serial #:	28095	**Service Location:**	Service Address
Scale Capacity:	210 grams	**As Found:**	PASS
		As Left:	PASS

Scale Linear Test

Instrument Range: 210.0000 grams **Resolution:** 0.0001 grams

Calibration Standard grams	As Found UUT grams	As Found Error grams	As Left UUT grams	As Left Error grams	As Left % of Error	Tolerance (As Left) Allowable Error	
						Error	Condition
0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	PASS
21.0000	21.0013	0.0013	21.0013	0.0013	0.006	0.0210	PASS
42.0000	42.0036	0.0036	42.0036	0.0036	0.009	0.0420	PASS
63.0000	63.0047	0.0047	63.0047	0.0047	0.007	0.0630	PASS
84.0000	84.0067	0.0067	84.0067	0.0067	0.008	0.0840	PASS
105.0000	105.0020	0.0020	105.0020	0.0020	0.002	0.1050	PASS
126.0000	126.0050	0.0050	126.0050	0.0050	0.004	0.1260	PASS
147.0000	147.0058	0.0058	147.0058	0.0058	0.004	0.1470	PASS
168.0000	168.0075	0.0075	168.0075	0.0075	0.004	0.1680	PASS
189.0000	189.0105	0.0105	189.0105	0.0105	0.006	0.1890	PASS
210.0000	210.0103	0.0103	210.0103	0.0103	0.005	0.2100	PASS
105.0000	105.0020	0.0020	105.0020	0.0020	0.002	0.1050	PASS
0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	PASS

Expanded Uncertainty± 0.000351 grams

Scale CE-002-1 Revision 9 1/24/2011

Page 1 of 2

Manufacturer: Scientech Type: Digital Balance Serial #: 28095

FUNCTIONAL CHECKS					
OFF CENTER LOAD:		**HYSTERESIS: Load Increments**		**REPEATABILITY:**	
Loading position	105.0000	Test Weight Applied, % of load	Readings	Test Weight Applied	105.0000
Right	105.0012	0%	0.0000	1st	105.0020
Left	105.0027	(R1) 50%	105.0020	2nd	105.0020
Front	105.0011	100%	210.0103	3rd	105.0020
Back	105.0026	(R2)50%	105.0020	4th	105.0020
As Left	PASS	0%	0.0000	5th	105.0020
		As Left	PASS	As Left	PASS
Tolerance Deviation of lowest and highest reading within 0.1%		Tolerance The Difference of R1 and R2 must be within 0.1%		Tolerance Deviation of lowest and highest reading within 0.1%	

Remarks:

We sincerely thank you for your business.
Please call us at 1-800-356-4662 for all your calibration needs.
Cleaning and preventive maintenance were preformed before calibration of this equipment.

Calibrations are performed under ambient conditions using manufacturer's and customers specifications for the PASS/FAIL results. Results may be influenced by the age of the instrument and environmental conditions. Calibration data should be reviewed to insure that the instrument is performing to its intended accuracy. Calibrations conforms to ANSI / NCSL Z540-1 specifications and CAL-CERT Procedure CP-002

Accredited by the International Accreditation Service, Inc. (IAS) under Calibration Laboratory Code CL-108.
This Laboratory meets the requirements of ISO/IEC 17025 AND ANSI/NCSL Z540-1

This Certificate is issued as a statement of the fact that on this date the above instrument(s) had an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the instrument(s) will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "CAL-CERT", since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the instrument(s) and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from deterioration, obsolescence, malfunction, or substandard performance of said instrument(s); which shall be deemed to be and which shall remain the sole responsibility of the machines regular custodian, owner, and/or manufacturer.

This report shall not be reproduced except in full, without written approval from Cal-Cert

Service Engineer: KEVIN CORRIGAN **Date:** July 10, 2013

Technical Manager: MARSHALL DOYLE **Signature:**

REPORT#: 45655-D-01

Scale CP-002-1 Revision 9 1/4/2011

Page 2 of 2

AIR LIQUIDE Air Liquide America Specialty Gases LLC | Scott

RATA CLASS

Dual-Analyzed Calibration Standard

500 WEAVER PARK RD, LONGMONT, CO 80501 Phone: 888-253-1635 Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Interference Free™ Multi-Component EPA Protocol Gas

Assay Laboratory - PGVP Vendor ID: A42012

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
500 WEAVER PARK RD
LONGMONT, CO 80501

P.O. No.: 24
Document # : 45160164-001

Customer
DIRIGO LABORATORIES, INC

JOHN STEINERT
11785 SE HWY 212 SUITE 30
CLACKAMAS OR 97015
US

ANALYTICAL INFORMATION Gas Type : OCC

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL021796 **Certification Date:** 05Mar2012 **Exp. Date:** 27Feb2015
Cylinder Pressure*:** 1143 PSIG **Batch No:** LGM0049653

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ACCURACY**	TRACEABILITY
CARBON MONOXIDE	4.27	%	+/- 1%	Direct NIST and VSL
CARBON DIOXIDE	17.2	%	+/- 1%	Direct NIST and VSL
OXYGEN	17.0	%	+/- 1%	Direct NIST and VSL
NITROGEN	BALANCE			

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2639	27Apr2017	KAL004146	0.974 %	CARBON MONOXIDE
NTRM 1800	01Mar2013	K015614	17.87 %	CARBON DIOXIDE
NTRM 2658	01Feb2016	K012175	10.03 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
HP/6890/US00034440	20Feb2012	TCD/FID
FTIR//0929062	10Feb2012	FTIR
OXYMAT/6E/W5-951	20Feb2012	PARAMAGNETIC

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis

CARBON MONOXIDE
Date: 27Feb2012 Response Unit:AREA
Z1=0.00000 R1=1876082. T1=8259395.
R2=1867768. Z2=0.00000 T2=8217214.
Z3=0.00000 T3=8224550. R3=1862374.
Avg. Concentration: 4.262 %

CARBON DIOXIDE
Date: 28Feb2012 Response Unit:%
Z1=0.00483 R1=17.88295 T1=17.19822
R2=17.88429 Z2=0.00546 T2=17.20909
Z3=0.00649 T3=17.21928 R3=17.89547
Avg. Concentration: 17.19 %

OXYGEN
Date: 29Feb2012 Response Unit:VOLTS
Z1=0.00000 R1=10.04000 T1=17.04000
R2=10.05000 Z2=0.00000 T2=17.04000
Z3=0.00000 T3=17.04000 R3=10.06000
Avg. Concentration: 17.04 %

Second Triad Analysis

Date: 05Mar2012 Response Unit: AREA
Z1=0.00000 R1=1828660. T1=8068158.
R2=1824750. Z2=0.00000 T2=8068443.
Z3=0.00000 T3=8055063. R3=1820843.
Avg. Concentration: 4.274 %

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r=1.000000
Constants: A=0.00101487
B=5.2891E-07 C=-5.157E-16
D= E=

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r=9.99996E-1
Constants: A=0.00000E+0
B=9.14230E-1 C=1.04890E-2
D=2.30000E-5 E=0.00000E+0

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r=1.000000
Constants: A=-0.00483773
B=0.99911168 C=
D= E=

APPROVED BY: JOHN ROZOF

Page 1 of 1

Airgas

CERTIFICATE OF BATCH ANALYSIS

NITROGEN - ULTRA HIGH PURITY-PURE

Airgas Nor Pac
11900 NE 95th St., Ste. 400
Vancouver, Washington 98682
(360) 944-4000 Fax: (360) 944-4100
www.airgas.com

Part Number:	NI UHP200BA	Reference Number:	16-101518687-3
Cylinder Analyzed:	6564&	Cylinder Volume:	230 Cubic Feet
Laboratory:	NOR - Portland - OR	Cylinder Pressure:	2200 PSIG
Analysis Date:	May 10, 2011	Valve Outlet:	580
Lot #:	16-101518687-3		

ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
NitrogenUltraHighPurity	99.999%	99.999%
CO + CO2	< 1 PPM	< 1 PPM
Moisture	< 1 PPM	< 1 PPM
Oxygen	< 1 PPM	< 1 PPM
THC	< 0.5 PPM	< 0.5 PPM

Cylinders in Batch:
CAI2175778Y, CG969822, N-459011

Notes:

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Approved for Release

Page 1 of 16-101521404-1

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6891 Fax: (323) 567-3666
http://www.airgas.com

Part Number:	E04NI77E15A0575	Reference Number:	48-124265336-1
Cylinder Number:	CC280566	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32011	Valve Outlet:	590
Analysis Date:	May 25, 2011		

Expiration Date: May 25, 2014

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	2.500 %	2.494 %	G1	+/- 1% NIST Traceable
CARBON DIOXIDE	10.00 %	10.47 %	G1	+/- 1% NIST Traceable
OXYGEN	10.50 %	10.11 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	060608	CC206095	22.51% OXYGEN/NITROGEN	May 01, 2016
NTRM	080614	CC267714	1.959% CARBON MONOXIDE/NITROGEN	Oct 15, 2012
NTRM	040604	XC034266B	19.84% CARBON DIOXIDE/NITROGEN	May 15, 2012

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS % CO2	NDIR	May 21, 2011
HORIBA % CO	NDIR	May 03, 2011
Siemens %O2	PARAMAGNETIC	May 20, 2011

Triad Data Available Upon Request

Notes:

Approved for Release

Page 1 of 48-124265336-1

Certificate of Calibration

Certificate Number: 469735

JJ Calibrations, Inc.
7007 SE Lake Rd
Portland, OR 97267-3105
Phone 503.786.3005
FAX 503.786.3004

Dirigo Laboratories, Inc.
11785 SE Hwy. 212
Suite 305
Clackamas, OR 97015

PO: 7
Order Date: 02/04/2011
Authorized By: N/A

Property #: 051
User: N/A
Department: N/A
Make: Unknown
Model: 10 LBS.
Serial #: 051
Description: Mass
Procedure: DCN 500901
Accuracy: NIST HB 105-1 (F CLASS)

Calibrated on: 02/08/2011
*Recommended Due: 02/08/2016
Environment: 18 °C 36 % RH
As Received: Within Tolerance
As Returned: Within Tolerance
Action Taken: Calibrated
Technician: 92

Remarks: * Any number of factors may cause the calibration item to drift out of calibration before the recommended interval has expired.

Standards Used

Std ID	Manufacturer	Model	Nomenclature	Due Date	Trace ID
432A	Sartorius	C-44	Microbalance 5.1g	11/08/2011	461791
503A	Rice Lake	1mg-200g (Class O)	Mass Set	11/08/2011	460936
550A	And (A&D) Co.	HP-30K	Balance 30 Kg	02/02/2012	467177

Measurement Data

Parameter Measurement Description	Range	Unit	Reference	UUT	Variance	Min	Max
Before/After							
Mass							
Class F - 10 lb		mg	4535924.0	4536081	-157.0	4535474.0	4536374.0

JJ Calibrations, Inc. certifies that this instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual with the stated procedure using standards that are traceable to the National Institute of Standards and Technology (NIST), or other National Measurement Institutes (NMI's), or by using natural physical constants, intrinsic standards or ratio calibration techniques. The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2005, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without prior written consent of JJ Calibrations, Inc.
JJ Calibrations, Inc. quality system has been assessed and accredited to ISO/IEC 17025:2005.

Reviewer

Issued 02/08/2011 Rev # 14

Inspector

Certificate: 469735

Page 1 of 1

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059-2130
(323) 357-6891 Fax: (323) 567-3666
http://www.airgas.com

Part Number:	E04NI77E15A0575	Reference Number:	48-124265336-1
Cylinder Number:	CC280566	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32011	Valve Outlet:	590
Analysis Date:	May 25, 2011		

Expiration Date: May 25, 2014

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OXYGEN	10.50 %	10.11 %	G1	+/- 1% NIST Traceable
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Siemens %O2	PARAMAGNETIC	May 20, 2011

Triad Data Available Upon Request

Notes:

Approved for Release

Page 1 of 48-124265336-1

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Dirigo Laboratories, Inc.
11785 SE Hwy. 212
Suite 305
Clackamas, OR 97015

PO: 7
Order Date: 02/04/2011
Authorized By: N/A

Property #: 051
User: N/A
Department: N/A
Make: Unknown
Model: 10 LBS.
Serial #: 051
Description: Mass
Procedure: DCN 500901
Accuracy: NIST HB 105-1 (F CLASS)

Calibrated on: 02/08/2011
*Recommended Due: 02/08/2016
Environment: 18 °C 36 % RH
As Received: Within Tolerance
As Returned: Within Tolerance
Action Taken: Calibrated
Technician: 92

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Mass							
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JJ Calibrations, Inc. certifies that this instrument has been calibrated in accordance with the JJ Calibrations Quality Assurance Manual with the stated procedure using standards that are traceable to the National Institute of Standards and Technology (NIST), or other National Measurement Institutes (NMI's), or by using natural physical constants, intrinsic standards or ratio calibration techniques. The quality system and this certificate are in compliance with ANSI/NCSL Z540-1-1994, ISO/IEC 17025-2005, ISO 10012-1, the ISO 9000 family and QS 9000. The expanded uncertainties of measurements for this calibration are based upon 95% (2 sigma) confidence limits. Unless otherwise stated, a test accuracy ratio (TAR) of 4:1, if achievable, is maintained. The results reported herein apply only to the calibration of the item described above. This report may not be reproduced, except in full, without prior written consent of JJ Calibrations, Inc.
JJ Calibrations, Inc. quality system has been assessed and accredited to ISO/IEC 17025:2005.

Reviewer

Issued 02/08/2011 Rev # 14

Inspector

Certificate: **469735**

Page 1 of 1

Appendix F: Hand Calculations

GreenTech Mfg Model/ CrownRag/ RS7300E
Project # 004-HHW-023-1
Hand Calculations Run #1

A. Dry Moisture Content To % M_w

$$\frac{20.9 \times 100}{20.9 + 100} = \frac{2090}{120.9} = 17.29\%$$

B Burn Rate Kg/hr $\frac{60 \times Wt_{lb} \times 0.4536 \times 100 - \%M_w}{\text{minute} \quad 100}$

$$\frac{60 \times 112.2 \times 0.4536}{200} \times \frac{100 - 17.29}{100} = 12.63 \text{ Kg/hr}$$

C Total Particulate Sample Train A = 7.5 mg
Sample Train B = 7.4 mg
Ambient -0.00001254

D Volume Standard V_{mstd}

$$V_m Y_{Std} \left(\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m \quad P_{std}} \right) = (28.32) .995 \times 528 \left(\frac{30.42}{16575.68} \right)$$

$= 27.3$

E Dilution Tunnel Gas Velocity V_s

$$F_p \times C_p \times 85.49 \times \sqrt{\Delta P} \times \sqrt{\frac{T_s}{P_s \times M_s}}$$

$= 1 \times .99 \times 85.49 \times 0.2121 \times 0.81 = 14.54$

F Particulate Concentration: C_S - Ambient

$\frac{7.5}{1000} / 27.32 = 0.000274567 - 0.000011254$

$= 0.000263313$

G Q_{sd} - Avg Dilution Tunnel gas flow rate

$Q_{sd} = 3600 (1 - B_{ws}) \times V_s \times A \times \frac{T_{std}}{T_s\ Avg} \times \frac{P_s}{P_{std}}$

$3600 (0.98) \times 14.53667 \times 0.7854 \times \frac{528}{527.1} \times \frac{30.257}{29.92}$

$= 37912$ dscf/hr

H ET Particulate Emissions g

$ET = (C_S - C_T)\ Q_{sd} \times \Theta$

$(0.000274567 - 0.000011254)\ 37912 \times 200/60$

$= 33.28$ g Total PM Emissions

I Q_{in} Heat input BTU

$= (W_{fuel} / (1 + M_c/100) \times 8600$

$(112.2 / 1.209) \times 8600 = 798,114$ BTU

J Q_{out}

Total BTU w/water + Steel / hr

$631996 / 3.3333 = 189,599$ BTU/hr

Appendix G: Certification

CERTIFICATE OF ACCREDITATION

This certifies that:

Dirigo Laboratories INC.

Has satisfied the requirements for laboratory accreditation for the certification of wood heaters pursuant to subpart AAA of 40 CFR Part 60, New Source Performance Standards For Residential Wood Heaters

February 24, 2011 - February 24, 2016
EFFECTIVE DATE

MEASUREMENT TECHNOLOGY GROUP
GROUP LEADER

Methods 28, 28A, 28 OWHH, 5G, 5H
METHODS

9
CERTIFICATE NUMBER

CERTIFICATE OF ACCREDITATION

This certifies that:

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February 24, 2011 - February 24, 2016
EFFECTIVE DATE

MEASUREMENT TECHNOLOGY GROUP
GROUP LEADER

Methods 28, 28A, 28 OWHH, 5G, 5H
METHODS

9M (Mobile Laboratory)
CERTIFICATE NUMBER

PREBURN

JOB # 004_HHW_023_1
TECHNICIAI BTN
DATE: 3_12_14
RUN #: EPA1
READING INTERVAL: 10
.
Run Time: 110

Model Designation RS7300 E

	Tunnel Traverse Information											
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10	Pt.11	Pt. 12
dP	0.045	0.045	0.052	0.052	0.055	0.046	0.044	0.045	0.045	0.052	0.052	0.045
Temperature	90	90	90	90	90	90	90	90	90	90	90	90

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	32.1	-0.03	6021	6022	6024	6022	6023	6022.4
10	27.1	-0.031	6021	6022	6024	6022	6022	6022.2
20	72.1	-0.037	6021	6022	6024	6021	6022	6022
30	65.1	-0.035	6019	6020	6022	6020	6021	6020.4
40	56.9	-0.033	6018	6019	6021	6019	6019	6019.2
50	50.5	-0.037	6017	6018	6020	6018	6019	6018.4
60	45.1	-0.038	6016	6017	6019	6017	6017	6017.2
70	35.1	-0.041	6017	6017	6020	6017	6018	6017.8
80	29.1	-0.044	6016	6016	6018	6016	6017	6016.6
90	24.1	-0.04	6016	6017	6019	6017	6017	6017.2
100	18.1	-0.034	6019	6020	6022	6020	6020	6020.2
110	11.1	-0.033	6021	6022	6024	6022	6022	6022.2

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	14.53667	ft/sec.
Intial Tunnel Flow:	661.2461	scfm
Average Tunnel Flow:	631.898	scfm

Notes:

Run #	Epa#1
Date:	3/12/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.045	0.045	0.052	0.052	0.055	0.046	0.044	0.045	0.045	0.052	0.052	0.045	0.048
Temperature	90	90	90	90	90	90	90	90	90	90	90	90	90.000

Tunnel Velocity:	14.537	ft/sec.
Intial Tunnel Flow:	661.25	scfm
Average Tunnel Flow	631.9	scfm

JOB #	004-hhw-023-1							ROOM TEMP (F)		66.0			BEG	MID	END	AVG
TECHNICIA	BTN								BAROMETRIC				30.28	30.28	30.28	30.28
DATE:	3/12/2014															
RUN #:	Epa#1															
READING INTERVAL:	10															
SAMPLE BOX :	A	METER Y FACTOR:		0.995						PROBE MATERIAL:			SS			
FRONT FILTER #:					REAR FILTER #	REAR FILTER #:										
FINAL LEAK RATE (CFM):		@		IN-HG		FINAL LEAK RATE (CFM)				@		IN-HG				
Run Time:		200		AMBIENT FILTER #:			VOLUME		LITERS	FUEL MOISTURE DB				20.9	%	
				FINAL LEAK RATE (CFM):			@		IN-HG							
TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
0		0.000	0.042	0.06	0		NA	112.2	0	107	374	70	6024	6022	73	68
10	1.380	0.138	0.046	1.98	0	14.683	101	106.1	6.1	114	411	75	6022	6021	74	65
20	2.766	0.139	0.046	1.97	-1.51	14.709	101	98.1	8	116	426	76	6022	6020	79	65
30	4.149	0.138	0.045	1.98	-1.26	14.573	101	88.2	9.9	118	433	78	6023	6021	82	65
40	5.547	0.140	0.049	2.02	-1.65	15.181	98	79.8	8.4	116	412	78	6024	6022	85	65
50	6.951	0.140	0.043	2	-2.28	14.184	104	71.1	8.7	113	390	78	6024	6022	89	65
60	8.363	0.141	0.048	2	0	14.960	98	64.1	7	111	388	78	6024	6023	92	65
70	9.774	0.141	0.045	2.01	-2.09	14.497	101	57.1	7	112	395	78	6025	6023	94	66
80	11.188	0.141	0.045	2.01	-2.18	14.497	101	49.1	8	112	397	79	6025	6024	96	65
90	12.603	0.141	0.05	2.02	0	15.295	95	41.1	8	113	416	78	6025	6023	97	66
100	14.025	0.142	0.041	2	-0.01	13.826	105	34.4	6.7	111	402	78	6025	6023	99	66
110	15.440	0.141	0.046	2	-2.08	14.645	99	28.6	5.8	111	384	78	6025	6023	99	65
120	16.865	0.143	0.046	2.02	-2.32	14.606	99	24.4	4.2	108	374	77	6025	6023	100	66
130	18.290	0.142	0.041	2.03	-2.18	13.753	105	19.1	5.3	105	356	77	6025	6023	101	66
140	19.720	0.143	0.046	2.03	-0.03	14.542	99	15.1	4	103	333	76	6025	6023	101	66
150	21.153	0.143	0.041	2.04	0	13.704	105	12	3.1	101	305	76	6025	6023	102	66
160	22.584	0.143	0.045	2.03	-1.6	14.332	100	9.9	2.1	99	298	76	6025	6024	102	66
170	24.020	0.144	0.043	2.05	0	13.984	102	7	2.9	97	279	75	6026	6024	102	66
180	25.457	0.144	0.048	2.03	-1.21	14.762	97	4.1	2.9	96	260	75	6026	6024	102	66
190	26.888	0.143	0.047	2.02	0	14.581	97	3.1	1	94	244	75	6026	6024	102	67
200	28.324	0.144	0.048	2.02	0	14.722	96	0	3.1	93	216	74	6025	6024	103	66
	28.324		0.045	2.01		14.502	100.1			107	357				94	66

JOB #	004_HHW_023_1												
TECHNICIAN	BTN												
DATE:	3_12_14												
RUN #:	EPA1												
READING INTERVAL:	10												
SAMPLE BOX :	B	METER Y FACTOR:		0.974			PROBE MATERIAL:		SS				
FRONT FILTER #:						REAR FILTER #:							
FINAL LEAK RATE (CFM):		@		IN-HG		FINAL LEAK RATE (CFM):		@		IN-HG			

Run Time: 200 **Firebox Delta T** **#N/A**

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6021	6022	70	6022	6023	71	
10	1.594	0.159	116	-0.04	2.05	-0.78	6020	6020	76	6020	6021	72	
20	3.109	0.151	110	-0.04	2	-2.09	6019	6020	77	6019	6020	73	
30	4.529	0.142	103	-0.04	2.01	-1.85	6020	6021	79	6021	6022	78	
40	5.936	0.141	97	-0.05	2.07	-2.19	6021	6022	80	6022	6022	83	
50	7.342	0.141	103	-0.04	2.06	-0.77	6021	6022	79	6022	6023	86	
60	8.750	0.141	97	-0.04	2.04	-0.96	6021	6022	79	6022	6023	89	
70	10.161	0.141	100	-0.04	2.05	-2.38	6022	6023	79	6023	6023	91	
80	11.567	0.141	99	-0.04	2.03	-1.13	6022	6023	80	6023	6024	93	
90	12.974	0.141	94	-0.04	2.04	-2.24	6022	6023	80	6023	6024	94	
100	14.383	0.141	103	-0.04	2.04	-2.08	6022	6023	79	6023	6024	96	
110	15.795	0.141	98	-0.03	2.05	-2.4	6022	6023	79	6023	6023	97	
120	17.206	0.141	97	-0.04	2.03	-0.98	6022	6023	78	6023	6023	97	
130	18.618	0.141	103	-0.03	2.05	-1.13	6022	6023	78	6023	6024	98	
140	20.033	0.141	97	-0.03	2.04	-2.42	6022	6023	78	6023	6024	98	
150	21.448	0.141	102	-0.03	2.04	-0.94	6022	6023	77	6023	6023	99	
160	22.867	0.142	98	-0.03	2.07	-1.87	6023	6023	77	6023	6024	99	
170	24.294	0.143	101	-0.03	2.06	-1.45	6023	6024	77	6023	6024	99	
180	25.716	0.142	95	-0.02	2.06	-1.01	6023	6024	76	6024	6024	99	
190	27.144	0.143	96	-0.02	2.06	-1.44	6023	6024	76	6024	6024	99	
200	28.569	0.142	95	-0.02	2.07	-1.34	6022	6023	75	6023	6024	99	
	28.56923	0.143	100.192	-0.033	2.046	-1.54524	6022	6023	78	6022	6023	91	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water
0	13.262	140	169	3.24	52	162	113	183772	2353	4630
1	13.349	139.85	168.92	3.24	51.43	162.4	112.676	184566.856	2353	4630
2	13.287	139.61	168.94	3.21	51.31	162.36	112.775	183105.363	2353	4630
3	13.327	139.55	168.49	3.26	51.4	162.07	112.264	183694.229	2353	4630
4	13.223	139.02	167.83	3.29	51.53	161.45	111.54	182262.205	2353	4630
5	13.382	136.79	167.85	3.57	52.28	161.34	110.268	195673.137	2353	4630
6	13.287	133.77	168.14	4.04	52.58	159.4	108.329	218413.174	2353	4630
7	13.318	132.56	167.73	4.16	52.42	158.39	107.456	224949.488	2353	4630
8	13.301	131.42	167.38	4.29	52.14	157.39	106.561	228859.176	2353	4630
9	13.278	129.72	166.75	4.50	52.03	155.61	105.247	237953.735	2353	4630
10	13.332	129.63	166.53	4.50	51.81	155.09	105.013	236477.178	2353	4630
11	13.37	129.59	166.09	4.49	51.7	154.74	104.7	235060.251	2353	4630
12	13.306	129.03	166.06	4.49	51.8	155.03	104.508	235414.69	2353	4630
13	13.294	128.96	166.13	4.47	51.8	155.09	104.345	234090.357	2353	4630
14	13.33	128.65	165.82	4.53	51.68	154.73	104.21	235012.571	2353	4630
15	13.294	128.63	165.54	4.46	51.6	154.53	104.075	234124.581	2353	4630
16	13.255	128.28	165.32	4.58	51.84	154.63	103.756	234750.838	2353	4630
17	13.224	128.5	165.54	4.50	51.73	153.78	103.55	233174.738	2353	4630
18	13.23	128.69	165.47	4.54	51.59	153.71	103.4	233121.602	2353	4630
19	13.276	128.23	165.28	4.55	51.66	153.28	103.202	233502.091	2353	4630
20	13.26	128.23	165.01	4.52	51.53	152.84	103.067	232620.07	2353	4630
21	13.357	128.27	164.91	4.51	51.5	152.88	102.889	232722.721	2353	4630
22	13.311	128.05	164.7	4.52	51.35	152.49	102.733	230900.97	2353	4630
23	13.318	127.89	164.67	4.49	51.38	152.71	102.712	232013.501	2353	4630
24	13.289	127.84	164.36	4.51	51.34	152.42	102.513	230229.839	2353	4630
25	13.322	127.81	163.93	4.50	51.1	152.08	102.456	230761.386	2353	4630
26	13.393	128.01	164	4.40	51.11	152.39	102.74	227657.938	2353	4630
27	13.313	127.53	164.05	4.54	51.16	152.07	102.257	230445.289	2353	4630
28	13.374	127.71	163.83	4.50	51.35	152.12	102.292	230906.064	2353	4630
29	13.317	127.28	163.67	4.52	51.18	151.71	102.037	232061.391	2353	4630
30	13.355	127.36	163.75	4.54	51.13	151.85	102.115	231237.851	2353	4630
31	13.407	130.07	163.14	4.12	51.18	153.83	103.756	212603.712	2353	4630
32	13.388	126.51	163.7	4.62	51.14	151.24	101.54	238297.504	2353	4630
33	13.439	127.73	163.85	4.45	51.23	152.32	102.498	229480.556	2353	4630
34	13.32	127.91	163.24	4.43	51.28	152.31	102.442	227464.441	2353	4630
35	13.338	127.73	162.92	4.42	51.36	152.2	102.392	227842.672	2353	4630
36	13.342	128.13	163.06	4.34	51.1	152.27	102.385	226923.513	2353	4630
37	13.387	127.82	163.41	4.51	51.26	152.28	102.42	228094.525	2353	4630
38	13.295	127.52	163.38	4.49	51.22	152.25	102.2	230163.398	2353	4630
39	13.313	127.52	163.38	4.48	51.43	152.19	102.15	229685.016	2353	4630
40	13.306	127.05	163.18	4.49	51.22	151.75	101.916	229447.855	2353	4630
41	13.468	127.26	163.12	4.46	51.23	151.76	101.873	229631.193	2353	4630
42	13.351	127.15	162.88	4.45	51.26	151.66	101.717	229879.543	2353	4630
43	13.332	127.02	162.75	4.56	51.26	151.35	101.483	228872.929	2353	4630
44	13.348	126.81	162.41	4.49	51.18	151.22	101.305	228648.741	2353	4630
45	13.303	126.93	162.4	4.51	51.24	150.89	101.121	227816.45	2353	4630
46	13.258	126.61	162.08	4.51	51.31	151.02	100.957	227676.765	2353	4630
47	13.34	126.94	161.88	4.56	51.45	151.28	101.057	226120.051	2353	4630
48	13.333	126.24	161.71	4.50	51.41	150.87	100.616	226914.818	2353	4630
49	13.365	126.19	161.53	4.47	51.43	150.63	100.489	225873.327	2353	4630
50	13.331	126	161.48	4.53	51.24	150.02	100.155	225719.54	2353	4630
51	13.427	125.9	161.24	4.47	51.34	150.24	100.027	224465.517	2353	4630
52	13.411	125.77	160.85	4.47	51.27	149.92	99.828	224322.862	2353	4630
53	13.343	125.55	160.63	4.52	51.19	149.66	99.565	225040.879	2353	4630
54	13.35	125.65	160.47	4.45	51.29	149.38	99.416	222628.79	2353	4630
55	13.38	125.37	160.32	4.55	51.07	148.8	99.089	223889.903	2353	4630
56	13.459	125.23	160.45	4.46	51.2	149.11	99.189	222685.079	2353	4630
57	13.364	125.47	160.42	4.45	51.17	149.46	99.089	222610.161	2353	4630
58	13.489	125.25	160.07	4.45	51.22	149.51	99.104	222488.619	2353	4630
59	13.361	125.32	160.14	4.41	51.42	149.38	99.139	222932.487	2353	4630
60	13.372	125.73	160.01	4.50	51.23	149.2	99.096	219945.719	2353	4630
61	13.208	125.19	159.88	4.53	51.16	148.88	98.791	223029.726	2353	4630
62	13.289	125.23	159.66	4.47	51.2	148.86	98.642	221879.572	2353	4630

density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
8.339394	110	1.001221	27.02798	1	154.5	3057.89	183473.4
8.339911	110.97	1.001221	27.00463	1	154.385	3046.49	182789.4
8.340019	111.05	1.001221	26.72976	1	154.275	3018.129	181087.7
8.339938	110.67	1.00122	27.1465	1	154.02	3051.294	183077.6
8.339821	109.92	1.001218	27.42133	1	153.425	3062.3	183738
8.339138	109.06	1.001217	29.7874	1	152.32	3288.594	197315.6
8.338863	106.82	1.001217	33.68901	1	150.955	3653.939	219236.3
8.33901	105.97	1.001218	34.68194	1	150.145	3731.323	223879.4
8.339266	105.25	1.001219	35.75044	1	149.4	3814.245	228854.7
8.339367	103.58	1.001219	37.56051	1	148.235	3957.951	237477.1
8.339567	103.28	1.00122	37.51971	1	148.08	3944.864	236691.8
8.339667	103.04	1.001219	37.42009	1	147.84	3922.661	235359.6
8.339576	103.23	1.001219	37.43636	1	147.545	3917.17	235030.2
8.339576	103.29	1.00122	37.29458	1	147.545	3896.251	233775
8.339685	103.05	1.00122	37.77043	1	147.235	3940.86	236451.6
8.339757	102.93	1.001219	37.18698	1	147.085	3874.954	232497.2
8.33954	102.79	1.00122	38.17007	1	146.8	3965.205	237912.3
8.33964	102.05	1.00122	37.48668	1	147.02	3886.482	233188.9
8.339766	102.12	1.00122	37.8959	1	147.08	3923.216	235393
8.339703	101.62	1.00122	37.94565	1	146.755	3920.846	235250.8
8.339821	101.31	1.001221	37.67931	1	146.62	3888.233	233294
8.339848	101.38	1.001221	37.59603	1	146.59	3872.942	232376.5
8.339983	101.14	1.001221	37.70506	1	146.375	3878.284	232697
8.339956	101.33	1.001221	37.41304	1	146.28	3847.461	230847.6
8.339992	101.08	1.001222	37.59668	1	146.1	3858.858	231531.5
8.340208	100.98	1.001222	37.50591	1	145.87	3847.401	230844.1
8.340199	101.28	1.001222	36.70521	1	146.005	3775.701	226542.1
8.340154	100.91	1.001221	37.88098	1	145.79	3878.325	232699.5
8.339983	100.77	1.001222	37.5466	1	145.77	3845.409	230724.5
8.340136	100.53	1.001222	37.73077	1	145.475	3854.639	231278.3
8.340181	100.72	1.001222	37.89778	1	145.555	3874.66	232479.6
8.340136	102.65	1.001222	34.34468	1	146.605	3567.82	214069.2
8.340172	100.1	1.001221	38.55661	1	145.105	3919.821	235189.2
8.340091	101.09	1.001221	37.12174	1	145.79	3809.551	228573.1
8.340046	101.03	1.001221	36.97976	1	145.575	3792.907	227574.4
8.339974	100.84	1.001222	36.84601	1	145.325	3777.346	226640.8
8.340208	101.17	1.001221	36.21318	1	145.595	3712.215	222732.9
8.340064	101.02	1.001221	37.58033	1	145.615	3853.679	231220.7
8.3401	101.03	1.001221	37.41369	1	145.45	3828.347	229700.8
8.339911	100.76	1.001221	37.39616	1	145.45	3824.684	229481
8.3401	100.53	1.001221	37.47207	1	145.115	3823.668	229420.1
8.340091	100.53	1.001221	37.21349	1	145.19	3795.68	227740.8
8.340064	100.4	1.001221	37.10494	1	145.015	3778.813	226728.8
8.340064	100.09	1.001222	38.05571	1	144.885	3866.726	232003.5
8.340136	100.04	1.001221	37.47223	1	144.61	3800.761	228045.7
8.340082	99.65	1.001221	37.63045	1	144.665	3809.876	228592.5
8.340019	99.71	1.001221	37.63851	1	144.345	3804.509	228270.5
8.339893	99.83	1.001221	38.04659	1	144.41	3849.568	230974.1
8.339929	99.46	1.001221	37.49632	1	143.975	3777.335	226640.1
8.339911	99.2	1.001221	37.24604	1	143.86	3747.389	224843.3
8.340082	98.78	1.001221	37.77223	1	143.74	3787.697	227261.8
8.339992	98.9	1.001221	37.2881	1	143.57	3734.373	224062.4
8.340055	98.65	1.001222	37.27171	1	143.31	3725.305	223518.3
8.340127	98.47	1.001221	37.66401	1	143.09	3754.597	225275.8
8.340037	98.09	1.001222	37.08814	1	143.06	3691.661	221499.6
8.340234	97.73	1.001222	37.97309	1	142.845	3767.312	226038.7
8.340118	97.91	1.001222	37.21361	1	142.84	3695.69	221741.4
8.340145	98.29	1.001221	37.147	1	142.945	3685.356	221121.3
8.3401	98.29	1.001221	37.1051	1	142.66	3681.753	220905.2
8.33992	97.96	1.001221	36.74569	1	142.73	3647.38	218842.8
8.340091	97.97	1.001222	37.50539	1	142.87	3721.175	223270.5
8.340154	97.72	1.001222	37.81426	1	142.535	3740.272	224416.3
8.340118	97.66	1.001222	37.29701	1	142.445	3683.546	221012.7

# Reading		
202		
	T avg BEGIN	154.5
	T avg END	131.375
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	-23.125
	Cp	1.001221795
	Cpa	1.000906866
202	TOTAL MINUTES	200

TOTAL BTU	690140
TOTAL BTU WITH WATER	-52703
TOTAL BTU WITH H20 AND STEEL	-5441
BTU/HR	189599

63	13.473	124.83	159.38	4.49	51.19	148.54	98.351	222011.954	2353	4630		8.340127	97.35	1.001222	37.48053	1	142.105	3690.751	221445
64	13.369	125.68	159.44	4.36	51.19	148.97	98.89	216020.093	2353	4630		8.340127	97.78	1.001222	36.37129	1	142.56	3601.152	216069.1
65	13.307	125.63	159.26	4.34	51.14	148.8	98.77	214985.48	2353	4630		8.340172	97.66	1.001222	36.22137	1	142.445	3581.956	214917.3
66	13.292	125.54	159.43	4.35	51.11	149.02	98.734	214228.857	2353	4630		8.340199	97.91	1.001222	36.23816	1	142.485	3582.311	214938.7
67	13.216	125.48	159.11	4.38	51.05	148.72	98.72	214962.031	2353	4630		8.340252	97.67	1.001221	36.50528	1	142.295	3608.203	216492.2
68	13.302	125.41	159.17	4.30	51.25	148.65	98.578	214377.39	2353	4630		8.340073	97.4	1.001222	35.89567	1	142.29	3542.847	212570.8
69	13.402	125.6	159.36	4.32	51.11	148.71	98.628	214080.398	2353	4630		8.340199	97.6	1.001222	36.06302	1	142.48	3561.169	213670.2
70	13.318	125.49	159.38	4.38	51.13	148.6	98.585	214436.955	2353	4630		8.340181	97.47	1.001221	36.54667	1	142.435	3607.354	216441.2
71	13.278	125.52	159.15	4.33	51.29	148.57	98.521	215394.164	2353	4630		8.340037	97.28	1.001221	36.09568	1	142.335	3560.526	213631.6
72	13.356	125.55	159.18	4.36	51.26	148.79	98.585	215970.564	2353	4630		8.340064	97.53	1.001221	36.36268	1	142.365	3589.192	215351.5
73	13.321	125.54	159.43	4.35	51.32	148.65	98.578	216632.485	2353	4630		8.34001	97.33	1.001221	36.29572	1	142.485	3582.33	214939.8
74	13.35	125.41	159.17	4.33	51.25	148.84	98.741	215086.393	2353	4630		8.340073	97.59	1.001221	36.10418	1	142.29	3569.314	214158.9
75	13.248	125.66	159.03	4.36	51.44	148.77	98.72	214217.758	2353	4630		8.339902	97.33	1.001222	36.39533	1	142.345	3597.337	215840.2
76	13.362	125.69	159.45	4.28	51.13	148.98	98.713	214416.339	2353	4630		8.340181	97.85	1.001222	35.72933	1	142.57	3531.259	211875.5
77	13.37	125.59	159.35	4.30	51.17	148.7	98.89	214534.365	2353	4630		8.340145	97.53	1.001222	35.8793	1	142.47	3552.439	213146.4
78	13.205	125.62	159.51	4.36	51.13	149.04	99.033	215041.533	2353	4630		8.340181	97.91	1.001222	36.37987	1	142.565	3607.21	216432.6
79	13.381	125.78	159.68	4.33	51.09	149.13	99.054	214770.635	2353	4630		8.340217	98.04	1.001221	36.08812	1	142.73	3579.038	214742.3
80	13.347	125.69	159.58	4.33	51.27	149.05	99.025	215225.486	2353	4630		8.340055	97.78	1.001221	36.13746	1	142.635	3582.883	214973
81	13.367	125.92	159.41	4.34	51.23	149.38	99.089	215323.921	2353	4630		8.340091	98.15	1.001221	36.20433	1	142.665	3591.832	215509.9
82	13.372	125.88	159.5	4.35	51.32	149.16	99.089	215234.087	2353	4630		8.34001	97.84	1.001221	36.23734	1	142.69	3595.106	215706.4
83	13.374	126.12	159.75	4.34	51.37	149.39	99.21	216072.258	2353	4630		8.339965	98.02	1.001221	36.17043	1	142.935	3592.851	215571.1
84	13.44	125.85	159.88	4.33	51.23	149.51	99.196	215550.696	2353	4630		8.340091	98.28	1.001221	36.09591	1	142.865	3584.943	215096.6
85	13.438	125.95	159.84	4.36	51.33	149.6	99.175	216452.767	2353	4630		8.340001	98.27	1.001221	36.3207	1	142.895	3606.505	216390.3
86	13.369	126.1	160.12	4.33	51.28	149.62	99.352	216730.472	2353	4630		8.340046	98.34	1.001221	36.08738	1	143.11	3589.73	215383.8
87	13.357	125.84	160	4.28	51.43	150	99.416	216107.771	2353	4630		8.339911	98.57	1.001221	35.65312	1	142.92	3548.818	212929.1
88	13.328	125.97	160.12	4.34	51.35	150.06	99.579	216659.35	2353	4630		8.339983	98.71	1.001221	36.22889	1	143.045	3612.041	216722.5
89	13.261	126.09	160.38	4.39	51.34	150.05	99.679	217594.84	2353	4630		8.339992	98.71	1.001221	36.59588	1	143.235	3652.294	219137.6
90	13.331	126.1	160.52	4.28	51.48	150.24	99.899	216895.932	2353	4630		8.339866	98.76	1.001222	35.66961	1	143.31	3567.712	214062.7
91	13.35	126.55	160.3	4.35	51.13	150.04	100.14	217987.889	2353	4630		8.340181	98.91	1.001221	36.28813	1	143.425	3638.331	218299.9
92	13.445	126.64	160.79	4.31	51.29	150.19	100.197	217114.605	2353	4630		8.340037	98.9	1.001221	35.92888	1	143.715	3604.363	216261.8
93	13.314	126.66	160.81	4.34	51.25	150.52	100.417	218317.049	2353	4630		8.340073	99.27	1.001221	36.17924	1	143.735	3637.447	218246.8
94	13.506	126.8	160.94	4.33	51.31	150.71	100.588	218442.615	2353	4630		8.340019	99.4	1.001221	36.07892	1	143.87	3633.537	218012.2
95	13.352	127.13	161.68	4.34	51.39	150.84	100.716	219233.976	2353	4630		8.339947	99.45	1.001222	36.19537	1	144.405	3649.907	218994.4
96	13.348	125.89	161.1	4.50	51.13	150.04	100.148	227094.911	2353	4630		8.340181	98.91	1.001222	37.49745	1	143.495	3759.883	225593
97	13.373	125.78	161.65	4.49	51.16	150.26	100.19	225838.79	2353	4630		8.340154	99.1	1.001221	37.44729	1	143.715	3756.425	225385.5
98	13.341	126.96	161.5	4.37	51.34	151.24	100.929	220525.308	2353	4630		8.339992	99.9	1.001221	36.44577	1	144.23	3682.928	220975.7
99	13.364	126.04	161.78	4.50	51.22	150.56	100.446	227647.606	2353	4630		8.3401	99.34	1.001221	37.48875	1	143.91	3770.192	226211.5
100	13.338	126.3	161.91	4.55	51.42	150.56	100.382	227908.658	2353	4630		8.33992	99.14	1.001221	37.9383	1	144.105	3812.972	228778.3
101	13.294	126.4	161.74	4.53	51.38	150.71	100.51	227404.94	2353	4630		8.339956	99.33	1.001221	37.75498	1	144.07	3799.388	227963.3
102	13.266	126.1	161.71	4.53	51.28	150.68	100.474	227785.256	2353	4630		8.340046	99.4	1.001221	37.73871	1	143.905	3796.39	227783.4
103	13.307	125.91	161.38	4.49	51.28	150.62	100.403	227540.026	2353	4630		8.340046	99.34	1.001221	37.45515	1	143.645	3765.203	225912.2
104	13.419	126.32	161.52	4.50	51.23	150.32	100.439	226911.583	2353	4630		8.340091	99.09	1.001222	37.53875	1	143.92	3774.96	226497.6
105	13.342	125.89	161.63	4.46	51.2	150.35	100.325	226566.947	2353	4630		8.340118	99.15	1.001221	37.18859	1	143.76	3735.5	224130
106	13.347	126.27	161.62	4.53	51.39	150.41	100.382	227157.49	2353	4630		8.339947	99.02	1.001221	37.79664	1	143.945	3798.736	227924.2
107	13.216	126.11	161.58	4.56	51.29	150.44	100.219	226846.287	2353	4630		8.340037	99.15	1.001221	37.98887	1	143.845	3811.855	228711.3
108	13.246	126	161.6	4.49	51.38	149.96	100.041	225622.892	2353	4630		8.339956	98.58	1.001221	37.42138	1	143.8	3748.244	224894.6
109	13.359	125.98	161.32	4.52	51.36	150.13	100.098	226957.863	2353	4630		8.339974	98.77	1.001221	37.67166	1	143.65	3775.463	226527.8
110	13.37	125.81	161.42	4.48	51.33	150.47	100.084	226907.82	2353	4630		8.340001	99.14	1.001222	37.32984	1	143.615	3740.685	224441.1
111	13.259	125.83	161.05	4.57	51.14	150.06	100.084	226763.357	2353	4630		8.340172	98.92	1.001222	38.07288	1	143.44	3815.141	228908.5
112	13.386	126.08	161.42	4.49	51.19	150.1	100.062	225978.24	2353	4630		8.340127	98.91	1.001221	37.42215	1	143.75	3749.107	224946.4
113	13.337	125.76	160.84	4.50	51.34	150.11	99.949	225703.881	2353	4630		8.339992	98.77	1.001221	37.56332	1	143.3	3759.001	225540.1
114	13.357	125.8	161.02	4.51	51.32	150.21	99.849	225977.131	2353	4630		8.34001	98.89	1.001221	37.60511	1	143.41	3759.415	225564.9
115	13.406	125.65	161	4.50	51.5	150.38	99.821	225926.86	2353	4630		8.339848	98.88	1.001221	37.56267	1	143.325	3754.121	225247.3
116	13.372	125.77	161.12	4.57	51.42	150.06	99.807	225892.031	2353	4630		8.33992	98.64	1.001221	38.07173	1	143.445	3804.465	228267.9
117	13.396	125.67	161.15	4.48	51.38	149.71	99.572	225334.676	2353	4630		8.339956	98.33	1.001221	37.37134	1	143.41	3725.682	223540.9
118	13.412	125.56	160.9	4.52	51.4	149.8	99.508	224782.05	2353	4630		8.339938	98.4	1.001221	37.65482	1	143.23	3751.531	225091.8
119	13.301	125.46	160.54	4.52	51.37	149.51	99.324	224569.165	2353	4630		8.339965	98.14	1.001221	37.72166	1	143	3751.241	225074.5
120	13.343	125.37	160.46	4.48	51.35	149.37	99.26	225727.45	2353	4630		8.339983	98.02	1.001221	37.34644	1	142.915	3711.534	222692
121	13.322	125.51	160.46	4.51	51.42	149.56	99.423	224339.313	2353	4630		8.33992	98.14	1.001221	37.63806	1	142.985	3746.66	224799.6
122	13.383	125.52	160.47	4.53	51.23	149.51	99.217	225901.432	2353	4630		8.340091	98.28	1.001221	37.78895	1	142.995	3753.885	225233.1
123	13.342	124.99	160.34	4.50	51.3	149.2	99.089	225142.988	2353	4630		8.340028	97.9	1.001221	37.56349	1	142.665	3726.671	223600.3
124	13.334	125.04	159.99	4.52	51.48	149.12	98.983	223790.891	2353	4630		8.339866	97.64	1.001222	37.66283	1	142.515	3732.535	223952.1
125	13.314	125.07	159.76	4.52	51.11	148.77	98.777	223325.286	2353	4630		8.340199	97.66	1.001222	37.66434	1	142.415	3724.915	223494.9
126	13.331	125.05	159.47	4.55	51.16	148.57	98.677	223654.872	2353	4630		8.340154	97.41	1.001221	37.92268	1	142.26	3746.667	224800

127	13.292	124.87	159.83	4.53	51.25	148.84	98.535	222642.875	2353	4630		8.340073	97.59	1.00122	37.77219	1	142.35	3726.425	223585.5
128	13.316	124.64	159.46	4.54	51.55	148.87	98.294	223251.477	2353	4630		8.339803	97.32	1.001221	37.88772	1	142.05	3728.683	223721
129	13.332	124.52	159.61	4.52	51.37	148.64	98.145	222538.229	2353	4630		8.339965	97.27	1.001221	37.70498	1	142.065	3705.075	222304.5
130	13.354	124.49	159.19	4.54	51.27	148.3	97.925	221576.684	2353	4630		8.340055	97.03	1.001221	37.83049	1	141.84	3709.074	222544.4
131	13.347	124.51	159.08	4.51	51.36	148	97.754	220693.025	2353	4630		8.339974	96.64	1.001221	37.60494	1	141.795	3680.523	220831.4
132	13.393	124.22	158.65	4.57	51.26	147.97	97.584	220959.927	2353	4630		8.340064	96.71	1.00122	38.09741	1	141.435	3722.234	223334.1
133	13.381	123.94	158.77	4.52	51.59	147.9	97.342	220889.723	2353	4630		8.339766	96.31	1.001221	37.6874	1	141.355	3673.046	220382.8
134	13.394	123.95	158.39	4.54	51.39	147.47	97.207	220475.16	2353	4630		8.339947	96.08	1.001222	37.83	1	141.17	3681.833	220910
135	13.252	125.56	158.26	4.32	51.2	148.36	98.116	210306.522	2353	4630		8.340118	97.16	1.001221	35.98761	1	141.91	3535.272	212116.3
136	13.356	125.05	157.89	4.31	51.29	148.07	97.719	209747.492	2353	4630		8.340037	96.78	1.001221	35.97058	1	141.47	3519.3	211158
137	13.367	124.9	158.01	4.28	51.42	147.93	97.577	209866.468	2353	4630		8.33992	96.51	1.001221	35.71154	1	141.455	3488.879	209332.7
138	13.343	124.94	157.52	4.26	51.39	147.91	97.527	209746.548	2353	4630		8.339947	96.52	1.001221	35.49481	1	141.23	3465.929	207955.7
139	13.344	124.95	157.53	4.37	51.4	147.67	97.257	208084.311	2353	4630		8.339938	96.27	1.001221	36.46221	1	141.24	3550.534	213032.1
140	13.351	124.57	157.28	4.32	51.41	147.61	96.98	209219.696	2353	4630		8.339929	96.2	1.001221	36.02015	1	140.925	3497.499	209850
141	13.409	124.74	157.19	4.20	51.38	147.46	96.987	205399.759	2353	4630		8.339956	96.08	1.001221	35.02782	1	140.965	3401.39	204083.4
142	13.581	124.41	156.86	4.19	51.39	147.09	96.66	205872.592	2353	4630		8.339947	95.7	1.001221	34.93604	1	140.635	3381.042	202862.5
143	13.46	124.13	156.58	4.29	51.24	146.45	96.248	207426.093	2353	4630		8.340082	95.21	1.001221	35.77061	1	140.355	3447.053	206823.2
144	13.396	123.75	156.33	4.25	51.39	146.65	96.149	205360.536	2353	4630		8.339947	95.26	1.001221	35.40307	1	140.04	3408.127	204487.6
145	13.392	123.91	156.23	4.28	51.35	146.62	95.865	205883.125	2353	4630		8.339983	95.27	1.001221	35.66177	1	140.07	3422.889	205373.3
146	13.293	123.72	156.17	4.29	51.43	146.5	95.552	204819.102	2353	4630		8.339911	95.07	1.001221	35.77822	1	139.945	3422.853	205371.2
147	13.483	123.48	155.67	4.27	51.46	146.15	95.268	203890.283	2353	4630		8.339884	94.69	1.001221	35.6113	1	139.575	3396.76	203805.6
148	13.297	123.89	155.42	4.19	51.33	146.41	95.538	199571.92	2353	4630		8.340001	95.08	1.001221	34.95294	1	139.655	3343.412	200604.7
149	13.382	123.79	154.92	4.15	51.36	145.88	95.162	197801.917	2353	4630		8.339974	94.52	1.001221	34.56919	1	139.355	3293.69	197621.4
150	13.158	123.5	154.77	4.19	51.41	145.67	94.97	198263.98	2353	4630		8.339929	94.26	1.001221	34.93596	1	139.135	3321.919	199315.2
151	13.353	123.66	154.39	4.17	51.36	145.37	94.693	196479.487	2353	4630		8.339974	94.01	1.001221	34.73599	1	139.025	3293.272	197596.3
152	13.252	123.14	154.15	4.17	51.32	145.14	94.295	196659.991	2353	4630		8.34001	93.82	1.001221	34.78618	1	138.645	3284.169	197050.1
153	13.349	122.74	154.15	4.16	51.32	144.7	94.047	195957.759	2353	4630		8.34001	93.38	1.001221	34.7278	1	138.445	3270.033	196202
154	13.361	122.93	153.54	4.21	51.37	144.31	93.713	195091.025	2353	4630		8.339965	92.94	1.001222	35.06955	1	138.235	3290.488	197429.3
155	13.402	122.65	153.13	4.09	51.16	144.05	93.564	192812.938	2353	4630		8.340154	92.89	1.001222	34.10289	1	137.89	3194.702	191682.1
156	13.394	122.25	153.13	4.15	51.02	143.49	93.216	193464.91	2353	4630		8.340279	92.47	1.001222	34.60382	1	137.69	3229.571	193774.3
157	13.369	123.1	152.66	3.97	51.07	144.04	93.464	186664.675	2353	4630		8.340234	92.97	1.001222	33.13575	1	137.88	3100.785	186047.1
158	13.344	123.09	152.51	3.98	51.06	144.03	93.287	186644.51	2353	4630		8.340243	92.97	1.001221	33.15247	1	137.8	3096.471	185788.2
159	13.398	122.49	152.18	3.98	51.33	143.65	92.953	185179.679	2353	4630		8.340001	92.32	1.001222	33.1515	1	137.335	3085.297	185117.8
160	13.385	122.58	152.01	3.93	51.15	143.67	92.733	184960.431	2353	4630		8.340163	92.52	1.001222	32.74348	1	137.295	3040.111	182406.6
161	13.317	122.53	151.43	3.99	51.17	143.24	92.434	184326.434	2353	4630		8.340145	92.07	1.001221	33.26884	1	136.98	3078.928	184735.7
162	13.434	122.18	151.08	3.96	51.22	142.98	92.086	183220.029	2353	4630		8.3401	91.76	1.001221	33.06016	1	136.63	3048.094	182885.7
163	13.434	122.16	151.06	3.97	51.4	142.64	91.731	182061.61	2353	4630		8.339938	91.24	1.001221	33.13457	1	136.61	3043.178	182590.7
164	13.399	122.83	150.93	3.79	51.47	142.96	91.895	175581.678	2353	4630		8.339875	91.49	1.001221	31.56643	1	136.88	2904.339	174260.3
165	13.4	122.2	150.44	3.87	51.31	142.74	91.639	176797.599	2353	4630		8.340019	91.43	1.001222	32.30923	1	136.32	2964.403	177864.2
166	13.49	122.02	150.26	3.84	51.19	142.07	91.326	176579.465	2353	4630		8.340127	90.88	1.001222	32.00107	1	136.14	2926.1	175566
167	13.354	121.94	150.05	3.87	51.12	141.69	90.986	175358.612	2353	4630		8.34019	90.57	1.001221	32.29321	1	135.995	2941.819	176509.2
168	13.401	121.71	149.56	3.91	51.22	141.34	90.737	175570	2353	4630		8.3401	90.12	1.001221	32.61813	1	135.635	2963.285	177797.1
169	13.38	121.57	149.28	3.84	51.34	141.33	90.481	173851.913	2353	4630		8.339992	89.99	1.001221	32.04225	1	135.425	2902.755	174165.3
170	13.259	122.03	149.21	3.66	51.34	142.02	90.645	165835.974	2353	4630		8.339992	90.68	1.001221	30.52437	1	135.62	2770.259	166215.6
171	13.452	122.24	148.63	3.63	51.42	141.84	90.531	164977.843	2353	4630		8.33992	90.42	1.001221	30.25723	1	135.435	2742.561	164553.7
172	13.436	122.46	148.84	3.64	51.43	141.73	90.396	164475.078	2353	4630		8.339911	90.3	1.001221	30.31558	1	135.65	2743.752	164625.1
173	13.42	122.02	148.41	3.55	51.46	141.44	90.112	163215.565	2353	4630		8.339884	89.98	1.00122	29.58157	1	135.215	2668.907	160134.4
174	13.374	121.86	148.25	3.65	51.57	141.04	89.821	164065.205	2353	4630		8.339785	89.47	1.00122	30.43187	1	135.055	2736.757	164205.4
175	13.4	121.87	147.87	3.64	51.52	140.73	89.522	163325.6	2353	4630		8.33983	89.21	1.001221	30.31528	1	134.87	2717.197	163031.8
176	13.381	121.36	147.62	3.64	51.47	140.5	89.167	162317.606	2353	4630		8.339875	89.03	1.001221	30.32378	1	134.49	2707.181	162430.9
177	13.426	121.23	147.36	3.61	51.47	140.25	88.883	161606.067	2353	4630		8.339875	88.78	1.00122	30.11529	1	134.295	2680.004	160800.2
178	13.419	120.98	147.12	3.65	51.56	140.02	88.62	161114.304	2353	4630		8.339794	88.46	1.00122	30.45693	1	134.05	2702.387	162143.2
179	13.412	120.61	146.75	3.64	51.52	139.6	88.23	161533.683	2353	4630		8.33983	88.08	1.001221	30.33196	1	133.68	2679.456	160767.3
180	13.416	122.22	146.36	3.384	51.47	140.18	88.762	149661.386	2353	4630		8.339875	88.71	1.00122	28.22214	1	134.29	2508.111	150486.6
181	13.319	121.93	146.34	3.39	51.51	139.97	88.507	149460.115	2353	4630		8.339839	88.46	1.00122	28.27205	1	134.135	2505.327	150319.6
182	13.463	122.06	146.07	3.358	51.64	140.03	88.365	149103.04	2353	4630		8.339721	88.39	1.00122	28.00478	1	134.065	2477.662	148659.7
183	13.379	121.49	145.91	3.393	51.67	139.62	88.024	149633	2353	4630		8.339694	87.95	1.00122	28.29658	1	133.7	2493.817	149629
184	13.409	121.73	145.61	3.397	51.64	139.53	87.775	149059.842	2353	4630		8.339721	87.89	1.00122	28.33003	1	133.67	2489.702	149382.1
185	13.325	121.27	145.15	3.401	51.65	139.15	87.548	148168.693	2353	4630		8.339712	87.5	1.00122	28.36336	1	133.21	2486.184	149171.1
186	13.468	121.15	145.16	3.363	51.72	138.91	87.179	147562.626	2353	4630		8.339649	87.19	1.00122	28.04624	1	133.155	2448.026	146881.6
187	13.529	121.28	144.9	3.22	51.66	138.91	87.285	141347.643	2353	4630		8.339703	87.25	1.00122	26.85384	1	133.09	2346.797	140807.8
188	13.405	121.67	144.76	3.273	51.71	138.77	87.122	141013.296	2353	4630		8.339658	87.06	1.001221	27.2957	1	133.215	2380.959	142857.5
189	13.431	121.11	144.21	3.265	51.49	138.31	86.788	141861.573	2353	4630		8.339857	86.82	1.00122	27.22963	1	132.66	2366.087	141965.2
190	13.427	121	144.09	3.264	51.78	138.33	86.561	141521.708	2353	4630		8.339594	86.55	1.00122	27.22044	1	132.545	2359.102	141546.1

191	13.552	120.7	144.06	3.244	51.75	138.18	86.298	141662.723	2353	4630
192	13.405	120.86	143.42	3.271	51.91	138	86.028	140412.699	2353	4630
193	13.434	121.23	143.26	3.011	51.87	138.16	86.106	133385.516	2353	4630
194	13.473	121.18	143.34	3.078	51.96	137.93	85.943	133323.16	2353	4630
195	13.545	121.27	142.9	3.079	51.85	137.7	85.637	133197.667	2353	4630
196	13.419	120.85	142.75	3.074	51.76	137.55	85.538	132901.055	2353	4630
197	13.432	120.81	142.31	3.05	51.78	137.26	85.296	129354.538	2353	4630
198	13.417	121.03	142.41	3.022	52.01	137.22	85.14	128092.256	2353	4630
199	13.472	120.8	142.04	3.001	51.77	136.93	84.941	128744.997	2353	4630
200	13.445	120.82	141.93	2.989	51.86	136.7	84.7	127940.273	2353	4630
		120.61								

8.339622	86.43	1.001219	27.05373	1	132.38	2337.529	140251.8
8.339476	86.09	1.001219	27.27843	1	132.14	2349.57	140974.2
8.339513	86.29	1.001219	25.11027	1	132.245	2164.781	129886.8
8.339431	85.97	1.001219	25.66877	1	132.26	2208.741	132524.4
8.339531	85.85	1.00122	25.67742	1	132.085	2201.619	132097.1
8.339612	85.79	1.00122	25.63597	1	131.8	2195.524	131731.4
8.339594	85.48	1.001219	25.43576	1	131.56	2172.213	130332.8
8.339385	85.21	1.00122	25.20162	1	131.72	2148.283	128897
8.339603	85.16	1.001219	25.02715	1	131.42	2128.423	127705.4
8.339522	84.84	1.0014	24.92683	1	131.375	2114.258	126855.5

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: BTN
DATE: 3_12_14
RUN NUMBER: EPA1

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	1006.428	Liters
Total Sample Volume - Vm	35.542	ft^3
Average Sample Rate	0.18	Liters/min
Sample Time	200.00	Minutes
Average Meter Temperature	85	°F
Total Sample Volume (Standard Conditions) - Vmstd	35.544	dscf
Total Particulates	0.4	mg
Particulate Concentration (dry-standard)	0.000011254	grams/dscf
Particulate Emission Rate	0.000120000	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA1

DATE: 3_12_14

BURN RATE 12.63 KG/HR DRY

FILTER A PARTICULATE 7.5 mg

FILTER B PARTICULATE 7.4 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	28.32		28.57	
Average Gas Velocity in Dilution Tunnel - vs	14.54	feet/second	14.54	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	37913.88	dscf/hour	37913.88	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	27.32	dscf	27.12	dscf
Average Tunnel Temperature	107.1	F	107.1	F
Average Delta p	0.045		0.045	
Average Gas Meter Temperature	94	F	91	F
Average Delta H	2.01	in-h20	2.05	in-h20
Total Time of Test	200	min	200	min
Total Particulates	7.5	mg	7.4	mg
Particulate Concentration (dry-standard)	0.000274567	grams/dscf	0.000272840	grams/dscf
Ambient Train (dry-standard)	0.000011254	grams/dscf	0.000011254	grams/dscf
Net (dry-standard)	0.000263313	grams/dscf	0.000261586	grams/dscf
Particulate Emission Rate	9.98	grams/hour	9.92	grams/hour
Total PM Emissions	33.28	grams	33.06	grams
Average Total PM Emissions		33.17	grams	
AVERAGE PARTICLATE EMISSIONS RATE		9.95	grams/hour	
% OF AVERAGE	100.3		99.7	
Emissions Factor	0.791	g/Kg -Dry	0.785	g/Kg -Dry

Heat Output	189599	Btu/hr	199.9035899	MJ/hr				
Emissions	0.1157	lb/MMBtu Out	0.0498	g/MJ	0.7879	g/dry kg	9.9505	g/hr
Qin	798114	BTU	841	MJ				
Qin LHV	741318	BTU	782	MJ				
Delivered Efficiency	79.19%	ndel	85.25%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech

Model: Crown Royal RS7300E

Date:

Run: EPA#1

Control #: 004-hhw-023-1

est Duration: 200

urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Wood Moisture (% DRY): 20.9

Wood Moisture (% wet): 17.29

Load Weight (lb wet): 112.20

Burn Rate (dry kg/h): 12.63

Total Particulate Emissions: 33.17 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

○ Douglas
◉ Oak

Averages		356.8	65.8	5.19	15.08	1.25
		Temp. (F)				
Elapsed Time (min)	Fuel Weight Remaining (lb)	Flue Gas	Room Temp	Flue Gas Composition (%) O2	CO2	CO
0	112.2	374.0	68.0	3.16	16.33	0.92
10	106.1	411.0	65.0	1.10	19.40	1.58
20	98.1	426.0	65.0	0.53	19.94	1.72
30	88.2	433.0	65.0	0.39	20.00	1.47
40	79.8	412.0	65.0	2.49	18.40	1.55
50	71.1	390.0	65.0	3.82	17.30	0.38
60	64.1	388.0	65.0	3.65	17.49	0.36
70	57.1	395.0	66.0	2.47	18.53	0.64
80	49.1	397.0	65.0	2.02	18.87	0.78
90	41.1	416.0	66.0	0.58	20.00	0.91
100	34.4	402.0	66.0	2.10	18.65	0.58
110	28.6	384.0	65.0	2.82	17.58	0.65
120	24.4	374.0	66.0	3.69	16.69	0.64
130	19.1	356.0	66.0	5.09	14.63	1.42
140	15.1	333.0	66.0	7.18	12.35	1.93
150	12.0	305.0	66.0	9.05	10.65	1.99
160	9.9	298.0	66.0	9.37	10.49	1.86

170	7.0	279.0	66.0	10.64	9.00	2.17
180	4.1	260.0	66.0	11.98	7.69	1.79
190	3.1	244.0	67.0	13.03	6.73	1.62
200	0.0	216.0	66.0	13.86	6.03	1.32

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: EPA#1
Control #: 004-hhw-023-1
Test Duration: 200 min

	HHV	LHV
Eff	76.2%	82.1%
Comb Eff	93.9%	93.9%
HT Eff	81.2%	87.4%
Output	191,504	kJ/h
Burn Rate	12.63	kg/h
Grams CO	3,508	g
Input	251,215	kJ/h
MC wet	17.29	

Ultimate CO2
CO2-ult 19.80
F_0
1.055

Overall Heating Efficiency:	76.2%	Air Fuel Ratio (A/F)	
Combustion Efficiency:	93.9%	Dry Molecular Weight (Md)	30.59
Heat Transfer Efficiency:	81.2%	Dry Moles Exhaust Gas (Nr):	240.73
		Air Fuel Ratio (A/F)	6.85

Heat Output:	181,663	Btu/h	191,504	kJ/h
Heat Input:	238,305	Btu/h	251,215	kJ/h
Burn Duration:	3.333333333	h		
Burn Rate:	27.8	lb/h	12.6	kg/h
Stack Temp:	356.0	Deg. F	180.0	Deg. C

Averages	1.25	15.08	33.9%	20.00	4.29	180.4	18.8	92.4%	81.2%	75.0%	8.1	19.98	60.76	0.35

INPUT DATA				**Oxygen Calculation**			**Input Data**		**Combust**	**Heat**	**Net**	**Air**	**Wet Wt**	**% Wet**	**Dry Wt.**
Elapsed Time	**Weight Remaining (kg)**	**% CO [e]**	**% CO2 [d]**	**Excess Air EA**	**Total O2**	**Calc. % O2 [g]**	**Flue Gas (ºC)**	**Room Temp (ºC)**	**Eff %**	**Transfer %**	**Eff %**	**Fuel Ratio**	**Now Wt**	**Consumed x**	**Now Wtdn**
0	50.91	0.92	16.33	14.8%	19.95	3.16	190.0	20.0	95.5%	81.7%	78.0%	7.0	50.91	0.00	42.11
10	48.14	1.58	19.40	-5.6%	19.73	-0.46	210.6	18.3	93.5%	81.6%	76.4%	5.7	48.14	5.44	39.82
20	44.51	1.72	19.94	-8.6%	19.70	-1.10	218.9	18.3	93.2%	81.4%	75.9%	5.5	44.51	12.57	36.82
30	40.02	1.47	20.00	-7.8%	19.71	-1.03	222.8	18.3	94.1%	81.3%	76.6%	5.6	40.02	21.39	33.10
40	36.21	1.55	18.40	-0.7%	19.79	0.62	211.1	18.3	93.4%	81.3%	75.9%	6.0	36.21	28.88	29.95
50	32.26	0.38	17.30	12.0%	19.92	2.43	198.9	18.3	98.2%	81.7%	80.3%	6.9	32.26	36.63	26.68
60	29.08	0.36	17.49	10.9%	19.91	2.24	197.8	18.3	98.3%	81.9%	80.5%	6.8	29.08	42.87	24.06
70	25.91	0.64	18.53	3.3%	19.84	0.99	201.7	18.9	97.1%	82.0%	79.7%	6.3	25.91	49.11	21.43
80	22.28	0.78	18.87	0.8%	19.81	0.55	202.8	18.3	96.6%	82.0%	79.2%	6.2	22.28	56.24	18.43
90	18.65	0.91	20.00	-5.3%	19.74	-0.72	213.3	18.9	96.2%	81.9%	78.8%	5.8	18.65	63.37	15.42
100	15.61	0.58	18.65	3.0%	19.84	0.90	205.6	18.9	97.4%	81.9%	79.8%	6.3	15.61	69.34	12.91
110	12.98	0.65	17.58	8.6%	19.89	1.99	195.6	18.3	97.0%	81.9%	79.4%	6.7	12.98	74.51	10.73
120	11.07	0.64	16.69	14.3%	19.94	2.93	190.0	18.9	96.9%	81.9%	79.3%	7.0	11.07	78.25	9.16
130	8.67	1.42	14.63	23.4%	20.02	4.68	180.0	18.9	92.5%	81.3%	75.2%	7.5	8.67	82.98	7.17
140	6.85	1.93	12.35	38.7%	20.12	6.80	167.2	18.9	88.7%	80.6%	71.4%	8.3	6.85	86.54	5.67
150	5.44	1.99	10.65	56.7%	20.21	8.57	151.7	18.9	86.9%	80.4%	69.8%	9.3	5.44	89.30	4.50
160	4.49	1.86	10.49	60.3%	20.23	8.81	147.8	18.9	87.4%	80.6%	70.4%	9.6	4.49	91.18	3.72
170	3.18	2.17	9.00	77.3%	20.30	10.21	137.2	18.9	83.9%	79.9%	67.0%	10.5	3.18	93.76	2.63
180	1.86	1.79	7.69	108.9%	20.40	11.81	126.7	18.9	84.4%	79.6%	67.2%	12.4	1.86	96.35	1.54
190	1.41	1.62	6.73	137.2%	20.46	12.92	117.8	19.4	84.1%	79.4%	66.7%	14.0	1.41	97.24	1.16
200	0.00	1.32	6.03	169.4%	20.52	13.83	102.2	18.9	85.3%	80.1%	68.3%	16.0	0.00	100.00	0.00
0															0.00
0															0.00

Moisture Cont

%HC	Combustion Efficiency:	93.9%			Moisture of Wood (wet basis):	17.29	
1.32	Total Input (kJ):	837,383	794,217	(Btu)	Initial Dry Weight Wtdo (kg):	42.11	
	Total Output (kJ):	638,348	605,442	(Btu)	Moisture Content Dry	20.90	
	Efficiency:	76.2%					
	Total CO (g):	3507.96					

Load Weight (kg):	50.91				
Fuel Heating:	HHV	LHV		HHV	LHV
Value in kJ/kg - CV:	19887.00	18463.91	Btu/lb	8555.61	7943.38

60.76	848951	4.17	6.60	2.68	19887.00	17.29	79.37	21.05	3.96	12.73	0.17	0.39	37.64	16.54	3.73	0.51
% Dry	**Fuel Properties**					**Mw**	**Mass Balance**					**kg Wood per**				
Comsumed	**Total**	**Carbon**	**Hydrogen**	**Oxygen**	**Calorific**	**Moisture**	**(moles/100 mole dry flue gas)**					**100 mole dfp**	**Moles per kg of Dry Woo**			
y	**Input**	**/12= [a]**	**/1= [b]**	**/16= [c]**	**Value**	**Fuel Burnt**	**[h]**	**[u]**	**[w]**	**[j]**	**[k]**	**Nk**	**CO2**	**O2**	**CO**	**HC**
0.00	0	4.17	6.60	2.68	19887.00	17.29	79.59	21.11	4.17	13.51	0.13	0.41	39.35	7.61	2.22	0.31
5.44	75379	4.17	6.60	2.68	19887.00	17.29	79.48	21.08	5.09	16.34	0.23	0.51	38.31	-0.90	3.12	0.45
12.57	66797	4.17	6.60	2.68	19887.00	17.29	79.44	21.07	5.26	16.85	0.25	0.52	38.11	-2.11	3.29	0.48
21.39	68289	4.17	6.60	2.68	19887.00	17.29	79.56	21.10	5.20	16.75	0.21	0.52	38.62	-1.99	2.84	0.41
28.88	63811	4.17	6.60	2.68	19887.00	17.29	79.43	21.07	4.84	15.53	0.22	0.48	38.20	1.28	3.22	0.46
36.63	58587	4.17	6.60	2.68	19887.00	17.29	79.89	21.19	4.26	13.94	0.05	0.42	40.86	5.75	0.90	0.12
42.87	52243	4.17	6.60	2.68	19887.00	17.29	79.91	21.20	4.30	14.08	0.05	0.43	40.92	5.25	0.84	0.11
49.11	55975	4.17	6.60	2.68	19887.00	17.29	79.84	21.18	4.62	15.07	0.09	0.46	40.29	2.15	1.39	0.20
56.24	59706	4.17	6.60	2.68	19887.00	17.29	79.80	21.17	4.74	15.43	0.11	0.47	39.99	1.17	1.65	0.24
63.37	54855	4.17	6.60	2.68	19887.00	17.29	79.81	21.17	5.05	16.40	0.13	0.50	39.80	-1.43	1.81	0.26
69.34	46646	4.17	6.60	2.68	19887.00	17.29	79.87	21.19	4.63	15.13	0.08	0.46	40.44	1.94	1.26	0.18
74.51	37317	4.17	6.60	2.68	19887.00	17.29	79.78	21.16	4.40	14.33	0.09	0.44	40.18	4.54	1.49	0.21
78.25	35451	4.17	6.60	2.68	19887.00	17.29	79.74	21.15	4.18	13.62	0.09	0.42	40.13	7.05	1.54	0.21
82.98	34704	4.17	6.60	2.68	19887.00	17.29	79.27	21.03	3.90	12.47	0.20	0.39	37.71	12.06	3.66	0.51
86.54	26495	4.17	6.60	2.68	19887.00	17.29	78.92	20.93	3.49	10.99	0.27	0.35	35.55	19.59	5.56	0.77
89.30	19405	4.17	6.60	2.68	19887.00	17.29	78.79	20.90	3.10	9.68	0.27	0.31	34.54	27.79	6.45	0.89
91.18	18658	4.17	6.60	2.68	19887.00	17.29	78.84	20.91	3.02	9.47	0.25	0.30	34.85	29.27	6.18	0.84
93.76	21644	4.17	6.60	2.68	19887.00	17.29	78.62	20.85	2.75	8.49	0.30	0.27	32.87	37.30	7.93	1.08
96.35	14553	4.17	6.60	2.68	19887.00	17.29	78.71	20.88	2.33	7.22	0.24	0.23	33.13	50.89	7.71	1.03
97.24	26868	4.17	6.60	2.68	19887.00	17.29	78.73	20.88	2.06	6.36	0.21	0.20	32.91	63.19	7.92	1.04
100.00	11568	4.17	6.60	2.68	19887.00	17.29	78.82	20.91	1.80	5.62	0.17	0.18	33.59	77.02	7.35	0.94

ent MCwb: 17.29

Dry kg : 42.11
CA: 50.00
HY: 6.60
OX: 42.90

											SUMS					
221.08	32.14	11.61	453.60	6542.04	4878.42	4732.86	4682.72	6396.12	5660.11	291.91	5247.31	1200.33	22486.60	20094.61	9611.24	33515.37
ıd		Moisture	Stack Temp	Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent						Room Temp	Energy Losses (kJ/kg of Dry Fuel) Flue Gas Constituent					
N2	H2O	Present	K	CO2	O2	CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb
191.80	32.55	11.61	463.15	6886.08	5131.51	4977.54	4924.99	6740.06	5952.46	293.15	270.98	39.06	638.31	944.60	275.59	1625.01
156.92	32.26	11.61	483.71	7838.87	5818.63	5638.36	5580.04	7722.78	6740.90	291.48	300.27	-5.23	900.45	875.65	404.81	1636.11
151.84	32.21	11.61	492.04	8202.94	6078.41	5887.48	5827.13	8104.37	7037.90	291.48	312.63	-12.83	949.68	884.81	428.42	1643.03
153.65	32.34	11.61	495.93	8373.53	6199.85	6003.87	5942.58	8283.78	7176.64	291.48	323.43	-12.32	820.44	913.06	370.27	1654.13
164.89	32.24	11.61	484.26	7863.08	5835.93	5654.96	5596.49	7748.09	6760.69	291.48	300.35	7.50	928.77	922.82	414.37	1635.67
188.67	32.93	11.61	472.04	7332.55	5456.00	5290.25	5234.83	7195.07	6325.77	291.48	299.60	31.37	258.73	987.66	107.81	1655.98
186.95	32.94	11.61	470.93	7284.54	5421.53	5257.14	5202.00	7145.21	6286.27	291.48	298.09	28.47	242.79	972.53	101.38	1655.40
173.59	32.77	11.61	474.82	7431.64	5525.89	5357.07	5301.15	7300.68	6405.36	292.04	299.40	11.88	401.23	920.22	176.83	1650.86
169.10	32.69	11.61	475.93	7500.89	5576.74	5406.21	5349.81	7370.13	6464.06	291.48	299.94	6.51	476.69	904.65	212.04	1648.82
158.82	32.64	11.61	486.48	7938.89	5888.82	5705.36	5646.55	7830.20	6820.68	292.04	315.98	-8.40	522.83	896.80	236.31	1657.75
173.20	32.81	11.61	478.71	7600.28	5646.73	5473.08	5416.19	7476.34	6543.72	292.04	307.36	10.96	362.79	938.08	159.86	1657.30
182.36	32.75	11.61	468.71	7188.62	5352.62	5190.93	5136.36	7045.70	6207.30	291.48	288.86	24.32	428.17	936.68	185.55	1643.38
191.70	32.74	11.61	463.15	6928.33	5164.19	5009.54	4956.59	6778.79	5990.82	292.04	278.01	36.43	443.15	950.20	188.76	1635.93
204.32	32.15	11.61	453.15	6500.07	4855.14	4712.26	4661.92	6337.51	5636.12	292.04	245.10	58.54	1052.99	952.52	455.49	1594.79
227.17	31.63	11.61	440.37	5957.06	4461.55	4333.22	4286.31	5781.81	5183.71	292.04	211.78	87.39	1596.31	973.71	689.16	1554.57
255.51	31.39	11.61	424.82	5302.40	3984.38	3873.02	3830.41	5117.65	4634.22	292.04	183.13	110.72	1851.27	978.72	792.75	1525.89
261.94	31.48	11.61	420.93	5139.83	3865.42	3758.18	3716.67	4953.72	4497.06	292.04	179.14	113.15	1772.06	973.55	755.21	1525.63
287.11	31.00	11.61	410.37	4700.79	3543.24	3446.90	3408.41	4513.06	4125.20	292.04	154.51	132.16	2270.04	978.60	968.35	1490.97
339.13	31.11	11.61	399.82	4264.97	3222.05	3136.25	3100.85	4078.63	3753.98	292.04	141.31	163.96	2206.76	1051.60	921.18	1484.45
385.02	31.08	11.61	390.93	3879.36	2936.02	2859.13	2826.58	3698.28	3422.69	292.59	127.68	185.51	2264.67	1088.30	930.36	1473.13
439.04	31.29	11.61	375.37	3268.12	2482.11	2419.23	2391.25	3096.54	2896.76	292.04	109.77	191.17	2098.46	1049.85	836.72	1466.54

	AVERAGE	SUMS						
12101.33	4964.61	199035	51013	148021.98	649916	51013	3507.96	279.65
	Total							
	Loss	**Total**	**Chemical**	**Sensible and**	**Total**	**Chem**	**Grams Produced**	
H2O Fuel MC	**Rate**	**Loss**	**Loss 1**	**Latent Loss**	**Output**	**Loss 2**	**CO**	**HC**
579.65	4373.20	0	0	0.00	0	0	0.00	0.00
588.80	4700.86	17818	4868	12950.51	57561	4868	331.10	27.34
592.25	4797.99	16116	4551	11564.75	50681	4551	309.17	25.63
593.86	4662.88	16012	4019	11993.21	52278	4019	272.96	22.64
589.03	4798.51	15397	4240	11157.07	48414	4240	289.09	23.69
583.98	3925.13	11563	1063	10500.12	47024	1063	74.03	5.66
583.52	3882.18	10198	890	9308.11	42045	890	61.95	4.75
584.91	4045.33	11386	1602	9784.15	44589	1602	109.66	8.87
585.59	4134.25	12412	2036	10376.48	47294	2036	138.95	11.35
589.73	4211.00	11615	2060	9555.64	43240	2060	139.87	11.61
586.51	4022.87	9436	1207	8229.15	37210	1207	82.60	6.68
582.61	4089.57	7674	1134	6539.40	29643	1134	78.06	6.21
580.09	4112.58	7331	1110	6220.95	28120	1110	76.80	6.00
575.98	4935.41	8613	2597	6015.98	26092	2597	178.83	14.19
570.72	5683.66	7572	3007	4565.28	18923	3007	207.25	16.40
564.34	6006.82	5861	2551	3310.04	13543	2551	176.31	13.82
562.75	5881.48	5518	2345	3172.69	13140	2345	162.34	12.67
558.43	6553.07	7132	3489	3642.51	14512	3489	241.50	18.85
554.12	6523.38	4774	2268	2505.59	9780	2268	158.03	12.06
550.27	6619.93	8944	4281	4662.95	17924	4281	299.70	22.50
544.17	6296.67	3663	1695	1967.40	7905	1695	119.75	8.72

Dirigo Laboratories, Inc.

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#1
Control #: 004-hhw-023-1
Test Duration: 200
Output Category: 4

	HHV Basis	LHV Basis	
Overall Efficiency	76.2%	82.1%	
Combustion Efficiency	93.9%	93.9%	
Heat Transfer Efficiency	81.2%	87.4%	
HHV Output Rate (kJ/h)	191,504	181,663	**(Btu/h)**
Burn Rate (kg/h)	12.63	27.84	**(lb/h)**
Input (kJ/h)	251,215	238,305	**(Btu/h)**
Test Load Weight (dry kg)	42.1	92.8	**dry lb**
MC wet (%)	17.29		
MC dry (%)	20.90		
Particulate (g)	33.17		
CO (g)	3508		
Test Duration (h)	3.333333333		

Emissions	**Particulate**	**CO**
g/MJ Output	0.05	5.50
g/kg Dry Fuel	0.79	83.31
g/h	9.95	1052.39
lb/MM Btu Output	0.12	12.77

Air/Fuel Ratio (A/F)	6.85

Test Results in Accordance with CSA B415.1-10

Technician: _____

PREBURN

JOB # 004_HHW_023_1
TECHNICIAI BTN
DATE: 3_13_14
RUN #: EPA2
READING INTERVAL: 10
.
Run Time: 290

Model Designation RS7300 E

	Tunnel Traverse Information											
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10	Pt.11	Pt. 12
dP	0.045	0.045	0.052	0.052	0.055	0.046	0.044	0.045	0.045	0.052	0.052	0.045
Temperature	90	90	90	90	90	90	90	90	90	90	90	90

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	25.1	-0.009	6009	6009	6012	6009	6010	6009.8
10	26	-0.004	6009	6010	6012	6009	6010	6010
20	26.3	-0.002	6009	6010	6012	6010	6011	6010.4
30	25.4	-0.021	6010	6011	6013	6011	6011	6011.2
40	20.1	-0.035	6011	6012	6014	6012	6013	6012.4
50	17.1	-0.023	6012	6013	6015	6013	6013	6013.2
60	17.1	-0.018	6013	6014	6016	6014	6014	6014.2
70	19.8	-0.006	6014	6014	6017	6014	6015	6014.8
80	16.1	-0.004	6015	6015	6018	6015	6016	6015.8
90	16.1	-0.004	6015	6016	6018	6016	6016	6016.2
100	17.1	0.003	6016	6017	6019	6017	6017	6017.2
110	17.1	0.001	6017	6017	6020	6017	6018	6017.8
120	17.1	-0.006	6018	6019	6021	6019	6020	6019.4
130	22	-0.036	6020	6020	6023	6020	6021	6020.8
140	15.6	-0.037	6018	6019	6021	6018	6019	6019
150	14	-0.021	6016	6017	6019	6017	6017	6017.2
160	13.1	-0.016	6017	6017	6019	6017	6018	6017.6
170	14.1	-0.005	6019	6020	6022	6020	6020	6020.2
180	14.1	-0.005	6021	6022	6024	6022	6022	6022.2
190	13.2	-0.001	6022	6023	6025	6023	6024	6023.4
200	14.1	-0.001	6023	6024	6026	6024	6025	6024.4
210	14.1	-0.014	6022	6023	6025	6023	6024	6023.4
220	18.1	-0.03	6020	6021	6023	6021	6021	6021.2
230	11.1	-0.024	6019	6020	6022	6019	6020	6020
240	11.1	-0.011	6019	6020	6022	6019	6020	6020
250	11.1	-0.012	6020	6021	6023	6021	6021	6021.2
260	11.1	-0.01	6019	6019	6021	6019	6020	6019.6
270	12.1	-0.001	6015	6016	6018	6015	6016	6016
280	11.2	-0.004	6013	6014	6016	6014	6015	6014.4
290	12.1	-0.003	6016	6017	6019	6017	6017	6017.2

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	14.24386	ft/sec.
Intial Tunnel Flow:	659.6047	scfm
Average Tunnel Flow:	643.0977	scfm

Notes:

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T

Technician____________________

Run #	Epa#2
Date:	3/13/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.045	0.045	0.052	0.052	0.055	0.046	0.044	0.045	0.045	0.052	0.052	0.045	0.048
Temperature	90	90	90	90	90	90	90	90	90	90	90	90	90.000

Tunnel Velocity:	14.244	ft/sec.
Intial Tunnel Flow:	659.6	scfm
Average Tunnel Flow	643.1	scfm

JOB #	004-hhw-023-1															
TECHNICIAN	Btn							ROOM TEMP (F)		72.0			BEG	MID	END	AVG
DATE:	3/13/2014								BAROMETRIC I				30.13	30.13	30.13	30.13
RUN #:	Epa#2															
READING INTERVAL:		10														
SAMPLE BOX :		A	METER Y FACTOR:		0.995					PROBE MATERIAL:			SS			
FRONT FILTER #:						REAR FILTER #	REAR FILTER #:									
FINAL LEAK RATE (CFM):			@		IN-HG		FINAL LEAK RATE (CFM)			@		IN-HG				
Run Time:		740		AMBIENT FILTER #:				VOLUME		LITERS	FUEL MOISTURE DB			20.6	%	
				FINAL LEAK RATE (CFM):				@		IN-HG						
TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
0		0.000	0.041	0.04	-0.08		NA	108.1	0	98	265	63	6021	6020	71	68
10	1.369	0.137	0.041	1.98	-0.58	13.824	109	100.7	7.4	108	349	73	6023	6022	72	68
20	2.762	0.139	0.047	2.02	0	14.511	101	98.1	2.6	86	243	71	6023	6021	77	67
30	4.161	0.140	0.045	1.99	-0.67	14.199	103	98.1	0	86	200	72	6024	6022	81	66
40	5.561	0.140	0.044	2	0	14.028	103	99.1	-1	85	177	72	6024	6022	85	67
50	6.968	0.141	0.042	2.01	0	13.718	106	99.1	0	86	162	72	6025	6023	88	69
60	8.383	0.142	0.044	2	-1.17	14.028	103	98.1	1	85	151	74	6027	6025	91	70
70	9.794	0.141	0.044	2	-2.18	14.015	102	99.1	-1	84	143	74	6028	6026	93	70
80	11.210	0.142	0.044	2	-1.58	14.270	104	92.6	6.5	104	331	78	6028	6027	96	71
90	12.622	0.141	0.042	2	-1.03	13.755	104	85.1	7.5	89	301	77	6029	6027	98	72
100	14.045	0.142	0.046	2	0	14.317	99	85.1	0	83	222	76	6029	6027	100	71
110	15.466	0.142	0.046	1.98	0	14.330	99	85.1	0	84	191	76	6030	6028	101	72
120	16.895	0.143	0.051	1.99	-0.46	15.089	95	84.1	1	84	172	76	6030	6028	102	72
130	18.318	0.142	0.041	2	-1.33	13.504	105	84.1	0	82	160	75	6030	6028	103	72
140	19.747	0.143	0.044	2	-1	13.989	101	85	-0.9	82	150	75	6030	6029	103	72
150	21.177	0.143	0.047	1.98	0	14.471	98	84.1	0.9	83	144	75	6031	6029	104	73
160	22.606	0.143	0.045	1.99	-0.87	14.354	101	80.5	3.6	98	297	77	6031	6029	105	73
170	24.032	0.143	0.045	1.99	-2.09	14.495	102	69.9	10.6	109	372	80	6031	6029	105	73
180	25.457	0.143	0.044	2	-0.58	13.989	101	68.1	1.8	82	239	76	6031	6029	106	73
190	26.898	0.144	0.047	2.04	-1.98	14.445	98	68.1	0	81	201	75	6031	6029	106	72
200	28.346	0.145	0.045	2.05	-1.45	14.134	101	68.1	0	81	179	75	6031	6029	106	72
210	29.794	0.145	0.046	2.01	-0.47	14.277	100	68.1	0	80	165	75	6031	6029	107	73
220	31.233	0.144	0.039	2.01	-0.01	13.146	108	68.1	0	80	155	74	6031	6029	107	73
230	32.672	0.144	0.043	2.03	-1.1	13.791	103	68.1	0	79	148	74	6031	6029	106	72
240	34.113	0.144	0.042	2.01	-1.87	13.705	104	68.1	0	85	167	75	6031	6029	107	72
250	35.555	0.144	0.044	2.02	-2.1	14.053	102	67.1	1	87	186	75	6031	6029	107	73
260	36.994	0.144	0.046	2.01	-1.06	14.526	101	62.1	5	99	321	77	6031	6029	107	73
270	38.428	0.143	0.047	2.01	-0.14	14.551	99	51.1	11	89	304	77	6031	6029	107	73

TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
280	39.869	0.144	0.048	2.01	-2.12	14.584	97	50.1	1	80	230	75	6031	6029	107	73
290	41.305	0.144	0.049	2	0	14.722	96	50.1	0	79	195	75	6031	6029	107	72
300	42.742	0.144	0.045	2	-0.85	14.108	100	50.1	0	79	175	74	6031	6029	107	73
310	44.182	0.144	0.046	2.01	-0.3	14.251	99	50.1	0	78	162	74	6031	6029	107	73
320	45.622	0.144	0.047	2.02	-1.52	14.405	98	50.1	0	78	152	74	6031	6029	107	73
330	47.059	0.144	0.05	2.01	-1.71	14.843	95	50.1	0	77	145	73	6031	6029	107	73
340	48.498	0.144	0.047	2	0	14.391	98	50.1	0	77	140	73	6031	6029	107	73
350	49.938	0.144	0.045	2.01	-2.24	14.251	101	47.1	3	90	250	75	6031	6029	107	73
360	51.372	0.143	0.041	2.01	-0.63	13.738	107	37.8	9.3	101	335	77	6031	6029	107	73
370	52.809	0.144	0.046	2.02	0	14.264	99	36.1	1.7	79	241	75	6031	6029	107	72
380	54.248	0.144	0.045	2.02	-0.24	14.108	100	35.1	1	79	200	74	6031	6029	107	72
390	55.686	0.144	0.047	2	-2.15	14.405	98	35.1	0	78	177	74	6031	6029	107	73
400	57.121	0.144	0.046	2	-1.68	14.251	99	35.1	0	78	163	74	6031	6029	107	73
410	58.560	0.144	0.046	2.02	-2.14	14.251	99	35.1	0	78	153	74	6031	6029	107	73
420	60.000	0.144	0.044	2.01	0	13.937	101	35.1	0	78	145	74	6031	6029	107	73
430	61.435	0.144	0.044	2.01	0	13.937	101	36.1	-1	78	140	73	6031	6029	107	73
440	62.874	0.144	0.043	1.98	-2.2	13.842	103	35.1	1	83	173	74	6031	6029	107	72
450	64.312	0.144	0.045	2.01	-0.65	14.251	101	34.1	1	90	251	75	6031	6029	107	73
460	65.746	0.143	0.042	2.01	0	13.880	105	27	7.1	99	341	77	6031	6029	107	73
470	67.182	0.144	0.046	2	-2.14	14.251	99	25.1	1.9	78	230	75	6031	6029	107	73
480	68.623	0.144	0.049	2.01	-1.14	14.708	96	23.1	2	78	192	74	6031	6029	107	73
490	70.059	0.144	0.048	2	0	14.544	97	23.1	0	77	171	74	6031	6029	107	73
500	71.494	0.144	0.042	2.02	-0.63	13.604	103	24.1	-1	77	157	74	6031	6029	107	72
510	72.932	0.144	0.049	1.99	-2.12	14.694	96	24.1	0	77	148	73	6031	6029	107	72
520	74.370	0.144	0.046	2.01	0	14.237	99	24.1	0	77	140	73	6031	6029	107	73
530	75.807	0.144	0.045	2.02	0	14.069	100	24.1	0	76	133	73	6031	6029	107	72
540	77.243	0.144	0.045	2.01	-1.94	14.212	101	22.7	1.4	87	228	74	6031	6029	106	72
550	78.678	0.143	0.049	2.02	-0.25	14.912	97	19.4	3.3	93	290	75	6031	6029	107	72
560	80.112	0.143	0.047	2.01	-2.1	14.418	98	15	4.4	79	260	75	6031	6029	106	72
570	81.547	0.144	0.048	1.99	-1.02	14.557	97	14.1	0.9	78	205	74	6031	6029	107	73
580	82.983	0.144	0.043	2	-2.28	13.778	102	14	0.1	78	178	74	6031	6029	107	72
590	84.416	0.143	0.045	1.99	0	14.082	100	14.1	-0.1	77	162	73	6031	6029	107	72
600	85.853	0.144	0.043	2	0	13.765	102	14	0.1	77	150	73	6031	6029	107	73
610	87.289	0.144	0.05	2	-0.49	14.843	95	14.1	-0.1	77	147	73	6031	6029	107	72
620	88.722	0.143	0.048	2.01	-2.14	14.544	96	14.1	0	77	137	73	6031	6029	107	72
630	90.157	0.144	0.045	2	-1.23	14.069	100	15	-0.9	76	131	73	6030	6029	107	72
640	91.594	0.144	0.042	1.99	-0.53	13.730	104	13.9	1.1	87	230	74	6030	6029	107	72
650	93.023	0.143	0.043	2.02	-0.96	13.969	103	9.1	4.8	93	294	75	6030	6029	107	71
660	94.456	0.143	0.044	1.99	-0.62	13.937	101	7	2.1	78	244	74	6030	6029	107	72
670	95.890	0.143	0.043	2.01	-2.16	13.765	102	6.1	0.9	77	194	74	6030	6029	107	72
680	97.322	0.143	0.051	2.01	-1.15	14.991	94	7	-0.9	77	171	73	6030	6028	106	72

TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
690	98.757	0.143	0.044	2	0	13.911	101	7	0	76	156	73	6030	6028	107	72
700	100.191	0.143	0.045	1.99	0	14.069	100	7.1	-0.1	76	145	73	6030	6028	106	72
710	101.623	0.143	0.047	1.99	-2.2	14.378	97	6	1.1	76	137	72	6030	6028	106	72
720	103.057	0.143	0.045	2	0	14.069	100	6	0	76	131	72	6030	6028	106	71
730	104.491	0.143	0.045	2.01	-0.46	14.199	100	5	1	86	224	73	6030	6028	107	72
740	105.920	0.143	0.042	1.98	0	13.780	104	-0.2	5.2	91	279	74	6030	6028	106	72
																73
	105.920		0.045	2.00		14.189	100.3			83	202				104	72

JOB #	004_HHW_023_1
TECHNICIAN	BTN
DATE:	3_13_14
RUN #:	EPA2
READING INTERVAL:	10
SAMPLE BOX :	B

METER Y FACTOR: 0.974 PROBE MATERIAL: SS

FRONT FILTER #:		[redacted]		REAR FILTER #:		[redacted]			
FINAL LEAK RATE (CFM):		@		IN-HG	FINAL LEAK RATE (CFM):		@		IN-HG

Run Time: 740 **Firebox Delta T** **#N/A**

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6018	6019	64	6019	6020	71	
10	1.524	0.152	120	-0.04	2.02	-1.7	6020	6021	74	6021	6022	71	
20	3.175	0.165	119	-0.02	2.06	-1.84	6020	6021	73	6021	6022	73	
30	4.677	0.150	109	0	2.03	-1.64	6021	6022	72	6021	6022	77	
40	6.097	0.142	104	-0.01	2.01	-1.3	6021	6022	72	6022	6022	82	
50	7.514	0.142	105	-0.01	2.03	-1.94	6022	6023	73	6022	6023	86	
60	8.941	0.143	103	0	2.03	-1.82	6024	6025	75	6024	6025	89	
70	10.363	0.142	102	0	2.04	-2.29	6025	6025	76	6025	6026	91	
80	11.785	0.142	103	-0.04	2.04	-2.21	6025	6026	79	6026	6027	94	
90	13.210	0.143	104	-0.03	2.02	-1.19	6026	6027	78	6026	6027	96	
100	14.641	0.143	99	-0.02	2.04	-0.94	6026	6027	77	6027	6027	97	
110	16.068	0.143	99	-0.01	2.03	-2.2	6027	6027	77	6027	6028	99	
120	17.502	0.143	94	-0.01	2.02	-2.13	6027	6028	77	6028	6028	100	
130	18.934	0.143	104	-0.01	2.02	-0.78	6027	6028	76	6028	6028	100	
140	20.368	0.143	101	-0.01	2.02	-1.12	6028	6028	76	6028	6029	101	
150	21.803	0.144	98	-0.01	2.03	-2.24	6028	6029	77	6029	6029	102	
160	23.238	0.144	101	-0.03	2.02	-1.81	6028	6029	79	6028	6029	102	
170	24.668	0.143	101	-0.04	2.03	-2.25	6028	6029	81	6028	6029	103	
180	26.104	0.144	101	-0.02	2.01	-1.03	6028	6029	77	6028	6029	103	
190	27.542	0.144	97	-0.02	2.04	-2.32	6028	6029	76	6028	6029	103	
200	28.987	0.144	100	-0.01	2.03	-2.12	6028	6029	76	6028	6029	103	
210	30.429	0.144	98	-0.02	2.04	-1.51	6028	6029	76	6028	6029	104	
220	31.875	0.145	107	-0.01	2.03	-2.09	6028	6029	75	6029	6029	104	
230	33.317	0.144	102	0	2.05	-1.81	6028	6029	75	6028	6029	104	
240	34.763	0.145	104	-0.02	2.04	-1.82	6028	6029	75	6028	6029	104	
250	36.206	0.144	101	-0.01	2.02	-1.64	6028	6029	76	6029	6029	104	
260	37.651	0.145	100	-0.04	2.04	-1.49	6028	6029	78	6029	6029	104	
270	39.089	0.144	98	-0.04	2.04	-1.03	6028	6029	79	6029	6029	104	
280	40.530	0.144	96	-0.03	2.03	-2.03	6028	6029	77	6029	6029	104	
290	41.976	0.145	96	-0.02	2.05	-2.35	6028	6029	76	6029	6029	104	
300	43.417	0.144	99	-0.01	2.03	-2.25	6028	6029	76	6029	6029	104	
310	44.863	0.145	98	-0.02	2.04	-1.56	6028	6029	75	6029	6029	104	
320	46.303	0.144	97	-0.01	2.03	-1.51	6028	6029	75	6029	6029	105	
330	47.750	0.145	94	-0.01	2.02	-1.71	6028	6029	74	6029	6029	105	
340	49.191	0.144	97	-0.01	2.03	-2.34	6028	6029	74	6029	6029	104	
350	50.636	0.144	100	-0.03	2.03	-0.88	6028	6029	76	6029	6029	105	
360	52.076	0.144	106	-0.04	2.04	-2.37	6028	6029	78	6028	6029	104	
370	53.521	0.144	99	-0.03	2.03	-0.97	6028	6029	76	6029	6029	104	

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
380	54.963	0.144	99	-0.02	2.04	-2.36	6028	6029	75	6028	6029	104	
390	56.408	0.144	97	-0.01	2.04	-1.33	6028	6029	75	6028	6029	104	
400	57.850	0.144	98	-0.01	2.04	-2.16	6028	6029	75	6028	6029	104	
410	59.294	0.144	98	-0.01	2.03	-0.93	6028	6029	75	6028	6029	104	
420	60.737	0.144	101	-0.01	2.03	-1.16	6028	6029	74	6028	6029	104	
430	62.180	0.144	100	0	2.03	-2.4	6028	6029	74	6028	6029	104	
440	63.624	0.144	102	-0.02	2.04	-0.82	6028	6029	75	6028	6029	104	
450	65.065	0.144	100	-0.03	2.06	-1.52	6028	6029	76	6029	6029	104	
460	66.510	0.145	105	-0.04	2.04	-1.16	6028	6029	78	6029	6029	104	
470	67.952	0.144	98	-0.03	2.03	-1.45	6028	6029	76	6029	6029	104	
480	69.396	0.144	95	-0.01	2.04	-1.09	6028	6029	75	6029	6029	104	
490	70.838	0.144	96	-0.01	2.04	-2.08	6028	6029	74	6029	6029	104	
500	72.283	0.145	103	-0.01	2.05	-1.3	6028	6029	74	6029	6029	104	
510	73.723	0.144	95	-0.01	2.04	-0.79	6028	6029	74	6029	6029	104	
520	75.168	0.145	98	-0.01	2.04	-2.26	6028	6029	74	6029	6029	104	
530	76.610	0.144	99	-0.01	2.04	-2.1	6028	6029	73	6028	6029	104	
540	78.054	0.144	100	-0.03	2.04	-1.03	6028	6029	75	6028	6029	104	
550	79.495	0.144	96	-0.03	2.03	-2.28	6028	6029	76	6028	6029	104	
560	80.937	0.144	97	-0.03	2.02	-1.41	6028	6029	76	6028	6029	104	
570	82.380	0.144	96	-0.03	2.03	-2.34	6028	6029	75	6028	6029	104	
580	83.821	0.144	102	-0.02	2.04	-0.78	6028	6029	74	6028	6029	104	
590	85.266	0.144	99	-0.01	2.04	-1.51	6028	6029	74	6028	6029	104	
600	86.707	0.144	101	-0.01	2.05	-2.01	6028	6029	74	6028	6029	104	
610	88.152	0.144	94	-0.01	2.02	-1.96	6028	6029	74	6028	6029	104	
620	89.592	0.144	96	0	2.03	-0.97	6028	6029	74	6028	6029	104	
630	91.037	0.144	99	0	2.03	-1.94	6028	6028	73	6028	6029	104	
640	92.475	0.144	103	-0.02	2.04	-1.11	6028	6028	75	6028	6029	104	
650	93.918	0.144	103	-0.03	2.05	-1.17	6027	6028	76	6028	6029	104	
660	95.357	0.144	100	-0.03	2.03	-0.87	6027	6028	75	6028	6029	104	
670	96.799	0.144	101	-0.02	2.04	-0.85	6027	6028	74	6028	6029	104	
680	98.240	0.144	93	-0.01	2.03	-1.54	6027	6028	74	6028	6029	103	
690	99.682	0.144	100	-0.01	2.03	-2.29	6027	6028	73	6028	6029	104	
700	101.125	0.144	99	-0.01	2.04	-1.23	6027	6028	73	6028	6028	104	
710	102.566	0.144	97	0	2.05	-0.93	6027	6028	73	6028	6028	104	
720	104.010	0.144	99	-0.01	2.04	-1.76	6027	6028	73	6028	6028	104	
730	105.450	0.144	100	-0.02	2.04	-2.03	6027	6028	74	6028	6028	103	
740	106.891	0.144	104	-0.03	2.05	-1.61	6027	6028	76	6028	6028	104	
	106.891	0.144	100.384	-0.017	2.034595	-1.62347	6027	6028	75	6028	6028	101	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT

							1	2	3	4	5	6										
							TEMPERATURES															
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T									

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T

							1	2	3	4	5	6										
							TEMPERATURES															
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T									

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
	106.891	0.144	100.384	-0.017	2.034595	-1.623467	6027	6028	75	6028	6028	101	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT
													#N/A

# Reading		
742		
	T avg BEGIN	172
	T avg END	174.705
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	2.705
	Cp	1.001193607
	Cpa	1.000801934
742	TOTAL MINUTES	740

TOTAL BTU	340191
TOTAL BTU WITH WATER	6164
TOTAL BTU WITH H20 AND STEEL	636
BTU/HR	28134

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water		density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
0	13.285	168	176	0.45	57	173	118	26608	2353	4630		8.33463	116	1.0012	3.758918	1	172	444.0844	26645.07
1	13.191	169.02	176.41	0.46	57.5	173.46	118.145	26864.465	2353	4630		8.334131	115.96	1.001199	3.800364	1	172.715	449.5325	26971.95
2	13.249	169.47	176.86	0.45	57.54	173.99	118.642	26643.156	2353	4630		8.334091	116.45	1.0012	3.717004	1	173.165	441.5219	26491.32
3	13.249	169.64	177.03	0.45	57.45	174.27	118.791	26791.943	2353	4630		8.334181	116.82	1.001199	3.750381	1	173.335	446.0457	26762.74
4	13.208	169.67	177.58	0.46	57.68	174.6	119.104	27647.908	2353	4630		8.33395	116.92	1.0012	3.833617	1	173.625	457.147	27428.82
5	13.223	170.35	177.74	0.47	57.44	175.05	119.586	27854.433	2353	4630		8.334191	117.61	1.0012	3.883733	1	174.045	464.9974	27899.85
6	13.138	170.56	178.48	0.46	57.39	175.61	120.275	27957.326	2353	4630		8.334241	118.22	1.0012	3.858754	1	174.52	464.6683	27880.1
7	13.213	171.47	178.99	0.46	57.51	176.02	120.943	28238.75	2353	4630		8.334121	118.51	1.0012	3.850364	1	175.23	466.2333	27974
8	13.137	172.16	179.81	0.46	57.41	176.65	121.689	28193.303	2353	4630		8.334221	119.24	1.0012	3.858744	1	175.985	470.13	28207.8
9	13.176	172.98	180.77	0.47	57.5	177.65	122.733	28701.671	2353	4630		8.334131	120.15	1.001199	3.883705	1	176.875	477.2305	28633.83
10	13.137	173.87	182.06	0.47	57.54	178.58	123.763	28872.647	2353	4630		8.334091	121.04	1.001199	3.942025	1	177.965	488.4618	29307.71
11	13.123	174.81	182.73	0.47	57.68	179.56	124.594	29047.609	2353	4630		8.33395	121.88	1.001199	3.883621	1	178.77	484.4559	29067.36
12	13.28	175.7	183.62	0.45	57.72	180.56	125.616	28637.147	2353	4630		8.33391	122.84	1.001199	3.741926	1	179.66	470.6091	28236.55
13	13.293	176.48	184.54	0.46	57.78	181.51	126.454	29445.227	2353	4630		8.333849	123.73	1.001199	3.858572	1	180.51	488.5168	29311.01
14	13.229	177.83	185.61	0.44	57.73	182.49	127.548	28208.507	2353	4630		8.3339	124.76	1.001198	3.67525	1	181.72	469.3325	28159.95
15	13.269	178.34	186	0.43	57.85	183.02	128.088	27920.657	2353	4630		8.333779	125.17	1.001199	3.608526	1	182.17	462.7629	27765.77
16	13.244	178.3	185.82	0.44	57.81	183.11	128.265	28425.538	2353	4630		8.333819	125.3	1.001198	3.683548	1	182.06	473.0364	28382.18
17	13.251	178.1	186.02	0.44	57.94	183.4	128.194	28334.219	2353	4630		8.333688	125.46	1.001197	3.641822	1	182.06	467.4187	28045.12
18	13.321	177.86	186.3	0.46	58.16	183.54	128.237	29826.883	2353	4630		8.333465	125.38	1.001198	3.858394	1	182.08	495.3817	29722.9
19	13.364	177.92	186.1	0.47	57.96	183.36	128.187	29676.993	2353	4630		8.333668	125.4	1.001198	3.891823	1	182.01	499.4789	29968.73
20	13.062	177.91	186.22	0.47	57.88	183.23	128.066	29928.221	2353	4630		8.333749	125.35	1.001199	3.941863	1	182.065	505.4237	30325.42
21	13.164	177.51	185.96	0.47	57.81	183.11	128.059	29916.643	2353	4630		8.333819	125.3	1.001199	3.891894	1	181.735	498.9898	29939.39
22	13.181	177.57	186.02	0.47	57.54	182.86	128.01	30044.95	2353	4630		8.334091	125.32	1.001199	3.89202	1	181.795	498.8151	29928.9
23	13.38	177.34	185.52	0.47	57.57	182.71	127.853	29886.345	2353	4630		8.334061	125.14	1.0012	3.892006	1	181.43	498.2019	29892.11
24	13.221	176.99	185.31	0.47	57.35	182.4	127.704	29926.642	2353	4630		8.334281	125.05	1.0012	3.883775	1	181.15	496.5689	29794.13
25	13.269	177.09	185.14	0.47	57.32	182.19	127.555	29820.909	2353	4630		8.334311	124.87	1.0012	3.883789	1	181.115	495.9913	29759.48
26	13.241	176.51	184.83	0.47	57.34	181.96	127.342	29683.892	2353	4630		8.334291	124.62	1.0012	3.892114	1	180.67	496.2244	29773.46
27	13.317	176.77	184.83	0.46	57.34	182.02	127.292	29756.53	2353	4630		8.334291	124.68	1.0012	3.867111	1	180.8	492.843	29570.58
28	13.339	176.32	184.63	0.47	57.41	182.08	127.086	29642.768	2353	4630		8.334221	124.67	1.001199	3.925418	1	180.475	499.4641	29967.84
29	13.339	176.51	184.83	0.46	57.54	181.96	126.93	29670.64	2353	4630		8.334091	124.42	1.001199	3.867018	1	180.67	491.4293	29485.76
30	13.391	176.22	184.4	0.47	57.57	181.75	126.76	29433.684	2353	4630		8.334061	124.18	1.0012	3.90034	1	180.31	495.0002	29700.01
31	13.36	176.1	184.15	0.46	57.52	181.52	126.49	29080.925	2353	4630		8.334111	124	1.001199	3.817023	1	180.125	483.394	29003.64
32	13.383	175.89	183.94	0.47	57.71	181.27	126.234	29589.395	2353	4630		8.33392	123.56	1.001199	3.891941	1	179.915	491.8844	29513.06
33	13.254	175.8	183.59	0.47	57.62	181.13	126.035	29484.032	2353	4630		8.33401	123.51	1.001199	3.908651	1	179.695	493.2177	29593.06
34	13.288	175.55	183.33	0.46	57.56	180.84	125.772	29320.05	2353	4630		8.334071	123.28	1.0012	3.842007	1	179.44	483.7965	29027.79
35	13.332	175.42	183.34	0.46	57.51	180.73	125.531	29096.42	2353	4630		8.334121	123.22	1.001199	3.833696	1	179.38	481.8247	28909.48
36	13.25	175.11	183.16	0.46	57.66	180.5	125.254	28694.498	2353	4630		8.33397	122.84	1.001199	3.833626	1	179.135	480.7526	28845.15
37	13.324	175.12	182.77	0.46	57.8	180.45	124.984	29056.974	2353	4630		8.333829	122.65	1.001197	3.833561	1	178.945	479.7076	28782.45
38	13.257	174.78	182.57	0.47	58.13	180.44	124.728	29048.212	2353	4630		8.333496	122.31	1.001197	3.875076	1	178.675	483.9092	29034.55
39	13.267	174.98	182.63	0.47	58.13	180.32	124.451	29013.836	2353	4630		8.333496	122.19	1.001197	3.90841	1	178.805	486.9879	29219.27
40	13.321	174.55	182.47	0.45	58.16	180.05	124.231	28707.344	2353	4630		8.333465	121.89	1.001197	3.741726	1	178.51	465.3948	27923.69

41	13.311	174.43	182.21	0.47	58.24	179.82	123.919	28913.607	2353	4630		8.333384	121.58	1.001197	3.875024	1	178.32	480.7639	28845.84
42	13.443	174.18	181.84	0.46	58.19	179.42	123.699	28655.698	2353	4630		8.333435	121.23	1.001197	3.85838	1	178.01	477.8493	28670.96
43	13.259	174.12	181.91	0.47	58.13	179.42	123.464	28905.496	2353	4630		8.333496	121.29	1.001197	3.883409	1	178.015	480.035	28802.1
44	13.308	173.92	181.31	0.46	58.33	179.42	123.237	28644.719	2353	4630		8.333293	121.09	1.001196	3.866648	1	177.615	477.0841	28625.05
45	13.246	173.78	181.3	0.46	58.45	179.22	123.017	28607.983	2353	4630		8.333171	120.77	1.001197	3.849925	1	177.54	474.1731	28450.39
46	13.223	173.46	181.12	0.47	58.26	179	122.832	28706.876	2353	4630		8.333364	120.74	1.001197	3.875014	1	177.29	476.5456	28592.74
47	13.421	173.12	181.17	0.46	58.18	178.74	122.683	28613.874	2353	4630		8.333445	120.56	1.001198	3.858385	1	177.145	473.9254	28435.53
48	13.25	172.98	180.77	0.47	57.91	178.32	122.548	28705.674	2353	4630		8.333718	120.41	1.001198	3.908514	1	176.875	479.5544	28773.26
49	13.082	172.75	180.53	0.46	57.95	178.17	122.335	28459.084	2353	4630		8.333678	120.22	1.001198	3.866827	1	176.64	473.615	28416.9
50	13.183	172.68	180.2	0.47	57.94	177.8	122.172	28664.059	2353	4630		8.333688	119.86	1.001199	3.925167	1	176.44	480.1205	28807.23
51	13.257	172.42	180.34	0.46	57.68	177.51	121.93	28285.155	2353	4630		8.33395	119.83	1.001199	3.858619	1	176.38	471.0455	28262.73
52	13.131	172.43	179.69	0.47	57.7	177.4	121.817	28253.689	2353	4630		8.33393	119.7	1.001199	3.875277	1	176.06	472.6408	28358.45
53	13.247	172.03	179.42	0.47	57.63	177.28	121.646	28281.536	2353	4630		8.334	119.65	1.001199	3.908646	1	175.725	476.0415	28562.49
54	13.195	171.62	179.27	0.46	57.54	176.84	121.476	28089.263	2353	4630		8.334091	119.3	1.0012	3.867018	1	175.445	470.3138	28218.83
55	13.235	171.48	178.87	0.47	57.27	176.29	121.284	28072.929	2353	4630		8.334361	119.02	1.0012	3.883812	1	175.175	471.6095	28296.57
56	13.227	171.32	178.58	0.47	57.39	176.15	121.021	27873.055	2353	4630		8.334241	118.76	1.0012	3.95043	1	174.95	478.6587	28719.52
57	13.248	171.3	178.56	0.46	57.43	176.19	120.836	28055.146	2353	4630		8.334201	118.76	1.0012	3.867069	1	174.93	467.842	28070.52
58	13.281	170.8	178.45	0.46	57.32	175.97	120.702	28036.067	2353	4630		8.334311	118.65	1.0012	3.842117	1	174.625	464.3078	27858.47
59	13.238	170.75	178.53	0.46	57.34	175.86	120.496	27998.647	2353	4630		8.334291	118.52	1.0012	3.858777	1	174.64	465.5251	27931.51
60	13.339	170.79	178.05	0.46	57.38	175.6	120.19	27796.208	2353	4630		8.334251	118.22	1.0012	3.850424	1	174.42	463.3377	27800.26
61	13.335	170.57	177.96	0.46	57.43	175.53	119.956	27945.47	2353	4630		8.334201	118.1	1.001199	3.867069	1	174.265	464.4345	27866.07
62	13.338	170.27	177.66	0.49	57.59	175.43	119.743	29248.969	2353	4630		8.334041	117.84	1.0012	4.04201	1	173.965	484.583	29074.98
63	13.408	169.84	177.23	0.46	57.49	175.28	119.515	28149.507	2353	4630		8.334141	117.79	1.001199	3.842039	1	173.535	459.732	27583.92
64	13.094	169.92	177.31	0.47	57.58	174.87	119.352	27830.057	2353	4630		8.334051	117.29	1.0012	3.900336	1	173.615	466.0714	27964.29
65	13.273	169.57	177.09	0.47	57.42	174.49	119.175	28160.93	2353	4630		8.334211	117.07	1.0012	3.933748	1	173.33	469.3671	28162.02
66	13.242	169.59	176.72	0.47	57.31	174.39	118.876	28090.377	2353	4630		8.334321	117.08	1.0012	3.908797	1	173.155	465.2196	27913.18
67	13.215	169.39	176.65	0.46	57.45	174.14	118.564	27502.785	2353	4630		8.334181	116.69	1.0012	3.808721	1	173.02	452.119	27127.14
68	13.258	168.8	176.46	0.48	57.45	174.09	118.287	27896.038	2353	4630		8.334181	116.64	1.001199	3.958736	1	172.63	468.8283	28129.7
69	13.29	168.87	176.13	0.47	57.79	173.97	118.024	27606.212	2353	4630		8.333839	116.18	1.001199	3.908571	1	172.5	461.8584	27711.5
70	13.248	168.87	176	0.46	57.59	173.79	117.825	27485.098	2353	4630		8.334041	116.2	1.001199	3.833659	1	172.435	452.2423	27134.54
71	13.255	168.46	175.85	0.47	57.77	173.59	117.64	27478.327	2353	4630		8.333859	115.82	1.001199	3.875245	1	172.155	456.4302	27385.81
72	13.18	168.19	175.45	0.47	57.77	173.41	117.264	27722.477	2353	4630		8.333859	115.64	1.001198	3.925248	1	171.82	460.8419	27650.51
73	13.316	168.05	175.44	0.47	57.83	173.09	117.03	27616.876	2353	4630		8.333799	115.26	1.001198	3.88355	1	171.745	455.0365	27302.19
74	13.27	167.67	175.19	0.47	57.9	172.92	116.724	27623.978	2353	4630		8.333728	115.02	1.001198	3.950187	1	171.43	461.6343	27698.06
75	13.277	167.45	174.84	0.47	57.82	172.6	116.554	27483.005	2353	4630		8.333809	114.78	1.001199	3.908556	1	171.145	456.104	27366.24
76	13.235	167.6	174.99	0.47	57.77	172.38	116.355	27374.698	2353	4630		8.333859	114.61	1.001198	3.875245	1	171.295	451.4445	27086.67
77	13.112	167.87	175.13	0.47	57.85	172.33	116.447	27483.757	2353	4630		8.333779	114.48	1.001199	3.933544	1	171.5	458.5984	27515.91
78	13.116	167.91	175.16	0.46	57.75	172.48	116.767	26728.667	2353	4630		8.33388	114.73	1.001199	3.858586	1	171.535	451.0959	27065.76
79	13.163	168.52	176.04	0.46	57.57	173.16	117.562	27377.637	2353	4630		8.334061	115.59	1.0012	3.850336	1	172.28	453.1964	27191.79
80	13.283	168.9	176.69	0.47	57.36	173.88	118.592	27974.66	2353	4630		8.334271	116.52	1.001201	3.94211	1	172.795	468.0642	28083.85
81	13.178	169.84	177.36	0.47	57.1	174.62	119.53	28075.121	2353	4630		8.334531	117.52	1.001202	3.908895	1	173.6	467.7917	28067.5
82	13.225	170.63	178.55	0.47	56.9	175.41	120.723	28470.649	2353	4630		8.334729	118.51	1.001202	3.942327	1	174.59	476.5016	28590.09
83	13.256	171.37	179.02	0.47	56.85	176.39	121.746	28786.143	2353	4630		8.334779	119.54	1.001203	3.942351	1	175.195	480.5427	28832.56
84	13.386	172.24	180.03	0.47	56.59	177.25	122.932	29110.251	2353	4630		8.335036	120.66	1.001203	3.950807	1	176.135	486.2648	29175.89
85	13.291	173.29	181.21	0.48	56.58	178.15	124.011	29412.815	2353	4630		8.335046	121.57	1.001203	3.967482	1	177.25	492.6033	29556.2
86	13.414	174.05	182.1	0.47	56.55	179.14	124.963	29087.674	2353	4630		8.335076	122.59	1.001203	3.89248	1	178.075	487.001	29220.06
87	13.321	174.85	183.17	0.47	56.63	180.06	125.886	29646.472	2353	4630		8.334997	123.43	1.001203	3.900779	1	179.01	491.644	29498.64
88	13.278	175.63	183.69	0.48	56.62	180.83	126.745	30054.02	2353	4630		8.335007	124.21	1.001202	3.975798	1	179.66	504.5185	30271.11
89	13.332	176.97	185.02	0.47	56.7	181.75	127.924	30193.464	2353	4630		8.334928	125.05	1.001202	3.925751	1	180.995	502.8013	30168.08
90	13.507	176.99	185.44	0.48	56.86	182.32	128.493	30303.655	2353	4630		8.334769	125.46	1.001202	3.959015	1	181.215	509.317	30559.02
91	13.362	177.46	185.64	0.47	56.94	182.74	128.706	30639.3	2353	4630		8.33469	125.8	1.001201	3.950643	1	181.55	509.0821	30544.93
92	13.379	177.56	185.62	0.47	57.11	183.08	128.784	30431.788	2353	4630		8.334521	125.97	1.001201	3.900556	1	181.59	502.9322	30175.93
93	13.215	177.56	185.35	0.47	57.24	183.08	128.628	30237.274	2353	4630		8.334391	125.84	1.0012	3.908829	1	181.455	503.3885	30203.31
94	13.27	177.57	185.23	0.47	57.26	183.09	128.564	30330.125	2353	4630		8.334371	125.83	1.0012	3.917154	1	181.4	504.2096	30252.57

95	13.301	177.59	185.25	0.47	57.28	183.05	128.471	30172.737	2353	4630		8.334351	125.77	1.0012	3.908811	1	181.42	502.7716	30166.3
96	13.469	177.44	185.1	0.47	57.26	182.91	128.336	30197.413	2353	4630		8.334371	125.65	1.001201	3.950492	1	181.27	507.599	30455.94
97	13.482	177.43	185.09	0.47	57.24	182.9	128.209	30257.054	2353	4630		8.334391	125.66	1.0012	3.917164	1	181.26	502.8183	30169.1
98	13.461	177.3	184.96	0.47	57.38	182.54	127.946	30009.258	2353	4630		8.334251	125.16	1.0012	3.908764	1	181.13	500.7108	30042.65
99	13.468	177.18	184.7	0.47	57.39	182.43	127.718	29979.093	2353	4630		8.334241	125.04	1.0012	3.892091	1	180.94	497.6865	29861.19
100	13.396	176.77	184.56	0.47	57.38	182.3	127.555	30010.721	2353	4630		8.334251	124.92	1.001199	3.900429	1	180.665	498.116	29886.96
101	13.316	176.91	184.57	0.47	57.59	182.13	127.299	29936.787	2353	4630		8.334041	124.54	1.001199	3.900331	1	180.74	497.1036	29826.21
102	13.348	176.86	184.39	0.46	57.67	182.14	127.108	29582.86	2353	4630		8.33396	124.47	1.001199	3.858624	1	180.625	491.05	29463
103	13.342	176.5	184.28	0.47	57.64	181.99	126.916	29778.288	2353	4630		8.33399	124.35	1.001199	3.891973	1	180.39	494.5462	29672.77
104	13.288	176.34	184.13	0.46	57.55	181.54	126.717	29503.428	2353	4630		8.334081	123.99	1.001199	3.858679	1	180.235	489.5466	29372.8
105	13.351	176.36	183.89	0.47	57.64	181.51	126.532	29758.622	2353	4630		8.33399	123.87	1.001199	3.891973	1	180.125	493.0495	29582.97
106	13.384	176.29	183.55	0.47	57.77	181.38	126.227	29618.07	2353	4630		8.333859	123.61	1.001198	3.916914	1	179.92	495.0128	29700.77
107	13.252	176.16	183.55	0.47	57.84	181.21	126.028	29380.551	2353	4630		8.333789	123.37	1.001198	3.925215	1	179.855	495.2797	29716.78
108	13.451	175.8	183.32	0.47	57.87	181.11	125.815	29509.143	2353	4630		8.333759	123.24	1.001198	3.916867	1	179.56	493.391	29603.46
109	13.368	175.67	183.06	0.47	57.94	180.99	125.687	29760.227	2353	4630		8.333688	123.05	1.001198	3.9085	1	179.365	491.8363	29510.18
110	13.298	175.63	183.42	0.47	57.84	181.03	125.588	29657.281	2353	4630		8.333789	123.19	1.001199	3.925215	1	179.525	493.5507	29613.04
111	13.413	175.24	183.03	0.47	57.77	180.66	125.446	29883.895	2353	4630		8.333859	122.89	1.001198	3.950249	1	179.135	496.1369	29768.21
112	13.38	175.09	182.74	0.47	57.82	180.71	125.24	29514.096	2353	4630		8.333809	122.89	1.001198	3.950226	1	178.915	495.319	29719.14
113	13.383	175.03	182.56	0.47	57.9	180.54	125.076	29479.561	2353	4630		8.333728	122.64	1.001198	3.908519	1	178.795	489.4475	29366.85
114	13.368	174.9	182.43	0.47	57.97	180.42	124.871	29321.716	2353	4630		8.333658	122.45	1.001198	3.916819	1	178.665	489.6831	29380.99
115	13.423	174.99	182.25	0.47	57.92	180.14	124.643	29207.243	2353	4630		8.333708	122.22	1.001198	3.908509	1	178.62	487.7518	29265.11
116	13.288	174.84	182.1	0.47	58.04	180.06	124.331	29230.44	2353	4630		8.333587	122.02	1.001198	3.891785	1	178.47	484.4492	29066.95
117	13.387	174.33	181.99	0.46	57.99	179.65	124.096	29038.975	2353	4630		8.333637	121.66	1.001198	3.816806	1	178.16	474.2178	28453.07
118	13.383	174.21	182.13	0.47	57.93	179.3	123.848	29161.287	2353	4630		8.333698	121.37	1.001198	3.891837	1	178.17	482.5737	28954.42
119	13.354	174.19	181.58	0.47	57.92	179.17	123.656	28975.006	2353	4630		8.333708	121.25	1.001198	3.908509	1	177.885	483.8894	29033.36
120	13.351	174.04	181.56	0.47	58.1	179.15	123.372	28906.841	2353	4630		8.333526	121.05	1.001197	3.891757	1	177.8	480.7085	28842.51
121	13.352	173.93	180.92	0.47	58.26	179.05	123.116	28840.788	2353	4630		8.333364	120.79	1.001197	3.883348	1	177.425	478.6743	28720.46
122	13.347	173.76	181.16	0.47	58.36	178.9	122.832	28844.921	2353	4630		8.333262	120.54	1.001196	3.924967	1	177.46	482.6882	28961.29
123	13.213	173.56	181.08	0.47	58.48	178.89	122.64	28610.269	2353	4630		8.33314	120.41	1.001196	3.89991	1	177.32	478.8568	28731.41
124	13.366	173.34	180.6	0.46	58.6	178.76	122.321	28323.505	2353	4630		8.333018	120.16	1.001196	3.833188	1	176.97	469.44	28166.4
125	13.353	173.19	180.45	0.47	58.65	178.49	122.086	28408.459	2353	4630		8.332967	119.84	1.001196	3.93316	1	176.82	480.7581	28845.49
126	13.381	172.96	180.61	0.47	58.54	178.16	121.852	28445.036	2353	4630		8.333079	119.62	1.001195	3.891548	1	176.785	474.7598	28485.59
127	13.366	172.97	180.23	0.47	58.69	177.93	121.532	28455.828	2353	4630		8.332926	119.24	1.001195	3.949807	1	176.6	480.6018	28836.11
128	13.379	172.57	179.83	0.47	58.69	177.69	121.284	28507.208	2353	4630		8.332926	119	1.001196	3.924808	1	176.2	476.5856	28595.14
129	13.347	172.43	179.82	0.46	58.61	177.68	121.028	28354.967	2353	4630		8.333008	119.07	1.001196	3.866515	1	176.125	468.5164	28110.98
130	13.356	172.2	179.59	0.47	58.51	177.28	120.922	28246.257	2353	4630		8.33311	118.77	1.001197	3.883229	1	175.895	470.1297	28207.78
131	13.409	171.97	179.36	0.47	58.34	176.95	120.936	28277.131	2353	4630		8.333283	118.61	1.001198	3.90831	1	175.665	473.2217	28393.3
132	13.226	171.92	178.92	0.47	57.9	176.61	120.893	28345.069	2353	4630		8.333728	118.71	1.001198	3.883517	1	175.42	470.0527	28203.16
133	13.381	171.55	178.94	0.47	57.86	176.39	120.716	28420.419	2353	4630		8.333769	118.53	1.001198	3.925205	1	175.245	474.4027	28464.16
134	13.375	171.62	178.75	0.47	57.94	176.4	120.496	27798.864	2353	4630		8.333688	118.46	1.001198	3.883499	1	175.185	468.5066	28110.4
135	13.276	171.47	178.47	0.47	57.98	176.32	120.354	27785.502	2353	4630		8.333648	118.34	1.001198	3.875146	1	174.97	466.9482	28016.89
136	13.389	170.81	178.6	0.46	57.91	176.2	120.211	27738.397	2353	4630		8.333718	118.29	1.001199	3.791842	1	174.705	456.3675	27382.05
137	13.312	170.92	178.31	0.46	57.76	175.94	120.084	27808.41	2353	4630		8.33387	118.18	1.001198	3.83358	1	174.615	460.9032	27654.19
138	13.254	170.76	177.89	0.46	57.93	175.79	119.863	27740.981	2353	4630		8.333698	117.86	1.001198	3.850169	1	174.325	462.0458	27722.75
139	13.377	170.61	177.86	0.46	57.84	175.59	119.665	27588.941	2353	4630		8.333789	117.75	1.001199	3.858544	1	174.235	462.2862	27737.17
140	13.343	170.34	177.6	0.46	57.77	175.41	119.48	27558.794	2353	4630		8.333859	117.64	1.001199	3.825242	1	173.97	457.5876	27455.26
141	13.276	170.04	177.43	0.46	57.8	175.19	119.366	27297.824	2353	4630		8.333829	117.39	1.001199	3.850229	1	173.735	460.1376	27608.26
142	13.327	169.9	177.29	0.46	57.6	175.13	119.26	27607.364	2353	4630		8.33403	117.53	1.0012	3.858656	1	173.595	460.7354	27644.12
143	13.351	169.87	177.13	0.46	57.5	174.85	119.182	27617.557	2353	4630		8.334131	117.35	1.0012	3.842034	1	173.5	458.4509	27507.05
144	13.342	169.46	176.71	0.46	57.34	174.59	119.146	27636.438	2353	4630		8.334291	117.25	1.001201	3.858777	1	173.085	460.31	27618.6
145	13.344	169.41	176.93	0.47	57.1	174.31	119.104	27702.591	2353	4630		8.334531	117.21	1.001202	3.875557	1	173.17	462.1489	27728.94
146	13.319	169.33	176.32	0.46	56.94	173.93	118.869	27458.469	2353	4630		8.33469	116.99	1.001201	3.808953	1	172.825	453.3103	27198.62
147	13.365	169.01	176.4	0.46	57.03	173.83	118.635	27131.752	2353	4630		8.3346	116.8	1.001201	3.808912	1	172.705	452.4129	27144.77
148	13.347	168.91	175.91	0.46	57.2	173.74	118.4	27729.425	2353	4630		8.334431	116.54	1.001201	3.867176	1	172.41	458.4235	27505.41

149	13.338	168.62	175.74	0.47	57.1	173.65	118.166	28073.868	2353	4630	
150	13.357	168.32	175.58	0.48	57.2	173.49	117.925	28014.365	2353	4630	
151	13.328	168.14	175.39	0.47	57.28	173.26	117.704	27802.902	2353	4630	
152	13.366	167.87	175.13	0.47	57.41	173.08	117.463	27683.671	2353	4630	
153	13.294	167.7	175.09	0.48	57.3	172.92	117.278	27797.059	2353	4630	
154	13.276	167.55	174.94	0.47	57.22	172.66	117.065	27757.927	2353	4630	
155	13.345	167.37	174.63	0.47	57.11	172.38	117.03	27383.488	2353	4630	
156	13.299	166.98	174.5	0.47	56.9	172.2	116.937	27737.076	2353	4630	
157	13.314	166.7	174.36	0.47	56.83	172.06	116.802	27633.341	2353	4630	
158	13.331	166.96	174.21	0.47	56.82	171.93	116.753	27601.749	2353	4630	
159	13.274	166.81	174.33	0.46	56.8	171.92	116.682	27554.111	2353	4630	
160	13.417	167.34	174.47	0.47	56.94	172.11	116.888	27341.528	2353	4630	
161	13.335	167.42	174.81	0.47	56.89	172.36	117.179	27375.705	2353	4630	
162	13.284	167.96	175.88	0.47	56.9	172.92	118.003	27781.422	2353	4630	
163	13.337	168.62	176.41	0.48	56.49	173.58	118.919	28218.84	2353	4630	
164	13.318	169.55	177.21	0.48	56.57	174.44	119.856	28505.843	2353	4630	
165	13.422	170.08	178	0.48	56.64	175.17	120.623	28638.774	2353	4630	
166	13.258	171.12	178.77	0.47	56.68	176.18	121.604	28404.131	2353	4630	
167	13.372	171.92	179.71	0.48	56.69	176.85	122.52	29275.5	2353	4630	
168	13.303	172.7	180.88	0.48	56.62	177.75	123.592	29417.064	2353	4630	
169	13.213	173.63	181.54	0.47	56.55	178.72	124.608	29762.701	2353	4630	
170	13.473	174.67	182.72	0.48	56.54	179.73	125.829	30022.634	2353	4630	
171	13.35	175.62	183.4	0.46	56.43	180.72	126.866	29029.849	2353	4630	
172	13.427	176.67	184.33	0.46	56.43	181.62	127.868	29423.39	2353	4630	
173	13.554	177.06	184.98	0.46	56.42	182.21	128.5	29421.645	2353	4630	
174	13.506	177.32	184.85	0.45	56.48	182.45	128.713	29102.229	2353	4630	
175	13.402	177.44	184.97	0.45	56.54	182.63	128.833	29232.608	2353	4630	
176	13.363	177.31	185.1	0.46	56.54	182.69	128.755	29347.312	2353	4630	
177	13.285	177.17	184.83	0.46	56.66	182.68	128.72	29564.622	2353	4630	
178	13.517	177.3	184.96	0.46	56.6	182.68	128.684	29476.904	2353	4630	
179	13.344	177.42	185.08	0.46	56.79	182.67	128.549	29593.079	2353	4630	
180	13.376	177.04	184.96	0.458	56.53	182.44	128.485	29463.174	2353	4630	
181	13.377	177.7	184.96	0.451	56.6	182.5	128.535	29058.769	2353	4630	
182	13.426	177.33	184.73	0.451	56.63	182.34	128.372	28812.994	2353	4630	
183	13.209	177.44	184.57	0.451	56.54	182.14	128.209	28755.31	2353	4630	
184	13.294	177.22	184.48	0.445	56.65	181.94	127.889	28663.417	2353	4630	
185	13.419	176.83	184.22	0.437	56.72	181.88	127.669	28695.906	2353	4630	
186	13.468	177.08	184.21	0.444	56.91	181.81	127.449	28429.855	2353	4630	
187	13.399	177.08	183.81	0.445	57.04	181.69	127.228	28027.169	2353	4630	
188	13.361	176.66	183.66	0.451	57.15	181.55	127.001	28595.703	2353	4630	
189	13.428	176.55	183.68	0.452	57.31	181.51	126.76	28559.478	2353	4630	
190	13.185	176.85	183.71	0.449	57.41	181.3	126.568	28505.397	2353	4630	
191	13.392	176.46	183.46	0.452	57.42	181.07	126.17	28282.689	2353	4630	
192	13.396	176.46	183.46	0.457	57.69	181.19	125.957	28314.949	2353	4630	
193	13.347	176.06	183.06	0.451	57.75	181.01	125.744	28150.34	2353	4630	
194	13.369	176.46	183.06	0.421	57.82	180.83	125.467	26453.429	2353	4630	
195	13.366	176.06	183.06	0.447	57.89	180.65	125.268	27939.151	2353	4630	
196	13.471	175.77	182.76	0.449	57.92	180.56	125.055	28059.355	2353	4630	
197	13.349	175.65	182.51	0.45	58	180.45	124.75	28028.293	2353	4630	
198	13.293	175.38	182.78	0.448	58.27	180.39	124.544	27899.154	2353	4630	
199	13.299	175.52	182.38	0.446	58.2	180.27	124.338	27715.047	2353	4630	
200	13.374	175.25	182.51	0.453	58.4	180.02	124.096	27682.576	2353	4630	
201	13.308	175.12	182.25	0.446	58.47	179.84	123.89	27673.4	2353	4630	
202	13.302	175.02	182.01	0.446	58.63	179.75	123.663	27530.428	2353	4630	

8.334531	116.55	1.001201	3.950568	1	172.18	467.3833	28043	
8.334431	116.29	1.0012	3.967189	1	171.95	468.3924	28103.54	
8.334351	115.98	1.0012	3.950482	1	171.765	465.5455	27932.73	
8.334221	115.67	1.0012	3.950421	1	171.5	464.5853	27875.12	
8.334331	115.62	1.001201	3.992145	1	171.395	468.7528	28125.17	
8.334411	115.44	1.001201	3.925508	1	171.245	460.0914	27605.49	
8.334521	115.27	1.001202	3.900556	1	171	457.0306	27421.84	
8.334729	115.3	1.001202	3.942327	1	170.74	461.558	27693.48	
8.334799	115.23	1.001202	3.92569	1	170.53	459.0796	27544.78	
8.334809	115.11	1.001202	3.91736	1	170.585	457.9133	27474.8	
8.334829	115.12	1.001202	3.800682	1	170.57	444.004	26640.24	
8.33469	115.17	1.001202	3.950643	1	170.905	462.3377	27740.26	
8.334739	115.47	1.001202	3.933997	1	171.115	461.5358	27692.15	
8.334729	116.02	1.001203	3.908988	1	171.92	461.8273	27709.64	
8.335135	117.09	1.001203	3.959189	1	172.515	471.3891	28283.35	
8.335056	117.87	1.001203	3.967487	1	173.38	476.099	28565.94	
8.334987	118.53	1.001202	3.975789	1	174.04	480.1482	28808.89	
8.334947	119.5	1.001202	3.934095	1	174.945	478.977	28738.62	
8.334938	120.16	1.001203	4.03411	1	175.815	494.8536	29691.21	
8.335007	121.13	1.001203	3.959128	1	176.79	489.9052	29394.31	
8.335076	122.17	1.001203	3.950826	1	177.585	492.8967	29573.8	
8.335086	123.19	1.001203	4.000841	1	178.695	504.0276	30241.66	
8.335194	124.29	1.001203	3.825854	1	179.51	485.9549	29157.29	
8.335194	125.19	1.001203	3.800849	1	180.5	486.5918	29195.51	
8.335204	125.79	1.001203	3.834194	1	181.02	493.2867	29597.2	
8.335145	125.97	1.001203	3.72581	1	181.085	480.137	28808.22	
8.335086	126.09	1.001203	3.734118	1	181.205	481.6564	28899.38	
8.335086	126.15	1.001203	3.859145	1	181.205	497.4817	29848.9	
8.334967	126.02	1.001203	3.800745	1	181	489.8203	29389.22	
8.335027	126.08	1.001202	3.817442	1	181.13	491.8342	29510.05	
8.334839	125.88	1.001203	3.809021	1	181.25	490.2349	29414.09	
8.335096	125.91	1.001203	3.817474	1	181	491.0781	29464.68	
8.335027	125.9	1.001203	3.759097	1	181.33	483.7566	29025.4	
8.334997	125.71	1.001203	3.759084	1	181.03	483.1416	28988.49	
8.335086	125.6	1.001203	3.759124	1	181.005	482.5331	28951.98	
8.334977	125.29	1.001202	3.709065	1	180.85	474.9189	28495.14	
8.334908	125.16	1.001202	3.642355	1	180.525	465.5746	27934.48	
8.33472	124.9	1.001201	3.700615	1	180.645	472.2063	28332.38	
8.33459	124.65	1.001201	3.708893	1	180.445	472.4416	28346.5	
8.334481	124.4	1.0012	3.758851	1	180.16	477.9508	28677.05	
8.334321	124.2	1.0012	3.767113	1	180.115	478.0922	28685.53	
8.334221	123.89	1.0012	3.742065	1	180.28	474.194	28451.64	
8.334211	123.65	1.001199	3.767063	1	179.96	475.8602	28551.61	
8.33394	123.5	1.001199	3.808611	1	179.96	480.2962	28817.77	
8.33388	123.26	1.001198	3.75858	1	179.56	473.1853	28391.12	
8.333809	123.01	1.001198	3.508534	1	179.76	440.7327	26443.96	
8.333738	122.76	1.001198	3.725181	1	179.56	467.2051	28032.31	
8.333708	122.64	1.001198	3.741835	1	179.265	468.4957	28109.74	
8.333627	122.45	1.001197	3.750132	1	179.08	468.389	28103.34	
8.333354	122.12	1.001197	3.733342	1	179.08	465.5221	27931.32	
8.333425	122.07	1.001196	3.716707	1	178.95	462.6809	27760.85	
8.333222	121.62	1.001196	3.774949	1	178.88	469.0165	28140.99	
8.33315	121.37	1.001196	3.716585	1	178.685	460.9983	27659.9	
8.332987	121.12	1.001196	3.716512	1	178.515	460.1446	27608.68	

203	13.439	174.79	181.91	0.445	58.6	179.6	123.407	27466.63	2353	4630
204	13.326	174.62	181.62	0.45	58.5	179.45	123.244	27625.838	2353	4630
205	13.402	174.5	181.36	0.45	58.44	179.34	123.081	27498.216	2353	4630
206	13.294	174.35	181.34	0.448	58.56	179.08	123.024	27535.829	2353	4630
207	13.409	174.36	181.22	0.447	58.43	179.09	122.846	27588.933	2353	4630
208	13.314	174.23	181.09	0.445	58.57	178.91	122.726	27332.159	2353	4630
209	13.288	174.08	180.82	0.446	58.42	178.66	122.413	27368.111	2353	4630
210	13.293	173.85	180.98	0.443	58.45	178.56	122.307	27204.081	2353	4630
211	13.313	173.71	180.44	0.447	58.24	178.25	122.179	27332.955	2353	4630
212	13.306	173.33	180.33	0.446	58.47	178.21	122.023	27315.692	2353	4630
213	13.352	173.59	180.19	0.449	58.45	177.96	121.795	27240.909	2353	4630
214	13.359	173.07	180.06	0.449	58.4	177.79	121.667	27366.138	2353	4630
215	13.32	172.94	179.93	0.45	58.33	177.73	121.497	27285.77	2353	4630
216	13.318	172.84	179.83	0.447	58.3	177.52	121.319	27133.642	2353	4630
217	13.216	172.66	179.39	0.447	58.19	177.36	121.128	27132.8	2353	4630
218	13.364	172.42	179.28	0.446	58.41	177.13	120.9	27021.718	2353	4630
219	13.335	172.28	179.01	0.447	58.26	176.88	120.751	27146.369	2353	4630
220	13.435	172.16	179.02	0.449	58.48	176.77	120.503	27020.978	2353	4630
221	13.276	172.15	178.61	0.432	58.4	176.64	120.283	26341.612	2353	4630
222	13.345	171.87	179	0.442	58.45	176.57	120.119	26714.354	2353	4630
223	13.37	171.49	178.74	0.45	58.33	176.34	119.849	26939.743	2353	4630
224	13.322	171.62	178.08	0.448	58.47	176.03	119.579	26863.708	2353	4630
225	13.272	171.08	178.21	0.443	58.32	175.84	119.452	26685.547	2353	4630
226	13.292	171.33	177.67	0.452	58.51	175.77	119.267	26791.098	2353	4630
227	13.354	170.68	177.68	0.451	58.45	175.54	119.04	26721.784	2353	4630
228	13.228	170.79	177.52	0.447	58.5	175.28	118.805	26545.506	2353	4630
229	13.374	170.8	177.4	0.431	58.44	175.17	118.557	25718.342	2353	4630
230	13.375	170.41	177.14	0.447	58.58	174.99	118.386	26558.586	2353	4630
231	13.226	170.29	177.15	0.446	58.66	174.81	118.102	26362.885	2353	4630
232	13.37	170.03	177.03	0.449	58.67	174.76	117.925	26374.928	2353	4630
233	13.439	169.87	176.73	0.45	58.9	174.49	117.648	26320.646	2353	4630
234	13.315	170.02	176.36	0.446	58.86	174.27	117.349	26234.986	2353	4630
235	13.39	169.62	176.21	0.445	58.91	174.08	117.129	26223.214	2353	4630
236	13.287	169.65	176.38	0.445	58.94	173.92	116.881	26212.523	2353	4630
237	13.388	169.26	175.86	0.451	59.02	173.87	116.653	26066.045	2353	4630
238	13.161	168.97	175.7	0.442	59.06	173.6	116.469	26013.222	2353	4630
239	13.318	168.88	175.61	0.451	59.1	173.34	116.256	25938.685	2353	4630
240	13.374	168.85	175.31	0.444	59.13	173.31	115.957	25876.838	2353	4630
241	13.352	168.58	175.05	0.446	59	173.06	115.751	25800.246	2353	4630
242	13.346	168.31	175.04	0.447	58.99	172.87	115.538	25856.74	2353	4630
243	13.289	168.16	174.89	0.448	59.05	172.62	115.304	25827.642	2353	4630
244	13.311	168.01	174.61	0.447	59.09	172.48	115.133	25594.331	2353	4630
245	13.296	167.9	174.5	0.444	58.98	172.38	114.906	25532.009	2353	4630
246	13.357	167.5	174.37	0.44	59.05	172.13	114.686	25501.948	2353	4630
247	13.332	167.23	173.96	0.445	59.1	171.94	114.473	25652.579	2353	4630
248	13.293	167.52	173.98	0.444	58.99	171.72	114.324	25361.946	2353	4630
249	13.189	167.11	173.57	0.44	58.98	171.47	114.089	25407.026	2353	4630
250	13.227	166.9	173.63	0.443	59.1	171.27	113.898	25396.226	2353	4630
251	13.273	166.62	173.22	0.444	58.96	171.14	113.706	25365.108	2353	4630
252	13.296	166.48	173.21	0.447	59.01	170.95	113.55	25324.063	2353	4630
253	13.315	166.5	172.97	0.441	58.97	170.78	113.443	25267	2353	4630
254	13.279	166.37	172.97	0.442	58.97	170.72	113.365	25221.743	2353	4630
255	13.278	166.26	172.99	0.442	58.92	170.74	113.479	25233.872	2353	4630
256	13.237	166.65	173.25	0.447	58.99	170.87	113.578	25204.246	2353	4630

8.333018	121	1.001196	3.708193	1	178.35	458.1643	27489.86	
8.33312	120.95	1.001196	3.749904	1	178.12	462.706	27762.36	
8.333181	120.9	1.001196	3.749931	1	177.93	462.0973	27725.84	
8.333059	120.52	1.001196	3.73321	1	177.845	459.8239	27589.44	
8.333191	120.66	1.001196	3.724936	1	177.79	458.1408	27488.45	
8.333048	120.34	1.001196	3.708207	1	177.66	455.6378	27338.27	
8.333201	120.24	1.001196	3.716608	1	177.45	455.5054	27330.32	
8.333171	120.11	1.001197	3.691595	1	177.415	452.0483	27122.9	
8.333384	120.01	1.001196	3.725023	1	177.075	455.664	27339.84	
8.33315	119.74	1.001196	3.716585	1	176.83	454.0514	27243.08	
8.333171	119.51	1.001196	3.741594	1	176.89	456.2526	27375.16	
8.333222	119.39	1.001197	3.741617	1	176.565	455.776	27346.56	
8.333293	119.4	1.001197	3.749982	1	176.435	456.1568	27369.41	
8.333323	119.22	1.001197	3.724996	1	176.335	452.4538	27147.23	
8.333435	119.17	1.001196	3.725045	1	176.025	451.7471	27104.83	
8.333211	118.72	1.001197	3.716612	1	175.85	449.8763	26992.58	
8.333364	118.62	1.001196	3.725014	1	175.645	450.3372	27020.23	
8.33314	118.29	1.001196	3.74158	1	175.59	451.4111	27084.66	
8.333222	118.24	1.001196	3.599952	1	175.38	433.531	26011.86	
8.333171	118.12	1.001197	3.683261	1	175.435	442.9591	26577.55	
8.333293	118.01	1.001196	3.749982	1	175.115	449.9692	26998.15	
8.33315	117.56	1.001197	3.733251	1	174.85	446.9527	26817.16	
8.333303	117.52	1.001196	3.691653	1	174.645	441.5028	26490.17	
8.33311	117.26	1.001196	3.766566	1	174.5	449.7644	26985.86	
8.333171	117.09	1.001196	3.75826	1	174.18	447.9184	26875.1	
8.33312	116.78	1.001196	3.724905	1	174.155	443.0667	26584	
8.333181	116.73	1.001196	3.591601	1	174.1	426.3186	25579.12	
8.333038	116.41	1.001196	3.724868	1	173.775	441.4994	26489.97	
8.332956	116.15	1.001196	3.716499	1	173.72	439.4507	26367.04	
8.332946	116.09	1.001195	3.741493	1	173.53	441.7427	26504.56	
8.332711	115.59	1.001195	3.74972	1	173.3	441.6741	26500.45	
8.332752	115.41	1.001195	3.716407	1	173.19	436.6377	26198.26	
8.3327	115.17	1.001195	3.708052	1	172.915	434.8392	26090.35	
8.33267	114.98	1.001194	3.708038	1	173.015	433.9168	26035.01	
8.332587	114.85	1.001194	3.757997	1	172.56	438.9051	26334.31	
8.332546	114.54	1.001194	3.682985	1	172.335	429.4658	25767.95	
8.332505	114.24	1.001194	3.75796	1	172.245	437.407	26244.42	
8.332474	114.18	1.001194	3.699619	1	172.08	429.5091	25770.54	
8.332608	114.06	1.001194	3.716343	1	171.815	430.6842	25841.05	
8.332618	113.88	1.001194	3.72468	1	171.675	430.856	25851.36	
8.332557	113.57	1.001194	3.732985	1	171.525	430.9421	25856.53	
8.332515	113.39	1.001194	3.724634	1	171.31	429.3405	25760.43	
8.332629	113.4	1.001194	3.699687	1	171.2	425.6239	25537.44	
8.332557	113.08	1.001194	3.666325	1	170.935	420.9782	25258.69	
8.332505	112.84	1.001194	3.707965	1	170.595	424.9688	25498.13	
8.332618	112.73	1.001194	3.699683	1	170.75	423.4677	25408.06	
8.332629	112.49	1.001194	3.666357	1	170.34	418.7904	25127.42	
8.332505	112.17	1.001195	3.6913	1	170.265	420.9339	25256.03	
8.332649	112.18	1.001194	3.699696	1	169.92	421.1801	25270.81	
8.332598	111.94	1.001194	3.724671	1	169.845	423.4416	25406.5	
8.332639	111.81	1.001194	3.674694	1	169.735	417.3662	25041.97	
8.332639	111.75	1.001195	3.683026	1	169.67	418.0251	25081.51	
8.33269	111.82	1.001194	3.683049	1	169.625	418.4479	25106.88	
8.332618	111.88	1.001194	3.72468	1	169.95	423.5469	25412.81	

257	13.32	166.95	173.68	0.439	59.09	170.96	113.819	25226.106	2353	4630
258	13.236	167.35	174.07	0.442	58.95	171.44	114.395	25398.578	2353	4630
259	13.471	167.76	174.36	0.447	58.97	171.95	114.814	25651.266	2353	4630
260	13.323	168.58	175.17	0.449	58.93	172.64	115.659	25873.03	2353	4630
261	13.319	168.96	175.69	0.449	59.05	173.05	116.355	25971.584	2353	4630
262	13.318	169.91	176.77	0.443	58.94	173.98	117.214	26175.739	2353	4630
263	13.308	170.58	177.97	0.45	58.88	174.78	118.258	26446.626	2353	4630
264	13.352	171.8	178.79	0.447	58.85	175.78	119.331	26666.275	2353	4630
265	13.336	172.48	179.87	0.444	58.94	176.76	120.396	26966.846	2353	4630
266	13.36	173.9	180.63	0.449	58.9	177.82	121.483	27126.764	2353	4630
267	13.39	174.57	181.56	0.45	58.92	178.62	122.328	27382.964	2353	4630
268	13.385	175.77	182.89	0.445	58.99	179.83	123.699	27517.444	2353	4630
269	13.376	176.54	183.67	0.446	59.04	180.72	124.629	27679.025	2353	4630
270	13.437	177.62	184.74	0.45	59.06	181.76	125.659	28220.223	2353	4630
271	13.385	178.02	185.02	0.436	59.2	182.43	126.284	28203.96	2353	4630
272	13.432	178.28	185.4	0.446	59.19	182.97	126.625	28336.139	2353	4630
273	13.436	178.28	185.4	0.429	59.26	183.15	126.682	28137.43	2353	4630
274	13.391	178.54	185.4	0.445	59.39	183.27	126.774	28285.886	2353	4630
275	13.366	178.43	185.43	0.44	59.42	183.17	126.767	28328.309	2353	4630
276	13.349	178.55	185.68	0.44	59.4	183.28	126.781	28273.534	2353	4630
277	13.421	178.57	185.44	0.446	59.43	183.17	126.667	28273.97	2353	4630
278	13.366	178.44	185.44	0.447	59.36	183.17	126.674	28129.272	2353	4630
279	13.253	178.44	185.17	0.436	59.36	182.99	126.554	27782.423	2353	4630
280	13.291	178.57	185.04	0.447	59.36	182.93	126.49	28315.863	2353	4630
281	13.312	178.18	185.17	0.445	59.43	182.81	126.348	28144.842	2353	4630
282	13.41	177.92	185.05	0.444	59.44	182.88	126.248	28170.378	2353	4630
283	13.292	178.2	184.93	0.441	59.45	182.71	126.192	28175.31	2353	4630
284	13.393	177.93	184.93	0.443	59.31	182.59	126.014	28134.718	2353	4630
285	13.398	177.81	184.81	0.447	59.26	182.6	125.886	28056.887	2353	4630
286	13.326	177.42	184.69	0.446	59.34	182.31	125.701	27962.712	2353	4630
287	13.345	177.82	184.29	0.435	59.54	182.25	125.495	27268.188	2353	4630
288	13.355	177.11	184.1	0.445	59.48	182.08	125.389	27798.827	2353	4630
289	13.536	177.52	184.11	0.448	59.43	181.97	125.211	27828.765	2353	4630
290	13.376	176.97	183.7	0.44	59.34	181.89	125.112	27833.463	2353	4630
291	13.34	176.99	183.72	0.443	59.29	181.73	125.147	27852.405	2353	4630
292	13.246	176.98	183.71	0.446	59.08	181.54	125.14	27947.603	2353	4630
293	13.375	176.58	183.44	0.447	59.01	181.6	125.098	28009.731	2353	4630
294	13.458	176.84	183.31	0.45	58.95	181.36	124.934	27894.522	2353	4630
295	13.326	176.44	183.17	0.453	58.8	181.17	124.885	27959.469	2353	4630
296	13.349	176.32	183.44	0.453	58.68	181.06	124.863	27982.039	2353	4630
297	13.342	176.05	182.92	0.449	58.55	180.82	124.778	27978.978	2353	4630
298	13.396	176.05	182.92	0.447	58.48	180.7	124.743	27905.7	2353	4630
299	13.323	175.54	182.8	0.445	58.37	180.6	124.665	27853.74	2353	4630
300	13.469	176.09	182.43	0.449	58.39	180.5	124.572	27926.756	2353	4630
301	13.273	175.56	182.29	0.448	58.38	180.36	124.388	27784.763	2353	4630
302	13.379	175.54	182.14	0.448	58.23	180.11	124.246	27840.436	2353	4630
303	13.308	175.44	181.91	0.446	58.33	180.02	124.096	27765.854	2353	4630
304	13.266	175.16	181.89	0.444	58.31	179.88	123.89	27685.655	2353	4630
305	13.33	175.04	181.64	0.446	58.32	179.71	123.699	27771.837	2353	4630
306	13.334	175.02	181.48	0.451	58.3	179.45	123.507	27719.988	2353	4630
307	13.525	174.64	181.64	0.449	58.39	179.35	123.287	27530.906	2353	4630
308	13.321	174.65	181.25	0.446	58.4	179.18	123.13	27483.874	2353	4630
309	13.333	174.25	181.11	0.445	58.39	179.05	122.925	27447.698	2353	4630
310	13.298	174.38	180.84	0.445	58.46	178.75	122.655	27368.194	2353	4630

8.332515	111.87	1.001195	3.657974	1	170.315	416.8443	25010.66	
8.332659	112.49	1.001194	3.683035	1	170.71	421.8241	25309.45	
8.332639	112.98	1.001195	3.72469	1	171.06	428.1574	25689.44	
8.33268	113.71	1.001194	3.741373	1	171.875	433.2403	25994.42	
8.332557	114	1.001195	3.741318	1	172.325	435.8411	26150.46	
8.33267	115.04	1.001195	3.691373	1	173.34	433.1975	25991.85	
8.332731	115.9	1.001195	3.749729	1	174.275	443.9653	26637.92	
8.332762	116.93	1.001195	3.724745	1	175.295	445.0085	26700.51	
8.33267	117.82	1.001195	3.699705	1	176.175	445.9619	26757.71	
8.332711	118.92	1.001195	3.741387	1	177.265	455.0579	27303.48	
8.33269	119.7	1.001194	3.749711	1	178.065	459.2425	27554.55	
8.332618	120.84	1.001194	3.708015	1	179.33	459.2255	27553.53	
8.332567	121.68	1.001194	3.716325	1	180.105	463.7149	27822.9	
8.332546	122.7	1.001194	3.749646	1	181.18	471.7392	28304.35	
8.332402	123.23	1.001194	3.632927	1	181.52	459.3282	27559.69	
8.332412	123.78	1.001193	3.716256	1	181.84	471.1325	28267.95	
8.33234	123.89	1.001193	3.574574	1	181.84	453.3744	27202.47	
8.332206	123.88	1.001193	3.707832	1	181.97	470.6174	28237.04	
8.332175	123.75	1.001193	3.666157	1	181.93	465.3022	27918.13	
8.332196	123.88	1.001193	3.666166	1	182.115	465.3547	27921.28	
8.332165	123.74	1.001193	3.716145	1	182.005	471.2746	28276.48	
8.332237	123.81	1.001193	3.72451	1	181.94	472.3615	28341.69	
8.332237	123.63	1.001193	3.632855	1	181.805	460.3009	27618.05	
8.332237	123.57	1.001193	3.72451	1	181.805	471.6752	28300.51	
8.332165	123.38	1.001193	3.707813	1	181.675	469.0336	28142.02	
8.332154	123.44	1.001193	3.699476	1	181.485	467.6086	28056.52	
8.332144	123.26	1.001193	3.674475	1	181.565	464.2427	27854.56	
8.332289	123.28	1.001193	3.691204	1	181.43	465.6985	27941.91	
8.33234	123.34	1.001193	3.724556	1	181.31	469.4289	28165.74	
8.332258	122.97	1.001193	3.716187	1	181.055	467.6855	28061.13	
8.332051	122.71	1.001193	3.624442	1	181.055	455.3919	27323.51	
8.332113	122.6	1.001193	3.70779	1	180.605	465.4707	27928.24	
8.332165	122.54	1.001193	3.73281	1	180.815	467.9465	28076.79	
8.332258	122.55	1.001193	3.666193	1	180.335	459.2322	27553.93	
8.332309	122.44	1.001194	3.691213	1	180.355	462.4958	27749.75	
8.332526	122.46	1.001194	3.716306	1	180.345	465.614	27936.84	
8.332598	122.59	1.001195	3.724671	1	180.01	466.5055	27990.33	
8.332659	122.41	1.001195	3.749697	1	180.075	469.0245	28141.47	
8.332813	122.37	1.001196	3.774764	1	179.805	471.975	28318.5	
8.332936	122.38	1.001196	3.77482	1	179.88	471.899	28313.94	
8.333069	122.27	1.001196	3.741548	1	179.485	467.4213	28045.28	
8.33314	122.22	1.001197	3.724914	1	179.485	465.2129	27912.77	
8.333252	122.23	1.001197	3.708297	1	179.17	462.848	27770.88	
8.333232	122.11	1.001197	3.741621	1	179.26	466.6589	27999.54	
8.333242	121.98	1.001197	3.733292	1	178.925	464.9327	27895.96	
8.333394	121.88	1.001197	3.733361	1	178.84	464.4102	27864.61	
8.333293	121.69	1.001197	3.716649	1	178.675	461.7732	27706.39	
8.333313	121.57	1.001197	3.699991	1	178.525	458.9405	27536.43	
8.333303	121.39	1.001197	3.716653	1	178.34	460.2965	27617.79	
8.333323	121.15	1.001197	3.758329	1	178.25	464.7353	27884.12	
8.333232	120.96	1.001196	3.741621	1	178.14	461.8452	27710.71	
8.333222	120.78	1.001197	3.716617	1	177.95	458.1746	27490.48	
8.333232	120.66	1.001196	3.708288	1	177.68	456.3866	27383.2	
8.333161	120.29	1.001196	3.708256	1	177.61	455.3804	27322.82	

311	13.322	174.08	180.68	0.446	58.42	178.66	122.427	27336.108	2353	4630
312	13.349	173.95	180.55	0.446	58.49	178.41	122.221	27327.779	2353	4630
313	13.208	173.84	180.04	0.443	58.51	178.31	121.987	27272.534	2353	4630
314	13.183	173.42	180.15	0.445	58.62	178.11	121.774	27238.325	2353	4630
315	13.304	173.43	179.9	0.452	58.57	177.88	121.611	27242.437	2353	4630
316	13.209	173.05	180.04	0.443	58.71	177.89	121.483	27186.667	2353	4630
317	13.205	172.91	179.78	0.447	58.65	177.71	121.199	27028.934	2353	4630
318	13.391	172.76	179.36	0.447	58.56	177.39	121.021	27097.154	2353	4630
319	13.285	172.61	179.34	0.449	58.67	177.43	120.844	27015.9	2353	4630
320	13.25	172.5	179.23	0.45	58.56	177.15	120.645	27100.899	2353	4630
321	13.219	172.37	178.96	0.443	58.56	176.96	120.467	26975.85	2353	4630
322	13.385	171.97	178.96	0.449	58.69	176.78	120.14	26946.749	2353	4630
323	13.453	171.96	178.43	0.45	58.75	176.59	119.942	26916.011	2353	4630
324	13.277	171.7	178.43	0.448	58.68	176.53	119.757	26848.541	2353	4630
325	13.416	171.7	178.29	0.449	58.88	176.29	119.523	26675.582	2353	4630
326	13.306	171.52	177.99	0.447	58.9	176.01	119.317	26703.055	2353	4630
327	13.227	171.24	177.7	0.449	58.88	175.99	119.004	26481.134	2353	4630
328	13.315	170.95	177.68	0.443	59.06	175.73	118.748	26451.471	2353	4630
329	13.296	170.69	177.55	0.455	58.93	175.42	118.521	26496.279	2353	4630
330	13.112	170.68	177.27	0.444	59.12	175.35	118.273	26385.973	2353	4630
331	13.348	170.52	177.12	0.441	59.16	175.27	118.017	26115.087	2353	4630
332	13.299	170.4	177.13	0.445	59.24	174.98	117.683	26306.99	2353	4630
333	13.194	170.25	176.85	0.447	59.22	174.72	117.435	26128.529	2353	4630
334	13.232	170.14	176.6	0.446	59.51	174.62	117.129	26136.659	2353	4630
335	13.308	170.11	176.31	0.44	59.48	174.47	116.859	25998.357	2353	4630
336	13.376	169.58	176.31	0.445	59.61	174.29	116.596	26025.834	2353	4630
337	13.229	169.56	175.89	0.443	59.66	174.08	116.298	25890.963	2353	4630
338	13.32	169.56	175.89	0.445	59.79	174.02	115.95	25720.13	2353	4630
339	13.298	169.26	175.46	0.445	59.89	173.75	115.744	25802.294	2353	4630
340	13.165	169.12	175.45	0.448	59.95	173.38	115.481	25917.253	2353	4630
341	13.258	168.86	175.32	0.444	60.01	173.38	115.176	25637.352	2353	4630
342	13.268	168.59	175.32	0.444	60.15	173.2	114.793	25526.812	2353	4630
343	13.318	168.44	174.77	0.45	60.26	172.93	114.523	25592.822	2353	4630
344	13.251	168.18	174.64	0.442	60.33	172.81	114.217	25395.708	2353	4630
345	13.213	168.19	174.65	0.445	60.47	172.58	113.99	25252.504	2353	4630
346	13.211	167.78	174.38	0.443	60.53	172.33	113.685	25118.926	2353	4630
347	13.379	167.91	174.38	0.441	60.53	172.2	113.464	25059.129	2353	4630
348	13.246	167.65	174.11	0.441	60.53	172.14	113.266	25132.933	2353	4630
349	13.192	167.5	173.84	0.442	60.51	171.89	113.081	25073.616	2353	4630
350	13.243	167.67	174.13	0.45	60.81	171.92	113.052	25132.995	2353	4630
351	13.337	167.54	174.4	0.446	60.75	171.86	112.939	25113.5	2353	4630
352	13.2	167.78	174.64	0.443	60.59	172.02	113.251	25153.533	2353	4630
353	13.167	168.15	175.02	0.445	60.7	172.55	113.748	25208.128	2353	4630
354	13.38	168.96	175.82	0.444	60.78	173.17	114.558	25341.841	2353	4630
355	13.178	169.62	176.48	0.442	60.72	173.77	115.226	25501.07	2353	4630
356	13.248	170.69	177.69	0.448	60.67	174.76	116.256	25798.118	2353	4630
357	13.284	171.59	178.18	0.446	60.7	175.64	117.257	25943.556	2353	4630
358	13.215	172.15	179.54	0.436	60.8	176.52	118.308	25920.026	2353	4630
359	13.306	173.2	180.46	0.445	60.67	177.61	119.444	26540.521	2353	4630
360	13.338	174.39	181.52	0.444	60.6	178.45	120.687	26775.869	2353	4630
361	13.247	175.31	182.18	0.442	60.47	179.54	121.866	27071.528	2353	4630
362	13.276	176.38	183.38	0.449	60.28	180.45	123.088	27301.225	2353	4630
363	13.385	177.17	184.3	0.445	60.15	181.66	124.43	27748.517	2353	4630
364	13.306	178.22	185.48	0.444	60	182.67	125.687	27942.435	2353	4630

8.333201	120.24	1.001196	3.716608	1	177.38	455.5574	27333.44	
8.33313	119.92	1.001196	3.716576	1	177.25	454.7869	27287.22	
8.33311	119.8	1.001196	3.691568	1	176.94	450.8617	27051.7	
8.332997	119.49	1.001196	3.708184	1	176.785	452.1004	27126.02	
8.333048	119.31	1.001195	3.766538	1	176.665	458.6	27516	
8.332905	119.18	1.001196	3.691477	1	176.545	448.9879	26939.27	
8.332967	119.06	1.001196	3.724836	1	176.345	451.9863	27119.18	
8.333059	118.83	1.001196	3.724877	1	176.06	451.3273	27079.64	
8.332946	118.76	1.001196	3.741493	1	175.975	452.6777	27160.66	
8.333059	118.59	1.001196	3.749876	1	175.865	452.9449	27176.69	
8.333059	118.4	1.001195	3.691545	1	175.665	445.241	26714.46	
8.332926	118.09	1.001195	3.741484	1	175.465	450.0391	27002.35	
8.332864	117.84	1.001196	3.749789	1	175.195	450.2949	27017.69	
8.332936	117.85	1.001195	3.733155	1	175.065	447.6056	26856.34	
8.332731	117.41	1.001195	3.741396	1	174.995	447.7172	26863.03	
8.332711	117.11	1.001195	3.724722	1	174.755	444.9536	26697.22	
8.332731	117.11	1.001194	3.741396	1	174.47	445.7728	26746.37	
8.332546	116.67	1.001195	3.691318	1	174.315	438.8603	26331.62	
8.33268	116.49	1.001194	3.791369	1	174.12	449.8934	26993.6	
8.332485	116.23	1.001194	3.699623	1	173.975	438.0879	26285.27	
8.332443	116.11	1.001194	3.674608	1	173.82	434.1838	26051.03	
8.332361	115.74	1.001194	3.707901	1	173.765	436.8777	26212.66	
8.332381	115.5	1.001193	3.724575	1	173.55	437.917	26275.02	
8.332082	115.11	1.001193	3.716108	1	173.37	435.7832	26146.99	
8.332113	114.99	1.001192	3.66613	1	173.21	428.931	25735.86	
8.331978	114.68	1.001192	3.70773	1	172.945	432.8219	25969.31	
8.331926	114.42	1.001192	3.691043	1	172.725	429.7725	25786.35	
8.331791	114.23	1.001191	3.707647	1	172.725	430.4138	25824.83	
8.331687	113.86	1.001191	3.707601	1	172.36	429.6437	25778.62	
8.331624	113.43	1.001191	3.732568	1	172.285	431.554	25893.24	
8.331561	113.37	1.00119	3.699213	1	172.09	426.5678	25594.07	
8.331415	113.05	1.00119	3.699148	1	171.955	425.1416	25508.5	
8.3313	112.67	1.00119	3.749085	1	171.605	429.8673	25792.04	
8.331226	112.48	1.001189	3.682402	1	171.41	421.0931	25265.59	
8.331079	112.11	1.001189	3.70733	1	171.42	423.1011	25386.06	
8.331016	111.8	1.001189	3.69064	1	171.08	420.0693	25204.16	
8.331016	111.67	1.001189	3.673978	1	171.145	417.3599	25041.6	
8.331016	111.61	1.001189	3.673978	1	170.88	416.6316	24997.9	
8.331037	111.38	1.001188	3.682318	1	170.67	416.895	25013.7	
8.330721	111.11	1.001188	3.748824	1	170.9	424.3157	25458.94	
8.330784	111.11	1.001189	3.71553	1	170.97	420.1271	25207.62	
8.330953	111.43	1.001188	3.690612	1	171.21	418.4622	25107.73	
8.330837	111.85	1.001188	3.707222	1	171.585	422.1902	25331.41	
8.330752	112.39	1.001188	3.698854	1	172.39	424.2369	25454.21	
8.330816	113.05	1.001189	3.682221	1	173.05	424.7918	25487.51	
8.330868	114.09	1.001188	3.732229	1	174.19	434.4097	26064.58	
8.330837	114.94	1.001188	3.715553	1	174.885	436.1923	26171.54	
8.330731	115.72	1.001189	3.632199	1	175.845	430.2289	25813.74	
8.330868	116.94	1.001189	3.707236	1	176.83	443.3336	26600.01	
8.330942	117.85	1.001189	3.698938	1	177.955	446.9447	26816.68	
8.331079	119.07	1.00119	3.682337	1	178.745	449.2857	26957.14	
8.331279	120.17	1.00119	3.740744	1	179.88	460.9888	27659.33	
8.331415	121.51	1.001191	3.70748	1	180.735	461.8711	27712.27	
8.331572	122.67	1.001191	3.699218	1	181.85	465.4975	27929.85	

365	13.297	178.76	186.02	0.443	59.88	183.22	126.362	28115.326	2353	4630
366	13.455	179.19	186.05	0.445	59.78	183.61	126.767	28200.495	2353	4630
367	13.418	178.92	186.05	0.444	59.71	183.73	127.022	28288.823	2353	4630
368	13.387	179.19	186.05	0.438	59.58	183.85	127.236	28286.26	2353	4630
369	13.393	179.3	186.29	0.449	59.49	183.95	127.406	28412.605	2353	4630
370	13.378	179.04	186.04	0.445	59.5	183.96	127.42	28476.422	2353	4630
371	13.339	179.15	186.28	0.439	59.41	183.94	127.42	28378.485	2353	4630
372	13.381	179.02	186.15	0.45	59.41	183.94	127.37	28540.741	2353	4630
373	13.172	179.01	186.14	0.446	59.4	183.81	127.299	28305.439	2353	4630
374	13.346	178.87	185.87	0.444	59.32	183.68	127.172	28388.82	2353	4630
375	13.331	178.75	185.61	0.444	59.33	183.57	127.165	28314.612	2353	4630
376	13.468	178.61	185.47	0.448	59.59	183.62	126.98	28277.369	2353	4630
377	13.374	179.01	185.48	0.446	59.53	183.51	126.845	28290.195	2353	4630
378	13.477	178.59	185.46	0.447	59.45	183.43	126.618	28165.161	2353	4630
379	13.482	178.45	185.05	0.448	59.57	183.12	126.476	28288.497	2353	4630
380	13.331	178.47	185.34	0.444	59.66	183.2	126.213	28135.419	2353	4630
381	13.284	178.2	185.06	0.44	59.71	182.95	125.986	28081.697	2353	4630
382	13.332	178.21	184.94	0.445	59.79	182.78	125.844	28040.72	2353	4630
383	13.331	177.95	184.68	0.441	59.79	182.66	125.63	27973.775	2353	4630
384	13.383	177.67	184.67	0.444	59.85	182.53	125.453	28027.928	2353	4630
385	13.372	177.92	184.52	0.442	59.84	182.46	125.29	27757.052	2353	4630
386	13.433	177.52	184.25	0.445	59.76	182.33	125.126	27781.206	2353	4630
387	13.338	177.51	184.11	0.441	59.82	182.02	124.934	27693.096	2353	4630
388	13.384	177.24	183.97	0.442	59.82	182.02	124.828	27826.602	2353	4630
389	13.474	177.23	183.83	0.446	59.74	181.77	124.799	27779.034	2353	4630
390	13.366	176.97	183.7	0.443	59.67	181.83	124.643	27630.476	2353	4630
391	13.388	176.83	183.69	0.442	59.66	181.58	124.459	27782.463	2353	4630
392	13.34	176.68	183.55	0.442	59.45	181.27	124.388	27808.735	2353	4630
393	13.505	176.54	183.4	0.446	59.64	181.2	124.21	27738.318	2353	4630
394	13.398	176.67	183.27	0.446	59.51	181.08	124.16	27674.656	2353	4630
395	13.305	176.12	183.12	0.445	59.48	181	123.947	27787.944	2353	4630
396	13.293	176.11	182.71	0.45	59.54	180.81	123.699	27681.985	2353	4630
397	13.373	175.98	182.71	0.446	59.47	180.57	123.55	27655.383	2353	4630
398	13.378	175.98	182.58	0.449	59.61	180.45	123.322	27589.123	2353	4630
399	13.377	175.59	182.45	0.446	59.61	180.21	123.152	27467.664	2353	4630
400	13.378	175.45	182.05	0.444	59.54	180.21	122.896	27270.579	2353	4630
401	13.404	175.46	182.06	0.45	59.68	179.98	122.726	27503.63	2353	4630
402	13.411	175.21	181.94	0.448	59.9	179.74	122.484	27261.269	2353	4630
403	13.375	174.96	181.95	0.444	59.84	179.69	122.356	27236.249	2353	4630
404	13.372	174.68	181.54	0.443	59.76	179.56	122.079	27217.317	2353	4630
405	13.393	174.82	181.16	0.447	59.71	179.33	121.909	27153.244	2353	4630
406	13.323	174.69	181.03	0.444	59.71	179.15	121.724	27127.299	2353	4630
407	13.363	174.43	181.03	0.447	59.77	178.91	121.511	27124.135	2353	4630
408	13.397	174.32	180.92	0.448	59.86	178.81	121.362	27105.673	2353	4630
409	13.286	173.68	180.67	0.444	59.82	178.65	121.064	26997.109	2353	4630
410	13.354	173.8	180.4	0.443	59.94	178.46	120.886	26823.21	2353	4630
411	13.471	173.8	180.4	0.444	59.94	178.46	120.709	26893.77	2353	4630
412	13.352	173.68	180.01	0.447	60.02	178.22	120.481	26784.577	2353	4630
413	13.295	173.27	180	0.445	60	177.91	120.233	26721.172	2353	4630
414	13.428	173.14	180	0.447	59.94	177.85	120.034	26772.483	2353	4630
415	13.393	173.01	179.61	0.447	59.94	177.61	119.849	26693.697	2353	4630
416	13.399	172.89	179.62	0.446	60.02	177.44	119.615	26676.495	2353	4630
417	13.348	172.49	179.22	0.438	60.15	177.26	119.317	26559.904	2353	4630
418	13.32	172.33	179.06	0.445	60.18	177.05	119.104	26587.536	2353	4630

8.331697	123.34	1.001192	3.690942	1	182.39	466.9506	28017.03	
8.331801	123.83	1.001192	3.707652	1	182.62	470.5681	28234.08	
8.331874	124.02	1.001192	3.699352	1	182.485	470.4594	28227.56	
8.332009	124.27	1.001193	3.64942	1	182.62	464.8914	27893.48	
8.332102	124.46	1.001193	3.741114	1	182.795	477.2088	28632.53	
8.332092	124.46	1.001193	3.707781	1	182.54	473.0091	28380.54	
8.332185	124.53	1.001193	3.657829	1	182.715	466.6366	27998.2	
8.332185	124.53	1.001193	3.749483	1	182.585	478.1414	28688.49	
8.332196	124.41	1.001193	3.716159	1	182.575	473.6278	28417.67	
8.332278	124.36	1.001193	3.699532	1	182.37	471.0382	28262.29	
8.332268	124.24	1.001192	3.699527	1	182.18	471.0113	28260.68	
8.331999	124.03	1.001193	3.732735	1	182.04	474.548	28472.88	
8.332061	123.98	1.001193	3.716099	1	182.245	471.9309	28315.85	
8.332144	123.98	1.001192	3.724468	1	182.025	472.147	28328.82	
8.332019	123.55	1.001192	3.732745	1	181.75	472.6654	28359.92	
8.331926	123.54	1.001192	3.699375	1	181.905	467.4658	28047.95	
8.331874	123.24	1.001192	3.666025	1	181.63	462.4182	27745.09	
8.331791	122.99	1.001192	3.707647	1	181.575	467.1411	28028.47	
8.331791	122.87	1.001191	3.67432	1	181.315	462.1548	27729.29	
8.331728	122.68	1.001191	3.699287	1	181.17	464.6396	27878.38	
8.331739	122.62	1.001192	3.682629	1	181.22	461.9464	27716.78	
8.331822	122.57	1.001192	3.707661	1	180.885	464.4775	27868.65	
8.33176	122.2	1.001192	3.674306	1	180.81	459.5927	27575.56	
8.33176	122.2	1.001192	3.682638	1	180.605	460.2442	27614.65	
8.331843	122.03	1.001192	3.716002	1	180.53	464.3061	27858.37	
8.331916	122.16	1.001192	3.691039	1	180.335	460.6106	27636.63	
8.331926	121.92	1.001193	3.682711	1	180.26	458.8933	27533.6	
8.332144	121.82	1.001192	3.682808	1	180.115	458.6432	27518.59	
8.331947	121.56	1.001193	3.716048	1	179.97	462.1208	27727.25	
8.332082	121.57	1.001193	3.716108	1	179.97	461.9423	27716.54	
8.332113	121.52	1.001193	3.70779	1	179.62	460.1175	27607.05	
8.332051	121.27	1.001193	3.749423	1	179.41	464.353	27861.18	
8.332123	121.1	1.001192	3.716127	1	179.345	459.6749	27580.49	
8.331978	120.84	1.001192	3.741058	1	179.28	461.9048	27714.29	
8.331978	120.6	1.001193	3.716062	1	179.02	458.1862	27491.17	
8.332051	120.67	1.001192	3.69943	1	178.75	455.1871	27311.23	
8.331905	120.3	1.001191	3.749357	1	178.76	460.6918	27641.51	
8.331676	119.84	1.001191	3.732591	1	178.575	457.7274	27463.64	
8.331739	119.85	1.001192	3.699292	1	178.455	453.17	27190.2	
8.331822	119.8	1.001192	3.690997	1	178.11	451.1303	27067.82	
8.331874	119.62	1.001192	3.724348	1	177.99	454.5727	27274.36	
8.331874	119.44	1.001192	3.699352	1	177.86	450.8366	27050.19	
8.331812	119.14	1.001191	3.72432	1	177.73	453.085	27185.1	
8.331718	118.95	1.001192	3.73261	1	177.62	453.5367	27212.2	
8.33176	118.83	1.001191	3.699301	1	177.175	448.3857	26903.14	
8.331635	118.52	1.001191	3.690914	1	177.1	446.7113	26802.68	
8.331635	118.52	1.001191	3.699246	1	177.1	447.064	26823.84	
8.331551	118.2	1.001191	3.724203	1	176.845	449.2301	26953.81	
8.331572	117.91	1.001191	3.70755	1	176.635	446.3008	26778.05	
8.331635	117.91	1.001191	3.724241	1	176.57	447.568	26854.08	
8.331635	117.67	1.001191	3.724241	1	176.31	446.878	26812.68	
8.331551	117.42	1.00119	3.715872	1	176.255	445.0031	26700.19	
8.331415	117.11	1.00119	3.64916	1	175.855	435.9251	26155.5	
8.331384	116.87	1.00119	3.707466	1	175.695	442.0995	26525.97	

419	13.35	172.07	178.8	0.448	60.26	176.87	118.798	26469.706	2353	4630
420	13.338	171.93	178.66	0.439	60.18	176.62	118.585	26337.784	2353	4630
421	13.315	172.04	178.51	0.439	60.3	176.54	118.315	25964.879	2353	4630
422	13.337	171.94	178.41	0.442	60.39	176.39	118.145	26246.414	2353	4630
423	13.334	171.68	178.27	0.445	60.39	176.27	117.896	26120.341	2353	4630
424	13.374	171.7	177.9	0.447	60.42	176.05	117.697	26163.845	2353	4630
425	13.348	171.3	177.77	0.446	60.35	175.93	117.427	26127.599	2353	4630
426	13.335	171.17	177.64	0.443	60.55	175.68	117.158	25934.034	2353	4630
427	13.376	170.76	177.62	0.446	60.61	175.49	116.902	26081.372	2353	4630
428	13.153	170.87	177.47	0.434	60.58	175.35	116.76	25722.757	2353	4630
429	13.35	170.6	177.07	0.444	60.64	175.1	116.483	25839.406	2353	4630
430	13.342	170.48	177.21	0.439	60.65	174.87	116.277	25907.502	2353	4630
431	13.357	170.2	176.8	0.449	60.64	174.74	116.007	25709.296	2353	4630
432	13.332	169.92	176.52	0.443	60.69	174.53	115.844	25626.533	2353	4630
433	13.323	169.65	176.38	0.45	60.69	174.35	115.616	25728.321	2353	4630
434	13.309	169.79	176.25	0.444	60.75	174.23	115.41	25597.645	2353	4630
435	13.245	169.4	176.13	0.445	60.76	174.12	115.24	25568.949	2353	4630
436	13.142	169.54	175.75	0.443	60.77	173.89	115.048	25589.414	2353	4630
437	13.294	169.25	175.71	0.444	60.67	173.74	114.807	25447.951	2353	4630
438	13.295	169.13	175.46	0.44	60.75	173.44	114.601	25357.429	2353	4630
439	13.243	168.98	175.19	0.448	60.61	173.37	114.487	25357.424	2353	4630
440	13.377	168.75	175.09	0.45	60.71	173.16	114.331	25442.185	2353	4630
441	13.291	168.46	175.05	0.447	60.61	172.89	114.153	25360.287	2353	4630
442	13.245	168.62	174.95	0.44	60.64	172.79	113.969	25353.186	2353	4630
443	13.232	168.09	174.43	0.445	60.57	172.55	113.812	25349.618	2353	4630
444	13.283	168.11	174.45	0.443	60.66	172.45	113.614	25307.182	2353	4630
445	13.155	167.74	174.47	0.443	60.48	172.11	113.436	25194.048	2353	4630
446	13.318	167.77	173.84	0.449	60.51	171.95	113.244	25204.854	2353	4630
447	13.362	167.63	173.83	0.447	60.44	171.82	113.138	25216.032	2353	4630
448	13.247	167.54	173.87	0.443	60.48	171.68	112.953	25151.683	2353	4630
449	13.12	167.56	173.89	0.441	60.5	171.64	113.024	25233.64	2353	4630
450	13.294	167.84	173.65	0.451	60.52	171.78	113.031	25170.221	2353	4630
451	13.285	167.73	174.06	0.445	60.41	171.8	113.166	25257.523	2353	4630
452	13.319	168.16	174.36	0.444	60.38	172.13	113.599	25270.177	2353	4630
453	13.261	168.71	175.44	0.443	60.46	172.51	114.146	25432.954	2353	4630
454	13.241	169.26	175.99	0.445	60.35	173.32	115.041	25675.327	2353	4630
455	13.277	170.08	176.55	0.443	60.45	174.02	115.801	25665.592	2353	4630
456	13.154	170.87	177.87	0.444	60.38	174.81	116.866	25980.555	2353	4630
457	13.329	171.81	179.06	0.448	60.4	175.73	117.868	26174.631	2353	4630
458	13.293	172.46	179.85	0.447	60.38	176.87	118.876	26577.448	2353	4630
459	13.322	173.52	180.52	0.443	60.4	177.9	120.105	26726.366	2353	4630
460	13.298	174.7	181.43	0.445	60.32	178.8	121.305	26931.831	2353	4630
461	13.428	176.04	183.04	0.446	60.34	180.02	122.683	27297.008	2353	4630
462	13.327	176.98	184.24	0.444	60.35	181	123.734	27485.013	2353	4630
463	13.229	177.67	184.8	0.442	60.25	181.99	124.721	27734.832	2353	4630
464	13.308	178.06	185.19	0.444	60.25	182.47	125.176	27782.447	2353	4630
465	13.422	178.58	185.31	0.445	60.37	182.7	125.417	27853.138	2353	4630
466	13.335	178.33	185.19	0.447	60.25	182.89	125.488	28021.604	2353	4630
467	13.321	178.45	185.05	0.434	60.37	182.94	125.552	27850.838	2353	4630
468	13.326	178.46	185.19	0.442	60.52	183.01	125.595	27846.953	2353	4630
469	13.277	178.33	185.06	0.442	60.32	182.95	125.595	27885.177	2353	4630
470	13.347	178.56	185.03	0.446	60.42	182.92	125.531	27883.43	2353	4630
471	13.29	178.02	185.02	0.445	60.47	182.85	125.375	27873.162	2353	4630
472	13.257	178.3	184.9	0.443	60.55	182.8	125.247	27879.017	2353	4630

8.3313	116.61	1.00119	3.732422	1	175.435	443.9321	26635.92	
8.331384	116.44	1.00119	3.657477	1	175.295	434.238	26054.28	
8.331258	116.24	1.00119	3.657422	1	175.275	433.2427	25994.56	
8.331163	116	1.00119	3.682374	1	175.175	435.5716	26134.3	
8.331163	115.88	1.001189	3.707368	1	174.975	437.6037	26256.22	
8.331132	115.63	1.00119	3.724016	1	174.8	438.8269	26329.62	
8.331205	115.58	1.001189	3.715718	1	174.535	436.8444	26210.66	
8.330995	115.13	1.001189	3.690631	1	174.405	432.9009	25974.06	
8.330932	114.88	1.001189	3.715596	1	174.19	434.877	26092.62	
8.330963	114.77	1.001189	3.615638	1	174.17	422.6637	25359.82	
8.3309	114.46	1.001189	3.69892	1	173.835	431.3734	25882.4	
8.33089	114.22	1.001189	3.657261	1	173.845	425.7608	25545.65	
8.3309	114.1	1.001188	3.740574	1	173.5	434.4485	26066.91	
8.330847	113.84	1.001188	3.690565	1	173.22	428.038	25682.28	
8.330847	113.66	1.001188	3.748881	1	173.015	433.9457	26036.74	
8.330784	113.48	1.001188	3.698868	1	173.02	427.3936	25643.62	
8.330773	113.36	1.001188	3.707194	1	172.765	427.7247	25663.48	
8.330763	113.12	1.001189	3.690528	1	172.645	425.0925	25505.55	
8.330868	113.07	1.001188	3.698906	1	172.48	425.1649	25509.89	
8.330784	112.69	1.001189	3.665545	1	172.295	420.5745	25234.47	
8.330932	112.76	1.001188	3.732257	1	172.085	427.8028	25668.17	
8.330826	112.45	1.001189	3.748872	1	171.92	429.1218	25747.31	
8.330932	112.28	1.001189	3.723926	1	171.755	425.6027	25536.16	
8.3309	112.15	1.001189	3.665596	1	171.785	418.261	25095.66	
8.330974	111.98	1.001189	3.707283	1	171.26	422.4348	25346.09	
8.330879	111.79	1.001189	3.690579	1	171.28	419.8001	25188.01	
8.331069	111.63	1.001189	3.690663	1	171.105	419.1519	25149.12	
8.331037	111.44	1.001189	3.740636	1	170.805	424.1084	25446.5	
8.331111	111.38	1.001189	3.724007	1	170.73	421.8277	25309.66	
8.331069	111.2	1.001189	3.690663	1	170.705	417.3672	25042.03	
8.331048	111.14	1.001189	3.673992	1	170.725	415.743	24944.58	
8.331027	111.26	1.001189	3.757293	1	170.745	425.1957	25511.74	
8.331142	111.39	1.00119	3.707358	1	170.895	420.046	25202.76	
8.331174	111.75	1.001189	3.699041	1	171.26	420.7071	25242.43	
8.33109	112.05	1.00119	3.690673	1	172.075	421.7767	25306.6	
8.331205	112.97	1.001189	3.707386	1	172.625	427.0087	25620.52	
8.3311	113.57	1.00119	3.690677	1	173.315	427.8925	25673.55	
8.331174	114.43	1.00119	3.699041	1	174.37	432.8064	25968.38	
8.331153	115.33	1.00119	3.732356	1	175.435	440.4487	26426.92	
8.331174	116.49	1.00119	3.724035	1	176.155	443.2249	26593.5	
8.331153	117.5	1.00119	3.690701	1	177.02	443.799	26627.94	
8.331237	118.48	1.00119	3.7074	1	178.065	450.2613	27015.68	
8.331216	119.68	1.00119	3.715722	1	179.54	456.3983	27383.9	
8.331205	120.65	1.00119	3.699055	1	180.61	458.2436	27494.61	
8.33131	121.74	1.00119	3.682439	1	181.235	459.824	27589.44	
8.33131	122.22	1.00119	3.699102	1	181.625	463.5896	27815.38	
8.331184	122.33	1.00119	3.707377	1	181.945	465.5214	27931.29	
8.33131	122.64	1.00119	3.724096	1	181.76	467.8853	28073.12	
8.331184	122.57	1.001189	3.615734	1	181.75	454.5024	27270.15	
8.331027	122.49	1.00119	3.682314	1	181.825	463.0304	27781.83	
8.331237	122.63	1.001189	3.682407	1	181.695	463.042	27782.52	
8.331132	122.5	1.001189	3.715685	1	181.795	466.9883	28019.3	
8.331079	122.38	1.001189	3.70733	1	181.52	465.3592	27921.55	
8.330995	122.25	1.001189	3.690631	1	181.6	462.7902	27767.41	

473	13.36	178.29	185.02	0.446	60.47	182.85	125.162	27923.243	2353	4630
474	13.36	177.9	184.77	0.448	60.55	182.62	125.027	27808.745	2353	4630
475	13.334	177.91	184.78	0.44	60.49	182.63	124.863	27788.66	2353	4630
476	13.356	177.66	184.52	0.443	60.51	182.4	124.672	27650.763	2353	4630
477	13.369	177.64	184.37	0.442	60.55	182.38	124.551	27806.47	2353	4630
478	13.415	177.62	184.22	0.447	60.53	182.12	124.395	27593.947	2353	4630
479	13.314	177.21	184.07	0.441	60.45	182.11	124.288	27628.842	2353	4630
480	13.341	177.23	184.23	0.446	60.47	181.95	124.167	27582.216	2353	4630
481	13.374	177.22	183.95	0.452	60.4	181.82	124.238	27728.809	2353	4630
482	13.334	177.22	183.82	0.448	60.06	181.64	124.182	27738.915	2353	4630
483	13.366	176.68	183.81	0.447	60.25	181.45	123.997	27731.203	2353	4630
484	13.322	176.91	183.51	0.445	60.22	181.36	123.862	27637.47	2353	4630
485	13.238	176.66	183.52	0.445	60.1	181.31	123.741	27513.217	2353	4630
486	13.379	176.52	183.38	0.445	60.22	181.24	123.493	27449.577	2353	4630
487	13.417	176.23	183.1	0.445	60.33	180.98	123.372	27518.4	2353	4630
488	13.333	176.21	182.94	0.445	60.31	181.02	123.138	27427.57	2353	4630
489	13.357	176.23	182.96	0.448	60.33	180.8	122.939	27504.94	2353	4630
490	13.412	175.98	182.58	0.448	60.34	180.51	122.775	27318.471	2353	4630
491	13.371	175.85	182.58	0.449	60.34	180.45	122.662	27360.874	2353	4630
492	13.46	175.7	182.44	0.446	60.33	180.26	122.513	27248.462	2353	4630
493	13.463	175.58	182.31	0.443	60.21	180.15	122.3	27275.003	2353	4630
494	13.433	175.46	182.06	0.444	60.35	179.98	122.115	27321.93	2353	4630
495	13.206	175.31	182.04	0.446	60.26	179.78	121.944	27062.409	2353	4630
496	13.346	174.92	181.52	0.437	60.41	179.67	121.76	26974.444	2353	4630
497	13.367	175.05	181.79	0.49	60.34	179.54	121.667	27307.391	2353	4630
498	13.37	174.54	181.53	0.485	60.29	179.43	121.604	29687.382	2353	4630
499	13.351	174.11	181.37	0.484	60.25	179.28	121.454	29598.303	2353	4630
500	13.325	173.96	180.95	0.492	60.17	179.02	121.199	29574.353	2353	4630
501	13.363	173.68	180.81	0.488	60.22	178.95	121.021	29485.529	2353	4630
502	13.505	173.54	180.93	0.49	60.08	178.64	120.858	29512.059	2353	4630
503	13.364	173.55	180.68	0.487	60.15	178.53	120.716	29447.421	2353	4630
504	13.406	173.14	180.27	0.488	60.14	178.22	120.545	29433.219	2353	4630
505	13.473	173.16	180.03	0.49	60.1	178.18	120.318	29425.65	2353	4630
506	13.454	173.17	180.17	0.49	59.98	178.01	120.254	29392.756	2353	4630
507	13.37	172.91	179.91	0.493	60.04	177.76	120.077	29331.859	2353	4630
508	13.44	172.77	179.63	0.486	60.03	177.69	119.828	29303.788	2353	4630
509	13.477	172.37	179.1	0.491	59.9	177.27	119.636	29313.47	2353	4630
510	13.34	172.11	179.37	0.487	59.97	177.21	119.43	29283.067	2353	4630
511	13.332	172.47	179.07	0.474	60	176.94	119.224	27814.272	2353	4630
512	13.439	172.22	178.95	0.467	59.94	176.89	119.089	27772.639	2353	4630
513	13.318	171.94	178.54	0.463	59.93	176.58	118.834	27548.206	2353	4630
514	13.32	171.7	178.56	0.463	59.95	176.35	118.635	27594.403	2353	4630
515	13.351	171.57	178.3	0.465	59.95	176.17	118.415	27445.172	2353	4630
516	13.348	171.44	178.3	0.465	59.89	176.11	118.223	27490.782	2353	4630
517	13.241	171.46	177.79	0.464	59.84	175.83	117.989	27425.739	2353	4630
518	13.181	171.18	177.91	0.462	60.03	175.7	117.818	27310.636	2353	4630
519	13.3	170.91	177.64	0.466	59.95	175.51	117.591	27247.558	2353	4630
520	13.303	171.03	177.63	0.468	60.01	175.44	117.456	27318.203	2353	4630
521	13.376	170.78	177.38	0.469	60.02	175.14	117.136	27268.184	2353	4630
522	13.374	170.37	176.84	0.466	60.01	175.01	116.909	27246.689	2353	4630
523	13.318	170.07	176.66	0.465	59.97	174.85	116.703	27072.238	2353	4630
524	13.365	169.91	176.64	0.466	60.08	174.59	116.447	27147.659	2353	4630
525	13.339	169.77	176.5	0.467	60.07	174.46	116.319	27019.41	2353	4630
526	13.272	169.8	176.4	0.459	60.1	174.31	116.064	26961.223	2353	4630

8.331079	122.38	1.001189	3.715661	1	181.655	465.6126	27936.75	
8.330995	122.07	1.001189	3.732286	1	181.335	467.1914	28031.48	
8.331058	122.14	1.001189	3.665666	1	181.345	458.2503	27495.02	
8.331037	121.89	1.001189	3.690649	1	181.09	460.6677	27640.06	
8.330995	121.83	1.001189	3.6823	1	181.005	459.1795	27550.77	
8.331016	121.59	1.001189	3.723964	1	180.92	463.7935	27827.61	
8.3311	121.66	1.001189	3.674015	1	180.64	457.1791	27430.74	
8.331079	121.48	1.00119	3.715661	1	180.73	461.9113	27714.68	
8.331153	121.42	1.001191	3.765681	1	180.585	468.3977	28103.86	
8.331509	121.58	1.00119	3.732516	1	180.52	464.0629	27843.77	
8.33131	121.2	1.00119	3.724096	1	180.245	462.3263	27739.58	
8.331342	121.14	1.001191	3.707447	1	180.21	459.7585	27585.51	
8.331467	121.21	1.00119	3.707503	1	180.09	459.3161	27558.97	
8.331342	121.02	1.00119	3.707447	1	179.95	458.3885	27503.31	
8.331226	120.65	1.00119	3.707396	1	179.665	457.933	27475.98	
8.331247	120.71	1.00119	3.707405	1	179.575	457.0656	27423.94	
8.331226	120.47	1.00119	3.732389	1	179.595	459.4021	27564.13	
8.331216	120.17	1.00119	3.732385	1	179.28	458.7887	27527.32	
8.331216	120.11	1.00119	3.740716	1	179.215	459.3896	27563.38	
8.331226	119.93	1.00119	3.715727	1	179.07	455.7667	27346	
8.331352	119.94	1.00119	3.690789	1	178.945	451.9205	27115.23	
8.331205	119.63	1.00119	3.699055	1	178.76	452.2477	27134.86	
8.3313	119.52	1.001189	3.71576	1	178.675	453.6536	27219.21	
8.331142	119.26	1.00119	3.640709	1	178.22	443.8201	26629.21	
8.331216	119.2	1.00119	4.082296	1	178.42	497.2717	29836.3	
8.331268	119.14	1.00119	4.040665	1	178.035	491.9458	29516.75	
8.33131	119.03	1.00119	4.032354	1	177.74	490.3285	29419.71	
8.331394	118.85	1.00119	4.099046	1	177.455	497.3915	29843.49	
8.331342	118.73	1.001191	4.065695	1	177.245	492.6203	29557.22	
8.331488	118.56	1.00119	4.082429	1	177.235	493.9816	29638.89	
8.331415	118.38	1.00119	4.057399	1	177.115	490.3761	29422.56	
8.331426	118.08	1.001191	4.065736	1	176.705	490.6876	29441.26	
8.331467	118.08	1.001191	4.082419	1	176.595	491.7735	29506.41	
8.331593	118.03	1.001191	4.08248	1	176.67	491.5192	29491.15	
8.33153	117.72	1.001191	4.107444	1	176.41	493.7969	29627.81	
8.331541	117.66	1.001191	4.049129	1	176.2	485.777	29146.62	
8.331676	117.37	1.001191	4.090853	1	175.735	489.9962	29399.77	
8.331603	117.24	1.001191	4.057491	1	175.74	485.1632	29109.79	
8.331572	116.94	1.001191	3.949165	1	175.77	471.3961	28283.76	
8.331635	116.95	1.001191	3.890873	1	175.585	463.9121	27834.73	
8.331645	116.65	1.001191	3.857552	1	175.24	458.9543	27537.26	
8.331624	116.4	1.001191	3.857542	1	175.13	458.1846	27491.07	
8.331624	116.22	1.001191	3.874205	1	174.935	459.3105	27558.63	
8.331687	116.22	1.001191	3.874234	1	174.87	458.5693	27514.16	
8.331739	115.99	1.001191	3.865927	1	174.625	456.68	27400.8	
8.331541	115.67	1.001191	3.849172	1	174.545	454.0419	27242.51	
8.331624	115.56	1.001191	3.882537	1	174.275	457.0951	27425.7	
8.331561	115.43	1.001191	3.899171	1	174.33	458.5264	27511.58	
8.331551	115.12	1.001191	3.907497	1	174.08	458.2537	27495.22	
8.331561	115	1.001191	3.882508	1	173.605	454.4407	27266.44	
8.331603	114.88	1.001191	3.874196	1	173.365	452.6686	27160.11	
8.331488	114.51	1.001191	3.882474	1	173.275	452.6407	27158.44	
8.331499	114.39	1.001191	3.89081	1	173.135	453.1139	27186.84	
8.331467	114.21	1.00119	3.824144	1	173.1	444.3736	26662.42	

527	13.227	169.65	175.98	0.465	60.21	174.05	115.808	26872.551	2353	4630
528	13.388	169.35	175.95	0.465	59.98	173.83	115.602	26852.654	2353	4630
529	13.37	169.22	175.69	0.465	60.25	173.77	115.418	26790.515	2353	4630
530	13.371	168.94	175.67	0.439	60.16	173.51	115.133	25449.833	2353	4630
531	13.276	168.69	175.03	0.458	60.25	173.23	114.913	26337.295	2353	4630
532	13.338	168.81	175.15	0.458	60.24	173.1	114.736	26391.608	2353	4630
533	13.271	168.54	175.01	0.456	60.23	172.97	114.565	26192.221	2353	4630
534	13.372	168.43	174.63	0.462	60.31	172.74	114.288	26194.256	2353	4630
535	13.335	167.9	174.76	0.456	60.25	172.56	114.139	26114.569	2353	4630
536	13.342	167.72	174.58	0.464	60.26	172.51	113.869	26090.65	2353	4630
537	13.311	167.71	174.3	0.457	60.25	172.32	113.72	26098.635	2353	4630
538	13.197	167.3	174.03	0.459	60.44	172.19	113.507	26138.759	2353	4630
539	13.385	167.29	173.89	0.457	60.3	172.12	113.415	26063.116	2353	4630
540	13.36	167.54	173.88	0.461	60.49	172.05	113.4	26076.784	2353	4630
541	13.329	167.67	174.27	0.457	60.29	171.99	113.457	25975.601	2353	4630
542	13.323	167.54	174.27	0.459	60.42	172.05	113.535	26114.477	2353	4630
543	13.375	167.95	174.41	0.459	60.3	172.3	113.812	26133.436	2353	4630
544	13.384	168.21	174.94	0.459	60.36	172.6	114.189	26159.22	2353	4630
545	13.347	168.62	175.48	0.459	60.31	172.98	114.601	26361.199	2353	4630
546	13.384	169.16	175.76	0.462	60.32	173.41	115.254	26505.364	2353	4630
547	13.45	169.58	176.04	0.458	60.34	173.86	115.638	26577.318	2353	4630
548	13.383	170.24	176.83	0.455	60.41	174.34	116.241	26609.514	2353	4630
549	13.351	170.75	177.48	0.461	60.33	175	117.008	26909.641	2353	4630
550	13.341	171.42	178.42	0.458	60.41	175.55	117.712	27087.089	2353	4630
551	13.364	172.38	179.24	0.459	60.24	176.43	118.55	27189.125	2353	4630
552	13.359	172.76	180.02	0.456	60.36	177.21	119.48	27428.716	2353	4630
553	13.355	173.7	181.09	0.461	60.24	178	120.339	27614.611	2353	4630
554	13.352	174.77	181.89	0.463	60.31	178.98	121.398	27906.261	2353	4630
555	13.24	176.09	182.82	0.458	60.38	180.18	122.555	28181.397	2353	4630
556	13.401	177	184	0.459	60.24	181.14	123.706	28432.936	2353	4630
557	13.385	177.9	184.9	0.461	60.42	182.2	124.764	28715.579	2353	4630
558	13.448	178.32	185.45	0.461	60.24	182.88	125.46	28783.025	2353	4630
559	13.413	178.59	185.59	0.456	60.51	183.31	125.893	28859.966	2353	4630
560	13.469	178.75	185.74	0.461	60.4	183.33	126.007	28989.782	2353	4630
561	13.341	178.48	185.88	0.455	60.47	183.45	126.113	28877.718	2353	4630
562	13.419	178.72	185.85	0.46	60.37	183.6	126.135	28939.222	2353	4630
563	13.423	178.76	185.89	0.46	60.35	183.64	126.163	29026.416	2353	4630
564	13.399	178.75	185.61	0.449	60.34	183.57	126.12	28865.067	2353	4630
565	13.474	178.77	185.63	0.461	60.42	183.53	126.049	29005.698	2353	4630
566	13.393	178.64	185.5	0.459	60.42	183.53	125.886	28814.428	2353	4630
567	13.239	178.59	185.59	0.456	60.38	183.43	125.915	28896.759	2353	4630
568	13.35	178.57	185.44	0.457	60.36	183.41	125.758	28807.271	2353	4630
569	13.383	178.57	185.31	0.469	60.36	183.17	125.659	28858.11	2353	4630
570	13.458	178.43	185.16	0.451	60.62	183.1	125.488	28243.655	2353	4630
571	13.403	178.16	185.15	0.453	60.47	183.09	125.51	28395.559	2353	4630
572	13.343	178.29	185.15	0.452	60.27	182.91	125.353	28304.09	2353	4630
573	13.323	178.01	184.88	0.452	60.33	182.78	125.219	28239.814	2353	4630
574	13.427	177.88	184.88	0.45	60.39	182.66	125.105	28179.898	2353	4630
575	13.341	177.74	184.6	0.454	60.32	182.53	124.956	28448.847	2353	4630
576	13.416	177.6	184.46	0.455	60.24	182.4	124.736	28234.939	2353	4630
577	13.489	177.61	184.34	0.454	60.38	182.23	124.586	28161.098	2353	4630
578	13.401	177.34	184.34	0.454	60.38	182.11	124.402	28198.821	2353	4630
579	13.371	177.77	184.11	0.455	60.42	182.02	124.288	28301.658	2353	4630
580	13.401	177.09	183.69	0.455	60.33	181.88	124.118	28267.859	2353	4630

8.331352	113.84	1.001191	3.874079	1	172.815	449.1836	26951.02	
8.331593	113.85	1.00119	3.874191	1	172.65	448.3972	26903.83	
8.33131	113.52	1.00119	3.874059	1	172.455	447.6684	26860.11	
8.331405	113.35	1.00119	3.657487	1	172.305	421.5985	25295.91	
8.33131	112.98	1.00119	3.81574	1	171.86	439	26340	
8.331321	112.86	1.00119	3.815745	1	171.98	438.3243	26299.46	
8.331331	112.74	1.00119	3.799087	1	171.775	435.7603	26145.62	
8.331247	112.43	1.00119	3.849036	1	171.53	440.4222	26425.33	
8.33131	112.31	1.00119	3.799078	1	171.33	434.1389	26048.33	
8.3313	112.25	1.00119	3.865723	1	171.15	440.7099	26442.59	
8.33131	112.07	1.001189	3.807409	1	171.005	433.4935	26009.61	
8.331111	111.75	1.00119	3.82398	1	170.665	434.5649	26073.9	
8.331258	111.82	1.001189	3.807385	1	170.59	432.3281	25939.68	
8.331058	111.56	1.00119	3.840618	1	170.71	436.0443	26162.66	
8.331268	111.7	1.001189	3.80739	1	170.97	432.4888	25949.33	
8.331132	111.63	1.00119	3.82399	1	170.905	434.6732	26080.39	
8.331258	112	1.00119	3.824047	1	171.18	435.7402	26144.41	
8.331195	112.24	1.00119	3.824018	1	171.575	437.1804	26230.82	
8.331247	112.67	1.00119	3.824043	1	172.05	438.7605	26325.63	
8.331237	113.09	1.00119	3.849031	1	172.46	444.144	26648.64	
8.331216	113.52	1.001189	3.815697	1	172.81	441.7644	26505.86	
8.331142	113.93	1.00119	3.79067	1	173.535	441.1555	26469.33	
8.331226	114.67	1.001189	3.840695	1	174.115	449.9266	26995.6	
8.331142	115.14	1.00119	3.815663	1	174.92	449.6839	26981.03	
8.331321	116.19	1.00119	3.824076	1	175.81	453.8836	27233.01	
8.331195	116.85	1.00119	3.799025	1	176.39	454.4477	27266.86	
8.331321	117.76	1.00119	3.840739	1	177.395	462.7406	27764.44	
8.331247	118.67	1.00119	3.857368	1	178.33	468.8338	28130.03	
8.331174	119.8	1.00119	3.815678	1	179.455	468.1869	28091.21	
8.331321	120.9	1.001189	3.824076	1	180.5	473.6239	28417.43	
8.331132	121.78	1.00119	3.840652	1	181.4	479.7453	28784.72	
8.331321	122.64	1.001189	3.840739	1	181.885	482.4321	28945.93	
8.331037	122.8	1.00119	3.798953	1	182.09	478.8305	28729.83	
8.331153	122.93	1.001189	3.840661	1	182.245	484.5258	29071.55	
8.331079	122.98	1.00119	3.790641	1	182.18	478.6178	28717.07	
8.331184	123.23	1.00119	3.832345	1	182.285	483.9679	29038.07	
8.331205	123.29	1.00119	3.832354	1	182.325	484.0766	29044.59	
8.331216	123.23	1.001189	3.740716	1	182.18	472.3402	28340.41	
8.331132	123.11	1.001189	3.840652	1	182.2	484.6861	29081.17	
8.331132	123.11	1.00119	3.82399	1	182.07	481.9594	28917.56	
8.331174	123.05	1.00119	3.799015	1	182.09	478.9221	28735.32	
8.331195	123.05	1.00119	3.807356	1	182.005	479.3751	28762.51	
8.331195	122.81	1.001189	3.90733	1	181.94	491.5749	29494.49	
8.330921	122.48	1.001189	3.757245	1	181.795	472.0499	28323	
8.331079	122.62	1.00119	3.773979	1	181.655	474.2357	28454.14	
8.331289	122.64	1.00119	3.765743	1	181.72	472.6088	28356.53	
8.331226	122.45	1.00119	3.765714	1	181.445	472.0999	28325.99	
8.331163	122.27	1.00119	3.749024	1	181.38	469.5796	28174.78	
8.331237	122.21	1.00119	3.782382	1	181.17	473.1937	28391.62	
8.331321	122.16	1.00119	3.790751	1	181.03	473.4056	28404.34	
8.331174	121.85	1.00119	3.782353	1	180.975	471.7888	28307.33	
8.331174	121.73	1.001189	3.782353	1	180.84	471.0919	28265.52	
8.331132	121.6	1.00119	3.790665	1	180.94	471.6947	28301.68	
8.331226	121.55	1.00119	3.790708	1	180.39	471.0548	28263.29	

581	13.428	176.96	183.82	0.459	60.39	181.76	123.954	28237.439	2353	4630
582	13.41	176.68	183.55	0.452	60.38	181.63	123.741	28190.812	2353	4630
583	13.42	176.69	183.43	0.456	60.46	181.46	123.649	28127.902	2353	4630
584	13.364	176.29	183.41	0.453	60.32	181.21	123.514	28081.858	2353	4630
585	13.382	176.54	183.27	0.455	60.37	181.2	123.336	27970.896	2353	4630
586	13.411	176.3	183.16	0.454	60.39	181.04	123.102	28021.422	2353	4630
587	13.366	176.01	182.74	0.455	60.44	181.02	122.967	27960.332	2353	4630
588	13.404	176.53	182.87	0.428	60.43	180.89	122.747	25791.545	2353	4630
589	13.393	175.88	182.48	0.439	60.44	180.6	122.591	27327.077	2353	4630
590	13.419	175.77	182.37	0.445	60.53	180.44	122.399	27164.204	2353	4630
591	13.426	175.63	182.23	0.445	60.38	180.31	122.3	27160.672	2353	4630
592	13.414	175.35	182.22	0.449	60.31	180.18	122.108	27278.967	2353	4630
593	13.415	175.24	182.1	0.452	60.33	180.01	121.966	27275.74	2353	4630
594	13.432	175.12	181.85	0.448	60.61	179.9	121.738	27135.594	2353	4630
595	13.287	175.15	181.88	0.448	60.37	179.63	121.589	27120.638	2353	4630
596	13.373	174.74	181.61	0.446	60.49	179.44	121.412	27123.738	2353	4630
597	13.398	174.87	181.46	0.456	60.35	179.37	121.334	27241.159	2353	4630
598	13.388	174.47	181.33	0.442	60.28	179.25	121.256	27099.196	2353	4630
599	13.402	174.45	181.18	0.441	60.06	179.05	121.227	27086.75	2353	4630
600	13.428	174.21	180.94	0.446	60.08	178.83	121.057	27079.704	2353	4630
601	13.386	173.82	180.82	0.442	60.16	178.6	120.9	27018.892	2353	4630
602	13.328	174.21	180.67	0.447	60.22	178.46	120.709	26999.566	2353	4630
603	13.384	173.81	180.41	0.451	60.22	178.34	120.474	27194.399	2353	4630
604	13.379	173.58	180.31	0.446	60.18	178.19	120.247	26932.334	2353	4630
605	13.372	173.31	180.18	0.447	60.18	178.01	120.034	26972.628	2353	4630
606	13.395	173.2	179.93	0.452	60.27	177.85	119.814	26856.731	2353	4630
607	13.415	173.19	179.79	0.444	60.26	177.66	119.601	26764.256	2353	4630
608	13.438	172.79	179.52	0.446	60.25	177.47	119.388	26608.766	2353	4630
609	13.412	172.65	179.38	0.444	60.38	177.41	119.16	26664.393	2353	4630
610	13.383	172.65	179.12	0.445	60.38	177.16	118.976	26560.118	2353	4630
611	13.297	172.65	179.38	0.447	60.45	176.92	118.798	26529.231	2353	4630
612	13.475	172.37	178.97	0.45	60.43	176.9	118.542	26510.291	2353	4630
613	13.356	171.83	178.43	0.448	60.35	176.65	118.244	26333.907	2353	4630
614	13.393	171.97	178.31	0.451	60.49	176.48	118.045	26391.743	2353	4630
615	13.481	171.82	178.29	0.449	60.54	176.28	117.832	26307.879	2353	4630
616	13.552	171.69	178.15	0.445	60.54	176.16	117.612	26229.385	2353	4630
617	13.39	171.27	177.87	0.445	60.58	176.08	117.442	26232.497	2353	4630
618	13.386	171.39	177.73	0.448	60.77	175.89	117.186	26242.503	2353	4630
619	13.309	171.01	177.6	0.442	60.72	175.59	116.944	26055.14	2353	4630
620	13.38	170.84	177.44	0.453	60.75	175.38	116.717	26153.486	2353	4630
621	13.399	170.84	177.31	0.446	60.62	175.2	116.533	26047.819	2353	4630
622	13.393	170.7	177.17	0.446	60.74	175.07	116.248	26036.186	2353	4630
623	13.374	170.45	177.04	0.448	60.69	174.78	116.071	26025.562	2353	4630
624	13.409	170.16	176.5	0.452	60.73	174.7	115.844	26016.042	2353	4630
625	13.399	170.02	176.75	0.438	60.85	174.44	115.574	25765.011	2353	4630
626	13.419	169.72	176.45	0.446	60.95	174.29	115.418	25768.223	2353	4630
627	13.434	169.85	176.31	0.448	60.88	174.22	115.219	25842.528	2353	4630
628	13.269	169.42	175.88	0.444	60.91	174.01	114.977	25706.557	2353	4630
629	13.383	169.69	175.76	0.447	60.92	173.9	114.821	25587.402	2353	4630
630	13.405	169.16	175.5	0.446	60.92	173.72	114.565	25540.383	2353	4630
631	13.404	169.15	175.49	0.449	60.85	173.41	114.345	25549.466	2353	4630
632	13.384	168.76	175.36	0.446	60.91	173.16	114.175	25658.3	2353	4630
633	13.501	168.58	175.18	0.45	60.87	172.94	113.962	25448.618	2353	4630
634	13.383	168.45	174.79	0.448	60.87	172.94	113.777	25416.412	2353	4630

8.331163	121.37	1.00119	3.824004	1	180.39	474.5644	28473.87	
8.331174	121.25	1.001189	3.765691	1	180.115	466.5245	27991.47	
8.33109	121	1.00119	3.798977	1	180.06	470.2986	28217.92	
8.331237	120.89	1.00119	3.77405	1	179.85	466.7026	28002.16	
8.331184	120.83	1.00119	3.790689	1	179.905	468.0845	28085.07	
8.331163	120.65	1.001189	3.782348	1	179.73	466.1684	27970.1	
8.331111	120.58	1.001189	3.790655	1	179.375	466.6799	28000.8	
8.331121	120.46	1.001189	3.56572	1	179.7	438.202	26292.12	
8.331111	120.16	1.001189	3.657358	1	179.18	448.8923	26933.54	
8.331016	119.91	1.00119	3.707302	1	179.07	454.3099	27258.59	
8.331174	119.93	1.00119	3.707372	1	178.93	453.9511	27237.07	
8.331247	119.87	1.00119	3.74073	1	178.785	457.3165	27438.99	
8.331226	119.68	1.001189	3.765714	1	178.67	459.8351	27590.11	
8.330932	119.29	1.00119	3.732257	1	178.485	454.8981	27293.88	
8.331184	119.26	1.001189	3.732371	1	178.515	454.3549	27261.29	
8.331058	118.95	1.00119	3.715652	1	178.175	451.6614	27099.69	
8.331205	119.02	1.00119	3.79903	1	178.165	461.5	27690	
8.331279	118.97	1.001191	3.682425	1	177.9	447.0478	26822.87	
8.331509	118.99	1.001191	3.674196	1	177.815	445.942	26756.52	
8.331488	118.75	1.00119	3.715844	1	177.575	450.3644	27021.86	
8.331405	118.44	1.00119	3.682481	1	177.32	445.7418	26744.51	
8.331342	118.24	1.00119	3.72411	1	177.44	450.0686	27004.11	
8.331342	118.12	1.00119	3.757435	1	177.11	453.212	27192.72	
8.331384	118.01	1.00119	3.715797	1	176.945	447.3453	26840.72	
8.331384	117.83	1.00119	3.724128	1	176.745	447.554	26853.24	
8.331289	117.58	1.00119	3.765743	1	176.565	451.7256	27103.54	
8.3313	117.4	1.00119	3.699097	1	176.49	442.9422	26576.53	
8.33131	117.22	1.00119	3.715764	1	176.155	444.1454	26648.72	
8.331174	117.03	1.00119	3.699041	1	176.015	441.3021	26478.13	
8.331174	116.78	1.001189	3.707372	1	175.885	441.6129	26496.78	
8.3311	116.47	1.001189	3.724002	1	176.015	442.9302	26575.81	
8.331121	116.47	1.00119	3.749005	1	175.67	444.9432	26696.59	
8.331205	116.3	1.001189	3.73238	1	175.13	441.8564	26511.38	
8.331058	115.99	1.001189	3.757307	1	175.14	444.0587	26643.52	
8.331006	115.74	1.001189	3.740621	1	175.055	441.289	26477.34	
8.331006	115.62	1.001189	3.707297	1	174.92	436.541	26192.46	
8.330963	115.5	1.001188	3.707279	1	174.57	435.9076	26154.45	
8.330763	115.12	1.001188	3.732182	1	174.56	437.8792	26272.75	
8.330816	114.87	1.001188	3.682221	1	174.305	431.1253	25867.52	
8.330784	114.63	1.001189	3.773845	1	174.14	440.9955	26459.73	
8.330921	114.58	1.001188	3.715591	1	174.075	433.5035	26010.21	
8.330795	114.33	1.001188	3.715534	1	173.935	432.4368	25946.21	
8.330847	114.09	1.001188	3.73222	1	173.745	433.7173	26023.04	
8.330805	113.97	1.001188	3.765524	1	173.33	436.7315	26203.89	
8.330678	113.59	1.001188	3.648837	1	173.385	422.2115	25332.69	
8.330572	113.34	1.001188	3.715435	1	173.085	429.3375	25760.25	
8.330646	113.34	1.001188	3.73213	1	173.08	430.523	25831.38	
8.330615	113.1	1.001188	3.698793	1	172.65	425.7812	25546.87	
8.330604	112.98	1.001188	3.72378	1	172.725	428.076	25684.56	
8.330604	112.8	1.001188	3.715449	1	172.33	426.1661	25569.97	
8.330678	112.56	1.001188	3.740475	1	172.32	428.2126	25692.75	
8.330615	112.25	1.001188	3.715454	1	172.06	424.7159	25482.95	
8.330657	112.07	1.001188	3.748796	1	171.88	427.7277	25663.66	
8.330657	112.07	1.001188	3.732134	1	171.62	425.1354	25508.12	

635	13.413	168.44	174.64	0.446	60.93	172.69	113.621	25420.827	2353	4630
636	13.322	168.05	174.38	0.446	60.99	172.57	113.422	25380.829	2353	4630
637	13.351	167.87	174.34	0.443	61.02	172.41	113.251	25291.673	2353	4630
638	13.34	167.89	174.09	0.449	60.84	172.19	113.074	25365.857	2353	4630
639	13.378	168.04	174.24	0.449	60.91	172.19	113.024	25266.028	2353	4630
640	13.418	168.05	174.12	0.449	60.93	172.14	113.06	25364.516	2353	4630
641	13.393	167.89	174.49	0.44	60.77	172.19	113.102	25094.604	2353	4630
642	13.417	168.15	174.74	0.446	60.89	172.3	113.237	25239.264	2353	4630
643	13.453	168.38	174.71	0.444	60.99	172.57	113.507	25441.931	2353	4630
644	13.381	168.9	175.36	0.447	61.05	172.99	113.976	25574.378	2353	4630
645	13.415	169.3	175.64	0.447	60.86	173.24	114.352	25480.555	2353	4630
646	13.395	169.59	176.45	0.448	61.02	173.62	114.856	25576.773	2353	4630
647	13.415	169.84	176.84	0.443	61.01	174.22	115.382	25754.456	2353	4630
648	13.428	170.61	177.34	0.445	61.05	174.93	116.092	25911.515	2353	4630
649	13.38	171.38	178.25	0.446	61.03	175.51	116.81	26036.376	2353	4630
650	13.424	172.02	179.15	0.44	61.07	176.22	117.52	26106.143	2353	4630
651	13.411	172.92	179.91	0.445	61.18	177.04	118.372	26294.671	2353	4630
652	13.394	173.72	180.45	0.447	60.99	177.77	119.175	26451.533	2353	4630
653	13.452	174.52	181.38	0.444	61.2	178.63	120.14	26613.878	2353	4630
654	13.446	175.17	182.03	0.447	61.19	179.34	120.993	26906.508	2353	4630
655	13.401	176.09	182.55	0.445	61.24	180.3	121.881	27047.539	2353	4630
656	13.463	176.89	184.02	0.447	61.25	181.15	122.79	27366.644	2353	4630
657	13.404	177.69	184.69	0.442	61.33	181.88	123.677	27423.54	2353	4630
658	13.496	177.69	184.95	0.468	61.2	182.55	124.246	28947.375	2353	4630
659	13.471	178.12	185.11	0.463	61.16	182.88	124.572	29053.282	2353	4630
660	13.56	178.13	185.13	0.467	61.11	183.01	124.707	29202.791	2353	4630
661	13.424	178.38	185.38	0.471	61.16	183.06	124.821	29238.149	2353	4630
662	13.426	178.27	185.4	0.47	61.18	183.14	124.856	29351.609	2353	4630
663	13.283	178.11	185.1	0.462	61.15	183.11	124.785	29217.139	2353	4630
664	13.271	178.25	185.11	0.467	61.23	183.12	124.679	29249.855	2353	4630
665	13.306	177.99	185.25	0.467	61.36	183.06	124.714	28958.393	2353	4630
666	13.43	178.11	185.1	0.466	61.15	182.99	124.643	29132.066	2353	4630
667	13.371	178.1	185.09	0.466	61.01	182.98	124.65	29237.443	2353	4630
668	13.356	177.68	184.54	0.472	60.85	182.66	124.594	29247.31	2353	4630
669	13.372	177.55	184.54	0.462	60.85	182.6	124.537	29079.594	2353	4630
670	13.453	177.45	184.44	0.465	60.89	182.45	124.324	29182.896	2353	4630
671	13.325	177.27	184.4	0.467	60.91	182.23	124.103	29125.027	2353	4630
672	13.4	177.18	184.18	0.464	60.89	182.26	123.997	28921.101	2353	4630
673	13.471	177.03	184.03	0.466	60.93	182	123.812	28992.503	2353	4630
674	13.17	177.27	184.01	0.466	60.98	181.86	123.613	28846.725	2353	4630
675	13.394	176.75	183.61	0.471	60.84	181.62	123.393	28987.983	2353	4630
676	13.383	176.78	183.51	0.464	61.07	181.53	123.265	28874.616	2353	4630
677	13.395	176.22	183.48	0.471	60.98	181.38	123.038	29036.115	2353	4630
678	13.363	176.48	183.34	0.469	60.98	181.26	122.925	28676.203	2353	4630
679	13.316	176.04	183.17	0.467	61.13	181.1	122.782	28910.217	2353	4630
680	13.419	176.04	182.91	0.472	60.8	181.04	122.74	28785.937	2353	4630
681	13.354	175.92	182.92	0.471	60.68	180.81	122.676	28818.235	2353	4630
682	13.422	175.5	182.9	0.468	60.59	180.61	122.612	28814.671	2353	4630
683	13.55	175.77	182.63	0.469	60.52	180.55	122.569	28838.724	2353	4630
684	13.405	175.65	182.51	0.467	60.33	180.38	122.584	28789.493	2353	4630
685	13.387	175.36	182.23	0.461	60.24	180.24	122.371	28686.591	2353	4630
686	13.375	175.37	182.1	0.468	60.39	180.07	122.236	28693.231	2353	4630
687	13.372	175.11	181.84	0.471	60.39	179.95	122.037	28736.494	2353	4630
688	13.343	174.83	181.57	0.471	60.38	179.76	121.731	28592.387	2353	4630

8.330593	111.76	1.001187	3.715445	1	171.54	422.6538	25359.23	
8.33053	111.58	1.001187	3.715416	1	171.215	421.9103	25314.62	
8.330498	111.39	1.001188	3.690411	1	171.105	418.4392	25106.35	
8.330689	111.35	1.001188	3.740479	1	170.99	423.4533	25407.2	
8.330615	111.28	1.001188	3.740446	1	171.14	423.2623	25395.74	
8.330593	111.21	1.001188	3.740436	1	171.085	423.3962	25403.77	
8.330763	111.42	1.001188	3.665536	1	171.19	415.0718	24904.31	
8.330636	111.41	1.001187	3.715464	1	171.445	421.2275	25273.65	
8.33053	111.58	1.001187	3.698755	1	171.545	420.3331	25219.98	
8.330466	111.94	1.001188	3.723718	1	172.13	424.9187	25495.12	
8.330668	112.38	1.001187	3.723808	1	172.47	426.3305	25579.83	
8.330498	112.6	1.001187	3.732063	1	173.02	429.1588	25749.53	
8.330509	113.21	1.001187	3.690415	1	173.34	426.313	25578.78	
8.330466	113.88	1.001187	3.707057	1	173.975	430.8707	25852.24	
8.330487	114.48	1.001187	3.715397	1	174.815	434.5108	26070.65	
8.330445	115.15	1.001187	3.665396	1	175.585	431.2685	25876.11	
8.330328	115.86	1.001187	3.706996	1	176.415	439.3256	26359.53	
8.33053	116.78	1.001187	3.723747	1	177.085	444.3042	26658.25	
8.330307	117.43	1.001187	3.698656	1	177.95	444.8839	26693.03	
8.330317	118.15	1.001187	3.723652	1	178.6	451.0704	27064.22	
8.330264	119.06	1.001187	3.706968	1	179.32	452.345	27140.7	
8.330253	119.9	1.001186	3.723623	1	180.455	457.7661	27465.97	
8.330168	120.55	1.001187	3.681934	1	181.19	455.911	27354.66	
8.330307	121.35	1.001187	3.898584	1	181.32	484.9583	29097.5	
8.330349	121.72	1.001187	3.856952	1	181.615	481.0385	28862.31	
8.330402	121.9	1.001187	3.890298	1	181.63	485.7232	29143.39	
8.330349	121.9	1.001187	3.923594	1	181.88	490.3282	29419.69	
8.330328	121.96	1.001187	3.915254	1	181.835	489.4232	29365.39	
8.33036	121.96	1.001187	3.848626	1	181.605	480.8207	28849.24	
8.330275	121.89	1.001186	3.890238	1	181.68	485.6063	29136.38	
8.330136	121.7	1.001187	3.890174	1	181.62	485.7349	29144.1	
8.33036	121.84	1.001187	3.881948	1	181.605	484.4321	29065.93	
8.330509	121.97	1.001188	3.882017	1	181.595	484.4683	29068.1	
8.330678	121.81	1.001188	3.93208	1	181.11	490.4956	29429.73	
8.330678	121.75	1.001188	3.848773	1	181.045	479.884	28793.04	
8.330636	121.56	1.001188	3.873746	1	180.945	482.1716	28930.29	
8.330615	121.32	1.001188	3.890397	1	180.835	483.3834	29003.01	
8.330636	121.37	1.001188	3.865415	1	180.68	479.8691	28792.15	
8.330593	121.07	1.001187	3.882057	1	180.53	481.2159	28872.96	
8.33054	120.88	1.001188	3.882032	1	180.64	480.4397	28826.38	
8.330689	120.78	1.001187	3.923754	1	180.18	484.7386	29084.32	
8.330445	120.46	1.001187	3.865326	1	180.145	477.0253	28621.52	
8.33054	120.4	1.001187	3.923685	1	179.85	483.3356	29000.13	
8.33054	120.28	1.001187	3.907023	1	179.91	480.8409	28850.46	
8.330381	119.97	1.001188	3.890288	1	179.605	478.2249	28693.49	
8.330731	120.24	1.001189	3.932105	1	179.475	483.2002	28992.01	
8.330858	120.13	1.001189	3.923834	1	179.42	481.9325	28915.95	
8.330953	120.02	1.001189	3.898886	1	179.2	478.6186	28717.12	
8.331027	120.03	1.00119	3.907251	1	179.2	479.4777	28768.66	
8.331226	120.05	1.00119	3.890683	1	179.08	477.503	28650.18	
8.331321	120	1.00119	3.840739	1	178.795	470.5541	28233.25	
8.331163	119.68	1.00119	3.898984	1	178.735	477.1632	28629.79	
8.331163	119.56	1.00119	3.923978	1	178.475	479.4401	28766.41	
8.331174	119.38	1.00119	3.923983	1	178.2	478.2386	28694.32	

689	13.588	174.56	181.69	0.47	60.37	179.51	121.518	28668.686	2353	4630
690	13.419	174.44	181.43	0.471	60.45	179.46	121.348	28596.998	2353	4630
691	13.38	174.3	181.55	0.468	60.43	179.27	121.128	28531.418	2353	4630
692	13.377	174.15	181.02	0.474	60.56	179.08	120.936	28471.626	2353	4630
693	13.273	174.02	181.02	0.474	60.49	179.02	120.773	28475.867	2353	4630
694	13.584	173.72	180.84	0.472	60.51	178.74	120.609	28449.115	2353	4630
695	13.403	173.58	180.71	0.472	60.45	178.61	120.453	28366.524	2353	4630
696	13.394	173.44	180.17	0.467	60.37	178.54	120.283	28233.471	2353	4630
697	13.41	173.31	180.44	0.473	60.37	178.18	120.034	28297.616	2353	4630
698	13.371	173.3	180.29	0.465	60.43	178.05	119.899	28057.143	2353	4630
699	13.56	172.91	179.91	0.467	60.5	177.88	119.75	28184.895	2353	4630
700	13.24	172.77	179.76	0.465	60.36	177.69	119.544	28046.579	2353	4630
701	13.463	172.66	179.79	0.466	60.38	177.59	119.444	27980.738	2353	4630
702	13.358	172.52	179.25	0.469	60.24	177.46	119.26	28041.677	2353	4630
703	13.29	172.51	178.97	0.47	60.16	177.21	119.075	28076.4	2353	4630
704	13.377	172.11	178.97	0.466	60.16	177.02	118.855	27727.992	2353	4630
705	13.373	172.24	178.84	0.472	60.23	176.72	118.663	27898.3	2353	4630
706	13.418	171.69	178.56	0.466	60.27	176.64	118.457	27805.389	2353	4630
707	13.333	171.56	178.42	0.463	60.21	176.46	118.265	27764.193	2353	4630
708	13.395	171.7	178.3	0.468	60.15	176.17	118.095	27665.904	2353	4630
709	13.482	171.03	177.9	0.471	60.07	176.1	117.854	27640.792	2353	4630
710	13.444	171.17	178.03	0.47	60.34	175.98	117.669	27606.76	2353	4630
711	13.451	170.77	177.76	0.472	60.14	175.73	117.456	27695.997	2353	4630
712	13.408	170.63	177.62	0.466	60.19	175.54	117.243	27484.696	2353	4630
713	13.431	170.61	177.34	0.472	60.37	175.4	117.058	27568.193	2353	4630
714	13.401	170.17	176.9	0.472	60.26	175.3	116.902	27546.808	2353	4630
715	13.381	170.14	176.87	0.469	60.3	174.97	116.689	27328.882	2353	4630
716	13.468	169.85	176.71	0.469	60.21	174.71	116.462	27209.937	2353	4630
717	13.444	169.87	176.47	0.471	60.23	174.55	116.319	27345.5	2353	4630
718	13.431	169.36	176.48	0.473	60.24	174.37	116.121	27334.262	2353	4630
719	13.406	169.21	175.94	0.463	60.1	174.24	115.9	27158.093	2353	4630
720	13.465	169.19	175.53	0.472	60.28	173.98	115.631	27194.309	2353	4630
721	13.279	169.22	175.82	0.467	60.24	173.71	115.481	27227.882	2353	4630
722	13.386	169.18	175.52	0.473	60.13	173.61	115.354	27162.372	2353	4630
723	13.371	168.76	175.35	0.473	60.17	173.46	115.034	27132.647	2353	4630
724	13.373	168.36	175.22	0.473	60.23	173.22	114.842	27025.113	2353	4630
725	13.417	168.24	174.97	0.471	60.18	173.16	114.707	27067.692	2353	4630
726	13.371	168.37	174.97	0.468	60.18	172.98	114.473	26953.543	2353	4630
727	13.381	168.37	174.83	0.472	60.18	172.74	114.295	26919.08	2353	4630
728	13.528	167.58	174.57	0.467	60.25	172.5	114.018	26783.798	2353	4630
729	13.366	167.68	174.54	0.462	60.21	172.29	113.862	26691.257	2353	4630
730	13.508	167.69	174.55	0.471	60.29	172.23	113.692	26835.809	2353	4630
731	13.441	167.42	174.29	0.469	60.29	172.17	113.677	26602.589	2353	4630
732	13.397	167.55	174.28	0.467	60.35	172.22	113.628	26657.329	2353	4630
733	13.371	167.69	174.68	0.469	60.42	172.3	113.834	26695.916	2353	4630
734	13.292	168.11	175.1	0.468	60.45	172.68	114.104	26876.006	2353	4630
735	13.306	168.39	174.99	0.471	60.47	172.94	114.473	26750.487	2353	4630
736	13.435	168.94	175.8	0.472	60.35	173.32	114.984	26963.812	2353	4630
737	13.372	169.54	176.27	0.469	60.49	173.75	115.453	27060.601	2353	4630
738	13.397	169.92	176.92	0.468	60.41	174.23	116.071	27356.172	2353	4630
739	13.359	170.61	177.61	0.47	60.38	174.92	116.81	27384.689	2353	4630
740	13.386	171.27	178.14	0.468	60.51	175.71	117.484	27614.768	2353	4630

8.331184	119.14	1.001189	3.915657	1	178.125	476.3887	28583.32	
8.3311	119.01	1.001189	3.923948	1	177.935	476.7296	28603.78	
8.331121	118.84	1.001189	3.898965	1	177.925	472.8353	28370.12	
8.330984	118.52	1.001189	3.948887	1	177.585	478.1305	28687.83	
8.331058	118.53	1.001189	3.948922	1	177.52	477.4902	28649.41	
8.331037	118.23	1.001189	3.93225	1	177.28	474.8287	28489.72	
8.3311	118.16	1.00119	3.932279	1	177.145	474.2183	28453.1	
8.331184	118.17	1.00119	3.890663	1	176.805	468.5373	28112.24	
8.331184	117.81	1.001189	3.94065	1	176.875	473.5746	28414.48	
8.331121	117.62	1.001189	3.873971	1	176.795	465.0376	27902.26	
8.331048	117.38	1.00119	3.890599	1	176.41	466.4535	27987.21	
8.331195	117.33	1.00119	3.874006	1	176.265	463.665	27819.9	
8.331174	117.21	1.00119	3.882327	1	176.225	464.2725	27856.35	
8.331321	117.22	1.00119	3.907389	1	175.885	466.55	27993	
8.331405	117.05	1.00119	3.91576	1	175.74	466.8242	28009.45	
8.331405	116.86	1.00119	3.882435	1	175.54	461.9959	27719.76	
8.331331	116.49	1.00119	3.932388	1	175.54	467.1843	28031.06	
8.331289	116.37	1.00119	3.882381	1	175.125	460.4425	27626.55	
8.331352	116.25	1.00119	3.857416	1	174.99	456.7404	27404.42	
8.331415	116.02	1.001191	3.899102	1	175	461.0127	27660.76	
8.331499	116.03	1.00119	3.924136	1	174.465	463.0253	27781.52	
8.331216	115.64	1.00119	3.915671	1	174.6	461.3016	27678.1	
8.331426	115.59	1.00119	3.932433	1	174.265	462.4376	27746.26	
8.331373	115.35	1.00119	3.88242	1	174.125	455.7281	27343.68	
8.331184	115.03	1.00119	3.932319	1	173.975	460.8572	27651.43	
8.3313	115.04	1.00119	3.932374	1	173.535	460.2493	27614.96	
8.331258	114.67	1.00119	3.90736	1	173.505	456.4886	27389.31	
8.331352	114.5	1.00119	3.907404	1	173.28	455.6057	27336.34	
8.331331	114.32	1.00119	3.924057	1	173.17	456.9856	27419.14	
8.331321	114.13	1.001191	3.940715	1	172.92	458.1445	27488.67	
8.331467	114.14	1.00119	3.857469	1	172.575	447.6127	26856.76	
8.331279	113.7	1.00119	3.932364	1	172.36	455.2443	27314.66	
8.331321	113.47	1.00119	3.890727	1	172.52	449.8399	26990.39	
8.331436	113.48	1.00119	3.940769	1	172.35	455.1246	27307.48	
8.331394	113.29	1.00119	3.940749	1	172.055	453.8597	27231.58	
8.331331	112.99	1.00119	3.94072	1	171.79	453.0988	27185.93	
8.331384	112.98	1.00119	3.924082	1	171.605	450.6554	27039.32	
8.331384	112.8	1.00119	3.899088	1	171.67	446.8715	26812.29	
8.331384	112.56	1.00119	3.932413	1	171.6	449.99	26999.4	
8.33131	112.25	1.00119	3.890722	1	171.075	444.1403	26648.42	
8.331352	112.08	1.00119	3.849085	1	171.11	438.786	26327.16	
8.331268	111.94	1.00119	3.924027	1	171.12	446.6614	26799.68	
8.331268	111.88	1.00119	3.907365	1	170.855	444.7059	26682.36	
8.331205	111.87	1.001189	3.890673	1	170.915	442.6152	26556.91	
8.331132	111.88	1.001189	3.907301	1	171.185	445.3127	26718.76	
8.3311	112.23	1.001189	3.898955	1	171.605	445.4154	26724.93	
8.331079	112.47	1.00119	3.923938	1	171.69	449.7194	26983.16	
8.331205	112.97	1.001189	3.932329	1	172.37	452.6926	27161.56	
8.331058	113.26	1.001189	3.907266	1	172.905	451.6422	27098.53	
8.331142	113.82	1.00119	3.898975	1	173.42	453.0962	27185.77	
8.331174	114.54	1.001189	3.915652	1	174.11	457.9312	27475.87	
8.331037	115.2	1.0014	3.898925	1	174.705	458.7026	27522.16	

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: BTN
DATE: 3_13_14
RUN NUMBER: EPA2

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	3870.502	Liters
Total Sample Volume - Vm	136.685	ft³
Average Sample Rate	0.18	Liters/min
Sample Time	740.00	Minutes
Average Meter Temperature	90	°F
Total Sample Volume (Standard Conditions) - Vmstd	134.782	dscf
Total Particulates	0.7	mg
Particulate Concentration (dry-standard)	0.000005194	grams/dscf
Particulate Emission Rate	0.000056757	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA2

DATE: 3_13_14

BURN RATE 3.30 KG/HR DRY

FILTER A PARTICULATE 12.9 mg

FILTER B PARTICULATE 13 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	105.92		106.89	
Average Gas Velocity in Dilution Tunnel - vs	14.24	feet/second	14.24	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	38585.86	dscf/hour	38585.86	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	99.93	dscf	99.20	dscf
Average Tunnel Temperature	83.3	F	83.3	F
Average Delta p	0.045		0.045	
Average Gas Meter Temperature	104	F	101	F
Average Delta H	2.00	in-h20	2.03	in-h20
Total Time of Test	740	min	740	min
Total Particulates	12.9	mg	13	mg
Particulate Concentration (dry-standard)	0.000129091	grams/dscf	0.000131047	grams/dscf
Ambient Train (dry-standard)	0.000005194	grams/dscf	0.000005194	grams/dscf
Net (dry-standard)	0.000123898	grams/dscf	0.000125854	grams/dscf
Particulate Emission Rate	4.78	grams/hour	4.86	grams/hour
Total PM Emissions	58.96	grams	59.89	grams
Average Total PM Emissions		59.43	grams	
AVERAGE PARTICLATE EMISSIONS RATE		4.82	grams/hour	
% OF AVERAGE	99.2		100.8	
Emissions Factor	1.450	g/Kg -Dry	1.473	g/Kg -Dry

Heat Output	28134	Btu/hr	29.66363962	MJ/hr				
Emissions	0.3776	lb/MMBtu Out	0.1624	g/MJ	1.4616	g/dry kg	4.8184	g/hr
Qin	770862	BTU	813	MJ				
Qin LHV	716006	BTU	755	MJ				
Delivered Efficiency	45.01%	ndel	48.46%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#2
Control #: 004-hhw-023-1
est Duration: 740
urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)
Weight Units lb (kg or lb)

Wood Moisture (% DRY):	20.6
Wood Moisture (% wet):	17.08
Load Weight (lb wet):	108.10
Burn Rate (dry kg/h):	3.30
Total Particulate Emissions:	59.43 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

○ Douglas
◉ Oak

Averages		**201.7**	**71.9**	**10.16**	**12.28**	**3.46**
		Temp. (F)				
Elapsed Time (min)	**Fuel Weight Remaining (lb)**	**Flue Gas**	**Room Temp**	**Flue Gas Composition (%) O2**	**CO2**	**CO**
0	108.1	265.0	68.0	3.29	16.54	1.23
10	100.7	349.0	68.0	0.59	19.90	1.96
20	98.1	243.0	67.0	7.94	14.80	5.00
30	98.1	200.0	66.0	11.92	10.42	3.30
40	99.1	177.0	67.0	12.55	8.99	2.56
50	99.1	162.0	69.0	12.35	8.48	2.20
60	98.1	151.0	70.0	12.54	7.72	1.86
70	99.1	143.0	70.0	12.26	7.37	1.69
80	92.6	331.0	71.0	0.98	19.05	2.29
90	85.1	301.0	72.0	1.21	19.77	5.00
100	85.1	222.0	71.0	11.23	14.04	4.97
110	85.1	191.0	72.0	12.79	10.98	3.30
120	84.1	172.0	72.0	12.91	9.63	2.55
130	84.1	160.0	72.0	13.05	8.52	2.09
140	85.0	150.0	72.0	13.25	7.36	1.71
150	84.1	144.0	73.0	13.51	6.40	1.43
160	80.5	297.0	73.0	4.27	15.63	2.04

170	69.9	372.0	73.0	0.67	18.48	5.00
180	68.1	239.0	73.0	8.46	20.00	5.00
190	68.1	201.0	72.0	11.91	15.29	5.00
200	68.1	179.0	72.0	12.81	11.82	3.60
210	68.1	165.0	73.0	13.32	9.51	2.66
220	68.1	155.0	73.0	13.46	7.98	2.10
230	68.1	148.0	72.0	13.60	6.89	1.74
240	68.1	167.0	72.0	13.38	5.51	1.27
250	67.1	186.0	73.0	19.15	0.82	0.31
260	62.1	321.0	73.0	2.51	17.64	2.29
270	51.1	304.0	73.0	0.93	17.68	5.00
280	50.1	230.0	73.0	8.39	20.00	5.00
290	50.1	195.0	72.0	11.74	16.42	5.00
300	50.1	175.0	73.0	12.79	13.44	5.00
310	50.1	162.0	73.0	12.96	11.80	4.46
320	50.1	152.0	73.0	13.40	9.95	3.60
330	50.1	145.0	73.0	13.90	7.80	2.74
340	50.1	140.0	73.0	13.80	7.54	2.60
350	47.1	250.0	73.0	8.14	11.21	1.99
360	37.8	335.0	73.0	0.63	18.08	5.00
370	36.1	241.0	72.0	4.28	20.00	5.00
380	35.1	200.0	72.0	9.12	20.00	5.00
390	35.1	177.0	73.0	11.91	16.08	5.00
400	35.1	163.0	73.0	12.71	13.02	4.98
410	35.1	153.0	73.0	13.34	10.53	3.78
420	35.1	145.0	73.0	13.29	9.47	3.24
430	36.1	140.0	73.0	13.45	8.21	2.73
440	35.1	173.0	72.0	18.38	1.54	0.37
450	34.1	251.0	73.0	6.66	12.22	3.16
460	27.0	341.0	73.0	0.63	19.20	2.19
470	25.1	230.0	73.0	5.09	20.00	5.00
480	23.1	192.0	73.0	10.07	19.20	5.00
490	23.1	171.0	73.0	12.13	15.03	5.00
500	24.1	157.0	72.0	12.99	12.50	4.75
510	24.1	148.0	72.0	13.55	10.24	3.71
520	24.1	140.0	73.0	13.79	8.89	3.12
530	24.1	133.0	72.0	13.98	7.72	2.69

540	22.7	228.0	72.0	10.26	8.72	2.90
550	19.4	290.0	72.0	4.19	14.84	3.16
560	15.0	260.0	72.0	1.89	20.00	5.00
570	14.1	205.0	73.0	7.21	20.00	5.00
580	14.0	178.0	72.0	11.37	15.89	5.00
590	14.1	162.0	72.0	12.96	12.28	5.00
600	14.0	150.0	73.0	13.27	10.67	4.54
610	14.1	147.0	72.0	13.39	9.37	3.84
620	14.1	137.0	72.0	13.45	8.28	3.27
630	15.0	131.0	72.0	13.50	7.33	2.84
640	13.9	230.0	72.0	10.35	8.41	3.47
650	9.1	294.0	71.0	5.31	13.77	2.69
660	7.0	244.0	72.0	3.97	16.09	5.00
670	6.1	194.0	72.0	9.15	14.62	5.00
680	7.0	171.0	72.0	12.18	11.29	5.00
690	7.0	156.0	72.0	13.06	9.53	4.23
700	7.1	145.0	72.0	13.20	8.56	3.62
710	6.0	137.0	72.0	13.14	7.81	3.21
720	6.0	131.0	71.0	13.02	7.26	2.92
730	5.0	224.0	72.0	12.88	6.41	2.20
740	-0.2	279.0	72.0	6.65	12.69	2.10

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: EPA#2
Control #: 004-hhw-023-1
Test Duration: 740 min

	HHV	LHV
Eff	69.4%	74.7%
Comb Eff	85.0%	85.0%
HT Eff	81.6%	87.8%
Output	45,483	kJ/h
Burn Rate	3.30	kg/h
Grams CO	8,378	g
Input	65,578	kJ/h
MC wet	17.08	

Ultimate CO2
CO2-ult 19.80
F_0
1.055

Overall Heating Efficiency: 69.4%
Combustion Efficiency: 85.0%
Heat Transfer Efficiency: 81.6%

Air Fuel Ratio (A/F)	
Dry Molecular Weight (Md)	30.21
Dry Moles Exhaust Gas (Nr):	249.14
Air Fuel Ratio (A/F)	7.02

Heat Output: 43,145 Btu/h 45,483 kJ/h
Heat Input: 62,207 Btu/h 65,578 kJ/h
Burn Duration: 12.33333333 h
Burn Rate: 7.3 lb/h 3.3 kg/h
Stack Temp: 200.8 Deg. F 93.8 Deg. C

Averages	3.46	12.28	71.5%	20.04	6.03	94.3	22.2	81.4%	83.7%	#DIV/0!	10.1	21.00	57.19	1.33

INPUT DATA				Oxygen Calculation			Input Data		Combust	Heat	Net	Air	Wet Wt	% Wet	Dry Wt.
Elapsed Time	Weight Remaining (kg)	% CO [e]	% CO2 [d]	Excess Air EA	Total O2	Calc. % O2 [g]	Flue Gas (ºC)	Room Temp (ºC)	Eff %	Transfer %	Eff %	Fuel Ratio	Now Wt	Consumed x	Now Wtdn
0	49.05	1.23	16.54	11.4%	19.92	2.76	129.4	20.0	94.1%	84.6%	79.6%	6.8	49.05	0.00	40.67
10	45.69	1.96	19.90	-9.4%	19.68	-1.20	176.1	20.0	92.3%	83.2%	76.9%	5.5	45.69	6.85	37.89
20	44.51	5.00	14.80	0.0%	19.80	2.50	117.2	19.4	78.9%	83.5%	65.9%	5.8	44.51	9.25	36.91
30	44.51	3.30	10.42	44.3%	20.15	8.08	93.3	18.9	80.0%	83.6%	66.9%	8.4	44.51	9.25	36.91
40	44.96	2.56	8.99	71.4%	20.28	10.01	80.6	19.4	81.6%	84.1%	68.6%	10.1	44.96	8.33	37.28
50	44.96	2.20	8.48	85.4%	20.33	10.75	72.2	20.6	82.9%	84.7%	70.3%	10.9	44.96	8.33	37.28
60	44.51	1.86	7.72	106.7%	20.39	11.74	66.1	21.1	84.0%	85.0%	#DIV/0!	12.2	44.51	9.25	36.91
70	44.96	1.69	7.37	118.6%	20.42	12.20	61.7	21.1	84.6%	85.3%	72.2%	13.0	44.96	8.33	37.28
80	42.01	2.29	19.05	-7.2%	19.71	-0.48	166.1	21.7	90.8%	83.4%	75.8%	5.6	42.01	14.34	34.84
90	38.61	5.00	19.77	-20.1%	19.52	-2.75	149.4	22.2	83.0%	83.6%	69.4%	4.7	38.61	21.28	32.02
100	38.61	4.97	14.04	4.2%	19.85	3.32	105.6	21.7	78.2%	84.0%	#DIV/0!	6.0	38.61	21.28	32.02
110	38.61	3.30	10.98	38.7%	20.12	7.49	88.3	22.2	80.8%	84.4%	68.2%	8.1	38.61	21.28	32.02
120	38.16	2.55	9.63	62.6%	20.24	9.34	77.8	22.2	82.6%	84.8%	70.1%	9.6	38.16	22.20	31.64
130	38.16	2.09	8.52	86.6%	20.33	10.77	71.1	22.2	83.7%	85.0%	71.1%	11.0	38.16	22.20	31.64
140	38.57	1.71	7.36	118.3%	20.42	12.20	65.6	22.2	84.5%	85.0%	#DIV/0!	12.9	38.57	21.37	31.98
150	38.16	1.43	6.40	152.9%	20.49	13.38	62.2	22.8	85.0%	85.0%	72.3%	15.0	38.16	22.20	31.64
160	36.52	2.04	15.63	12.1%	19.92	3.27	147.2	22.8	90.2%	83.4%	75.2%	6.7	36.52	25.53	30.29
170	31.72	5.00	18.48	-15.7%	19.59	-1.39	188.9	22.8	82.1%	81.6%	67.0%	4.9	31.72	35.34	26.30
180	30.90	5.00	20.00	-20.8%	19.50	-3.00	115.0	22.8	83.1%	85.1%	70.8%	4.6	30.90	37.00	25.62
190	30.90	5.00	15.29	-2.4%	19.77	1.98	93.9	22.2	79.4%	85.0%	#DIV/0!	5.7	30.90	37.00	25.62
200	30.90	3.60	11.82	28.4%	20.05	6.43	81.7	22.2	80.5%	85.0%	#DIV/0!	7.5	30.90	37.00	25.62
210	30.90	2.66	9.51	62.7%	20.24	9.40	73.9	22.8	81.9%	85.0%	#DIV/0!	9.6	30.90	37.00	25.62
220	30.90	2.10	7.98	96.5%	20.36	11.33	68.3	22.8	82.8%	85.0%	#DIV/0!	11.6	30.90	37.00	25.62
230	30.90	1.74	6.89	129.5%	20.44	12.68	64.4	22.2	83.4%	84.8%	#DIV/0!	13.6	30.90	37.00	25.62
240	30.90	1.27	5.51	192.1%	20.55	14.41	75.0	22.2	84.8%	82.9%	70.2%	17.4	30.90	37.00	25.62
250	30.44	0.31	0.82	1652.4%	20.88	19.90	85.6	22.8	81.7%	46.6%	38.1%	105.6	30.44	37.93	25.24
260	28.18	2.29	17.64	-0.6%	19.79	1.01	160.6	22.8	90.2%	83.3%	75.2%	6.0	28.18	42.55	23.36
270	23.19	5.00	17.68	-12.7%	19.64	-0.54	151.1	22.8	81.5%	83.0%	67.7%	5.1	23.19	52.73	19.22
280	22.73	5.00	20.00	-20.8%	19.50	-3.00	110.0	22.8	83.1%	85.3%	70.9%	4.6	22.73	53.65	18.85
290	22.73	5.00	16.42	-7.6%	19.71	0.79	90.6	22.2	80.5%	85.4%	#DIV/0!	5.4	22.73	53.65	18.85

300	22.73	5.00	13.44	7.4%	19.88	3.94	79.4	22.8	77.5%	85.2%	#DIV/0!	6.2	22.73	53.65	18.85
310	22.73	4.46	11.80	21.8%	20.01	5.98	72.2	22.8	77.2%	85.3%	#DIV/0!	7.0	22.73	53.65	18.85
320	22.73	3.60	9.95	46.1%	20.16	8.41	66.7	22.8	78.0%	85.3%	#DIV/0!	8.5	22.73	53.65	18.85
330	22.73	2.74	7.80	87.9%	20.33	11.16	62.8	22.8	78.6%	85.0%	#DIV/0!	11.0	22.73	53.65	18.85
340	22.73	2.60	7.54	95.3%	20.36	11.52	60.0	22.8	78.9%	85.1%	67.2%	11.4	22.73	53.65	18.85
350	21.37	1.99	11.21	50.0%	20.18	7.98	121.1	22.8	87.4%	83.0%	72.5%	8.9	21.37	56.43	17.72
360	17.15	5.00	18.08	-14.2%	19.61	-0.97	168.3	22.8	81.8%	82.4%	67.4%	5.0	17.15	65.03	14.22
370	16.38	5.00	20.00	-20.8%	19.50	-3.00	116.1	22.2	83.1%	85.0%	70.7%	4.6	16.38	66.60	13.58
380	15.93	5.00	20.00	-20.8%	19.50	-3.00	93.3	22.2	83.1%	86.0%	71.5%	4.6	15.93	67.53	13.21
390	15.93	5.00	16.08	-6.1%	19.73	1.15	80.6	22.8	80.2%	85.8%	#DIV/0!	5.5	15.93	67.53	13.21
400	15.93	4.98	13.02	10.0%	19.91	4.40	72.8	22.8	77.0%	85.4%	#DIV/0!	6.3	15.93	67.53	13.21
410	15.93	3.78	10.53	38.4%	20.12	7.70	67.2	22.8	78.1%	85.4%	#DIV/0!	8.0	15.93	67.53	13.21
420	15.93	3.24	9.47	55.8%	20.21	9.12	62.8	22.8	78.9%	85.5%	67.5%	9.1	15.93	67.53	13.21
430	16.38	2.73	8.21	81.0%	20.31	10.74	60.0	22.8	79.4%	85.4%	#DIV/0!	10.6	16.38	66.60	13.58
440	15.93	0.37	1.54	936.8%	20.83	19.11	78.3	22.2	86.4%	67.8%	58.6%	62.4	15.93	67.53	13.21
450	15.47	3.16	12.22	28.8%	20.06	6.26	121.7	22.8	82.8%	83.0%	68.8%	7.6	15.47	68.46	12.83
460	12.25	2.19	19.20	-7.4%	19.71	-0.58	171.7	22.8	91.3%	83.3%	76.0%	5.6	12.25	75.02	10.16
470	11.39	5.00	20.00	-20.8%	19.50	-3.00	110.0	22.8	83.1%	85.3%	70.9%	4.6	11.39	76.78	9.44
480	10.48	5.00	19.20	-18.2%	19.55	-2.15	88.9	22.8	82.6%	86.0%	71.1%	4.8	10.48	78.63	8.69
490	10.48	5.00	15.03	-1.1%	19.79	2.26	77.2	22.8	79.2%	85.7%	67.9%	5.7	10.48	78.63	8.69
500	10.93	4.75	12.50	14.8%	19.95	5.07	69.4	22.2	77.1%	85.5%	66.0%	6.6	10.93	77.71	9.07
510	10.93	3.71	10.24	42.0%	20.14	8.04	64.4	22.2	78.0%	85.5%	#DIV/0!	8.2	10.93	77.71	9.07
520	10.93	3.12	8.89	64.9%	20.25	9.80	60.0	22.8	78.5%	85.5%	#DIV/0!	9.6	10.93	77.71	9.07
530	10.93	2.69	7.72	90.2%	20.34	11.28	56.1	22.2	78.7%	85.5%	67.3%	11.1	10.93	77.71	9.07
540	10.30	2.90	8.72	70.4%	20.27	10.10	108.9	22.2	79.4%	81.8%	64.9%	9.9	10.30	79.00	8.54
550	8.80	3.16	14.84	10.0%	19.91	3.49	143.3	22.2	85.2%	82.9%	70.7%	6.5	8.80	82.05	7.30
560	6.81	5.00	20.00	-20.8%	19.50	-3.00	126.7	22.2	83.1%	84.6%	70.4%	4.6	6.81	86.12	5.64
570	6.40	5.00	20.00	-20.8%	19.50	-3.00	96.1	22.8	83.1%	85.9%	71.4%	4.6	6.40	86.96	5.30
580	6.35	5.00	15.89	-5.2%	19.74	1.35	81.1	22.2	80.0%	85.7%	#DIV/0!	5.5	6.35	87.05	5.27
590	6.40	5.00	12.28	14.6%	19.95	5.17	72.2	22.2	76.0%	85.2%	#DIV/0!	6.6	6.40	86.96	5.30
600	6.35	4.54	10.67	30.2%	20.07	7.13	65.6	22.8	75.3%	85.2%	#DIV/0!	7.5	6.35	87.05	5.27
610	6.40	3.84	9.37	49.9%	20.18	8.89	63.9	22.2	76.0%	85.1%	64.7%	8.7	6.40	86.96	5.30
620	6.40	3.27	8.28	71.4%	20.28	10.36	58.3	22.2	76.7%	85.3%	65.4%	9.9	6.40	86.96	5.30
630	6.81	2.84	7.33	94.7%	20.36	11.61	55.0	22.2	77.0%	85.3%	65.7%	11.3	6.81	86.12	5.64
640	6.31	3.47	8.41	66.7%	20.26	10.11	110.0	22.2	75.9%	81.2%	61.7%	9.6	6.31	87.14	5.23
650	4.13	2.69	13.77	20.3%	19.99	4.88	145.6	21.7	86.3%	82.5%	71.1%	7.1	4.13	91.58	3.42
660	3.18	5.00	16.09	-6.1%	19.73	1.14	117.8	22.2	80.2%	84.0%	67.4%	5.4	3.18	93.52	2.63
670	2.77	5.00	14.62	0.9%	19.81	2.69	90.0	22.2	78.7%	85.0%	#DIV/0!	5.8	2.77	94.36	2.29
680	3.18	5.00	11.29	21.6%	20.00	6.21	77.2	22.2	74.6%	84.5%	63.1%	7.0	3.18	93.52	2.63
690	3.18	4.23	9.53	43.9%	20.15	8.50	68.9	22.2	74.7%	84.6%	63.2%	8.3	3.18	93.52	2.63
700	3.22	3.62	8.56	62.6%	20.24	9.87	62.8	22.2	75.5%	84.9%	64.1%	9.4	3.22	93.43	2.67
710	2.72	3.21	7.81	79.7%	20.31	10.89	58.3	22.2	76.0%	85.0%	64.7%	10.4	2.72	94.45	2.26
720	2.72	2.92	7.26	94.5%	20.36	11.64	55.0	21.7	76.4%	85.1%	65.1%	11.3	2.72	94.45	2.26
730	2.27	2.20	6.41	130.0%	20.45	12.94	106.7	22.2	79.0%	80.0%	63.3%	13.5	2.27	95.37	1.88
740	-0.09	2.10	12.69	33.9%	20.09	6.35	137.2	22.2	88.1%	82.7%	72.8%	8.0	-0.09	100.19	-0.08
0															0.00

Moisture Cont

%HC		Combustion Efficiency:	85.0%			Moisture of Wood (wet basis):	17.08
1.32		Total Input (kJ):	808,791	767,099	(Btu)	Initial Dry Weight Wtdo (kg):	40.67
		Total Output (kJ):	560,956	532,040	(Btu)	Moisture Content Dry	20.60
		Efficiency:	69.4%				
		Total CO (g):	8377.85				

Load Weight (kg):	49.05				
Fuel Heating:	HHV	LHV		HHV	LHV
Value in kJ/kg - CV:	19887.00	18463.91	Btu/lb	8555.61	7943.38

57.19	827495	4.17	6.60	2.68	19887.00	17.08	78.24	20.75	3.89	11.87	0.49	0.39	31.51	35.52	9.11	1.26
% Dry	**Fuel Properties**					**Mw**	**Mass Balance**					**kg Wood per**				
Comsumed	**Total**	**Carbon**	**Hydrogen**	**Oxygen**	**Calorific**	**Moisture**	**(moles/100 mole dry flue gas)**					**100 mole dfp**	**Moles per kg of Dry Woo**			
y	**Input**	**/12= [a]**	**/1= [b]**	**/16= [c]**	**Value**	**Fuel Burnt**	**[h]**	**[u]**	**[w]**	**[j]**	**[k]**	**Nk**	**CO2**	**O2**	**CO**	**HC**
0.00	0	4.17	6.60	2.68	19887.00	17.08	79.47	21.08	4.31	13.87	0.17	0.43	38.60	6.45	2.87	0.40
6.85	65092	4.17	6.60	2.68	19887.00	17.08	79.34	21.04	5.31	16.97	0.28	0.53	37.63	-2.26	3.71	0.54
9.25	9726	4.17	6.60	2.68	19887.00	17.08	77.70	20.61	4.92	14.82	0.72	0.49	30.21	5.11	10.21	1.46
9.25	-3741	4.17	6.60	2.68	19887.00	17.08	78.20	20.74	3.40	10.31	0.46	0.34	30.77	23.86	9.74	1.37
8.33	-3741	4.17	6.60	2.68	19887.00	17.08	78.44	20.81	2.86	8.72	0.35	0.28	31.63	35.20	9.01	1.24
8.33	3741	4.17	6.60	2.68	19887.00	17.08	78.57	20.84	2.64	8.10	0.30	0.26	32.34	40.99	8.39	1.14
9.25	0	4.17	6.60	2.68	19887.00	17.08	78.68	20.87	2.36	7.29	0.25	0.23	32.89	50.01	7.92	1.06
8.33	20575	4.17	6.60	2.68	19887.00	17.08	78.74	20.88	2.23	6.90	0.22	0.22	33.24	55.05	7.62	1.01
14.34	52373	4.17	6.60	2.68	19887.00	17.08	79.14	20.99	5.20	16.50	0.33	0.52	36.81	-0.93	4.43	0.64
21.28	28057	4.17	6.60	2.68	19887.00	17.08	77.98	20.69	6.12	18.74	0.72	0.61	32.47	-4.52	8.21	1.19
21.28	0	4.17	6.60	2.68	19887.00	17.08	77.67	20.60	4.73	14.20	0.71	0.47	29.81	7.06	10.55	1.51
21.28	3741	4.17	6.60	2.68	19887.00	17.08	78.23	20.75	3.54	10.75	0.46	0.35	31.19	21.27	9.37	1.32
22.20	3741	4.17	6.60	2.68	19887.00	17.08	78.48	20.82	3.01	9.22	0.35	0.30	32.18	31.19	8.52	1.18
22.20	-3367	4.17	6.60	2.68	19887.00	17.08	78.62	20.86	2.61	8.06	0.28	0.26	32.75	41.38	8.03	1.09
21.37	0	4.17	6.60	2.68	19887.00	17.08	78.73	20.88	2.23	6.91	0.23	0.22	33.15	54.97	7.70	1.02
22.20	16834	4.17	6.60	2.68	19887.00	17.08	78.79	20.90	1.92	5.98	0.18	0.19	33.44	69.88	7.47	0.97
25.53	53121	4.17	6.60	2.68	19887.00	17.08	79.06	20.97	4.31	13.65	0.29	0.43	36.45	7.64	4.76	0.67
35.34	46388	4.17	6.60	2.68	19887.00	17.08	77.91	20.67	5.81	17.72	0.72	0.58	31.97	-2.40	8.65	1.25
37.00	6734	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
37.00	0	4.17	6.60	2.68	19887.00	17.08	77.73	20.62	5.04	15.20	0.72	0.50	30.48	3.96	9.97	1.43
37.00	0	4.17	6.60	2.68	19887.00	17.08	78.15	20.73	3.82	11.60	0.51	0.38	31.08	16.92	9.46	1.34
37.00	0	4.17	6.60	2.68	19887.00	17.08	78.43	20.80	3.01	9.19	0.37	0.30	31.76	31.40	8.88	1.23
37.00	0	4.17	6.60	2.68	19887.00	17.08	78.59	20.85	2.49	7.64	0.28	0.25	32.24	45.78	8.48	1.15
37.00	0	4.17	6.60	2.68	19887.00	17.08	78.69	20.87	2.13	6.56	0.23	0.21	32.56	59.95	8.22	1.09
37.00	3741	4.17	6.60	2.68	19887.00	17.08	78.81	20.91	1.67	5.18	0.16	0.17	33.25	86.92	7.66	0.97
37.93	22446	4.17	6.60	2.68	19887.00	17.08	78.97	20.95	0.27	0.88	0.01	0.03	30.04	729.07	11.36	0.48
42.55	59855	4.17	6.60	2.68	19887.00	17.08	79.06	20.97	4.86	15.39	0.33	0.48	36.46	2.09	4.73	0.68
52.73	44891	4.17	6.60	2.68	19887.00	17.08	77.86	20.65	5.62	17.09	0.72	0.56	31.64	-0.97	8.95	1.29
53.65	3741	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
53.65	0	4.17	6.60	2.68	19887.00	17.08	77.79	20.63	5.31	16.10	0.72	0.53	31.06	1.49	9.46	1.36

53.65	0	4.17	6.60	2.68	19887.00	17.08	77.62	20.59	4.60	13.74	0.71	0.46	29.38	8.62	10.93	1.56
53.65	0	4.17	6.60	2.68	19887.00	17.08	77.76	20.63	4.05	12.11	0.63	0.40	29.25	14.81	11.06	1.57
53.65	0	4.17	6.60	2.68	19887.00	17.08	78.04	20.70	3.37	10.12	0.51	0.34	29.64	25.06	10.73	1.51
53.65	0	4.17	6.60	2.68	19887.00	17.08	78.30	20.77	2.62	7.89	0.38	0.26	29.92	42.83	10.51	1.45
53.65	11223	4.17	6.60	2.68	19887.00	17.08	78.34	20.78	2.52	7.60	0.36	0.25	30.08	45.95	10.37	1.42
56.43	46014	4.17	6.60	2.68	19887.00	17.08	78.82	20.91	3.23	10.12	0.27	0.32	34.84	24.79	6.18	0.85
65.03	41150	4.17	6.60	2.68	19887.00	17.08	77.89	20.66	5.71	17.41	0.72	0.57	31.81	-1.70	8.80	1.27
66.60	10101	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
67.53	3741	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
67.53	0	4.17	6.60	2.68	19887.00	17.08	77.77	20.63	5.23	15.83	0.72	0.52	30.89	2.21	9.61	1.38
67.53	0	4.17	6.60	2.68	19887.00	17.08	77.60	20.58	4.49	13.40	0.71	0.45	29.14	9.84	11.15	1.59
67.53	0	4.17	6.60	2.68	19887.00	17.08	77.99	20.69	3.56	10.69	0.53	0.35	29.71	21.72	10.66	1.50
67.53	-3741	4.17	6.60	2.68	19887.00	17.08	78.17	20.73	3.16	9.52	0.45	0.31	30.13	29.01	10.31	1.44
66.60	0	4.17	6.60	2.68	19887.00	17.08	78.32	20.78	2.72	8.21	0.38	0.27	30.38	39.73	10.10	1.39
67.53	7482	4.17	6.60	2.68	19887.00	17.08	78.98	20.95	0.46	1.49	0.02	0.05	33.36	413.91	8.02	0.50
68.46	30302	4.17	6.60	2.68	19887.00	17.08	78.36	20.79	3.80	11.64	0.45	0.38	32.34	16.56	8.36	1.18
75.02	33668	4.17	6.60	2.68	19887.00	17.08	79.19	21.01	5.21	16.56	0.32	0.52	37.04	-1.13	4.22	0.61
76.78	14590	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
78.63	7482	4.17	6.60	2.68	19887.00	17.08	77.95	20.68	5.98	18.29	0.72	0.60	32.26	-3.61	8.40	1.22
78.63	-3741	4.17	6.60	2.68	19887.00	17.08	77.71	20.61	4.98	15.00	0.72	0.50	30.34	4.56	10.09	1.45
77.71	-3741	4.17	6.60	2.68	19887.00	17.08	77.68	20.60	4.30	12.85	0.68	0.43	29.20	11.85	11.10	1.58
77.71	0	4.17	6.60	2.68	19887.00	17.08	78.01	20.69	3.47	10.42	0.52	0.35	29.63	23.28	10.74	1.51
77.71	0	4.17	6.60	2.68	19887.00	17.08	78.19	20.74	2.99	8.99	0.43	0.30	29.92	32.98	10.50	1.46
77.71	5237	4.17	6.60	2.68	19887.00	17.08	78.31	20.77	2.59	7.80	0.37	0.26	29.99	43.81	10.45	1.44
79.00	17582	4.17	6.60	2.68	19887.00	17.08	78.28	20.76	2.89	8.72	0.40	0.29	30.37	35.19	10.10	1.40
82.05	28805	4.17	6.60	2.68	19887.00	17.08	78.51	20.83	4.43	13.71	0.45	0.44	33.68	7.91	7.17	1.02
86.12	19827	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
86.96	3741	4.17	6.60	2.68	19887.00	17.08	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
87.05	0	4.17	6.60	2.68	19887.00	17.08	77.76	20.63	5.19	15.68	0.72	0.52	30.79	2.62	9.69	1.39
86.96	0	4.17	6.60	2.68	19887.00	17.08	77.55	20.57	4.32	12.83	0.71	0.43	28.58	12.03	11.64	1.66
87.05	0	4.17	6.60	2.68	19887.00	17.08	77.66	20.60	3.80	11.27	0.64	0.38	28.19	18.82	11.99	1.70
86.96	-374	4.17	6.60	2.68	19887.00	17.08	77.90	20.66	3.30	9.81	0.54	0.33	28.54	27.08	11.70	1.64
86.96	-3367	4.17	6.60	2.68	19887.00	17.08	78.09	20.71	2.88	8.60	0.45	0.29	28.88	36.14	11.41	1.59
86.12	748	4.17	6.60	2.68	19887.00	17.08	78.22	20.75	2.53	7.58	0.39	0.25	29.07	46.02	11.26	1.55
87.14	22072	4.17	6.60	2.68	19887.00	17.08	78.01	20.69	2.97	8.82	0.48	0.30	28.48	34.25	11.75	1.64
91.58	25812	4.17	6.60	2.68	19887.00	17.08	78.66	20.86	4.04	12.58	0.38	0.40	34.24	12.13	6.69	0.94
93.52	11223	4.17	6.60	2.68	19887.00	17.08	77.77	20.63	5.23	15.84	0.72	0.52	30.90	2.19	9.60	1.38
94.36	0	4.17	6.60	2.68	19887.00	17.08	77.69	20.61	4.88	14.67	0.72	0.49	30.11	5.54	10.30	1.47
93.52	-3367	4.17	6.60	2.68	19887.00	17.08	77.50	20.56	4.08	12.04	0.71	0.41	27.81	15.31	12.32	1.75
93.52	-374	4.17	6.60	2.68	19887.00	17.08	77.74	20.62	3.45	10.18	0.60	0.34	27.80	24.81	12.34	1.74
93.43	3741	4.17	6.60	2.68	19887.00	17.08	77.95	20.68	3.04	9.04	0.51	0.30	28.26	32.58	11.95	1.67
94.45	4115	4.17	6.60	2.68	19887.00	17.08	78.09	20.71	2.75	8.19	0.45	0.27	28.53	39.78	11.72	1.63
94.45	3741	4.17	6.60	2.68	19887.00	17.08	78.18	20.74	2.54	7.58	0.40	0.25	28.73	46.04	11.56	1.59
95.37	41150	4.17	6.60	2.68	19887.00	17.08	78.45	20.81	2.14	6.46	0.30	0.21	30.14	60.82	10.34	1.39
100.19	18705	4.17	6.60	2.68	19887.00	17.08	78.86	20.92	3.62	11.36	0.29	0.36	35.23	17.63	5.83	0.81

ent MCwb: 17.08

Dry kg : 40.67
CA: 50.00
HY: 6.60
OX: 42.90

											SUMS					
276.89	30.66	11.44	367.42	2839.55	2151.04	2095.19	2071.24	2702.67	2508.33	295.34	6875.34	4350.58	194600.30	38314.68	84045.40	106888.80
ıd		Moisture	Stack Temp	Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent						Room Temp	Energy Losses (kJ/kg of Dry Fuel) Flue Gas Constituent					
N2	H2O	Present	K	CO2	O2	CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb
185.46	32.36	11.44	402.59	4337.10	3273.80	3185.94	3150.12	4153.62	3813.25	293.15	167.42	21.12	821.42	584.23	360.66	1546.20
150.03	32.09	11.44	449.26	6292.05	4702.51	4564.81	4515.90	6128.69	5459.97	293.15	236.78	-10.64	1065.82	677.51	481.79	1586.21
158.59	30.24	11.44	390.37	3856.65	2919.19	2842.82	2810.45	3675.86	3403.20	292.59	116.50	14.91	2917.11	445.71	1306.85	1432.62
230.89	30.43	11.44	366.48	2909.93	2214.38	2159.33	2134.13	2747.72	2585.89	292.04	89.53	52.84	2778.45	492.75	1219.46	1416.87
275.98	30.68	11.44	353.71	2377.92	1814.41	1770.49	1749.58	2234.67	2120.61	292.59	75.21	63.87	2564.71	482.84	1107.88	1414.16
299.67	30.88	11.44	345.37	2005.01	1532.32	1495.82	1478.04	1878.87	1791.82	293.71	64.85	62.80	2387.03	442.93	1020.10	1413.03
335.20	31.04	11.44	339.26	1742.67	1333.48	1302.11	1286.55	1629.43	1559.90	294.26	57.32	66.69	2252.82	431.26	947.10	1413.30
355.14	31.14	11.44	334.82	1567.94	1200.97	1173.01	1158.92	1463.45	1405.33	294.26	52.12	66.11	2166.14	411.58	901.07	1413.17
152.93	31.89	11.44	439.26	5804.37	4345.66	4220.29	4174.68	5636.97	5048.50	294.82	213.67	-4.04	1270.97	638.44	572.38	1563.07
128.09	30.79	11.44	422.59	5082.59	3818.30	3711.37	3670.58	4907.48	4440.72	295.37	165.05	-17.27	2354.62	470.17	1065.39	1490.30
164.92	30.15	11.44	378.71	3297.34	2500.97	2436.79	2408.78	3131.54	2917.53	294.82	98.30	17.65	3012.31	397.26	1348.07	1413.52
222.20	30.53	11.44	361.48	2582.59	1966.00	1917.30	1894.89	2437.05	2296.11	295.37	80.54	41.82	2670.47	421.04	1175.04	1412.61
262.25	30.81	11.44	350.93	2161.74	1649.46	1609.54	1590.53	2031.52	1927.83	295.37	69.56	51.45	2424.97	417.11	1050.87	1414.09
302.23	30.98	11.44	344.26	1897.61	1450.06	1415.48	1398.66	1778.61	1695.56	295.37	62.15	60.01	2284.91	422.72	973.59	1414.81
354.60	31.12	11.44	338.71	1678.48	1284.20	1253.95	1238.97	1569.76	1502.20	295.37	55.64	70.59	2189.36	439.35	911.51	1415.13
411.69	31.24	11.44	335.37	1526.26	1168.46	1141.11	1127.44	1425.81	1367.07	295.93	51.04	81.66	2122.93	464.16	860.58	1416.09
184.34	31.82	11.44	420.37	4968.61	3734.00	3629.75	3589.79	4794.52	4343.17	295.93	181.09	28.51	1363.43	661.75	602.41	1537.27
134.80	30.67	11.44	462.04	6732.57	5015.37	4864.45	4813.19	6593.63	5817.08	295.93	215.27	-12.05	2490.31	648.82	1121.02	1526.72
126.96	30.81	11.44	388.15	3639.01	2753.79	2681.58	2651.08	3469.88	3210.13	295.93	118.47	-13.43	2325.15	336.59	1054.72	1453.37
154.94	30.31	11.44	367.04	2805.39	2133.00	2079.53	2055.36	2652.99	2490.19	295.37	85.51	8.44	2841.35	318.46	1276.32	1408.03
205.45	30.49	11.44	354.82	2316.42	1765.97	1722.85	1702.58	2180.20	2063.44	295.37	71.98	29.87	2694.69	349.79	1192.64	1403.66
261.94	30.71	11.44	347.04	1986.33	1516.74	1480.30	1462.76	1864.23	1773.12	295.93	63.09	47.62	2527.27	383.16	1097.09	1404.56
317.53	30.87	11.44	341.48	1766.76	1350.74	1318.69	1302.98	1654.51	1579.67	295.93	56.96	61.84	2412.30	413.73	1025.14	1405.94
371.88	30.99	11.44	337.59	1634.76	1251.06	1221.67	1207.06	1528.19	1463.55	295.37	53.23	75.00	2337.24	448.88	971.35	1407.82
475.56	31.23	11.44	348.15	2051.53	1566.33	1528.65	1510.55	1925.84	1831.02	295.37	68.21	136.15	2180.33	718.36	861.51	1430.53
2893.17	32.21	11.44	358.71	2450.35	1866.25	1820.24	1798.92	2310.27	2179.94	295.93	73.61	1360.62	3234.71	5204.59	425.62	1486.55
163.43	31.81	11.44	433.71	5527.60	4142.34	4023.80	3980.11	5359.66	4813.74	295.93	201.56	8.65	1358.64	650.45	607.70	1551.71
139.33	30.58	11.44	424.26	5131.12	3852.93	3744.58	3703.52	4958.32	4480.31	295.93	162.34	-3.74	2565.56	516.03	1155.14	1481.81
126.96	30.81	11.44	383.15	3435.39	2602.52	2534.98	2505.99	3269.54	3034.84	295.93	111.84	-12.69	2323.96	318.17	1054.48	1447.97
147.14	30.45	11.44	363.71	2671.60	2032.77	1982.17	1959.06	2523.22	2373.72	295.37	82.98	3.04	2695.16	288.26	1214.10	1410.94

169.70	30.04	11.44	352.59	2206.80	1683.02	1642.08	1622.73	2075.68	1966.75	295.93	64.84	14.50	3111.46	275.37	1392.83	1380.08
192.77	30.03	11.44	345.37	1920.37	1466.91	1431.79	1414.80	1801.13	1715.06	295.93	56.17	21.73	3144.57	272.73	1399.61	1371.78
232.51	30.16	11.44	339.82	1701.06	1300.99	1270.24	1255.08	1591.93	1521.67	295.93	50.43	32.60	3048.95	291.82	1342.34	1371.78
300.33	30.27	11.44	335.93	1548.08	1185.01	1157.25	1143.39	1446.52	1386.39	295.93	46.32	50.75	2986.50	343.40	1289.26	1373.08
312.56	30.32	11.44	333.15	1439.07	1102.26	1076.59	1063.67	1343.17	1289.82	295.93	43.29	50.65	2946.66	332.46	1267.05	1372.40
244.98	31.46	11.44	394.26	3888.86	2938.97	2860.96	2828.62	3716.64	3424.56	295.93	135.49	72.86	1767.94	692.94	761.18	1491.13
137.03	30.63	11.44	441.48	5856.06	4381.27	4254.12	4208.30	5693.92	5088.71	295.93	186.28	-7.45	2526.86	576.66	1137.69	1502.44
126.96	30.81	11.44	389.26	3705.53	2803.79	2730.19	2699.15	3534.05	3268.29	295.37	120.64	-13.68	2325.55	342.70	1054.79	1455.16
126.96	30.81	11.44	366.48	2783.07	2116.29	2063.30	2039.31	2631.32	2470.78	295.37	90.61	-10.32	2320.12	258.92	1053.73	1430.59
149.40	30.41	11.44	353.71	2251.00	1716.31	1674.46	1654.75	2118.18	2005.49	295.93	69.53	3.79	2734.31	247.22	1231.53	1397.87
173.69	29.99	11.44	345.93	1942.35	1483.52	1447.96	1430.79	1822.15	1734.41	295.93	56.60	14.60	3170.32	248.51	1418.25	1370.45
220.05	30.16	11.44	340.37	1722.95	1317.57	1286.38	1271.05	1612.77	1541.00	295.93	51.19	28.62	3031.81	279.69	1339.29	1372.68
248.70	30.29	11.44	335.93	1548.08	1185.01	1157.25	1143.39	1446.52	1386.39	295.93	46.64	34.38	2929.06	284.36	1282.87	1373.73
289.84	30.38	11.44	333.15	1439.07	1102.26	1076.59	1063.67	1343.17	1289.82	295.93	43.72	43.79	2869.80	308.29	1241.12	1375.03
1711.17	32.17	11.44	351.48	2183.81	1666.10	1625.72	1606.53	2052.71	1947.20	295.37	72.86	689.61	2281.48	2749.05	443.11	1477.24
207.36	30.81	11.44	394.82	3911.63	2955.82	2877.28	2844.77	3739.17	3444.06	295.93	126.49	48.93	2390.40	589.90	1053.25	1460.76
152.78	31.94	11.44	444.82	5997.36	4483.84	4352.93	4306.21	5838.21	5206.66	295.93	222.15	-5.05	1214.02	657.91	546.94	1570.91
126.96	30.81	11.44	383.15	3435.39	2602.52	2534.98	2505.99	3269.54	3034.84	295.93	111.84	-12.69	2323.96	318.17	1054.48	1447.97
130.97	30.73	11.44	362.04	2583.66	1966.33	1917.51	1895.12	2439.11	2296.32	295.93	83.35	-7.10	2393.49	248.20	1085.36	1421.91
156.85	30.27	11.44	350.37	2118.51	1616.47	1577.34	1558.72	1990.89	1889.27	295.93	64.27	7.37	2871.95	244.49	1290.60	1388.25
181.45	30.01	11.44	342.59	1831.77	1400.27	1367.00	1350.73	1715.78	1637.53	295.37	53.49	16.60	3155.29	245.09	1408.84	1368.49
225.72	30.15	11.44	337.59	1634.76	1251.06	1221.67	1207.06	1528.19	1463.55	295.37	48.44	29.12	3051.18	272.46	1346.02	1369.64
263.12	30.25	11.44	333.15	1439.07	1102.26	1076.59	1063.67	1343.17	1289.82	295.93	43.05	36.35	2982.56	279.88	1301.67	1368.88
304.23	30.29	11.44	329.26	1308.02	1002.87	979.76	967.95	1218.67	1173.88	295.37	39.23	43.93	2967.51	294.48	1279.79	1367.57
272.67	30.37	11.44	382.04	3411.41	2585.30	2518.43	2489.58	3244.67	3015.10	295.37	103.62	90.98	2884.17	678.83	1250.13	1426.78
178.21	31.12	11.44	416.48	4827.72	3631.56	3531.02	3491.97	4651.02	4225.30	295.37	162.61	28.73	2055.06	622.29	913.30	1500.02
126.96	30.81	11.44	399.82	4138.11	3123.97	3040.22	3006.02	3962.23	3638.87	295.37	134.72	-15.24	2328.07	381.66	1055.30	1466.57
126.96	30.81	11.44	369.26	2873.58	2183.53	2128.47	2103.79	2720.39	2548.68	295.93	93.55	-10.65	2320.65	267.11	1053.83	1432.99
150.70	30.38	11.44	354.26	2294.29	1749.32	1706.66	1686.57	2158.91	2044.06	295.37	70.65	4.58	2758.70	254.16	1241.88	1397.98
180.50	29.85	11.44	345.37	1941.54	1483.27	1447.80	1430.62	1820.59	1734.26	295.37	55.49	17.84	3310.14	258.23	1478.30	1364.30
205.15	29.77	11.44	338.71	1657.30	1267.84	1237.94	1223.16	1550.30	1483.01	295.93	46.71	23.87	3408.71	250.94	1513.87	1353.12
237.26	29.88	11.44	337.04	1612.92	1234.49	1205.53	1191.10	1507.44	1444.22	295.37	46.03	33.43	3323.89	282.60	1463.93	1357.05
272.40	29.99	11.44	331.48	1394.95	1068.99	1044.23	1031.67	1300.83	1251.09	295.37	40.29	38.64	3239.97	281.03	1413.66	1356.34
310.18	30.07	11.44	328.15	1264.60	969.82	947.54	936.10	1177.69	1135.29	295.37	36.76	44.63	3197.57	290.36	1380.79	1356.18
264.21	29.89	11.44	383.15	3456.56	2618.88	2550.99	2521.80	3289.00	3054.03	295.37	98.46	89.70	3355.95	666.29	1464.03	1405.45
195.61	31.28	11.44	418.71	4941.44	3715.78	3612.58	3572.70	4763.48	4322.80	294.82	169.21	45.09	1917.20	698.85	845.13	1510.43
149.34	30.41	11.44	390.93	3773.62	2854.28	2779.10	2747.56	3601.24	3326.76	295.37	116.59	6.24	2743.66	410.31	1233.04	1438.10
159.97	30.22	11.44	363.15	2649.34	2016.07	1965.95	1943.01	2501.65	2354.31	295.37	79.76	11.18	2933.95	310.83	1316.15	1399.75
190.89	29.67	11.44	350.37	2139.68	1632.83	1593.35	1574.53	2010.35	1908.47	295.37	59.50	24.99	3505.02	300.56	1561.21	1361.00
226.75	29.69	11.44	342.04	1809.85	1383.68	1350.85	1334.76	1694.86	1618.20	295.37	50.31	34.33	3508.50	302.66	1550.11	1353.47
257.31	29.83	11.44	335.93	1569.25	1201.37	1173.26	1159.20	1465.98	1405.58	295.37	44.34	39.14	3395.70	298.28	1488.69	1353.37
285.22	29.91	11.44	331.48	1394.95	1068.99	1044.23	1031.67	1300.83	1251.09	295.37	39.79	42.53	3330.18	294.25	1449.29	1352.73
309.40	29.98	11.44	328.15	1285.77	986.18	963.54	951.91	1197.14	1154.48	294.82	36.94	45.41	3281.15	294.52	1418.50	1352.94
368.88	30.38	11.44	379.82	3321.22	2518.16	2453.32	2425.17	3156.22	2937.26	295.37	100.10	153.15	2952.65	894.59	1244.77	1424.96
218.95	31.54	11.44	410.37	4573.93	3445.15	3350.88	3313.59	4396.66	4010.09	295.37	161.16	60.74	1669.56	725.52	726.30	1513.36

	AVERAGE	SUMS						
39893.36	6332.91	247834	120976	126857.81	579661	120976	8377.85	652.51
	Total							
	Loss	**Total**	**Chemical**	**Sensible and**	**Total**	**Chem**	**Grams Produced**	
H2O Fuel MC	**Rate**	**Loss**	**Loss 1**	**Latent Loss**	**Output**	**Loss 2**	**CO**	**HC**
546.85	4047.89	0	0	0.00	0	0	0.00	0.00
565.69	4603.18	15067	4999	10067.37	50026	4999	339.69	28.15
542.15	6775.85	3314	2049	1264.91	6412	2049	139.76	11.44
532.80	6582.70	-1238	-747	-490.89	-2503	-747	-51.32	-4.11
527.47	6236.15	-1173	-687	-485.75	-2568	-687	-47.44	-3.74
523.71	5914.45	1113	638	474.42	2628	638	44.19	3.44
521.06	5689.54	0	0	0.00	0	0	0.00	0.00
519.29	5529.48	5721	3163	2558.25	14854	3163	220.82	16.73
560.98	4815.46	12682	4796	7885.85	39691	4796	326.31	26.92
554.03	6082.29	8581	4774	3807.25	19476	4774	324.43	26.87
536.59	6823.70	0	0	0.00	0	0	0.00	0.00
529.48	6331.01	1191	719	471.53	2550	719	49.37	3.96
525.27	5953.32	1120	651	469.07	2621	651	44.88	3.55
522.61	5740.79	-972	-549	-422.50	-2395	-549	-38.08	-2.96
520.40	5601.98	0	0	0.00	0	0	0.00	0.00
518.85	5515.30	4669	2517	2151.53	12166	2517	177.09	13.07
552.91	4927.37	13162	5196	7965.46	39960	5196	355.78	28.77
569.78	6559.87	15301	8306	6995.05	31086	8306	565.02	46.65
539.94	5814.81	1969	1136	833.24	4765	1136	77.17	6.39
531.70	6469.80	0	0	0.00	0	0	0.00	0.00
526.82	6269.45	0	0	0.00	0	0	0.00	0.00
523.50	6046.29	0	0	0.00	0	0	0.00	0.00
521.28	5897.19	0	0	0.00	0	0	0.00	0.00
519.95	5813.49	0	0	0.00	0	0	0.00	0.00
524.16	5919.26	1113	570	543.82	2627	570	40.36	2.91
528.15	12313.85	13898	4107	9791.45	8547	4107	358.92	8.61
558.30	4937.01	14859	5850	9009.25	44996	5850	398.92	32.68
554.48	6431.63	14518	8309	6209.48	30373	8309	565.52	46.61
537.94	5781.67	1088	631	456.68	2653	631	42.87	3.55
530.37	6224.83	0	0	0.00	0	0	0.00	0.00

525.71	6764.80	0	0	0.00	0	0	0.00	0.00
522.83	6789.42	0	0	0.00	0	0	0.00	0.00
520.62	6658.55	0	0	0.00	0	0	0.00	0.00
519.07	6608.37	0	0	0.00	0	0	0.00	0.00
517.97	6530.47	3685	2371	1314.80	7537	2371	163.91	12.83
542.40	5463.93	12642	5803	6838.70	33371	5803	400.68	31.52
561.44	6483.92	13417	7490	5926.27	27734	7490	509.67	42.04
540.61	5825.77	2959	1703	1255.43	7142	1703	115.75	9.59
531.48	5675.12	1068	631	436.64	2673	631	42.87	3.55
526.16	6210.41	0	0	0.00	0	0	0.00	0.00
523.05	6801.79	0	0	0.00	0	0	0.00	0.00
520.84	6624.11	0	0	0.00	0	0	0.00	0.00
519.07	6470.13	-1217	-790	-427.42	-2524	-790	-54.29	-4.33
517.97	6399.73	0	0	0.00	0	0	0.00	0.00
525.49	8238.84	3100	1020	2079.86	4382	1020	84.44	2.99
542.62	6212.35	9466	5204	4262.02	20836	5204	356.74	28.73
562.79	4769.67	8075	2944	5130.88	25593	2944	200.28	16.54
537.94	5781.67	4242	2461	1781.05	10348	2461	167.19	13.85
529.49	5754.69	2165	1302	863.40	5317	1302	88.50	7.32
524.83	6391.75	-1202	-779	-422.87	-2539	-779	-53.16	-4.35
521.95	6769.75	-1273	-855	-418.26	-2467	-855	-58.44	-4.75
519.95	6636.82	0	0	0.00	0	0	0.00	0.00
517.97	6530.36	0	0	0.00	0	0	0.00	0.00
516.64	6509.16	1714	1115	598.82	3523	1115	77.06	6.05
537.71	6972.22	6164	3629	2535.56	11418	3629	250.07	19.79
551.56	5833.58	8450	4256	4193.68	20356	4256	290.89	23.65
544.85	5895.94	5878	3344	2534.32	13949	3344	227.21	18.83
532.37	5689.86	1070	631	439.41	2671	631	42.87	3.55
526.60	6254.55	0	0	0.00	0	0	0.00	0.00
523.05	7007.35	0	0	0.00	0	0	0.00	0.00
520.18	7117.39	0	0	0.00	0	0	0.00	0.00
519.73	7026.66	-132	-90	-42.43	-242	-90	-6.16	-0.49
517.52	6887.45	-1166	-785	-380.55	-2201	-785	-54.07	-4.30
516.20	6822.48	257	172	84.90	492	172	11.86	0.93
538.16	7618.04	8455	5310	3144.67	13617	5310	365.23	29.10
552.68	5738.57	7448	3548	3900.25	18364	3548	243.11	19.61
541.28	6489.21	3662	2226	1435.75	7561	2226	151.71	12.46
530.15	6581.76	0	0	0.00	0	0	0.00	0.00
525.05	7337.34	-1242	-854	-388.41	-2125	-854	-58.38	-4.74
521.72	7321.10	-138	-95	-42.93	-236	-95	-6.50	-0.52
519.29	7138.81	1343	916	427.18	2398	916	62.94	5.03
517.52	7026.29	1454	986	467.89	2661	986	67.93	5.38
516.42	6945.87	1307	882	424.99	2434	882	60.86	4.79
536.82	7307.05	15120	8624	6496.08	26031	8624	599.31	46.13
549.10	5405.73	5084	2232	2852.67	13620	2232	153.55	12.22

Dirigo Laboratories, Inc.

Manufacturer:	**Green Tech**
Model:	**Crown Royal RS7300E**
Date:	
Run:	**EPA#2**
Control #:	**004-hhw-023-1**
Test Duration:	**740**
Output Category:	**4**

	HHV Basis	LHV Basis	
Overall Efficiency	69.4%	74.7%	
Combustion Efficiency	85.0%	85.0%	
Heat Transfer Efficiency	81.6%	87.8%	
HHV Output Rate (kJ/h)	45,483	43,145	**(Btu/h)**
Burn Rate (kg/h)	3.30	7.27	**(lb/h)**
Input (kJ/h)	65,578	62,207	**(Btu/h)**
Test Load Weight (dry kg)	40.7	89.6	**dry lb**
MC wet (%)	17.08		
MC dry (%)	20.60		
Particulate (g)	59.43		
CO (g)	8378		
Test Duration (h)	12.33333333		

Emissions	**Particulate**	**CO**
g/MJ Output	0.11	14.93
g/kg Dry Fuel	1.46	206.00
g/h	4.82	679.28
lb/MM Btu Output	0.25	34.71

Air/Fuel Ratio (A/F)	7.02

Test Results in Accordance with CSA B415.1-10

Technician: _____

PREBURN

JOB # 004_HHW_023_1
TECHNICIAN BTN
DATE: 3_14_14
RUN #: EPA3
READING INTERVAL: 10
.
Run Time: 230

Model Designation RS7300 E

Tunnel Traverse Information

	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10
dP	0.045	0.045	0.050	0.052	0.052	0.046	0.044	0.045	0.045	0.052
Temperature	95	95	95	95	95	95	95	95	95	95

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	46.1	0.004	6026	6027	6029	6027	6027	6027.2
10	45.1	-0.02	6026	6027	6029	6027	6027	6027.2
20	39.1	-0.04	6027	6028	6030	6027	6028	6028
30	35	-0.027	6027	6028	6030	6028	6029	6028.4
40	35.1	-0.024	6028	6028	6030	6028	6029	6028.6
50	35.1	-0.021	6028	6029	6031	6028	6029	6029
60	34.1	-0.01	6028	6029	6031	6029	6029	6029.2
70	32	-0.035	6028	6029	6031	6029	6029	6029.2
80	25.1	-0.035	6028	6029	6031	6029	6030	6029.4
90	24.1	-0.035	6029	6029	6031	6029	6030	6029.6
100	24.1	-0.011	6029	6030	6032	6029	6030	6030
110	24.1	-0.011	6029	6030	6032	6030	6030	6030.2
120	23.1	0.003	6029	6030	6032	6030	6030	6030.2
130	22.1	-0.031	6029	6030	6032	6030	6030	6030.2
140	10.1	-0.031	6025	6026	6028	6026	6026	6026.2
150	10	-0.022	6023	6024	6026	6024	6024	6024.2
160	8.1	-0.019	6022	6023	6025	6023	6024	6023.4
170	-0.2	-0.008	6022	6023	6025	6023	6023	6023.2
180	8	-0.028	6021	6022	6024	6022	6023	6022.4
190	2.1	-0.043	6021	6021	6023	6021	6022	6021.6
200	2	-0.011	6020	6021	6023	6021	6022	6021.4
210	2.1	-0.014	6020	6021	6023	6021	6021	6021.2
220	2.1	-0.009	6020	6021	6023	6021	6021	6021.2
230	2.1	-0.012	6020	6020	6023	6020	6021	6020.8

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	14.15272	ft/sec.
Intial Tunnel Flow:	654.3378	scfm
Average Tunnel Flow:	638.0554	scfm

Notes:

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T

Run #	Epa#3
Date:	3/14/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.045	0.045	0.050	0.052	0.052	0.046	0.044	0.045	0.045	0.052	0.052	0.045	0.048
Temperature	95	95	95	95	95	95	95	95	95	95	95	95	95.000

Tunnel Velocity:	14.153	ft/sec.
Intial Tunnel Flow:	654.34	scfm
Average Tunnel Flow	638.06	scfm

JOB #	004-hhw-023-1							ROOM TEMP (F)		72.0			BEG	MID	END	AVG
TECHNICIAN	GEN								BAROMETRIC I				30.17	30.17	30.17	30.17
DATE:	3/14/2014															
RUN #:	Epa#3															
READING INTERVAL:		10														
SAMPLE BOX :		A	METER Y FACTOR:		0.995					PROBE MATERIAL:			SS			
FRONT FILTER #:						REAR FILTER #	REAR FILTER #:									
FINAL LEAK RATE (CFM):			@		IN-HG		FINAL LEAK RATE (CFM)			@		IN-HG				
Run Time:		510		AMBIENT FILTER #:				VOLUME		LITERS	FUEL MOISTURE DB			22	%	
				FINAL LEAK RATE (CFM):				@		IN-HG						
TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						

	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
0		0.000	0.049	0.07	0		NA	108.6	0	87	283	74	6023	6021	76	66
10	1.378	0.138	0.043	1.97	-1.36	14.023	105	102.2	6.4	98	346	74	6023	6021	76	65
20	2.756	0.138	0.045	2	-0.51	14.059	100	97.1	5.1	76	271	71	6023	6021	80	66
30	4.138	0.138	0.046	1.92	-0.19	14.254	99	97.1	0	79	212	71	6026	6024	83	72
40	5.538	0.140	0.042	2.02	-1.13	13.621	104	97.1	0	79	184	72	6027	6026	87	72
50	6.954	0.142	0.041	2.02	-1.63	13.445	106	97.1	0	78	165	73	6028	6027	90	73
60	8.370	0.142	0.042	2.04	-2.2	13.809	105	96.1	1	94	293	76	6029	6027	93	73
70	9.790	0.142	0.046	2.02	-2.18	14.594	101	88.1	8	105	355	79	6030	6028	96	73
80	11.210	0.142	0.047	2.04	0	14.422	98	82.1	6	80	265	77	6030	6029	98	74
90	12.639	0.143	0.042	2.02	-1.31	13.633	104	82.1	0	80	213	76	6031	6029	100	74
100	14.067	0.143	0.046	2.02	-2.17	14.254	99	82.1	0	79	186	76	6031	6030	102	74
110	15.500	0.143	0.043	2.03	-1.18	13.782	102	82.1	0	79	168	76	6032	6030	103	75
120	16.936	0.144	0.042	2.03	-1.9	13.709	104	82.1	0	86	187	76	6031	6030	104	71
130	18.369	0.143	0.043	2.04	-2.12	13.985	103	78.1	4	95	275	77	6031	6029	105	70
140	19.801	0.143	0.047	2.01	-0.82	14.647	99	67.1	11	97	262	78	6030	6029	105	70
150	21.230	0.143	0.042	2.01	-1.54	13.933	105	52.2	14.9	104	359	78	6028	6026	106	66
160	22.660	0.143	0.041	2.02	-2.23	13.457	104	54.1	-1.9	79	237	73	6028	6026	105	70
170	24.097	0.144	0.047	2.01	-2.23	14.409	98	55	-0.9	79	199	73	6030	6028	105	71
180	25.532	0.143	0.048	2.03	-2.12	14.561	96	55	0	79	176	73	6030	6028	106	71
190	26.962	0.143	0.047	2.02	-2.23	14.409	97	55.1	-0.1	79	161	74	6030	6028	106	72
200	28.398	0.144	0.042	2.01	0	13.721	104	60.1	-5	87	196	75	6031	6029	106	73
210	29.826	0.143	0.043	2.01	-2.05	14.048	103	48.5	11.6	100	332	77	6031	6029	106	73
220	31.255	0.143	0.043	2.02	-2.22	13.884	102	42.1	6.4	87	307	78	6031	6029	107	73
230	32.689	0.143	0.043	2.01	-1.24	13.782	101	41.1	1	79	228	76	6031	6029	107	73
240	34.120	0.143	0.045	2.02	0	14.099	99	41.1	0	79	194	75	6031	6029	107	73
250	35.555	0.143	0.045	2	-2.02	14.086	99	41.1	0	78	173	74	6031	6029	107	73
260	36.990	0.144	0.04	2	-1.4	13.280	105	41.1	0	78	159	74	6031	6029	107	73
270	38.420	0.143	0.046	2.03	-2.22	14.399	99	39.1	2	90	249	76	6031	6029	107	73

TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
280	39.852	0.143	0.048	2.01	-2.04	14.829	98	33.4	5.7	99	328	78	6031	6029	107	73
290	41.283	0.143	0.048	2.02	-1.84	14.574	96	29.1	4.3	80	262	76	6031	6029	108	73
300	42.715	0.143	0.039	2	0	13.113	106	28.1	1	78	210	75	6031	6029	107	73
310	44.148	0.143	0.045	2.01	0	14.086	99	28.1	0	78	182	74	6031	6029	107	73
320	45.584	0.144	0.051	2.02	0	14.981	93	28.9	-0.8	77	164	74	6031	6029	107	73
330	47.014	0.143	0.046	2.01	-0.31	14.228	98	28.1	0.8	77	156	74	6031	6029	107	73
340	48.446	0.143	0.044	2.01	-0.22	14.172	102	23.6	4.5	97	333	76	6031	6029	108	73
350	49.877	0.143	0.042	2	0	13.621	102	19.1	4.5	79	261	75	6031	6029	107	73
360	51.306	0.143	0.045	2.01	-0.16	14.086	99	19.1	0	78	206	75	6031	6029	107	73
370	52.742	0.144	0.047	2	-1.69	14.382	97	19.1	0	77	179	74	6031	6029	107	73
380	54.170	0.143	0.044	2.01	-1.91	13.915	100	19.1	0	77	162	73	6031	6029	107	72
390	55.604	0.143	0.041	2.01	0	13.520	104	19.1	0	84	200	74	6031	6029	107	72
400	57.034	0.143	0.043	2.01	-1.52	13.972	103	17.1	2	94	299	76	6030	6029	107	72
410	58.460	0.143	0.047	2	-0.54	14.621	98	13.1	4	95	300	77	6030	6029	107	72
420	59.892	0.143	0.045	1.99	-1.97	14.086	99	12	1.1	78	228	75	6030	6029	107	72
430	61.325	0.143	0.045	1.99	-0.44	14.072	99	11	1	77	190	74	6030	6028	107	71
440	62.752	0.143	0.048	2.02	-2.12	14.534	95	11	0	77	170	73	6029	6028	107	71
450	64.187	0.144	0.045	2	-0.32	14.072	99	11	0	77	155	72	6029	6027	107	71
460	65.616	0.143	0.049	2.01	-2.16	14.821	95	10.9	0.1	87	223	73	6029	6027	107	71
470	67.045	0.143	0.043	2.01	-0.31	13.934	102	8.1	2.8	91	258	75	6029	6027	107	71
480	68.473	0.143	0.045	1.99	-1.44	14.242	100	6	2.1	90	247	75	6029	6027	107	70
490	69.898	0.142	0.044	2	0	14.070	101	5	1	89	236	75	6029	6027	106	70
500	71.325	0.143	0.042	1.99	-1.45	13.759	103	3.1	1.9	90	232	76	6029	6027	106	71
510	72.745	0.142	0.043	2	-1.86	13.997	102	0	3.1	96	301	76	6029	6027	106	71
																75
	72.745		0.045	2.01		14.078	100.5			85	233				103	72

JOB #	004_HHW_023_1						
TECHNICIAN	BTN						
DATE:	3_14_14						
RUN #:	EPA3						
READING INTERVAL:	10						
SAMPLE BOX :	*B*	METER Y FACTOR:	0.974		PROBE MATERIAL:	**SS**	
FRONT FILTER #:				REAR FILTER #:			
FINAL LEAK RATE (CFM):		@		IN-HG	FINAL LEAK RATE (CFM):	@	IN-HG

Run Time: 510 **Firebox Delta T** **#N/A**

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6020	6021	75	6021	6021	74	
10	1.580	0.158	119	-0.04	2.01	-1.67	6020	6021	74	6021	6021	75	
20	3.140	0.156	113	-0.03	1.97	-1.17	6020	6021	70	6021	6021	75	
30	4.562	0.142	101	-0.01	1.99	-1.7	6023	6024	72	6024	6024	80	
40	5.980	0.142	105	-0.01	2.07	-1.04	6025	6025	73	6025	6026	84	
50	7.401	0.142	105	-0.01	2.04	-1.68	6026	6026	74	6026	6027	88	
60	8.820	0.142	105	-0.03	2.05	-0.82	6026	6027	76	6027	6028	91	
70	10.239	0.142	101	-0.04	2.04	-1.14	6027	6028	79	6028	6028	94	
80	11.660	0.142	97	-0.02	2.03	-1.94	6028	6028	78	6028	6029	96	
90	13.090	0.143	103	-0.02	2.03	-1.45	6028	6029	77	6029	6029	98	
100	14.515	0.143	98	-0.01	2.05	-2.12	6028	6029	77	6029	6030	99	
110	15.943	0.143	101	-0.01	2.03	-0.83	6029	6030	77	6029	6030	101	
120	17.376	0.143	103	-0.02	2.04	-1.75	6029	6029	76	6029	6030	102	
130	18.805	0.143	102	-0.03	2.04	-1.72	6028	6029	77	6029	6029	102	
140	20.235	0.143	98	-0.03	2.02	-0.91	6028	6028	78	6028	6029	103	
150	21.660	0.143	104	-0.04	2.02	-2.22	6025	6026	78	6026	6026	102	
160	23.087	0.143	103	-0.03	2.04	-1.24	6025	6026	73	6026	6026	103	
170	24.518	0.143	97	-0.01	2.02	-1.87	6027	6027	74	6027	6028	103	
180	25.951	0.143	96	-0.01	2.03	-2.26	6027	6028	74	6028	6028	103	
190	27.377	0.143	96	-0.01	2.03	-1.67	6027	6028	74	6028	6029	103	
200	28.809	0.143	103	-0.02	2.03	-1.1	6028	6028	76	6028	6029	103	
210	30.236	0.143	102	-0.03	2.03	-1.75	6028	6029	78	6029	6029	104	
220	31.660	0.142	101	-0.03	2.02	-1.82	6028	6029	78	6029	6029	104	
230	33.092	0.143	101	-0.03	2	-1.8	6028	6029	76	6029	6029	104	

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
240	34.521	0.143	98	-0.02	2.02	-2.23	6028	6029	76	6029	6029	104	
250	35.950	0.143	98	-0.01	2.01	-0.95	6028	6029	75	6029	6029	104	
260	37.382	0.143	104	-0.01	2.03	-1.96	6028	6029	75	6029	6030	104	
270	38.811	0.143	98	-0.03	2.03	-1.62	6028	6029	76	6029	6030	104	
280	40.237	0.143	97	-0.03	2.04	-0.89	6028	6029	78	6029	6030	104	
290	41.668	0.143	95	-0.03	2.02	-1.13	6028	6029	77	6029	6030	104	
300	43.097	0.143	105	-0.02	2.01	-1.26	6028	6029	76	6029	6030	104	
310	44.526	0.143	98	-0.01	2.02	-2.15	6028	6029	75	6029	6029	105	
320	45.959	0.143	92	-0.01	2.04	-1.74	6028	6029	74	6029	6029	105	
330	47.388	0.143	97	-0.01	2.02	-1.86	6028	6029	74	6029	6029	105	
340	48.815	0.143	101	-0.04	2.03	-2.31	6028	6029	77	6029	6029	105	
350	50.244	0.143	102	-0.03	2.02	-2.14	6028	6029	76	6029	6029	105	
360	51.674	0.143	98	-0.02	2.02	-1.49	6028	6029	75	6029	6029	105	
370	53.102	0.143	96	-0.01	2.02	-1.82	6028	6029	74	6028	6029	104	
380	54.534	0.143	100	-0.01	2.03	-2.26	6028	6029	74	6028	6029	104	
390	55.963	0.143	103	-0.02	2.03	-2.17	6028	6028	74	6028	6029	104	
400	57.389	0.143	102	-0.03	2.02	-2.12	6027	6028	76	6028	6029	104	
410	58.819	0.143	98	-0.03	2.02	-1.59	6028	6028	77	6028	6029	104	
420	60.245	0.143	98	-0.02	2	-1.06	6027	6028	75	6028	6029	104	
430	61.673	0.143	98	-0.01	2.03	-2.18	6027	6028	74	6028	6028	104	
440	63.104	0.143	95	-0.01	2.02	-0.95	6027	6027	74	6027	6028	104	
450	64.532	0.143	98	-0.01	2.02	-1.71	6026	6027	73	6027	6028	104	
460	65.960	0.143	95	-0.02	2.03	-1.9	6026	6027	74	6027	6028	104	
470	67.390	0.143	102	-0.02	2.01	-1.77	6026	6027	75	6027	6027	104	
480	68.816	0.143	99	-0.03	2.02	-1.04	6026	6027	76	6027	6027	103	
490	70.239	0.142	100	-0.03	2.02	-1.18	6026	6027	76	6026	6027	103	
500	71.666	0.143	103	-0.02	2.02	-2.18	6026	6027	76	6027	6027	103	
510	73.089	0.142	102	-0.03	2.02	-1.78	6026	6027	77	6027	6027	103	
	73.08921	0.143	100.544	-0.021	2.02451	-1.6175	6027	6028	75	6028	6028	100	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT

# Reading		
512		
	T avg BEGIN	170.5
	T avg END	179.505
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	9.005
	Cp	1.001200855
	Cpa	1.000796241
512	TOTAL MINUTES	510

TOTAL BTU	395486
TOTAL BTU WITH WATER	20521
TOTAL BTU WITH STEEL	2119
BTU/HR	49191

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water	density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
0	13.402	165	176	0.76	56	173	119	44931	2353	4630	8.335616	117	1.001204	6.301726	1	170.5	750.8084	45048.5
1	13.47	165.15	175.71	0.75	56.19	173.43	119.011	45161.833	2353	4630	8.33543	117.24	1.001204	6.284914	1	170.43	748.8745	44932.47
2	13.34	165.73	176.03	0.76	56.24	173.9	119.352	45403.75	2353	4630	8.335381	117.66	1.001203	6.343225	1	170.88	757.9877	45479.26
3	13.314	165.61	176.04	0.76	56.39	174.03	119.238	45231.22	2353	4630	8.335234	117.64	1.001204	6.326442	1	170.825	755.2604	45315.62
4	13.291	165.87	176.29	0.76	56.31	174.15	119.544	45227.246	2353	4630	8.335312	117.84	1.001203	6.368179	1	171.08	762.1936	45731.62
5	13.389	166.43	176.46	0.75	56.42	174.43	119.913	45396.3	2353	4630	8.335204	118.01	1.001204	6.284744	1	171.445	754.5297	45271.78
6	13.361	166.98	177.14	0.76	56.3	174.81	120.396	45465.031	2353	4630	8.335322	118.51	1.001203	6.309839	1	172.06	760.5933	45635.6
7	13.392	167.57	177.86	0.76	56.5	175.65	120.929	45586.895	2353	4630	8.335125	119.15	1.001203	6.301355	1	172.715	762.933	45775.98
8	13.424	168.15	178.44	0.76	56.62	176.42	121.696	46053.469	2353	4630	8.335007	119.8	1.001203	6.29293	1	173.295	766.7457	46004.74
9	13.338	168.86	179.55	0.75	56.54	177.08	122.577	46184.651	2353	4630	8.335086	120.54	1.001202	6.242979	1	174.205	766.1657	45969.94
10	13.43	169.59	180.42	0.76	56.74	177.99	123.344	46868.458	2353	4630	8.334888	121.25	1.001203	6.334515	1	175.005	782.2641	46935.84
11	13.32	170.01	180.96	0.75	56.63	178.49	124.011	46863.47	2353	4630	8.334997	121.86	1.001201	6.267918	1	175.485	778.2247	46693.48
12	13.356	170.93	182.02	0.76	56.96	179.27	124.743	47253.066	2353	4630	8.33467	122.31	1.001201	6.30101	1	176.475	786.9513	47217.08
13	13.243	171.99	182.68	0.76	56.96	180.12	125.709	47664.582	2353	4630	8.33467	123.16	1.001201	6.30101	1	177.335	793.0449	47582.7
14	13.349	172.62	183.45	0.76	57.14	181.18	126.412	48150.041	2353	4630	8.334491	124.04	1.0012	6.300875	1	178.035	797.4623	47847.74
15	13.313	173.5	184.72	0.76	57.28	182.09	127.236	48027.086	2353	4630	8.334351	124.81	1.001201	6.325772	1	179.11	805.8324	48349.94
16	13.341	174.08	185.43	0.76	57.2	182.56	128.145	48434.197	2353	4630	8.334431	125.36	1.001201	6.292495	1	179.755	807.3199	48439.2
17	13.472	175.01	185.97	0.76	57.21	183.41	128.833	48856.732	2353	4630	8.334421	126.2	1.0012	6.325825	1	180.49	815.953	48957.18
18	13.303	174.87	186.09	0.76	57.4	183.46	128.819	48650.499	2353	4630	8.334231	126.06	1.0012	6.292344	1	180.48	811.5465	48692.79
19	13.313	175	185.96	0.76	57.27	183.46	128.734	48793.86	2353	4630	8.334361	126.19	1.001201	6.32578	1	180.48	815.3207	48919.24
20	13.368	174.36	185.71	0.75	57.22	182.76	128.457	48529.848	2353	4630	8.334411	125.54	1.001201	6.225805	1	180.035	800.7084	48042.5
21	13.372	174.22	185.44	0.76	57.22	182.4	128.23	48603.027	2353	4630	8.334411	125.18	1.001201	6.317484	1	179.83	811.0641	48663.84
22	13.355	174.09	185.18	0.76	57.02	182.09	127.96	48400.817	2353	4630	8.33461	125.07	1.001201	6.292631	1	179.635	806.1721	48370.33
23	13.291	173.96	184.79	0.75	57.1	181.8	127.662	47591.951	2353	4630	8.334531	124.7	1.001201	6.250898	1	179.375	798.9608	47937.65
24	13.319	173.99	184.68	0.75	56.99	181.47	127.356	47445.958	2353	4630	8.33464	124.48	1.001202	6.217641	1	179.335	792.8054	47568.32
25	13.34	173.61	184.3	0.75	56.95	181.37	127.214	48062.413	2353	4630	8.33468	124.42	1.001202	6.259345	1	178.955	797.233	47833.98
26	13.241	173.34	183.9	0.75	56.94	181.06	126.937	47840.227	2353	4630	8.33469	124.12	1.001201	6.259352	1	178.62	795.498	47729.88
27	13.223	172.97	183.79	0.75	56.97	180.67	126.618	47942.214	2353	4630	8.33466	123.7	1.001202	6.284334	1	178.38	796.6659	47799.95
28	13.264	172.99	183.28	0.74	56.93	180.5	126.39	47114.704	2353	4630	8.3347	123.57	1.001202	6.192682	1	178.135	783.6338	47018.03
29	13.289	172.57	183	0.76	56.84	180.13	126.128	47605.762	2353	4630	8.334789	123.29	1.001202	6.292766	1	177.785	794.6479	47678.87
30	13.244	172.24	182.53	0.76	56.84	180.06	125.879	47576.215	2353	4630	8.334789	123.22	1.001202	6.292766	1	177.385	793.0793	47584.76
31	13.299	172.16	182.32	0.75	56.76	179.75	125.68	47544.293	2353	4630	8.334868	122.99	1.001203	6.276156	1	177.24	789.736	47384.16
32	13.341	171.65	182.21	0.76	56.58	179.47	125.41	47574.118	2353	4630	8.335046	122.89	1.001203	6.30963	1	176.93	792.2426	47534.56
33	13.341	171.54	181.83	0.76	56.53	179.25	125.169	47440.174	2353	4630	8.335096	122.72	1.001203	6.326338	1	176.685	792.8139	47568.84
34	13.342	171.27	181.31	0.74	56.54	179.07	124.942	47042.205	2353	4630	8.335086	122.53	1.001202	6.201304	1	176.29	775.7349	46544.09
35	13.351	170.99	181.29	0.76	56.72	178.81	124.665	47314.933	2353	4630	8.334908	122.09	1.001203	6.292855	1	176.14	785.4423	47126.54
36	13.225	170.43	180.73	0.76	56.62	178.54	124.366	47003.349	2353	4630	8.335007	121.92	1.001203	6.334605	1	175.58	788.7569	47325.41
37	13.327	170.13	180.56	0.76	56.65	178.2	124.096	47035.867	2353	4630	8.334977	121.55	1.001203	6.292908	1	175.345	781.8642	46911.85
38	13.317	170.24	180.4	0.76	56.5	177.95	123.961	46831.377	2353	4630	8.335125	121.45	1.001204	6.334695	1	175.32	786.201	47172.06
39	13.318	169.66	180.22	0.75	56.11	177.9	123.819	46800.973	2353	4630	8.335509	121.79	1.001205	6.23496	1	174.94	772.9371	46376.22
40	13.298	169.42	179.58	0.76	55.87	177.26	123.713	47017.532	2353	4630	8.335743	121.39	1.001206	6.310158	1	174.5	781.59	46895.4

41	13.317	169.27	179.3	0.77	55.65	176.88	123.571	47034.403	2353	4630		8.335957	121.23	1.001206	6.385343	1	174.285	789.995	47399.7
42	13.307	169.16	179.06	0.76	55.61	176.72	123.322	46827.165	2353	4630		8.335996	121.11	1.001207	6.310349	1	174.11	779.1439	46748.63
43	13.366	168.46	178.89	0.76	55.5	176.38	123.045	46812.862	2353	4630		8.336103	120.88	1.001206	6.318766	1	173.675	778.4303	46705.82
44	13.34	168.28	178.31	0.75	55.65	176.16	122.711	46477.577	2353	4630		8.335957	120.51	1.001206	6.251968	1	173.295	768.1103	46086.62
45	13.361	168.21	178.5	0.76	55.72	175.97	122.349	46367.333	2353	4630		8.335889	120.25	1.001206	6.343612	1	173.355	777.0705	46624.23
46	13.313	167.88	178.17	0.75	55.71	175.73	121.987	46326.502	2353	4630		8.335899	120.02	1.001206	6.26026	1	173.025	764.5911	45875.46
47	13.377	167.66	177.69	0.75	55.77	175.41	121.511	46057.269	2353	4630		8.335841	119.64	1.001205	6.285224	1	172.675	764.6441	45878.65
48	13.392	167.33	177.23	0.76	55.96	175.04	121.277	46112.723	2353	4630		8.335655	119.08	1.001205	6.318427	1	172.28	767.2032	46032.19
49	13.349	167.37	177.14	0.76	55.94	174.84	120.9	46014.086	2353	4630		8.335675	118.9	1.001204	6.326777	1	172.255	765.8287	45949.72
50	13.354	166.88	176.78	0.75	56.11	174.52	120.46	45530.746	2353	4630		8.335509	118.41	1.001204	6.284973	1	171.83	757.9994	45479.97
51	13.322	166.67	176.44	0.76	56.24	174.26	120.006	45467.196	2353	4630		8.335381	118.02	1.001204	6.301548	1	171.555	757.1341	45428.04
52	13.321	166.36	176.12	0.76	56.25	173.85	119.608	45357.118	2353	4630		8.335371	117.6	1.001204	6.318211	1	171.24	756.6184	45397.1
53	13.328	165.86	175.76	0.76	56.28	173.58	119.167	45253.5	2353	4630		8.335342	117.3	1.001203	6.318189	1	170.81	753.8253	45229.52
54	13.383	165.66	175.69	0.76	56.55	173.33	118.756	44942.489	2353	4630		8.335076	116.78	1.001203	6.317988	1	170.675	751.2017	45072.1
55	13.267	165.58	175.34	0.76	56.47	173.14	118.415	44903.473	2353	4630		8.335155	116.67	1.001203	6.309712	1	170.46	748.0631	44883.78
56	13.335	165.23	175	0.75	56.66	172.82	118.052	44511.098	2353	4630		8.334967	116.16	1.001202	6.234556	1	170.115	736.8866	44213.2
57	13.3	165.04	175.07	0.76	56.73	172.64	117.747	44593.679	2353	4630		8.334898	115.91	1.001203	6.309518	1	170.055	743.8202	44629.21
58	13.338	164.56	174.58	0.76	56.64	172.32	117.491	44448.918	2353	4630		8.334987	115.68	1.001203	6.31792	1	169.57	743.1916	44591.5
59	13.28	164.63	174.53	0.76	56.58	172.08	117.271	44518.937	2353	4630		8.335046	115.5	1.001202	6.3263	1	169.58	742.7834	44567
60	13.275	164.57	174.33	0.76	56.79	171.85	116.994	44441.853	2353	4630		8.334839	115.06	1.001202	6.342812	1	169.45	742.9628	44577.77
61	13.329	164.64	174.54	0.75	56.86	171.97	117.087	44390.186	2353	4630		8.334769	115.11	1.001202	6.267746	1	169.59	734.7535	44085.21
62	13.14	164.68	174.98	0.76	56.9	172.32	117.385	44621.554	2353	4630		8.334729	115.42	1.001201	6.359399	1	169.83	747.3947	44843.68
63	13.27	165.67	175.57	0.75	57.04	172.8	118.003	44331.441	2353	4630		8.33459	115.76	1.001201	6.275947	1	170.62	741.4702	44488.21
64	13.297	166.36	176.39	0.76	57	173.68	118.706	44988.974	2353	4630		8.33463	116.68	1.001202	6.325984	1	171.375	751.8346	45110.08
65	13.332	166.68	177.1	0.76	56.92	174.27	119.423	45255.413	2353	4630		8.33471	117.35	1.001201	6.31771	1	171.89	755.3863	45323.18
66	13.33	167.4	177.82	0.75	56.98	175.06	120.275	45714.911	2353	4630		8.33465	118.08	1.001201	6.275991	1	172.61	755.7518	45345.11
67	13.355	168.11	178.54	0.76	56.97	175.83	121.199	46084.246	2353	4630		8.33466	118.86	1.001203	6.334342	1	173.325	768.6392	46118.35
68	13.366	169.09	179.38	0.77	56.62	176.49	122.179	46283.8	2353	4630		8.335007	119.87	1.001203	6.384615	1	174.235	781.0039	46860.24
69	13.469	169.53	180.09	0.76	56.67	177.32	122.946	46488.058	2353	4630		8.334957	120.65	1.001202	6.342903	1	174.81	780.7719	46846.32
70	13.283	170.11	180.94	0.77	56.79	178.03	123.89	47354.693	2353	4630		8.334839	121.24	1.001203	6.392821	1	175.525	792.9592	47577.55
71	13.224	171.12	181.55	0.76	56.61	178.77	124.842	47386.237	2353	4630		8.335017	122.16	1.001204	6.359618	1	176.335	794.903	47694.18
72	13.316	171.98	182.54	0.76	56.34	179.8	125.986	47737.031	2353	4630		8.335283	123.46	1.001203	6.309809	1	177.26	795.9042	47754.25
73	13.261	172.45	183.15	0.76	56.43	180.48	126.738	47918.743	2353	4630		8.335194	124.05	1.001204	6.318077	1	177.8	801.7045	48102.27
74	13.23	173.02	183.58	0.76	56.27	180.88	127.299	48243.968	2353	4630		8.335352	124.61	1.001203	6.351538	1	178.3	809.5172	48571.03
75	13.291	173.36	184.58	0.76	56.48	181.61	128.045	48795.529	2353	4630		8.335145	125.13	1.001203	6.368051	1	178.97	816.3782	48982.69
76	13.325	174.34	185.16	0.70	56.46	182.38	128.905	47853.3	2353	4630		8.335165	125.92	1.001203	5.80961	1	179.75	749.789	44987.34
77	13.378	174.4	185.09	0.75	56.39	182.68	129.103	48170.653	2353	4630		8.335234	126.29	1.001204	6.218084	1	179.745	803.7395	48224.37
78	13.534	174.17	184.99	0.75	56.36	182.7	128.933	48089.707	2353	4630		8.335263	126.34	1.001203	6.209771	1	179.58	801.6079	48096.47
79	13.343	174.62	185.05	0.75	56.41	182.51	128.926	47899.046	2353	4630		8.335214	126.1	1.001203	6.23474	1	179.835	804.7871	48287.23
80	13.336	174.25	184.81	0.74	56.51	182.36	128.656	47735.929	2353	4630		8.335115	125.85	1.001203	6.151315	1	179.53	792.3557	47541.34
81	13.417	174.07	184.5	0.74	56.53	182.26	128.521	47777.118	2353	4630		8.335096	125.73	1.001203	6.201311	1	179.285	797.9572	47877.43
82	13.483	173.96	184.52	0.74	56.62	182.04	128.209	47421.912	2353	4630		8.335007	125.42	1.001202	6.167905	1	179.24	791.7316	47503.9
83	13.393	173.89	184.19	0.74	56.75	181.91	127.924	47199.498	2353	4630		8.334878	125.16	1.001202	6.142805	1	179.04	786.7568	47205.41
84	13.414	173.8	184.1	0.74	56.79	181.83	127.704	47307.791	2353	4630		8.334839	125.04	1.001201	6.176115	1	178.95	789.6622	47379.73
85	13.395	173.71	183.87	0.75	56.97	181.51	127.328	47364.722	2353	4630		8.33466	124.54	1.001202	6.209322	1	178.79	791.5705	47494.23
86	13.382	173.49	183.65	0.74	56.95	181.31	127.101	47145.273	2353	4630		8.33468	124.36	1.001201	6.184332	1	178.57	786.979	47218.74
87	13.394	173.12	183.29	0.74	57.05	181.03	126.816	46974.589	2353	4630		8.33458	123.98	1.001201	6.175924	1	178.205	784.1467	47048.8
88	13.407	173.26	183.3	0.74	57.06	180.98	126.511	46980.518	2353	4630		8.33457	123.92	1.001201	6.184251	1	178.28	783.3153	46998.92
89	13.381	172.64	182.8	0.74	57.16	180.77	126.234	46858.948	2353	4630		8.334471	123.61	1.0012	6.184177	1	177.72	781.5903	46895.42
90	13.315	172.43	182.73	0.74	57.36	180.59	125.879	46689.338	2353	4630		8.334271	123.23	1.0012	6.200698	1	177.58	781.4745	46888.47
91	13.314	172.32	182.62	0.75	57.31	180.25	125.524	46800.889	2353	4630		8.334321	122.94	1.0012	6.217404	1	177.47	781.3698	46882.19
92	13.331	172.48	182.51	0.74	57.4	180.15	125.275	46606.334	2353	4630		8.334231	122.75	1.0012	6.200668	1	177.495	777.7206	46663.24
93	13.351	171.87	182.16	0.74	57.45	179.89	124.913	46450.491	2353	4630		8.334181	122.44	1.001199	6.15896	1	177.015	770.2569	46215.41
94	13.38	171.91	181.81	0.75	57.56	179.57	124.629	46286.73	2353	4630		8.334071	122.01	1.001199	6.208883	1	176.86	774.735	46484.1

95	13.384	171.7	181.33	0.74	57.55	179.38	124.288	45364.141	2353	4630		8.334081	121.83	1.001199	6.175554	1	176.515	768.4678	46108.07
96	13.338	171.31	181.48	0.72	57.56	179.08	123.926	45116.144	2353	4630		8.334071	121.52	1.001199	5.975529	1	176.395	741.4113	44484.68
97	13.341	171.08	180.98	0.73	57.66	178.75	123.635	45621.471	2353	4630		8.33397	121.09	1.001199	6.117134	1	176.03	757.1984	45431.9
98	13.432	170.88	181.04	0.74	57.79	178.57	123.365	45597.633	2353	4630		8.333839	120.78	1.001199	6.175375	1	175.96	762.7388	45764.33
99	13.26	170.74	180.5	0.74	57.58	178.38	123.159	45488.709	2353	4630		8.334051	120.8	1.001199	6.175531	1	175.62	761.4843	45689.06
100	13.364	170.4	180.3	0.73	57.64	178.07	122.811	45223.295	2353	4630		8.33399	120.43	1.001199	6.108815	1	175.35	751.1289	45067.73
101	13.235	170.2	179.97	0.74	57.78	177.89	122.456	45021.42	2353	4630		8.333849	120.11	1.001199	6.125379	1	175.085	750.9888	45059.33
102	13.337	170.09	179.73	0.74	57.66	177.61	122.193	45105.613	2353	4630		8.33397	119.95	1.001199	6.125468	1	174.91	749.3869	44963.21
103	13.359	169.61	179.51	0.73	57.64	177.28	121.937	45172.267	2353	4630		8.33399	119.64	1.001199	6.108815	1	174.56	745.7838	44747.03
104	13.332	169.52	179.28	0.74	57.62	177.08	121.71	45146.189	2353	4630		8.33401	119.46	1.0012	6.200504	1	174.4	755.5687	45334.12
105	13.368	169.15	178.92	0.74	57.45	176.81	121.554	44905.335	2353	4630		8.334181	119.36	1.001201	6.175628	1	174.035	751.5735	45094.41
106	13.323	168.88	178.51	0.74	57.24	176.68	121.532	44995.138	2353	4630		8.334391	119.44	1.001201	6.159115	1	173.695	749.4286	44965.72
107	13.509	168.79	178.55	0.74	57.08	176.29	121.298	44955.103	2353	4630		8.334551	119.21	1.001202	6.159233	1	173.67	748.0004	44880.03
108	13.285	168.15	178.18	0.74	56.9	175.83	121.106	44918.909	2353	4630		8.334729	118.93	1.001202	6.184369	1	173.165	749.8642	44991.85
109	13.251	168.17	177.8	0.74	56.92	175.79	120.879	44711.543	2353	4630		8.33471	118.87	1.001201	6.192689	1	172.985	749.4654	44967.92
110	13.386	167.66	177.82	0.74	57.01	175.5	120.567	44794.235	2353	4630		8.33462	118.49	1.001202	6.175954	1	172.74	745.5112	44730.67
111	13.354	167.68	177.45	0.75	56.83	175.22	120.382	44595.517	2353	4630		8.334799	118.39	1.001202	6.23443	1	172.565	751.4153	45084.92
112	13.259	167.32	177.09	0.73	56.79	175.01	120.027	44165.064	2353	4630		8.334839	118.22	1.001202	6.117772	1	172.205	735.1804	44110.82
113	13.298	167.22	176.72	0.74	56.83	174.67	119.835	44601.833	2353	4630		8.334799	117.84	1.001202	6.176086	1	171.97	741.0011	44460.07
114	13.479	166.99	176.49	0.74	56.73	174.46	119.508	43833.67	2353	4630		8.334898	117.73	1.001202	6.134485	1	171.74	734.0012	44040.07
115	13.434	166.74	176.38	0.74	56.81	174.06	119.281	44549.522	2353	4630		8.334819	117.25	1.001202	6.184436	1	171.56	738.5724	44314.34
116	13.372	166.27	175.91	0.74	56.81	173.93	118.89	44013.912	2353	4630		8.334819	117.12	1.001202	6.126092	1	171.09	729.2065	43752.39
117	13.47	165.96	175.59	0.74	56.82	173.63	118.635	44073.953	2353	4630		8.334809	116.81	1.001202	6.184428	1	170.775	734.5713	44074.28
118	13.494	165.76	175.26	0.75	56.89	173.45	118.415	44134.62	2353	4630		8.334739	116.56	1.001202	6.217716	1	170.51	737.1556	44229.34
119	13.368	165.43	175.07	0.75	56.89	173.09	118.067	43824.094	2353	4630		8.334739	116.2	1.001202	6.234385	1	170.25	736.96	44217.6
120	13.362	164.98	174.61	0.74	56.76	172.79	117.69	43557.359	2353	4630		8.334868	116.03	1.001203	6.167803	1	169.795	726.7617	43605.7
121	13.334	164.77	174.4	0.74	56.61	172.48	117.392	43453.488	2353	4630		8.335017	115.87	1.001202	6.192917	1	169.585	727.8731	43672.38
122	13.453	164.33	174.1	0.75	56.71	172.14	116.959	43573.92	2353	4630		8.334918	115.43	1.001201	6.234519	1	169.215	730.0591	43803.55
123	13.405	164.26	173.5	0.75	56.97	171.82	116.604	43192.011	2353	4630		8.33466	114.85	1.001202	6.217656	1	168.88	725.8748	43552.49
124	13.447	163.94	173.31	0.74	56.91	171.65	116.291	43133.706	2353	4630		8.33472	114.74	1.001202	6.159358	1	168.625	717.1386	43028.31
125	13.372	163.76	173.26	0.74	56.92	171.3	116	43004.577	2353	4630		8.33471	114.38	1.001202	6.184355	1	168.51	718.2473	43094.84
126	13.349	163.71	172.81	0.75	56.87	170.95	115.694	42948.512	2353	4630		8.334759	114.08	1.001201	6.259404	1	168.26	725.0456	43502.73
127	13.366	163.41	172.65	0.73	56.97	170.74	115.425	42132.895	2353	4630		8.33466	113.77	1.001202	6.059298	1	168.03	700.2349	42014.09
128	13.384	162.95	172.72	0.74	56.91	170.68	115.275	42741.329	2353	4630		8.33472	113.77	1.001201	6.184362	1	167.835	713.7586	42825.51
129	13.385	163.18	172.69	0.74	57.08	170.59	115.19	42519.379	2353	4630		8.334551	113.51	1.001201	6.150898	1	167.935	709.3729	42562.37
130	13.375	163.42	172.79	0.74	57.11	170.68	115.354	42738.696	2353	4630		8.334521	113.57	1.001201	6.17588	1	168.105	713.2681	42796.09
131	13.386	163.5	173	0.74	57.06	171	115.694	42988.212	2353	4630		8.33457	113.94	1.001201	6.167582	1	168.25	714.4093	42864.56
132	13.42	163.97	173.61	0.74	57.07	171.37	116.085	42998.969	2353	4630		8.33456	114.3	1.001201	6.184244	1	168.79	718.7603	43125.62
133	13.334	164.19	173.83	0.74	57.03	171.7	116.405	43047.156	2353	4630		8.3346	114.67	1.001201	6.134266	1	169.01	714.9171	42895.03
134	13.402	164.33	174.22	0.74	56.96	172.06	116.682	43316.274	2353	4630		8.33467	115.1	1.001201	6.134317	1	169.275	716.6242	42997.45
135	13.259	164.67	174.44	0.74	57.04	172.38	117.044	43299.398	2353	4630		8.33459	115.34	1.001201	6.125924	1	169.555	717.864	43071.84
136	13.34	164.88	174.52	0.74	56.99	172.39	117.108	43463.7	2353	4630		8.33464	115.4	1.001201	6.150964	1	169.7	721.1925	43271.55
137	13.305	165.11	174.75	0.74	57.02	172.67	117.385	43454.464	2353	4630		8.33461	115.65	1.001201	6.192615	1	169.93	727.7934	43667.61
138	13.367	165.36	175.12	0.74	57	172.77	117.683	43670.464	2353	4630		8.33463	115.77	1.001201	6.167626	1	170.24	726.6965	43601.79
139	13.437	165.72	175.22	0.75	57.1	173.16	117.939	43711.728	2353	4630		8.334531	116.06	1.001201	6.209225	1	170.47	733.1893	43991.36
140	13.364	165.88	175.64	0.74	57.12	173.43	118.173	43706.432	2353	4630		8.334511	116.31	1.001201	6.1342	1	170.76	725.7673	43546.04
141	13.239	166.02	175.92	0.74	57.13	173.74	118.528	43835.471	2353	4630		8.334501	116.61	1.001201	6.150862	1	170.97	729.9247	43795.48
142	13.518	166.27	176.17	0.74	57.19	173.97	118.841	43930.516	2353	4630		8.334441	116.78	1.0012	6.167486	1	171.22	733.8301	44029.8
143	13.405	167.15	177.05	0.74	57.28	174.66	119.586	44087.671	2353	4630		8.334351	117.38	1.0012	6.150751	1	172.1	736.4264	44185.59
144	13.355	167.76	178.06	0.74	57.36	175.52	120.425	44653.911	2353	4630		8.334271	118.16	1.0012	6.150692	1	172.91	741.5861	44495.17
145	13.431	168.71	179.13	0.74	57.32	176.39	121.319	44946.538	2353	4630		8.334311	119.07	1.0012	6.175724	1	173.92	750.1318	45007.91
146	13.406	169.38	179.67	0.74	57.39	177.3	122.243	45291.397	2353	4630		8.334241	119.91	1.0012	6.175673	1	174.525	755.8383	45350.3
147	13.394	170.62	180.78	0.74	57.51	178.62	123.216	45750.446	2353	4630		8.334121	121.11	1.001198	6.200586	1	175.7	764.9264	45895.58
148	13.556	171.63	182.06	0.74	58.07	180.2	124.253	46042.572	2353	4630		8.333557	122.13	1.001197	6.200166	1	176.845	771.3114	46278.68

149	13.385	172.22	182.91	0.74	58.25	181.57	125.368	46562.283	2353	4630	
150	13.431	173.27	183.97	0.73	58.24	182.65	126.497	46797.609	2353	4630	
151	13.393	174.3	185.26	0.74	58.48	183.64	127.399	47266.205	2353	4630	
152	13.519	175.07	185.9	0.74	58.45	184.4	128.358	47577.934	2353	4630	
153	13.384	175.32	186.14	0.74	58.35	184.74	128.642	47658.021	2353	4630	
154	13.434	175.31	186	0.74	58.34	184.67	128.841	47788.268	2353	4630	
155	13.442	175.04	186	0.75	58.08	184.01	128.578	47712.319	2353	4630	
156	13.429	175.19	185.62	0.74	57.77	183.61	128.557	47619.739	2353	4630	
157	13.394	174.85	185.02	0.73	57.82	183.06	128.258	47522.489	2353	4630	
158	13.39	174.48	184.77	0.74	57.78	182.72	127.932	47349.928	2353	4630	
159	13.274	174.24	184.53	0.74	57.74	182.56	127.711	47301.028	2353	4630	
160	13.468	174.49	184.53	0.74	57.8	182.26	127.456	47088.385	2353	4630	
161	13.381	174.17	184.34	0.74	57.75	182.15	127.228	47170.227	2353	4630	
162	13.388	173.85	184.01	0.74	57.69	181.92	127.037	47122.998	2353	4630	
163	13.619	173.76	183.66	0.74	57.74	181.66	126.745	46719.525	2353	4630	
164	13.449	173.39	183.42	0.74	57.63	181.44	126.575	46739.161	2353	4630	
165	13.402	173.53	183.43	0.73	57.58	181.33	126.319	46738.185	2353	4630	
166	13.467	173.11	182.88	0.74	57.62	181.13	126.199	46827.363	2353	4630	
167	13.396	173.21	182.98	0.74	57.72	180.86	125.915	46449.025	2353	4630	
168	13.4	172.53	182.7	0.75	57.77	180.54	125.638	46587.391	2353	4630	
169	13.369	172.39	182.56	0.74	57.57	180.36	125.368	46300.331	2353	4630	
170	13.37	172.2	182.23	0.73	57.64	180.3	125.176	46326.579	2353	4630	
171	13.292	172	181.9	0.73	57.57	179.94	124.892	46149.595	2353	4630	
172	13.442	171.68	181.58	0.74	57.64	179.7	124.523	46155.356	2353	4630	
173	13.48	171.58	181.48	0.75	57.61	179.43	124.324	46187.139	2353	4630	
174	13.361	171.22	180.99	0.74	57.65	179.23	123.954	45761	2353	4630	
175	13.38	171.12	181.02	0.72	57.55	178.9	123.628	44757.528	2353	4630	
176	13.447	170.49	180.52	0.74	57.72	178.74	123.315	45685.048	2353	4630	
177	13.366	170.39	180.29	0.74	57.68	178.47	123.059	45522.129	2353	4630	
178	13.377	170.54	180.18	0.73	57.77	178.13	122.768	44207.545	2353	4630	
179	13.402	170.17	179.94	0.74	57.72	178.03	122.527	45088.122	2353	4630	
180	13.379	169.79	179.56	0.742	57.75	177.68	122.264	45288.075	2353	4630	
181	13.431	169.57	179.47	0.74	57.79	177.48	121.966	45026.554	2353	4630	
182	13.346	169.33	179.36	0.739	57.68	177.2	121.71	45080.968	2353	4630	
183	13.287	169.05	178.95	0.738	57.53	176.82	121.405	44954.887	2353	4630	
184	13.402	168.55	178.58	0.737	57.75	176.66	121.035	44884.625	2353	4630	
185	13.41	168.7	178.07	0.739	57.71	176.38	120.723	44733.391	2353	4630	
186	13.393	168.36	177.99	0.747	57.69	176	120.389	44666.218	2353	4630	
187	13.326	167.96	177.73	0.739	57.63	175.76	120.211	44515.72	2353	4630	
188	13.37	167.57	177.34	0.74	57.57	175.41	119.835	44390.231	2353	4630	
189	13.401	167.49	177.13	0.734	57.76	175.15	119.53	44094.853	2353	4630	
190	13.426	167.36	176.86	0.739	57.56	175.03	119.302	44312.074	2353	4630	
191	13.393	166.98	176.35	0.741	57.64	174.62	118.969	43947.918	2353	4630	
192	13.37	166.48	176.11	0.738	57.6	174.28	118.649	44014.42	2353	4630	
193	13.544	166.24	175.74	0.737	57.42	174.06	118.55	43836.87	2353	4630	
194	13.466	165.99	175.76	0.738	57.24	173.71	118.422	43845.195	2353	4630	
195	13.276	165.76	175.39	0.737	57.07	173.5	118.273	43734.984	2353	4630	
196	13.275	165.79	175.16	0.744	56.84	173.23	118.067	43789.554	2353	4630	
197	13.328	165.29	174.8	0.742	57	172.89	117.79	43718.891	2353	4630	
198	13.199	165.09	174.46	0.738	56.73	172.46	117.427	43625.416	2353	4630	
199	13.223	164.73	174.23	0.741	56.76	172.25	117.172	43501.015	2353	4630	
200	13.287	164.48	173.98	0.739	56.64	171.84	116.795	43372.962	2353	4630	
201	13.378	163.98	173.22	0.74	56.67	171.5	116.462	43133.891	2353	4630	
202	13.321	163.88	173.25	0.74	56.77	171.22	116.17	43166.088	2353	4630	

8.333374	123.32	1.001197	6.166697	1	177.565	774.0319	46441.91	
8.333384	124.41	1.001196	6.108371	1	178.62	773.6149	46416.89	
8.33314	125.16	1.001196	6.18319	1	179.78	788.6746	47320.48	
8.333171	125.95	1.001197	6.174879	1	180.485	793.5436	47612.62	
8.333272	126.39	1.001197	6.183288	1	180.73	796.3824	47782.95	
8.333283	126.33	1.001198	6.158296	1	180.655	794.3912	47663.47	
8.333546	125.93	1.001199	6.225159	1	180.52	801.378	48082.68	
8.333859	125.84	1.001198	6.167056	1	180.405	793.7684	47626.1	
8.333809	125.24	1.001199	6.117016	1	179.935	785.4966	47129.8	
8.333849	124.94	1.001199	6.158715	1	179.625	788.8412	47330.47	
8.33389	124.82	1.001199	6.125409	1	179.385	783.2197	46993.18	
8.333829	124.46	1.001199	6.192035	1	179.51	790.1581	47409.49	
8.33388	124.4	1.001199	6.183739	1	179.255	787.688	47261.28	
8.33394	124.23	1.001199	6.167116	1	178.93	784.391	47063.46	
8.33389	123.92	1.001199	6.142077	1	178.71	779.411	46764.66	
8.334	123.81	1.001199	6.16716	1	178.405	781.5445	46892.67	
8.334051	123.75	1.001199	6.083857	1	178.48	769.4283	46165.7	
8.33401	123.51	1.001199	6.183836	1	177.995	781.3295	46879.77	
8.33391	123.14	1.001199	6.175427	1	178.095	778.511	46710.66	
8.333859	122.77	1.001199	6.233727	1	177.615	784.1323	47047.94	
8.334061	122.79	1.001199	6.158871	1	177.475	773.0512	46383.07	
8.33399	122.66	1.001199	6.117149	1	177.215	766.6386	45998.32	
8.334061	122.37	1.001199	6.108866	1	176.95	763.8634	45831.8	
8.33399	122.06	1.001199	6.133817	1	176.63	764.7172	45883.03	
8.33402	121.82	1.001199	6.217179	1	176.53	773.8714	46432.29	
8.33398	121.58	1.001199	6.133809	1	176.105	761.2222	45673.33	
8.334081	121.35	1.001199	5.975536	1	176.07	739.6292	44377.75	
8.33391	121.02	1.001199	6.192095	1	175.505	764.4937	45869.62	
8.33395	120.79	1.001199	6.167123	1	175.34	759.8297	45589.78	
8.333859	120.36	1.001199	6.058716	1	175.36	744.7081	44682.49	
8.33391	120.31	1.001199	6.125424	1	175.055	751.4295	45085.77	
8.33388	119.93	1.001199	6.183739	1	174.675	756.9548	45417.29	
8.333839	119.69	1.001199	6.167041	1	174.52	753.0712	45184.27	
8.33395	119.52	1.0012	6.158789	1	174.345	750.4854	45029.12	
8.334101	119.29	1.001199	6.150566	1	174	747.6046	44856.28	
8.33388	118.91	1.001199	6.142069	1	173.565	744.2966	44657.8	
8.33392	118.67	1.001199	6.158767	1	173.385	744.3962	44663.77	
8.33394	118.31	1.001199	6.225453	1	173.175	750.3748	45022.49	
8.334	118.13	1.001199	6.158826	1	172.845	741.2466	44474.8	
8.334061	117.84	1.001199	6.167205	1	172.455	739.9329	44395.97	
8.33387	117.39	1.001199	6.11706	1	172.31	732.0492	43922.95	
8.334071	117.47	1.001199	6.158878	1	172.11	735.6476	44138.85	
8.33399	116.98	1.001199	6.175487	1	171.665	735.5726	44134.35	
8.33403	116.68	1.0012	6.150514	1	171.295	730.628	43837.68	
8.334211	116.64	1.001201	6.142314	1	170.99	729.0454	43742.73	
8.334391	116.47	1.001201	6.150781	1	170.875	729.2626	43755.76	
8.33456	116.43	1.001202	6.142571	1	170.575	727.3735	43642.41	
8.334789	116.39	1.001201	6.201083	1	170.475	733.0228	43981.37	
8.33463	115.89	1.001202	6.184296	1	170.045	729.324	43759.44	
8.334898	115.73	1.001202	6.151155	1	169.775	723.18	43390.8	
8.334868	115.49	1.001203	6.176137	1	169.48	724.5407	43472.44	
8.334987	115.2	1.001203	6.159555	1	169.23	720.2704	43216.22	
8.334957	114.83	1.001202	6.167868	1	168.6	719.1858	43151.15	
8.334858	114.45	1.001202	6.167795	1	168.565	717.3742	43042.45	

203	13.365	163.39	173.03	0.747	56.75	170.96	115.893	43115.004	2353	4630
204	13.379	163.26	172.63	0.746	56.82	170.72	115.68	42970.21	2353	4630
205	13.273	163.57	172.8	0.741	56.79	170.82	115.638	43010.039	2353	4630
206	13.351	163.7	173.33	0.742	56.86	171.12	115.95	43050.504	2353	4630
207	13.331	163.99	173.76	0.736	56.96	171.39	116.256	43079.846	2353	4630
208	13.311	164.94	174.04	0.738	56.98	171.96	116.866	43250.83	2353	4630
209	13.477	165.37	175.13	0.739	57.21	172.72	117.463	43522.78	2353	4630
210	13.353	165.9	175.67	0.74	57.16	173.27	118.187	43797.756	2353	4630
211	13.37	166.56	176.73	0.742	57.29	174.12	119.011	44108.181	2353	4630
212	13.362	167.66	177.56	0.732	57.33	174.83	119.835	43937.981	2353	4630
213	13.399	168.32	178.75	0.74	57.33	175.92	120.986	44797.617	2353	4630
214	13.319	169.27	179.56	0.744	57.56	176.91	121.824	45067.994	2353	4630
215	13.448	170.11	180.54	0.738	57.61	177.86	122.811	45405.969	2353	4630
216	13.343	170.92	181.35	0.739	57.77	178.79	123.706	45694.782	2353	4630
217	13.296	172.12	182.42	0.735	57.64	179.7	124.849	45671.306	2353	4630
218	13.379	172.79	183.35	0.744	57.79	180.68	125.659	46486.885	2353	4630
219	13.374	173.98	184.28	0.739	57.79	181.88	126.888	47075.273	2353	4630
220	13.419	175.03	185.32	0.731	57.78	182.65	127.797	46960.348	2353	4630
221	13.324	174.91	185.34	0.737	57.72	183.2	128.336	47466.164	2353	4630
222	13.473	174.92	185.61	0.739	57.6	183.27	128.557	47464.232	2353	4630
223	13.421	175.07	185.5	0.745	57.62	183.35	128.599	47720.518	2353	4630
224	13.398	174.93	185.22	0.74	57.67	183.1	128.365	47476.939	2353	4630
225	13.315	174.63	184.93	0.743	57.64	182.95	128.137	47485.607	2353	4630
226	13.449	174.39	184.95	0.741	57.46	182.73	127.924	47513.628	2353	4630
227	13.406	174.4	184.7	0.744	57.67	182.56	127.683	47239.25	2353	4630
228	13.404	174.01	184.44	0.744	57.48	182.39	127.562	47585.881	2353	4630
229	13.376	173.89	184.32	0.739	57.56	182.1	127.285	47155.806	2353	4630
230	13.402	173.64	183.54	0.741	57.57	181.93	127.044	47045.629	2353	4630
231	13.385	173.36	183.79	0.744	57.63	181.74	126.76	46932.434	2353	4630
232	13.404	173.51	183.54	0.734	57.64	181.57	126.532	46675.043	2353	4630
233	13.396	173.2	183.5	0.73	57.66	181.41	126.362	46581.93	2353	4630
234	13.386	173.08	183.11	0.747	57.81	181.24	126.12	46711.901	2353	4630
235	13.385	172.8	182.84	0.735	57.66	180.93	125.929	46460.791	2353	4630
236	13.354	172.69	182.86	0.743	57.55	180.77	125.673	46369.007	2353	4630
237	13.377	172.42	182.58	0.74	57.54	180.51	125.531	46389.752	2353	4630
238	13.381	172.3	182.33	0.742	57.55	180.4	125.375	46349.015	2353	4630
239	13.344	171.78	181.81	0.735	57.5	179.99	125.147	46453.644	2353	4630
240	13.33	171.91	181.81	0.742	57.29	179.87	125.048	46431.601	2353	4630
241	13.461	171.25	181.28	0.746	57.23	179.57	124.778	46346.871	2353	4630
242	13.326	171.14	181.44	0.739	57.18	179.35	124.494	45933.756	2353	4630
243	13.384	171.13	180.9	0.741	57.17	179.04	124.267	46073.15	2353	4630
244	13.347	170.74	180.77	0.737	57.18	178.8	124.004	45992.071	2353	4630
245	13.348	170.46	180.36	0.744	57.16	178.48	123.72	45913.96	2353	4630
246	13.333	170.35	180.38	0.745	57.11	178.38	123.528	45872.479	2353	4630
247	13.372	169.95	179.98	0.744	57.05	178.02	123.202	45698.429	2353	4630
248	13.395	169.94	179.71	0.738	57.3	177.77	122.832	45399.304	2353	4630
249	13.425	169.52	179.42	0.737	57.15	177.51	122.548	45426.306	2353	4630
250	13.349	169.42	179.06	0.744	57.25	177.23	122.193	45080.666	2353	4630
251	13.421	169.04	178.67	0.741	57.26	177	121.831	45154.269	2353	4630
252	13.562	168.78	178.82	0.74	57.34	176.59	121.504	44938.573	2353	4630
253	13.399	168.8	178.3	0.743	57.41	176.36	121.199	44895.304	2353	4630
254	13.367	168.29	177.79	0.738	57.24	176.01	120.844	44736.424	2353	4630
255	13.357	167.99	177.76	0.738	57.34	175.68	120.595	44751.451	2353	4630
256	13.526	167.73	177.63	0.742	57.2	175.5	120.297	44598.285	2353	4630

8.334878	114.21	1.001202	6.226154	1	168.21	722.435	43346.1	
8.334809	113.9	1.001202	6.217767	1	167.945	720.136	43208.16	
8.334839	114.03	1.001202	6.176115	1	168.185	715.052	42903.12	
8.334769	114.26	1.001201	6.184399	1	168.515	717.9426	43076.56	
8.33467	114.43	1.001201	6.134317	1	168.875	714.008	42840.48	
8.33465	114.98	1.001201	6.150972	1	169.49	719.7025	43182.15	
8.334421	115.51	1.001201	6.159137	1	170.25	724.3395	43460.37	
8.334471	116.11	1.0012	6.167508	1	170.785	729.7943	43787.66	
8.334341	116.83	1.0012	6.184081	1	171.645	736.857	44211.42	
8.334301	117.5	1.0012	6.100708	1	172.61	731.9558	43917.35	
8.334301	118.59	1.001199	6.167383	1	173.535	747.0619	44823.72	
8.334071	119.35	1.001199	6.200549	1	174.415	756.2815	45376.89	
8.33402	120.25	1.001199	6.150507	1	175.325	756.2553	45375.32	
8.333859	121.02	1.001199	6.158722	1	176.135	762.7845	45767.07	
8.33399	122.06	1.001199	6.125483	1	177.27	765.6771	45940.62	
8.333839	122.89	1.001199	6.200376	1	178.07	780.067	46804.02	
8.333839	124.09	1.001199	6.158707	1	179.13	782.4027	46944.16	
8.333849	124.87	1.001199	6.092044	1	180.175	779.4783	46768.7	
8.33391	125.48	1.001199	6.142092	1	180.125	789.1968	47351.81	
8.33403	125.67	1.001199	6.158849	1	180.265	792.7126	47562.75	
8.33401	125.73	1.001199	6.208838	1	180.285	799.4077	47964.46	
8.33396	125.43	1.001199	6.16713	1	180.075	792.593	47555.58	
8.33399	125.31	1.0012	6.192155	1	179.78	794.3961	47663.76	
8.334171	125.27	1.001199	6.175621	1	179.67	790.9573	47457.44	
8.33396	124.89	1.0012	6.200466	1	179.55	792.6439	47558.64	
8.334151	124.91	1.001199	6.200608	1	179.225	791.9107	47514.64	
8.334071	124.54	1.001199	6.158878	1	179.105	784.873	47092.38	
8.334061	124.36	1.001199	6.175539	1	178.59	785.506	47130.36	
8.334	124.11	1.001199	6.200496	1	178.575	786.9174	47215.04	
8.33399	123.93	1.001199	6.117149	1	178.525	774.9432	46496.59	
8.33397	123.75	1.001199	6.083798	1	178.35	769.6823	46180.94	
8.333819	123.43	1.001199	6.225363	1	178.095	786.0842	47165.05	
8.33397	123.27	1.001199	6.125468	1	177.82	772.2993	46337.96	
8.334081	123.22	1.001199	6.192222	1	177.775	779.1285	46747.71	
8.334091	122.97	1.001199	6.167227	1	177.5	775.1068	46506.41	
8.334081	122.85	1.0012	6.183888	1	177.315	776.235	46574.1	
8.334131	122.49	1.0012	6.125586	1	176.795	767.5189	46051.13	
8.334341	122.58	1.001201	6.184081	1	176.86	774.2354	46454.12	
8.334401	122.34	1.001201	6.217463	1	176.265	776.7341	46604.05	
8.334451	122.17	1.001201	6.159159	1	176.29	767.6991	46061.94	
8.334461	121.87	1.001201	6.175835	1	176.015	768.374	46102.44	
8.334451	121.62	1.001201	6.14249	1	175.755	762.608	45756.48	
8.334471	121.32	1.001201	6.200846	1	175.41	768.09	46085.4	
8.334521	121.27	1.001201	6.209218	1	175.365	767.9336	46076.02	
8.33458	120.97	1.0012	6.200928	1	174.965	764.8837	45893.02	
8.334331	120.47	1.001201	6.150736	1	174.825	756.4145	45384.87	
8.334481	120.36	1.0012	6.142512	1	174.47	753.6563	45219.38	
8.334381	119.98	1.0012	6.200779	1	174.24	758.6014	45516.08	
8.334371	119.74	1.0012	6.175769	1	173.855	753.3031	45198.19	
8.334291	119.25	1.0012	6.167375	1	173.8	750.26	45015.6	
8.334221	118.95	1.001201	6.192326	1	173.55	751.4047	45084.28	
8.334391	118.77	1.0012	6.150781	1	173.04	744.177	44650.62	
8.334291	118.34	1.001201	6.150707	1	172.875	742.6351	44558.1	
8.334431	118.3	1.001201	6.184148	1	172.68	744.8276	44689.65	

257	13.377	167.22	177.12	0.74	57.22	175.21	120.02	44497.294	2353	4630
258	13.387	166.99	176.75	0.74	57.26	175.06	119.636	44349.499	2353	4630
259	13.383	166.86	176.36	0.745	57.26	174.64	119.338	44331.874	2353	4630
260	13.381	166.71	176.22	0.743	57.31	174.39	119.047	44349.88	2353	4630
261	13.325	166.19	176.22	0.742	57.31	174.02	118.67	44097.026	2353	4630
262	13.379	166.08	175.58	0.746	57.27	173.68	118.344	44030.016	2353	4630
263	13.347	165.81	175.45	0.751	57.33	173.56	118.01	43828.268	2353	4630
264	13.307	165.58	175.08	0.739	57.43	173.28	117.669	43605.466	2353	4630
265	13.242	165.04	174.81	0.739	57.36	172.91	117.229	43488.359	2353	4630
266	13.371	165.07	174.31	0.746	57.52	172.63	116.944	43336.536	2353	4630
267	13.323	164.53	174.43	0.736	57.58	172.38	116.533	43184.467	2353	4630
268	13.516	164.41	173.91	0.743	57.46	172.09	116.284	43069.704	2353	4630
269	13.308	164.41	173.91	0.736	57.66	171.84	115.929	42486.521	2353	4630
270	13.347	164.28	173.65	0.743	57.52	171.78	115.808	42814.286	2353	4630
271	13.336	164.3	173.8	0.742	57.68	171.74	115.822	42916.366	2353	4630
272	13.449	164.54	174.18	0.743	57.66	171.91	116.007	42959.025	2353	4630
273	13.476	164.93	174.17	0.742	57.58	172.26	116.426	43074.996	2353	4630
274	13.337	164.91	174.67	0.735	57.49	172.48	116.802	43367.539	2353	4630
275	13.35	165.45	175.34	0.74	57.7	172.98	117.25	43478.886	2353	4630
276	13.306	165.68	175.71	0.74	57.74	173.44	117.768	43678.079	2353	4630
277	13.279	166.48	176.38	0.74	57.68	174.05	118.514	43978.264	2353	4630
278	13.371	167.43	177.32	0.741	57.57	174.8	119.274	44204.507	2353	4630
279	13.379	168.08	177.84	0.742	57.62	175.46	119.991	44553.522	2353	4630
280	13.406	168.72	178.48	0.741	57.67	176.28	120.915	44809.686	2353	4630
281	13.364	169.53	179.69	0.74	57.62	177.15	121.781	45072.107	2353	4630
282	13.37	170.31	180.47	0.733	57.68	177.99	122.704	45327.677	2353	4630
283	13.28	171.11	181.41	0.739	57.83	178.9	123.649	45856.711	2353	4630
284	13.357	172.17	182.46	0.736	57.83	179.81	124.679	46192.905	2353	4630
285	13.315	172.83	183.52	0.742	57.83	180.89	125.893	46577.175	2353	4630
286	13.615	173.99	184.68	0.742	57.86	182.07	127.086	47165.438	2353	4630
287	13.353	174.89	185.19	0.741	57.7	182.77	128.038	47423.22	2353	4630
288	13.488	175.05	185.61	0.742	57.87	183.22	128.386	47620.059	2353	4630
289	13.294	175.17	185.34	0.74	57.86	183.33	128.422	47616.3	2353	4630
290	13.422	175.02	185.19	0.744	57.7	183.25	128.322	47612.375	2353	4630
291	13.371	174.92	185.22	0.763	57.94	183.22	128.358	48952.89	2353	4630
292	13.406	174.91	184.68	0.762	57.73	182.97	128.059	48908.683	2353	4630
293	13.345	174.39	184.69	0.759	57.8	182.8	127.811	48657.192	2353	4630
294	13.409	174.26	184.16	0.759	57.8	182.44	127.52	48601.301	2353	4630
295	13.428	174.15	184.45	0.756	57.76	182.4	127.349	48640.131	2353	4630
296	13.393	173.89	183.79	0.757	57.83	182.04	127.079	48335.814	2353	4630
297	13.513	173.73	184.03	0.733	57.74	181.96	126.973	47773.995	2353	4630
298	13.293	174.27	183.78	0.684	57.81	181.72	126.745	43515.621	2353	4630
299	13.455	173.86	183.37	0.725	57.87	181.72	126.511	46021.559	2353	4630
300	13.483	173.86	183.5	0.732	57.74	181.47	126.312	46126.684	2353	4630
301	13.378	173.71	183.22	0.729	57.78	181.21	126.092	46014.56	2353	4630
302	13.45	173.18	182.95	0.734	57.85	181.15	125.9	46204.573	2353	4630
303	13.43	173.03	182.8	0.742	57.63	180.95	125.822	46495.912	2353	4630
304	13.426	172.5	182.4	0.747	57.49	180.53	125.645	46682.851	2353	4630
305	13.408	172.63	182.4	0.744	57.49	180.41	125.396	46629.371	2353	4630
306	13.373	172.36	182.26	0.738	57.48	180.34	125.261	46405.914	2353	4630
307	13.367	172.2	181.7	0.736	57.45	180.01	124.998	46418.393	2353	4630
308	13.385	171.68	181.58	0.742	57.53	179.6	124.579	46246.798	2353	4630
309	13.406	171.7	181.33	0.741	57.75	179.5	124.317	46251.379	2353	4630
310	13.335	171.4	181.17	0.742	57.52	179.29	124.04	46015.064	2353	4630

8.334411	117.99	1.0012	6.167464	1	172.17	741.1076	44466.46	
8.334371	117.8	1.0012	6.167435	1	171.87	738.7329	44323.98	
8.334371	117.38	1.0012	6.209106	1	171.61	741.8717	44512.3	
8.334321	117.08	1.0012	6.192401	1	171.465	738.0715	44284.29	
8.334321	116.71	1.0012	6.184066	1	171.205	734.7441	44084.64	
8.334361	116.41	1.0012	6.217433	1	170.83	736.679	44200.74	
8.334301	116.23	1.0012	6.25906	1	170.63	739.5179	44371.08	
8.334201	115.85	1.0012	6.158975	1	170.33	725.5901	43535.41	
8.334271	115.55	1.0012	6.159026	1	169.925	722.8826	43372.96	
8.334111	115.11	1.001199	6.217247	1	169.69	727.9417	43676.5	
8.334051	114.8	1.0012	6.133861	1	169.48	715.6548	42939.29	
8.334171	114.63	1.001199	6.192289	1	169.16	720.9275	43255.65	
8.33397	114.18	1.0012	6.133802	1	169.16	711.9385	42716.31	
8.334111	114.26	1.001199	6.192244	1	168.965	717.9712	43078.27	
8.33395	114.06	1.001199	6.183791	1	169.05	717.0778	43024.67	
8.33397	114.25	1.001199	6.19214	1	169.36	719.1931	43151.59	
8.334051	114.68	1.0012	6.183866	1	169.55	720.8264	43249.59	
8.334141	114.99	1.001199	6.125594	1	169.79	716.3394	42980.36	
8.33393	115.28	1.001199	6.167108	1	170.395	723.9603	43437.62	
8.33389	115.7	1.001199	6.167078	1	170.695	727.1553	43629.32	
8.33395	116.37	1.001199	6.167123	1	171.43	731.767	43906.02	
8.334061	117.23	1.001199	6.175539	1	172.375	737.4645	44247.87	
8.33401	117.84	1.001199	6.183836	1	172.96	742.8943	44573.66	
8.33396	118.61	1.001199	6.175464	1	173.6	747.6017	44856.1	
8.33401	119.53	1.001199	6.167168	1	174.61	751.9443	45116.66	
8.33395	120.31	1.001198	6.108785	1	175.39	750.4707	45028.24	
8.333799	121.07	1.001198	6.158677	1	176.26	762.427	45745.62	
8.333799	121.98	1.001198	6.133676	1	177.315	765.6571	45939.43	
8.333799	123.06	1.001198	6.183679	1	178.175	779.4148	46764.89	
8.333769	124.21	1.001199	6.183656	1	179.335	786.7983	47207.9	
8.33393	125.07	1.001198	6.175442	1	180.04	791.6388	47498.33	
8.333759	125.35	1.001198	6.183649	1	180.33	794.8453	47690.72	
8.333769	125.47	1.001199	6.166989	1	180.255	792.9266	47575.59	
8.33393	125.55	1.001198	6.200444	1	180.105	796.6066	47796.4	
8.333688	125.28	1.001199	6.358604	1	180.07	817.1561	49029.37	
8.3339	125.24	1.001199	6.350432	1	179.795	814.2046	48852.28	
8.333829	125	1.001199	6.325376	1	179.54	809.4217	48565.3	
8.333829	124.64	1.001199	6.325376	1	179.21	807.5789	48454.73	
8.33387	124.64	1.001198	6.300405	1	179.3	803.3119	48198.71	
8.333799	124.21	1.001199	6.308686	1	178.84	802.6626	48159.75	
8.33389	124.22	1.001199	6.108741	1	178.88	776.5748	46594.49	
8.333819	123.91	1.001198	5.700332	1	179.025	723.3544	43401.26	
8.333759	123.85	1.001199	6.041975	1	178.615	765.2926	45917.56	
8.33389	123.73	1.001199	6.100407	1	178.68	771.4783	46288.7	
8.333849	123.43	1.001198	6.075376	1	178.465	766.9744	46018.46	
8.333779	123.3	1.001199	6.116994	1	178.065	771.053	46263.18	
8.334	123.32	1.0012	6.183828	1	177.915	778.995	46739.7	
8.334141	123.04	1.0012	6.225603	1	177.45	783.1543	46989.26	
8.334141	122.92	1.0012	6.200601	1	177.515	778.4633	46707.8	
8.334151	122.86	1.0012	6.150603	1	177.31	771.3551	46281.3	
8.334181	122.56	1.0012	6.133957	1	176.95	767.6521	46059.12	
8.334101	122.07	1.001199	6.183903	1	176.63	771.3079	46278.47	
8.33388	121.75	1.0012	6.175405	1	176.515	768.6287	46117.72	
8.334111	121.77	1.001199	6.18391	1	176.285	767.9719	46078.32	

311	13.396	171.16	180.66	0.747	57.67	179.06	123.741	45984.928	2353	4630
312	13.361	171.14	180.64	0.741	57.58	178.74	123.443	45849.844	2353	4630
313	13.411	170.72	180.49	0.745	57.63	178.48	123.088	45812.628	2353	4630
314	13.395	170.44	180.34	0.741	57.74	178.34	122.903	45904.506	2353	4630
315	13.269	170.43	179.8	0.739	57.66	178.03	122.633	45443.881	2353	4630
316	13.407	169.64	179.53	0.746	57.66	177.73	122.25	45477.403	2353	4630
317	13.361	169.76	179.39	0.74	57.59	177.42	121.944	45021.663	2353	4630
318	13.329	169.49	179.26	0.74	57.65	177.24	121.632	45208.057	2353	4630
319	13.424	169.37	179.01	0.74	57.66	177	121.362	44991.596	2353	4630
320	13.398	168.83	178.47	0.744	57.85	176.69	121.128	44875.255	2353	4630
321	13.369	168.71	178.35	0.74	57.73	176.4	120.744	44973.069	2353	4630
322	13.395	168.43	177.93	0.745	57.78	176.2	120.467	44915.195	2353	4630
323	13.395	168.36	177.6	0.729	57.98	175.9	120.211	44065.646	2353	4630
324	13.228	167.96	177.46	0.745	57.7	175.71	119.935	44642.194	2353	4630
325	13.451	167.68	177.05	0.743	57.62	175.33	119.537	44350.408	2353	4630
326	13.363	167.43	176.8	0.742	57.7	175.1	119.366	44373.842	2353	4630
327	13.417	167.05	176.56	0.743	57.72	174.63	118.933	44136.677	2353	4630
328	13.298	166.78	176.28	0.74	57.71	174.44	118.649	44179.346	2353	4630
329	13.355	166.53	175.9	0.742	57.66	174.27	118.308	43918.523	2353	4630
330	13.467	166.36	175.73	0.744	57.69	173.82	118.038	43893.57	2353	4630
331	13.329	166.23	175.47	0.744	57.69	173.7	117.754	43753.203	2353	4630
332	13.338	165.97	175.2	0.739	57.69	173.39	117.364	43523.752	2353	4630
333	13.326	165.4	174.9	0.74	57.71	172.99	117.008	43349.462	2353	4630
334	13.313	165.32	175.08	0.745	57.83	172.92	116.838	43525.97	2353	4630
335	13.352	165.57	175.2	0.741	57.89	173.03	117.115	43495.13	2353	4630
336	13.321	165.81	175.84	0.736	57.8	173.43	117.591	43612.761	2353	4630
337	13.334	166.86	176.76	0.75	57.86	174.21	118.55	44189.026	2353	4630
338	13.315	167.53	177.3	0.741	57.74	175.01	119.352	44355.735	2353	4630
339	13.433	168.35	178.38	0.745	57.9	175.83	120.275	44641.551	2353	4630
340	13.346	169.25	179.14	0.741	57.8	176.64	121.227	44925.671	2353	4630
341	13.31	169.93	180.09	0.738	57.76	177.57	122.108	45221.824	2353	4630
342	13.337	170.88	180.78	0.743	57.79	178.51	123.173	45709.317	2353	4630
343	13.224	171.65	181.82	0.741	57.83	179.39	124.21	46110.29	2353	4630
344	13.272	172.59	183.02	0.75	57.85	180.37	125.233	46572.272	2353	4630
345	13.343	173.64	183.94	0.735	57.64	181.27	126.355	46851.731	2353	4630
346	13.362	174.42	184.71	0.744	57.76	182.27	127.299	47419.829	2353	4630
347	13.393	175.25	185.15	0.739	57.8	183.04	128.017	47347.972	2353	4630
348	13.452	175.37	185.27	0.741	57.59	183.03	128.294	47441.477	2353	4630
349	13.447	175.06	184.97	0.745	57.61	182.99	128.301	47549.713	2353	4630
350	13.44	175.05	184.69	0.741	57.47	182.86	128.173	47563.763	2353	4630
351	13.303	174.77	184.54	0.74	57.65	182.96	128.088	47547.062	2353	4630
352	13.409	174.4	184.7	0.748	57.48	182.57	127.754	47424.627	2353	4630
353	13.364	174.14	184.44	0.741	57.61	182.39	127.477	47371.147	2353	4630
354	13.415	174.13	184.3	0.745	57.53	182.08	127.285	47542.898	2353	4630
355	13.411	173.86	184.02	0.74	57.59	182.07	127.03	47262.638	2353	4630
356	13.511	173.58	183.88	0.745	57.58	181.75	126.774	47154.153	2353	4630
357	13.385	173.43	183.33	0.735	57.69	181.37	126.454	46909.358	2353	4630
358	13.375	173.55	183.45	0.741	57.68	181.24	126.234	46789.088	2353	4630
359	13.459	173.12	183.02	0.74	57.72	181.03	125.957	46789.563	2353	4630
360	13.437	173.02	182.79	0.744	57.75	181	125.68	46797.676	2353	4630
361	13.415	172.75	182.52	0.736	57.8	180.51	125.396	46401.42	2353	4630
362	13.394	172.62	182.38	0.741	57.74	180.27	125.155	46489.424	2353	4630
363	13.26	172.33	182.1	0.742	57.72	180.19	124.842	46207.795	2353	4630
364	13.405	172.02	181.92	0.74	57.74	179.91	124.657	46259.023	2353	4630

8.33396	121.39	1.001199	6.225468	1	175.91	771.2696	46276.17	
8.334051	121.16	1.001199	6.175531	1	175.89	763.2403	45794.42	
8.334	120.85	1.001199	6.20883	1	175.605	765.1486	45908.92	
8.33389	120.6	1.001199	6.175412	1	175.39	759.8867	45593.2	
8.33397	120.37	1.001199	6.158804	1	175.115	756.1782	45370.69	
8.33397	120.07	1.001199	6.217142	1	174.585	760.9571	45657.43	
8.334041	119.83	1.001199	6.16719	1	174.575	752.9536	45177.22	
8.33398	119.59	1.001199	6.167145	1	174.375	751.0217	45061.3	
8.33397	119.34	1.001198	6.167138	1	174.19	749.3531	44961.19	
8.333779	118.84	1.001199	6.200331	1	173.65	751.9341	45116.05	
8.3339	118.67	1.001199	6.167086	1	173.53	745.5312	44731.87	
8.333849	118.42	1.001198	6.208718	1	173.18	748.8416	44930.5	
8.333648	117.92	1.001199	6.075229	1	172.98	731.1849	43871.1	
8.33393	118.01	1.001199	6.208778	1	172.71	745.5427	44732.56	
8.33401	117.71	1.001199	6.19217	1	172.365	741.0808	44464.85	
8.33393	117.4	1.001199	6.183776	1	172.115	739.0175	44341.05	
8.33391	116.91	1.001199	6.192095	1	171.805	737.3273	44239.64	
8.33392	116.73	1.001199	6.167101	1	171.53	732.5977	43955.86	
8.33397	116.61	1.001199	6.183806	1	171.215	732.4708	43948.25	
8.33394	116.13	1.001199	6.200451	1	171.045	732.7664	43965.98	
8.33394	116.01	1.001199	6.200451	1	170.85	731.0033	43860.2	
8.33394	115.7	1.001199	6.158782	1	170.585	723.6858	43421.15	
8.33392	115.28	1.001198	6.167101	1	170.15	722.4649	43347.9	
8.333799	115.09	1.001198	6.20868	1	170.2	726.279	43576.74	
8.333738	115.14	1.001199	6.1753	1	170.385	724.0871	43445.23	
8.333829	115.63	1.001198	6.133698	1	170.825	722.1321	43327.92	
8.333769	116.35	1.001199	6.250327	1	171.81	741.8645	44511.87	
8.33389	117.27	1.001198	6.175412	1	172.415	737.9309	44275.86	
8.333728	117.93	1.001199	6.208628	1	173.365	747.6377	44858.26	
8.333829	118.84	1.001199	6.175367	1	174.195	749.5187	44971.12	
8.33387	119.81	1.001199	6.150396	1	175.01	751.9127	45114.76	
8.333839	120.72	1.001198	6.192043	1	175.83	763.6065	45816.39	
8.333799	121.56	1.001198	6.175345	1	176.735	767.9588	46077.53	
8.333779	122.52	1.001199	6.250334	1	177.805	783.6867	47021.2	
8.33399	123.63	1.001199	6.125483	1	178.79	774.9132	46494.79	
8.33387	124.51	1.001199	6.200399	1	179.565	790.2506	47415.04	
8.333829	125.24	1.001199	6.1587	1	180.2	789.3638	47361.83	
8.334041	125.44	1.001199	6.175524	1	180.32	793.2328	47593.97	
8.33402	125.38	1.0012	6.208845	1	180.015	797.5567	47853.4	
8.334161	125.39	1.001199	6.175613	1	179.87	792.496	47549.76	
8.33398	125.31	1.0012	6.167145	1	179.655	790.885	47453.1	
8.334151	125.09	1.001199	6.233945	1	179.55	797.3665	47841.99	
8.33402	124.78	1.0012	6.175509	1	179.29	788.1797	47290.78	
8.334101	124.55	1.001199	6.208905	1	179.215	791.2483	47474.9	
8.334041	124.48	1.001199	6.16719	1	178.94	784.3577	47061.46	
8.334051	124.17	1.001199	6.208868	1	178.73	788.0667	47284	
8.33394	123.68	1.001199	6.125446	1	178.38	775.5159	46530.95	
8.33395	123.56	1.001199	6.175457	1	178.5	780.4872	46829.23	
8.33391	123.31	1.001199	6.167093	1	178.07	777.7197	46663.18	
8.33388	123.25	1.001199	6.200406	1	177.905	780.2011	46812.07	
8.333829	122.71	1.001199	6.133698	1	177.635	770.0633	46203.8	
8.33389	122.53	1.001199	6.175412	1	177.5	773.8103	46428.62	
8.33391	122.47	1.001199	6.183761	1	177.215	772.9185	46375.11	
8.33389	122.17	1.001199	6.167078	1	176.97	769.6909	46181.45	

365	13.397	171.89	181.4	0.739	57.81	179.67	124.437	46144.475	2353	4630
366	13.412	171.76	181.26	0.737	57.81	179.43	124.061	45928.905	2353	4630
367	13.486	171.35	181.12	0.742	57.8	179.24	123.876	45917.275	2353	4630
368	13.281	171.1	180.87	0.738	57.67	178.95	123.592	45707.534	2353	4630
369	13.368	170.82	180.71	0.742	57.85	178.56	123.23	45603.779	2353	4630
370	13.472	170.53	180.3	0.744	57.63	178.3	122.953	45647.573	2353	4630
371	13.415	170.56	180.06	0.744	57.66	178.15	122.683	45547.194	2353	4630
372	13.35	170.17	179.93	0.742	57.73	177.85	122.363	45486.918	2353	4630
373	13.361	169.76	179.53	0.745	57.58	177.66	122.292	45485.839	2353	4630
374	13.379	169.61	178.84	0.74	57.5	177.4	121.98	45335.976	2353	4630
375	13.344	169.23	179.26	0.736	57.52	177.05	121.667	44996.142	2353	4630
376	13.387	168.96	178.72	0.741	57.51	176.68	121.348	44980.779	2353	4630
377	13.34	168.82	178.59	0.747	57.37	176.56	121.227	45089.862	2353	4630
378	13.312	168.44	178.21	0.738	57.45	176.27	120.979	44810.347	2353	4630
379	13.298	168.13	177.9	0.739	57.34	175.99	120.631	44690.262	2353	4630
380	13.311	167.87	177.64	0.735	57.41	175.68	120.254	44399.943	2353	4630
381	13.204	167.74	177.24	0.738	57.47	175.5	119.97	44457.983	2353	4630
382	13.34	167.33	176.96	0.737	57.33	175.07	119.608	44268.018	2353	4630
383	13.335	167.21	176.84	0.75	57.41	174.9	119.366	44338.894	2353	4630
384	13.355	167.06	176.43	0.743	57.52	174.63	119.025	44126.143	2353	4630
385	13.464	166.9	176.27	0.746	57.36	174.37	118.741	44043.669	2353	4630
386	13.347	166.39	176.02	0.744	57.44	174.02	118.479	44037.609	2353	4630
387	13.323	166.38	175.61	0.742	57.36	173.83	118.209	43916.263	2353	4630
388	13.431	165.43	175.59	0.798	57.41	173.5	117.861	47091.976	2353	4630
389	13.321	165.69	175.06	0.769	57.34	173.14	117.605	45017.657	2353	4630
390	13.257	165.4	175.03	0.762	57.31	173.05	117.399	45015.345	2353	4630
391	13.313	165.11	174.62	0.764	57.36	172.67	117.037	44771.329	2353	4630
392	13.276	164.69	174.06	0.759	57.39	172.45	116.76	44719.48	2353	4630
393	13.251	164.8	174.43	0.769	57.37	172.25	116.717	44687.831	2353	4630
394	13.285	164.68	174.57	0.766	57.45	172.45	116.838	44650.135	2353	4630
395	13.331	165.04	174.67	0.764	57.35	172.66	117.129	44858.509	2353	4630
396	13.325	165.26	175.03	0.763	57.31	172.92	117.477	44885.868	2353	4630
397	13.337	165.9	175.4	0.766	57.28	173.45	117.981	45209.36	2353	4630
398	13.232	166.03	175.93	0.766	57.35	173.81	118.422	45397.419	2353	4630
399	13.316	166.65	176.42	0.763	57.31	174.26	118.962	45461.546	2353	4630
400	13.485	167.32	177.09	0.767	57.39	174.94	119.565	45731.139	2353	4630
401	13.316	167.72	177.49	0.763	57.32	175.42	120.176	45881.525	2353	4630
402	13.32	168.24	178.4	0.759	57.24	176.02	120.993	46245.945	2353	4630
403	13.293	168.74	178.77	0.765	57.29	176.48	121.532	46435.451	2353	4630
404	13.372	169.38	179.28	0.777	57.2	177.25	122.143	46935.348	2353	4630
405	13.436	169.81	180.5	0.779	57.36	177.7	122.797	47626.078	2353	4630
406	13.27	170.23	180.79	0.771	57.25	178.32	123.45	48036.529	2353	4630
407	13.348	170.76	181.18	0.783	57.32	178.81	124.018	48343.497	2353	4630
408	13.48	171.43	181.99	0.783	57.26	179.6	124.856	48619.059	2353	4630
409	13.384	172.12	182.41	0.783	57.43	180.11	125.368	48853.678	2353	4630
410	13.463	172.38	182.94	0.799	57.36	180.78	125.993	48863.729	2353	4630
411	13.386	172.93	183.89	0.785	57.38	181.28	126.611	49349.772	2353	4630
412	13.378	173.58	184.14	0.783	57.44	181.75	127.122	49523.267	2353	4630
413	13.362	174.01	184.83	0.778	57.54	182.32	127.726	49550.177	2353	4630
414	13.34	174.25	185.08	0.779	57.32	182.84	128.308	50107.367	2353	4630
415	13.407	174.79	185.62	0.776	57.33	183.15	128.741	49986.369	2353	4630
416	13.483	174.77	185.33	0.776	57.31	183.31	128.77	50076.894	2353	4630
417	13.365	174.61	185.3	0.776	57.34	183.04	128.663	50227.409	2353	4630
418	13.524	174.44	184.87	0.779	57.38	183.02	128.329	50054.671	2353	4630

8.333819	121.86	1.001199	6.158692	1	176.645	767.2877	46037.26	
8.333819	121.62	1.001199	6.142025	1	176.51	762.899	45773.94	
8.333829	121.44	1.001199	6.183701	1	176.235	766.9306	46015.84	
8.33396	121.28	1.001198	6.150463	1	175.985	761.0589	45663.54	
8.333779	120.71	1.001199	6.183664	1	175.765	762.9267	45775.6	
8.334	120.67	1.001199	6.200496	1	175.415	763.2837	45797.02	
8.33397	120.49	1.001199	6.200474	1	175.31	761.6047	45696.28	
8.3339	120.12	1.001199	6.183754	1	175.05	757.5701	45454.21	
8.334051	120.08	1.0012	6.208868	1	174.645	760.2057	45612.34	
8.334131	119.9	1.0012	6.167257	1	174.225	753.1844	45191.06	
8.334111	119.53	1.0012	6.133906	1	174.245	747.1891	44831.35	
8.334121	119.17	1.0012	6.175584	1	173.84	750.294	45017.64	
8.334261	119.19	1.0012	6.225693	1	173.705	755.6276	45337.66	
8.334181	118.82	1.0012	6.150626	1	173.325	744.9896	44699.37	
8.334291	118.65	1.0012	6.159041	1	173.015	743.8628	44631.77	
8.334221	118.27	1.0012	6.125652	1	172.755	737.518	44251.08	
8.334161	118.03	1.0012	6.150611	1	172.49	738.7744	44326.46	
8.334301	117.74	1.0012	6.14238	1	172.145	735.5593	44133.56	
8.334221	117.49	1.0012	6.250666	1	172.025	747.012	44820.72	
8.334111	117.11	1.0012	6.192244	1	171.745	737.9164	44274.98	
8.334271	117.01	1.0012	6.217366	1	171.585	739.1421	44348.52	
8.334191	116.58	1.0012	6.200638	1	171.205	735.527	44131.62	
8.334271	116.47	1.0012	6.184029	1	170.995	731.8851	43913.1	
8.334221	116.09	1.0012	6.650708	1	170.51	784.7999	47087.99	
8.334291	115.8	1.0012	6.40907	1	170.375	754.6434	45278.6	
8.334321	115.74	1.0012	6.350753	1	170.215	746.4668	44788.01	
8.334271	115.31	1.0012	6.367383	1	169.865	746.1137	44766.82	
8.334241	115.06	1.0012	6.325689	1	169.375	739.4738	44368.43	
8.334261	114.88	1.0012	6.409047	1	169.615	748.9422	44936.53	
8.334181	115	1.0012	6.383983	1	169.625	746.7869	44807.22	
8.334281	115.31	1.0012	6.367391	1	169.855	746.7013	44802.08	
8.334321	115.61	1.0012	6.359087	1	170.145	747.9432	44876.59	
8.334351	116.17	1.0012	6.384113	1	170.65	754.108	45246.48	
8.334281	116.46	1.0012	6.384059	1	170.98	756.9205	45415.23	
8.334321	116.95	1.0012	6.359087	1	171.535	757.3975	45443.85	
8.334241	117.55	1.0012	6.392363	1	172.205	765.2202	45913.21	
8.334311	118.1	1.001201	6.359079	1	172.605	765.1262	45907.57	
8.334391	118.78	1.0012	6.325803	1	173.32	766.2966	45977.79	
8.334341	119.19	1.001201	6.375771	1	173.755	775.7905	46547.43	
8.334431	120.05	1.0012	6.475853	1	174.33	791.9293	47515.76	
8.334271	120.34	1.0012	6.492397	1	175.155	798.204	47892.24	
8.334381	121.07	1.0012	6.425808	1	175.51	794.2181	47653.08	
8.334311	121.49	1.0012	6.525766	1	175.97	810.2839	48617.04	
8.334371	122.34	1.0012	6.525813	1	176.71	815.7645	48945.87	
8.334201	122.68	1.0012	6.525679	1	177.265	819.0932	49145.59	
8.334271	123.42	1.0012	6.659083	1	177.66	840.0046	50400.28	
8.334251	123.9	1.0012	6.542387	1	178.41	829.332	49759.92	
8.334191	124.31	1.001199	6.525672	1	178.86	830.5514	49833.09	
8.334091	124.78	1.0012	6.483923	1	179.42	829.1595	49749.57	
8.334311	125.52	1.0012	6.492428	1	179.665	834.0303	50041.82	
8.334301	125.82	1.0012	6.467418	1	180.205	833.6212	50017.27	
8.334321	126	1.0012	6.467433	1	180.05	833.8109	50028.65	
8.334291	125.7	1.0012	6.46741	1	179.955	833.1149	49986.9	
8.334251	125.64	1.0012	6.492382	1	179.655	834.1609	50049.65	

419	13.373	174.44	184.87	0.776	57.31	182.83	128.28	49861.083	2353	4630
420	13.489	174.15	184.71	0.777	57.34	182.63	128.052	49775.921	2353	4630
421	13.386	173.87	184.43	0.778	57.53	182.44	127.69	49701.548	2353	4630
422	13.397	173.55	184.11	0.779	57.4	182.02	127.413	49599.359	2353	4630
423	13.375	173.53	183.57	0.777	57.46	182.01	127.25	49530.133	2353	4630
424	13.405	173.36	183.66	0.785	57.42	181.79	127.001	49643.485	2353	4630
425	13.347	172.92	183.75	0.772	57.51	181.51	126.788	49431.647	2353	4630
426	13.356	172.87	183.04	0.778	57.39	181.28	126.476	49350.239	2353	4630
427	13.368	172.43	182.86	0.778	57.41	181	126.227	49296.53	2353	4630
428	13.39	172.38	182.81	0.783	57.29	180.83	126.035	49231.904	2353	4630
429	13.456	172.19	182.48	0.783	57.23	180.47	125.758	49054.674	2353	4630
430	13.383	171.63	181.92	0.776	57.19	180.26	125.467	48919.935	2353	4630
431	13.382	171.46	181.89	0.785	57.36	180.17	125.226	49004.689	2353	4630
432	13.385	171.41	181.58	0.781	57.31	179.82	124.97	48799.586	2353	4630
433	13.457	171.35	181.12	0.784	57.31	179.47	124.672	48856.56	2353	4630
434	13.362	170.91	180.94	0.78	57.27	179.13	124.309	48553.655	2353	4630
435	13.325	170.88	180.78	0.784	57.24	179.04	124.125	48513.167	2353	4630
436	13.38	170.44	180.48	0.779	57.2	178.7	123.805	48502.263	2353	4630
437	13.433	170.01	180.3	0.781	57.29	178.54	123.464	48253.792	2353	4630
438	13.457	170.01	179.77	0.777	57.22	178.23	123.244	48251.089	2353	4630
439	13.393	169.29	179.59	0.785	57.23	177.82	122.896	48097.568	2353	4630
440	13.42	169.45	179.35	0.782	57.12	177.54	122.619	48077.922	2353	4630
441	13.363	169.17	179.2	0.783	57.11	177.23	122.285	47922.598	2353	4630
442	13.392	168.76	179.18	0.783	57.02	177.03	122.136	47776	2353	4630
443	13.343	168.62	178.79	0.777	57.02	176.67	121.817	47660.195	2353	4630
444	13.393	168.06	178.22	0.778	56.98	176.45	121.433	47422.235	2353	4630
445	13.446	168.02	178.05	0.784	57.01	176.3	121.213	47652.298	2353	4630
446	13.552	167.61	177.77	0.783	56.93	175.79	120.836	47296.482	2353	4630
447	13.412	167.48	177.37	0.776	57.13	175.61	120.51	47155.596	2353	4630
448	13.405	167.2	177.23	0.78	57.12	175.36	120.183	46984.194	2353	4630
449	13.382	166.64	176.8	0.781	57.15	174.97	119.807	46990.858	2353	4630
450	13.387	166.37	176.79	0.782	57.01	174.78	119.643	46838.501	2353	4630
451	13.286	166.33	176.36	0.781	57.23	174.49	119.274	46653.39	2353	4630
452	13.345	165.61	175.91	0.781	57.04	174.08	118.819	46627.177	2353	4630
453	13.387	165.84	175.6	0.778	57	173.86	118.578	46360.04	2353	4630
454	13.428	165.56	175.2	0.783	56.99	173.61	118.351	46460.988	2353	4630
455	13.393	165.18	175.07	0.785	57	173.32	117.974	46170.411	2353	4630
456	13.355	164.81	174.71	0.784	57.03	172.98	117.704	45988.948	2353	4630
457	13.344	164.7	174.86	0.783	56.99	172.76	117.399	45987.519	2353	4630
458	13.293	164.57	174.47	0.785	56.99	172.39	117.143	45830.668	2353	4630
459	13.319	164.17	174.2	0.78	57.06	172.21	116.923	45749.901	2353	4630
460	13.445	164.18	173.95	0.783	57	172.1	116.717	45667.862	2353	4630
461	13.354	163.88	174.04	0.784	57.02	171.88	116.625	45796.967	2353	4630
462	13.357	164.17	174.2	0.782	56.92	171.97	116.824	45686.569	2353	4630
463	13.289	164.47	174.23	0.786	57.09	172.06	116.902	45858.079	2353	4630
464	13.346	164.73	174.23	0.783	56.95	172.18	117.065	45860.943	2353	4630
465	13.357	164.74	174.24	0.779	56.96	172.43	117.335	45999.443	2353	4630
466	13.395	164.57	174.6	0.781	56.92	172.58	117.449	46050.006	2353	4630
467	13.442	164.95	174.98	0.783	56.78	172.93	117.775	46004.344	2353	4630
468	13.337	165.33	175.23	0.779	56.89	173.34	118.152	46253.495	2353	4630
469	13.416	165.56	175.72	0.782	56.79	173.43	118.493	46542.54	2353	4630
470	13.371	165.84	176	0.786	56.87	173.74	118.734	46554.784	2353	4630
471	13.349	166.04	176.33	0.841	56.94	174.17	119.203	50373.785	2353	4630
472	13.382	166.56	176.85	0.841	56.93	174.34	119.466	50514.261	2353	4630

8.334321	125.52	1.0012	6.467433	1	179.655	830.638	49838.28	
8.334291	125.29	1.0012	6.475744	1	179.43	830.2267	49813.6	
8.334101	124.91	1.0012	6.48393	1	179.15	828.9266	49735.59	
8.334231	124.62	1.0012	6.492366	1	178.83	828.2043	49692.26	
8.334171	124.55	1.0012	6.475651	1	178.55	825.0153	49500.92	
8.334211	124.37	1.0012	6.542356	1	178.51	831.8824	49912.95	
8.334121	124	1.0012	6.433941	1	178.335	816.7254	49003.53	
8.334241	123.89	1.0012	6.48404	1	177.955	821.0594	49263.56	
8.334221	123.59	1.0012	6.484024	1	177.645	819.4413	49166.48	
8.334341	123.54	1.001201	6.525789	1	177.595	823.4652	49407.91	
8.334401	123.24	1.001201	6.525836	1	177.335	821.6615	49299.69	
8.334441	123.07	1.0012	6.467526	1	176.775	812.4349	48746.1	
8.334271	122.81	1.0012	6.542403	1	176.675	820.2623	49215.74	
8.334321	122.51	1.0012	6.509105	1	176.495	814.4192	48865.15	
8.334321	122.16	1.0012	6.534108	1	176.235	815.5982	48935.89	
8.334361	121.86	1.001201	6.500802	1	175.925	809.0783	48544.7	
8.334391	121.8	1.001201	6.534163	1	175.83	812.0267	48721.6	
8.334431	121.5	1.0012	6.492522	1	175.46	804.7715	48286.29	
8.334341	121.25	1.001201	6.50912	1	175.155	804.6069	48276.41	
8.334411	121.01	1.001201	6.475837	1	174.89	799.0663	47943.98	
8.334401	120.59	1.001201	6.542505	1	174.44	805.0133	48300.8	
8.334511	120.42	1.001201	6.517587	1	174.4	800.1398	48008.39	
8.334521	120.12	1.001201	6.52593	1	174.185	798.982	47938.92	
8.33461	120.01	1.001201	6.526	1	173.97	798.017	47881.02	
8.33461	119.65	1.001201	6.475992	1	173.705	789.8337	47390.02	
8.33465	119.47	1.001201	6.484358	1	173.14	788.3609	47301.66	
8.33462	119.29	1.001202	6.534342	1	173.035	792.9989	47579.94	
8.3347	118.86	1.001201	6.52607	1	172.69	789.5312	47371.87	
8.334501	118.48	1.001201	6.467573	1	172.425	780.3432	46820.59	
8.334511	118.24	1.001201	6.500918	1	172.215	782.2381	46934.28	
8.334481	117.82	1.001201	6.509229	1	171.72	780.7881	46847.29	
8.33462	117.77	1.001201	6.517673	1	171.58	780.7301	46843.81	
8.334401	117.26	1.001201	6.509167	1	171.345	777.307	46638.42	
8.33459	117.04	1.001201	6.509315	1	170.76	774.3595	46461.57	
8.33463	116.86	1.001201	6.484342	1	170.72	769.8241	46189.44	
8.33464	116.62	1.001201	6.526023	1	170.38	773.2892	46397.35	
8.33463	116.32	1.001201	6.542685	1	170.125	772.7939	46367.63	
8.3346	115.95	1.001201	6.534327	1	169.76	770.0404	46202.42	
8.33464	115.77	1.001201	6.526023	1	169.78	767.069	46024.14	
8.33464	115.4	1.001201	6.542692	1	169.52	767.3512	46041.07	
8.33457	115.15	1.001201	6.500965	1	169.185	761.0255	45661.53	
8.33463	115.1	1.001201	6.526015	1	169.065	762.612	45756.72	
8.33461	114.86	1.001202	6.534334	1	168.96	762.9825	45778.95	
8.33471	115.05	1.001201	6.517743	1	169.185	762.3433	45740.6	
8.334541	114.97	1.001202	6.550949	1	169.35	766.7392	46004.35	
8.33468	115.23	1.001201	6.526054	1	169.48	764.8905	45893.43	
8.33467	115.47	1.001202	6.492708	1	169.49	762.7373	45764.24	
8.33471	115.66	1.001202	6.509408	1	169.585	765.4425	45926.55	
8.334849	116.15	1.001202	6.526186	1	169.965	769.5453	46172.72	
8.334739	116.45	1.001202	6.492762	1	170.28	768.055	46083.3	
8.334839	116.64	1.001202	6.517844	1	170.64	773.247	46394.82	
8.334759	116.87	1.001202	6.551121	1	170.92	778.7754	46726.52	
8.33469	117.23	1.001202	7.009474	1	171.185	836.5543	50193.26	
8.3347	117.41	1.001201	7.009482	1	171.705	838.4009	50304.05	

473	13.338	166.68	177.37	0.843	56.98	174.82	119.856	50383.591	2353	4630
474	13.291	166.79	177.35	0.845	57.03	175.04	120.055	50639.404	2353	4630
475	13.441	167.21	177.24	0.838	57.05	175.36	120.283	50731.04	2353	4630
476	13.415	167.31	177.73	0.846	56.95	175.51	120.645	50962.434	2353	4630
477	13.328	167.56	177.99	0.839	57.08	175.75	120.95	50921.908	2353	4630
478	13.382	167.82	178.25	0.851	57.01	176.11	121.227	51264.009	2353	4630
479	13.403	168.18	178.34	0.845	56.97	176.37	121.454	51491.728	2353	4630
480	13.332	168.45	178.62	0.844	56.98	176.44	121.646	51389.891	2353	4630
481	13.347	168.59	178.88	0.85	57.04	176.75	121.888	51489.635	2353	4630
482	13.355	168.59	179.01	0.85	56.98	176.75	121.973	51581.406	2353	4630
483	13.325	168.96	178.99	0.834	57.09	177.15	122.221	51490.789	2353	4630
484	13.36	169.16	179.33	0.841	56.89	177.21	122.42	51716.541	2353	4630
485	13.35	169.39	179.55	0.845	56.98	177.42	122.605	51810.193	2353	4630
486	13.225	169.09	179.52	0.843	56.95	177.45	122.719	51866.304	2353	4630
487	13.395	169.33	179.5	0.848	57	177.61	122.811	51958.437	2353	4630
488	13.342	169.32	179.75	0.838	56.92	177.78	122.981	51834.343	2353	4630
489	13.338	169.45	179.74	0.846	57.04	177.77	123.038	52118.963	2353	4630
490	13.473	169.33	180.02	0.844	56.93	177.97	123.109	52092.513	2353	4630
491	13.359	169.63	180.19	0.846	57.03	177.94	123.216	51986.473	2353	4630
492	13.49	169.63	180.06	0.845	57.1	178	123.273	51964.804	2353	4630
493	13.338	169.81	179.98	0.847	57.02	178.05	123.443	52256.085	2353	4630
494	13.375	169.84	180.26	0.847	56.97	178.07	123.514	52254.66	2353	4630
495	13.396	170.17	180.33	0.849	56.85	178.02	123.585	52237.853	2353	4630
496	13.284	169.95	180.38	0.842	56.96	178.18	123.663	52354.808	2353	4630
497	13.355	170.22	180.52	0.844	57.03	178.37	123.841	52496.909	2353	4630
498	13.38	170.09	180.52	0.848	56.97	178.49	123.919	52663.999	2353	4630
499	13.408	170.37	180.79	0.848	56.98	178.68	124.061	52415.16	2353	4630
500	13.328	170.35	180.77	0.846	56.96	178.66	124.139	52514.958	2353	4630
501	13.445	170.46	181.15	0.845	56.8	179.01	124.366	52638.907	2353	4630
502	13.37	170.6	180.89	0.846	56.95	178.89	124.38	52714.062	2353	4630
503	13.355	170.71	181.4	0.845	56.92	179.18	124.743	52824.786	2353	4630
504	13.354	171.36	181.92	0.847	56.91	179.59	125.219	53025.414	2353	4630
505	13.364	171.9	182.46	0.847	56.86	180.14	125.808	53306.325	2353	4630
506	13.308	172.16	182.99	0.845	57.06	180.62	126.263	53500.94	2353	4630
507	13.384	172.79	183.35	0.845	57.03	181.08	126.745	53689.493	2353	4630
508	13.447	173.06	183.88	0.846	56.89	181.62	127.42	53932.341	2353	4630
509	13.409	173.57	184.27	0.851	56.88	181.97	127.917	54291.812	2353	4630
510	13.413	173.96	185.05	0.845	56.94	182.5	128.322	54364.27	2353	4630
		162.95								

8.33465	117.84	1.001201	7.02611	1	172.025	843.133	50587.98
8.3346	118.01	1.001201	7.042737	1	172.07	846.5314	50791.89
8.33458	118.31	1.001202	6.984378	1	172.225	841.1114	50466.68
8.33468	118.56	1.001201	7.051139	1	172.52	851.7064	51102.39
8.334551	118.67	1.001201	6.992688	1	172.775	846.7816	50806.9
8.33462	119.1	1.001201	7.092762	1	173.035	860.8673	51652.04
8.33466	119.4	1.001201	7.042788	1	173.26	856.4024	51384.14
8.33465	119.46	1.001201	7.034445	1	173.535	856.7399	51404.4
8.33459	119.71	1.001201	7.084402	1	173.735	864.541	51872.46
8.33465	119.77	1.001201	7.084453	1	173.8	865.1498	51908.99
8.334541	120.06	1.001202	6.951007	1	173.975	850.58	51034.8
8.334739	120.32	1.001201	7.009516	1	174.245	859.1359	51548.15
8.33465	120.44	1.001202	7.042779	1	174.47	864.5174	51871.05
8.33468	120.5	1.001201	7.026135	1	174.305	863.2761	51796.57
8.33463	120.61	1.001202	7.067766	1	174.415	869.0425	52142.55
8.33471	120.86	1.001201	6.984487	1	174.535	859.991	51599.46
8.33459	120.73	1.001202	7.051063	1	174.595	868.5912	52115.47
8.3347	121.04	1.001201	7.034487	1	174.675	867.0489	52022.93
8.3346	120.91	1.001201	7.051072	1	174.91	869.8483	52190.9
8.334531	120.9	1.001201	7.042678	1	174.845	869.215	52152.9
8.33461	121.03	1.001201	7.059415	1	174.895	872.4823	52348.94
8.33466	121.1	1.001202	7.059457	1	175.05	872.9897	52379.38
8.334779	121.17	1.001201	7.076227	1	175.25	875.5663	52533.98
8.33467	121.22	1.001201	7.017792	1	175.165	868.8837	52133.02
8.3346	121.34	1.001201	7.034403	1	175.37	872.1941	52331.65
8.33466	121.52	1.001201	7.067792	1	175.305	876.8859	52613.16
8.33465	121.7	1.001201	7.067783	1	175.58	877.8898	52673.39
8.33467	121.7	1.001202	7.051131	1	175.56	876.3725	52582.35
8.334829	122.21	1.001202	7.04293	1	175.805	876.9535	52617.21
8.33468	121.94	1.001202	7.051139	1	175.745	878.0745	52684.47
8.33471	122.26	1.001202	7.04283	1	176.055	879.5994	52775.96
8.33472	122.68	1.001202	7.059507	1	176.64	885.0469	53102.81
8.334769	123.28	1.001201	7.05955	1	177.18	889.2146	53352.88
8.33457	123.56	1.001201	7.042712	1	177.575	890.3021	53418.13
8.3346	124.05	1.001202	7.042737	1	178.07	893.7044	53622.27
8.334739	124.73	1.001202	7.05119	1	178.47	899.5423	53972.54
8.334749	125.09	1.001202	7.092872	1	178.92	908.389	54503.34
8.33469	125.56	1.0014	7.042813	1	179.505	905.0131	54300.78

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: BTN
DATE: 3_14_14
RUN NUMBER: EPA3

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	2474.509	Liters
Total Sample Volume - Vm	87.386	ft^3
Average Sample Rate	0.17	Liters/min
Sample Time	510.00	Minutes
Average Meter Temperature	90	°F
Total Sample Volume (Standard Conditions) - Vmstd	86.284	dscf
Total Particulates	0.3	mg
Particulate Concentration (dry-standard)	0.000003477	grams/dscf
Particulate Emission Rate	0.000035294	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA3

DATE: 3_14_14

BURN RATE 4.75 KG/HR DRY

FILTER A PARTICULATE 26.6 mg

FILTER B PARTICULATE 27 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	72.74		73.09	
Average Gas Velocity in Dilution Tunnel - vs	14.15	feet/second	14.15	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	38283.33	dscf/hour	38283.33	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	68.80	dscf	68.00	dscf
Average Tunnel Temperature	84.8	F	84.8	F
Average Delta p	0.045		0.045	
Average Gas Meter Temperature	103	F	100	F
Average Delta H	2.01	in-h20	2.02	in-h20
Total Time of Test	510	min	510	min
Total Particulates	26.6	mg	27	mg
Particulate Concentration (dry-standard)	0.000386601	grams/dscf	0.000397035	grams/dscf
Ambient Train (dry-standard)	0.000003477	grams/dscf	0.000003477	grams/dscf
Net (dry-standard)	0.000383124	grams/dscf	0.000393558	grams/dscf
Particulate Emission Rate	14.67	grams/hour	15.07	grams/hour
Total PM Emissions	124.67	grams	128.07	grams
Average Total PM Emissions		126.37	grams	
AVERAGE PARTICLATE EMISSIONS RATE		14.87	grams/hour	
% OF AVERAGE	98.7		101.3	
Emissions Factor	3.088	g/Kg -Dry	3.172	g/Kg -Dry

Heat Output	49191	Btu/hr	51.86483007	MJ/hr				
Emissions	0.6663	lb/MMBtu Out	0.2866	g/MJ	3.1297	g/dry kg	14.8670	g/hr
Qin	765541	BTU	807	MJ				
Qin LHV	711063	BTU	750	MJ				
Delivered Efficiency	54.62%	ndel	58.80%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#3
Control #: 004-hhw-023-1
est Duration: 510
urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)
Weight Units lb (kg or lb)

Wood Moisture (% DRY): 22
Wood Moisture (% wet): 18.03
Load Weight (lb wet): 108.60
Burn Rate (dry kg/h): 4.75
Total Particulate Emissions: 126.37 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

○ Douglas Fir
◉ Oak

Averages		**233.0**	**71.7**	**10.06**	**12.22**	**2.87**
		Temp. (F)				
Elapsed Time (min)	**Fuel Weight Remaining (lb)**	**Flue Gas**	**Room Temp**	**Flue Gas Composition (%) O2**	**CO2**	**CO**
0	108.6	283.0	66.0	7.97	11.94	1.79
10	102.2	346.0	65.0	0.93	19.83	1.74
20	97.1	271.0	66.0	5.07	17.47	5.00
30	97.1	212.0	72.0	11.74	10.50	2.68
40	97.1	184.0	72.0	12.73	8.84	1.82
50	97.1	165.0	73.0	12.74	8.19	1.45
60	96.1	293.0	73.0	7.81	12.68	1.22
70	88.1	355.0	73.0	0.62	19.76	2.91
80	82.1	265.0	74.0	6.33	20.00	5.00
90	82.1	213.0	74.0	18.89	1.94	0.36
100	82.1	186.0	74.0	13.98	7.61	1.83
110	82.1	168.0	75.0	13.77	7.09	1.53
120	82.1	187.0	71.0	19.33	2.39	0.07
130	78.1	275.0	70.0	7.05	12.59	2.10
140	67.1	262.0	70.0	9.23	11.13	5.00
150	52.2	359.0	66.0	1.52	18.89	2.44
160	54.1	237.0	70.0	9.87	19.99	5.00
170	55.0	199.0	71.0	12.64	14.64	5.00
180	55.0	176.0	71.0	13.25	12.43	4.06

190	55.1	161.0	72.0	13.52	10.71	3.33
200	60.1	196.0	73.0	19.06	1.16	0.26
210	48.5	332.0	73.0	1.54	18.60	1.78
220	42.1	307.0	73.0	1.97	18.97	1.31
230	41.1	228.0	73.0	8.52	20.00	5.00
240	41.1	194.0	73.0	12.31	15.03	5.00
250	41.1	173.0	73.0	13.27	12.08	4.35
260	41.1	159.0	73.0	13.39	10.64	3.63
270	39.1	249.0	73.0	10.98	8.52	1.52
280	33.4	328.0	73.0	3.29	17.13	0.75
290	29.1	262.0	73.0	2.67	20.00	5.00
300	28.1	210.0	73.0	8.90	20.00	5.00
310	28.1	182.0	73.0	12.66	14.01	5.00
320	28.9	164.0	73.0	13.69	11.35	4.80
330	28.1	156.0	73.0	14.71	4.03	0.80
340	23.6	333.0	73.0	0.45	15.91	5.00
350	19.1	261.0	73.0	3.45	17.73	5.00
360	19.1	206.0	73.0	9.65	14.35	5.00
370	19.1	179.0	73.0	12.43	10.99	4.17
380	19.1	162.0	72.0	13.21	9.66	3.35
390	19.1	200.0	72.0	15.04	7.11	1.51
400	17.1	299.0	72.0	6.93	13.14	1.35
410	13.1	300.0	72.0	8.57	11.67	1.99
420	12.0	228.0	72.0	6.51	14.49	3.77
430	11.0	190.0	71.0	9.14	14.56	4.65
440	11.0	170.0	71.0	11.71	11.89	3.78
450	11.0	155.0	71.0	11.91	11.22	3.54
460	10.9	223.0	71.0	14.40	5.25	1.43
470	8.1	258.0	71.0	11.26	8.66	1.80
480	6.0	247.0	70.0	13.10	6.96	1.72
490	5.0	236.0	70.0	14.78	5.44	0.99
500	3.1	232.0	71.0	15.01	5.29	0.73
510	0.0	301.0	71.0	9.55	11.10	1.01

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: EPA#3
Control #: 004-hhw-023-1
Test Duration: 510 min

	HHV	LHV
Eff	70.7%	76.2%
Comb Eff	87.5%	87.5%
HT Eff	80.8%	87.1%
Output	66,820	kJ/h
Burn Rate	4.75	kg/h
Grams CO	7,017	g
Input	94,495	kJ/h
MC wet	18.03	

Ultimate CO2
CO2-ult 19.80
F_0
1.055

Overall Heating Efficiency: 70.7%
Combustion Efficiency: 87.5%
Heat Transfer Efficiency: 80.8%

Air Fuel Ratio (A/F)	
Dry Molecular Weight (Md)	30.21
Dry Moles Exhaust Gas (Nr):	258.93
Air Fuel Ratio (A/F)	7.31

Heat Output: 63,386 Btu/h 66,820 kJ/h
Heat Input: 89,639 Btu/h 94,495 kJ/h
Burn Duration: 8.5 h
Burn Rate: 10.5 lb/h 4.8 kg/h
Stack Temp: 232.0 Deg. F 111.1 Deg. C

	Averages	2.87	12.22	97.4%	20.07	6.41	111.7	22.1	84.8%	82.1%	#DIV/0!	11.8	20.66	58.07	0.90
INPUT DATA				**Oxygen Calculation**			**Input Data**		**Combust**	**Heat**	**Net**	**Air**	**Wet Wt**	**% Wet**	**Dry Wt.**
Elapsed Time	**Weight Remaining (kg)**	**% CO [e]**	**% CO2 [d]**	**Excess Air EA**	**Total O2**	**Calc. % O2 [g]**	**Flue Gas (ºC)**	**Room Temp (ºC)**	**Eff %**	**Transfer %**	**Eff %**	**Fuel Ratio**	**Now Wt**	**Consumed x**	**Now Wtdn**
0	49.27	1.79	11.94	44.2%	20.15	7.32	139.4	18.9	89.1%	81.9%	72.9%	8.6	49.27	0.00	40.39
10	46.37	1.74	19.83	-8.2%	19.70	-1.00	174.4	18.3	93.1%	83.1%	77.3%	5.6	46.37	5.89	38.01
20	44.06	5.00	17.47	-11.9%	19.65	-0.32	132.8	18.9	81.3%	83.4%	67.8%	5.1	44.06	10.59	36.11
30	44.06	2.68	10.50	50.2%	20.18	8.34	100.0	22.2	83.1%	83.5%	#DIV/0!	8.8	44.06	10.59	36.11
40	44.06	1.82	8.84	85.8%	20.33	10.58	84.4	22.2	85.8%	84.1%	#DIV/0!	11.0	44.06	10.59	36.11
50	44.06	1.45	8.19	105.4%	20.39	11.47	73.9	22.8	87.6%	84.8%	74.3%	12.3	44.06	10.59	36.11
60	43.60	1.22	12.68	42.5%	20.14	6.85	145.0	22.8	92.6%	82.4%	76.3%	8.6	43.60	11.51	35.74
70	39.97	2.91	19.76	-12.6%	19.64	-1.58	179.4	22.8	89.1%	82.7%	73.7%	5.2	39.97	18.88	32.76
80	37.25	5.00	20.00	-20.8%	19.50	-3.00	129.4	23.3	83.1%	84.3%	70.1%	4.6	37.25	24.40	30.53
90	37.25	0.36	1.94	761.0%	20.81	18.69	100.6	23.3	89.0%	65.3%	#DIV/0!	52.0	37.25	24.40	30.53
100	37.25	1.83	7.61	109.8%	20.40	11.87	85.6	23.3	84.0%	83.3%	#DIV/0!	12.4	37.25	24.40	30.53
110	37.25	1.53	7.09	129.7%	20.44	12.59	75.6	23.9	85.4%	84.0%	#DIV/0!	13.6	37.25	24.40	30.53
120	37.25	0.07	2.39	705.0%	20.80	18.37	86.1	21.7	99.8%	73.1%	72.9%	49.6	37.25	24.40	30.53
130	35.44	2.10	12.59	34.8%	20.10	6.46	135.0	21.1	88.0%	82.5%	72.6%	8.0	35.44	28.08	29.05
140	30.44	5.00	11.13	22.8%	20.01	6.38	127.8	21.1	74.4%	81.1%	60.3%	7.0	30.44	38.21	24.95
150	23.68	2.44	18.89	-7.2%	19.71	-0.40	181.7	18.9	90.2%	82.3%	74.3%	5.6	23.68	51.93	19.41
160	24.55	5.00	19.99	-20.8%	19.50	-2.99	113.9	21.1	83.1%	84.9%	70.6%	4.6	24.55	50.18	20.12
170	24.95	5.00	14.64	0.8%	19.81	2.67	92.8	21.7	78.8%	84.6%	66.6%	5.8	24.95	49.36	20.45
180	24.95	4.06	12.43	20.1%	19.99	5.53	80.0	21.7	79.5%	84.9%	67.5%	7.0	24.95	49.36	20.45
190	25.00	3.33	10.71	41.0%	20.13	7.76	71.7	22.2	80.3%	85.1%	68.3%	8.2	25.00	49.26	20.49
200	27.27	0.26	1.16	1294.5%	20.86	19.57	91.1	22.8	88.3%	55.0%	48.6%	84.6	27.27	44.66	22.35
210	22.01	1.78	18.60	-2.8%	19.77	0.28	166.7	22.8	92.5%	83.3%	77.0%	5.9	22.01	55.34	18.04
220	19.10	1.31	18.97	-2.4%	19.77	0.15	152.8	22.8	94.5%	84.1%	79.4%	5.9	19.10	61.23	15.66
230	18.65	5.00	20.00	-20.8%	19.50	-3.00	108.9	22.8	83.1%	85.1%	70.8%	4.6	18.65	62.15	15.29
240	18.65	5.00	15.03	-1.1%	19.79	2.26	90.0	22.8	79.2%	84.9%	#DIV/0!	5.7	18.65	62.15	15.29
250	18.65	4.35	12.08	20.5%	20.00	5.74	78.3	22.8	78.0%	84.8%	#DIV/0!	7.0	18.65	62.15	15.29
260	18.65	3.63	10.64	38.8%	20.12	7.67	70.6	22.8	78.9%	85.1%	67.1%	8.1	18.65	62.15	15.29
270	17.74	1.52	8.52	97.2%	20.36	11.08	120.6	22.8	87.5%	81.2%	71.0%	11.8	17.74	64.00	14.54
280	15.15	0.75	17.13	10.8%	19.91	2.41	164.4	22.8	96.4%	83.2%	80.3%	6.8	15.15	69.24	12.42
290	13.20	5.00	20.00	-20.8%	19.50	-3.00	127.8	22.8	83.1%	84.4%	70.1%	4.6	13.20	73.20	10.82

300	12.75	5.00	20.00	-20.8%	19.50	-3.00	98.9	22.8	83.1%	85.5%	71.1%	4.6	12.75	74.13	10.45
310	12.75	5.00	14.01	4.2%	19.85	3.34	83.3	22.8	78.1%	84.9%	66.3%	6.0	12.75	74.13	10.45
320	13.11	4.80	11.35	22.6%	20.01	6.26	73.3	22.8	75.4%	84.7%	#DIV/0!	7.0	13.11	73.39	10.75
330	12.75	0.80	4.03	310.0%	20.66	16.23	68.9	22.8	86.9%	81.8%	71.1%	24.5	12.75	74.13	10.45
340	10.71	5.00	15.91	-5.3%	19.74	1.33	167.2	22.8	80.0%	81.4%	65.1%	5.5	10.71	78.27	8.78
350	8.67	5.00	17.73	-12.9%	19.63	-0.60	127.2	22.8	81.5%	83.9%	68.4%	5.1	8.67	82.41	7.10
360	8.67	5.00	14.35	2.3%	19.83	2.98	96.7	22.8	78.5%	84.3%	#DIV/0!	5.9	8.67	82.41	7.10
370	8.67	4.17	10.99	30.6%	20.07	6.99	81.7	22.8	77.2%	84.3%	#DIV/0!	7.6	8.67	82.41	7.10
380	8.67	3.35	9.66	52.2%	20.19	8.86	72.2	22.2	78.7%	84.6%	#DIV/0!	8.9	8.67	82.41	7.10
390	8.67	1.51	7.11	129.7%	20.44	12.58	93.3	22.2	85.6%	82.2%	70.4%	13.7	8.67	82.41	7.10
400	7.76	1.35	13.14	36.7%	20.11	6.29	148.3	22.2	92.2%	82.3%	75.9%	8.2	7.76	84.25	6.36
410	5.94	1.99	11.67	45.0%	20.16	7.49	148.9	22.2	87.8%	81.3%	71.3%	8.6	5.94	87.94	4.87
420	5.44	3.77	14.49	8.4%	19.89	3.52	108.9	22.2	82.7%	84.1%	69.6%	6.4	5.44	88.95	4.46
430	4.99	4.65	14.56	3.1%	19.84	2.95	87.8	21.7	79.8%	84.9%	67.7%	6.0	4.99	89.87	4.09
440	4.99	3.78	11.89	26.4%	20.04	6.26	76.7	21.7	79.9%	85.0%	#DIV/0!	7.4	4.99	89.87	4.09
450	4.99	3.54	11.22	34.2%	20.09	7.10	68.3	21.7	80.0%	85.4%	68.3%	7.8	4.99	89.87	4.09
460	4.95	1.43	5.25	196.4%	20.56	14.59	106.1	21.7	82.6%	78.4%	64.8%	17.5	4.95	89.96	4.05
470	3.68	1.80	8.66	89.3%	20.34	10.78	125.6	21.7	85.7%	80.7%	69.2%	11.2	3.68	92.54	3.01
480	2.72	1.72	6.96	128.1%	20.44	12.62	119.4	21.1	83.7%	79.4%	66.5%	13.5	2.72	94.48	2.23
490	2.27	0.99	5.44	208.0%	20.57	14.64	113.3	21.1	87.6%	78.1%	68.4%	18.4	2.27	95.40	1.86
500	1.41	0.73	5.29	228.9%	20.59	14.94	111.1	21.7	90.4%	78.3%	70.8%	19.8	1.41	97.15	1.15
510	0.00	1.01	11.10	63.5%	20.24	8.64	149.4	21.7	93.1%	81.2%	75.6%	9.9	0.00	100.00	0.00
0															0.00

Moisture Cont

%HC						
1.32	Combustion Efficiency:	87.5%			Moisture of Wood (wet basis):	18.03
	Total Input (kJ):	803,207	761,803	(Btu)	Initial Dry Weight Wtdo (kg):	40.39
	Total Output (kJ):	567,971	538,693	(Btu)	Moisture Content Dry	22.00
	Efficiency:	70.7%				
	Total CO (g):	7017.47				

Load Weight (kg):	49.27					
Fuel Heating:	HHV	LHV			HHV	LHV
Value in kJ/kg - CV:	19887.00	18463.91		Btu/lb	8555.61	7943.38

58.07	814671	4.17	6.60	2.68	19887.00	18.03	78.49	20.82	3.72	11.47	0.40	0.37	33.35	46.41	7.51	1.01
% Dry	**Fuel Properties**					**Mw**	**Mass Balance**					**kg Wood per**				
Comsumed	**Total**	**Carbon**	**Hydrogen**	**Oxygen**	**Calorific**	**Moisture**	**(moles/100 mole dry flue gas)**					**100 mole dfp**	**Moles per kg of Dry Woo**			
y	**Input**	**/12= [a]**	**/1= [b]**	**/16= [c]**	**Value**	**Fuel Burnt**	**[h]**	**[u]**	**[w]**	**[j]**	**[k]**	**Nk**	**CO2**	**O2**	**CO**	**HC**
0.00	0	4.17	6.60	2.68	19887.00	18.03	78.95	20.94	3.35	10.58	0.25	0.33	35.78	21.92	5.36	0.74
5.89	66194	4.17	6.60	2.68	19887.00	18.03	79.43	21.07	5.24	16.78	0.25	0.52	38.05	-1.92	3.34	0.48
10.59	18860	4.17	6.60	2.68	19887.00	18.03	77.85	20.65	5.57	16.93	0.72	0.55	31.55	-0.58	9.03	1.30
10.59	0	4.17	6.60	2.68	19887.00	18.03	78.48	20.82	3.25	9.99	0.37	0.32	32.44	25.78	8.28	1.15
10.59	0	4.17	6.60	2.68	19887.00	18.03	78.76	20.89	2.62	8.15	0.25	0.26	33.95	40.62	6.99	0.94
10.59	3698	4.17	6.60	2.68	19887.00	18.03	78.89	20.93	2.36	7.40	0.19	0.23	34.89	48.86	6.18	0.81
11.51	33282	4.17	6.60	2.68	19887.00	18.03	79.25	21.02	3.38	10.81	0.16	0.34	37.75	20.40	3.63	0.49
18.88	51772	4.17	6.60	2.68	19887.00	18.03	78.91	20.93	5.54	17.45	0.42	0.55	35.83	-2.86	5.28	0.76
24.40	22188	4.17	6.60	2.68	19887.00	18.03	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
24.40	0	4.17	6.60	2.68	19887.00	18.03	79.01	20.96	0.56	1.79	0.02	0.06	34.98	337.00	6.49	0.40
24.40	0	4.17	6.60	2.68	19887.00	18.03	78.69	20.87	2.32	7.18	0.24	0.23	32.91	51.34	7.91	1.06
24.40	0	4.17	6.60	2.68	19887.00	18.03	78.79	20.90	2.12	6.58	0.20	0.21	33.66	59.77	7.26	0.95
24.40	14792	4.17	6.60	2.68	19887.00	18.03	79.17	21.00	0.59	1.97	-0.02	0.06	41.00	315.22	1.20	-0.33
28.08	55470	4.17	6.60	2.68	19887.00	18.03	78.85	20.92	3.60	11.28	0.29	0.36	35.19	18.04	5.87	0.82
38.21	95778	4.17	6.60	2.68	19887.00	18.03	77.49	20.55	4.04	11.92	0.71	0.40	27.68	15.87	12.43	1.77
51.93	48074	4.17	6.60	2.68	19887.00	18.03	79.07	20.97	5.20	16.47	0.35	0.52	36.48	-0.76	4.71	0.68
50.18	-10354	4.17	6.60	2.68	19887.00	18.03	78.00	20.69	6.17	18.92	0.73	0.61	32.55	-4.86	8.14	1.18
49.36	-3328	4.17	6.60	2.68	19887.00	18.03	77.69	20.61	4.89	14.69	0.72	0.49	30.12	5.50	10.29	1.47
49.36	-370	4.17	6.60	2.68	19887.00	18.03	77.98	20.68	4.10	12.36	0.58	0.41	30.50	13.58	9.96	1.41
49.26	-18860	4.17	6.60	2.68	19887.00	18.03	78.20	20.74	3.48	10.56	0.47	0.35	30.91	22.39	9.61	1.35
44.66	24407	4.17	6.60	2.68	19887.00	18.03	79.01	20.96	0.34	1.12	0.01	0.03	34.06	574.51	7.63	0.19
55.34	66564	4.17	6.60	2.68	19887.00	18.03	79.34	21.05	4.95	15.83	0.26	0.49	37.74	0.57	3.61	0.52
61.23	27365	4.17	6.60	2.68	19887.00	18.03	79.57	21.11	4.91	15.83	0.19	0.49	38.81	0.31	2.68	0.39
62.15	3698	4.17	6.60	2.68	19887.00	18.03	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
62.15	0	4.17	6.60	2.68	19887.00	18.03	77.71	20.61	4.98	15.00	0.72	0.50	30.34	4.56	10.09	1.45
62.15	0	4.17	6.60	2.68	19887.00	18.03	77.83	20.64	4.09	12.27	0.62	0.41	29.67	14.10	10.69	1.52
62.15	7396	4.17	6.60	2.68	19887.00	18.03	78.06	20.71	3.55	10.68	0.51	0.35	30.14	21.72	10.28	1.45
64.00	28475	4.17	6.60	2.68	19887.00	18.03	78.88	20.92	2.46	7.71	0.20	0.24	34.84	45.32	6.22	0.82
69.24	36980	4.17	6.60	2.68	19887.00	18.03	79.71	21.14	4.32	14.04	0.10	0.43	39.89	5.61	1.75	0.24
73.20	19599	4.17	6.60	2.68	19887.00	18.03	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18

74.13	3698	4.17	6.60	2.68	19887.00	18.03	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
74.13	-2958	4.17	6.60	2.68	19887.00	18.03	77.65	20.60	4.73	14.19	0.71	0.47	29.74	7.09	10.61	1.52
73.39	0	4.17	6.60	2.68	19887.00	18.03	77.59	20.58	4.04	11.97	0.68	0.40	28.24	15.58	11.94	1.70
74.13	19599	4.17	6.60	2.68	19887.00	18.03	78.94	20.94	1.18	3.72	0.09	0.12	34.30	138.18	6.81	0.76
78.27	33282	4.17	6.60	2.68	19887.00	18.03	77.76	20.63	5.19	15.69	0.72	0.52	30.80	2.57	9.68	1.39
82.41	16641	4.17	6.60	2.68	19887.00	18.03	77.87	20.65	5.63	17.13	0.72	0.56	31.66	-1.06	8.93	1.29
82.41	0	4.17	6.60	2.68	19887.00	18.03	77.67	20.60	4.82	14.46	0.72	0.48	29.95	6.22	10.43	1.49
82.41	0	4.17	6.60	2.68	19887.00	18.03	77.85	20.65	3.78	11.29	0.59	0.38	29.22	18.60	11.09	1.57
82.41	0	4.17	6.60	2.68	19887.00	18.03	78.13	20.72	3.23	9.74	0.47	0.32	30.01	27.52	10.41	1.46
82.41	7396	4.17	6.60	2.68	19887.00	18.03	78.80	20.90	2.12	6.59	0.20	0.21	33.77	59.74	7.17	0.94
84.25	22188	4.17	6.60	2.68	19887.00	18.03	79.22	21.01	3.52	11.25	0.18	0.35	37.50	17.96	3.85	0.53
87.94	18860	4.17	6.60	2.68	19887.00	18.03	78.85	20.92	3.34	10.49	0.27	0.33	35.07	22.51	5.98	0.83
88.95	7766	4.17	6.60	2.68	19887.00	18.03	78.22	20.75	4.51	13.81	0.54	0.45	32.28	7.83	8.40	1.20
89.87	3698	4.17	6.60	2.68	19887.00	18.03	77.84	20.65	4.77	14.41	0.67	0.47	30.68	6.22	9.80	1.40
89.87	0	4.17	6.60	2.68	19887.00	18.03	78.07	20.71	3.89	11.76	0.53	0.39	30.73	16.18	9.77	1.38
89.87	370	4.17	6.60	2.68	19887.00	18.03	78.14	20.73	3.66	11.09	0.50	0.36	30.79	19.49	9.72	1.37
89.96	10724	4.17	6.60	2.68	19887.00	18.03	78.73	20.88	1.65	5.07	0.18	0.16	32.03	89.03	8.73	1.12
92.54	18120	4.17	6.60	2.68	19887.00	18.03	78.76	20.89	2.57	7.99	0.24	0.26	33.89	42.18	7.04	0.95
94.48	11464	4.17	6.60	2.68	19887.00	18.03	78.70	20.87	2.14	6.60	0.23	0.21	32.72	59.33	8.09	1.07
95.40	10724	4.17	6.60	2.68	19887.00	18.03	78.93	20.94	1.57	4.95	0.12	0.16	34.78	93.58	6.33	0.76
97.15	29954	4.17	6.60	2.68	19887.00	18.03	79.04	20.97	1.46	4.67	0.08	0.15	36.31	102.53	5.01	0.56
100.00	11464	4.17	6.60	2.68	19887.00	18.03	79.25	21.02	2.94	9.43	0.13	0.29	37.97	29.55	3.45	0.45

ent MCwb: 18.03

Dry kg : 40.39
CA: 50.00
HY: 6.60
OX: 42.90

											SUMS					
322.79	31.15	12.22	384.83	3546.27	2679.09	2607.74	2578.31	3391.34	3121.38	295.21	6272.78	5263.84	111511.49	39152.62	46852.95	76295.95
ıd		Moisture	Stack Temp	Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent						Room Temp	Energy Losses (kJ/kg of Dry Fuel) Flue Gas Constituent					
N2	H2O	Present	K	CO2	O2	CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb
236.56	31.69	12.22	412.59	4792.95	3610.98	3512.38	3473.25	4605.31	4203.44	292.04	171.47	79.16	1536.39	821.65	660.13	1526.60
152.42	32.20	12.22	447.59	6284.51	4700.17	4563.35	4514.29	6114.12	5458.48	291.48	239.14	-9.01	960.15	688.08	433.85	1591.45
140.58	30.56	12.22	405.93	4516.89	3407.88	3316.02	3278.83	4329.38	3968.82	292.04	142.49	-1.98	2584.97	460.93	1164.23	1465.11
242.48	30.86	12.22	373.15	3051.50	2317.03	2258.19	2232.10	2892.53	2703.89	295.37	99.00	59.73	2362.10	541.24	1028.73	1440.42
302.44	31.28	12.22	357.59	2427.17	1849.27	1803.84	1782.68	2286.92	2160.35	295.37	82.39	75.11	1990.36	539.16	840.86	1442.99
336.05	31.54	12.22	347.04	1986.33	1516.74	1480.30	1462.76	1864.23	1773.12	295.93	69.30	74.11	1757.09	491.55	724.41	1442.78
235.95	32.18	12.22	418.15	4875.95	3666.10	3564.17	3524.85	4701.30	4264.84	295.93	184.08	74.78	1040.88	831.69	439.23	1552.37
143.10	31.64	12.22	452.59	6328.33	4723.55	4583.73	4534.94	6177.31	5482.13	295.93	226.77	-13.51	1517.60	648.93	685.49	1564.45
126.96	30.81	12.22	402.59	4210.13	3175.68	3089.89	3055.27	4037.02	3698.12	296.48	137.07	-15.49	2328.47	387.91	1055.39	1468.40
1424.85	32.37	12.22	373.71	3031.57	2301.06	2242.42	2216.55	2875.47	2684.94	296.48	106.06	775.47	1851.75	3158.26	356.67	1510.05
340.24	31.05	12.22	358.71	2429.17	1849.89	1804.23	1783.11	2290.79	2160.75	296.48	79.93	94.97	2253.53	606.68	944.45	1432.30
374.07	31.26	12.22	348.71	2010.00	1533.87	1496.79	1479.10	1888.51	1792.80	297.04	67.66	91.68	2066.50	553.28	848.68	1430.65
1358.19	33.82	12.22	359.26	2514.89	1915.63	1868.46	1846.57	2370.60	2237.71	294.82	103.12	603.85	342.10	2508.00	-292.92	1562.81
220.40	31.53	12.22	408.15	4524.23	3410.16	3317.44	3280.40	4343.55	3970.27	294.26	159.21	61.54	1680.52	723.00	730.69	1511.63
192.68	29.63	12.22	400.93	4226.16	3190.44	3104.91	3069.98	4046.54	3716.30	294.26	116.97	50.64	3557.17	591.54	1579.07	1413.11
152.70	31.81	12.22	454.82	6571.24	4906.59	4761.77	4710.99	6410.67	5695.19	292.04	239.74	-3.75	1356.05	719.39	609.75	1579.60
127.01	30.80	12.22	387.04	3657.19	2769.22	2697.02	2666.25	3483.56	3228.73	294.26	119.05	-13.46	2326.18	338.65	1055.12	1453.90
159.82	30.22	12.22	365.93	2781.92	2115.94	2063.08	2039.06	2629.11	2470.55	294.82	83.78	11.63	2932.06	325.88	1315.10	1403.39
191.34	30.34	12.22	353.15	2271.24	1732.37	1690.28	1670.36	2135.82	2024.50	294.82	69.27	23.52	2836.09	319.60	1261.31	1395.38
225.73	30.47	12.22	344.82	1919.57	1466.66	1431.64	1414.63	1799.59	1714.91	295.37	59.34	32.85	2733.94	319.33	1203.34	1391.88
2319.71	32.79	12.22	364.26	2672.70	2033.11	1982.39	1959.29	2525.35	2373.94	295.93	91.02	1168.04	2175.32	4544.98	166.20	1519.75
161.00	32.13	12.22	439.82	5785.53	4330.03	4204.73	4159.37	5622.00	5029.76	295.93	218.37	2.45	1037.39	669.68	465.31	1574.18
162.79	32.39	12.22	425.93	5200.90	3903.95	3793.82	3752.29	5028.78	4539.12	295.93	201.85	1.20	768.62	610.84	345.19	1571.40
126.96	30.81	12.22	382.04	3390.24	2568.94	2502.42	2473.77	3225.21	2995.91	295.93	110.37	-12.53	2323.69	314.08	1054.43	1446.77
156.85	30.27	12.22	363.15	2628.16	1999.72	1949.94	1927.20	2482.19	2335.12	295.93	79.73	9.12	2875.71	302.29	1291.31	1401.75
191.18	30.13	12.22	351.48	2162.64	1649.74	1609.71	1590.72	2033.25	1928.01	295.93	64.17	23.27	3041.11	304.12	1353.37	1382.97
221.17	30.27	12.22	343.71	1854.48	1417.11	1383.31	1366.87	1738.19	1657.03	295.93	55.90	30.77	2924.62	302.31	1290.58	1381.18
322.52	31.52	12.22	393.71	3866.10	2922.12	2844.65	2812.47	3694.12	3405.06	295.93	134.69	132.43	1776.53	907.08	735.90	1493.19
185.61	32.68	12.22	437.59	5691.61	4261.74	4138.91	4094.16	5526.36	4951.18	295.93	227.02	23.89	501.44	759.91	217.35	1598.74
126.96	30.81	12.22	400.93	4162.66	3141.37	3056.89	3022.56	3988.21	3658.73	295.93	135.52	-15.32	2328.20	383.76	1055.33	1467.19

126.96	30.81	12.22	372.04	2985.50	2267.19	2209.68	2184.14	2829.36	2645.83	295.93	97.20	-11.06	2321.31	277.31	1053.96	1435.98
164.86	30.13	12.22	356.48	2361.66	1799.58	1755.43	1734.82	2224.72	2102.39	295.93	70.24	12.75	3022.60	285.99	1354.55	1388.13
193.04	29.77	12.22	346.48	1964.33	1500.13	1464.13	1446.77	1843.18	1753.77	295.93	55.47	23.37	3397.04	279.28	1512.47	1361.38
671.94	31.64	12.22	342.04	1788.67	1367.33	1334.84	1318.95	1675.40	1599.00	295.93	61.36	188.93	1936.24	886.26	678.97	1441.92
150.56	30.38	12.22	440.37	5809.03	4347.11	4221.19	4175.68	5645.96	5049.41	295.93	178.94	11.18	2780.49	628.69	1245.63	1489.41
139.04	30.59	12.22	400.37	4139.80	3124.49	3040.55	3006.38	3965.48	3639.21	295.93	131.07	-3.32	2553.80	418.01	1151.53	1456.34
162.10	30.18	12.22	369.82	2895.95	2200.25	2144.71	2119.86	2742.15	2568.11	295.93	86.73	13.68	2975.36	343.62	1333.40	1404.45
206.98	30.03	12.22	354.82	2295.24	1749.61	1706.84	1686.77	2160.74	2044.25	295.93	67.07	32.54	3156.60	349.13	1398.86	1381.80
242.75	30.25	12.22	345.37	1941.54	1483.27	1447.80	1430.62	1820.59	1734.26	295.37	58.27	40.82	2960.47	347.28	1298.37	1382.73
374.24	31.29	12.22	366.48	2783.07	2116.29	2063.30	2039.31	2631.32	2470.78	295.37	93.98	126.43	2044.21	763.18	837.51	1453.08
226.06	32.11	12.22	421.48	5036.17	3784.32	3678.56	3638.09	4860.69	4401.53	295.37	188.84	67.95	1104.39	822.43	471.16	1553.32
236.96	31.51	12.22	422.04	5059.38	3801.31	3694.96	3654.33	4884.08	4421.13	295.37	177.43	85.56	1714.46	865.91	739.05	1524.99
174.26	30.77	12.22	382.04	3411.41	2585.30	2518.43	2489.58	3244.67	3015.10	295.37	110.12	20.25	2397.90	433.84	1069.79	1445.75
164.00	30.36	12.22	360.93	2581.53	1965.67	1917.10	1894.67	2434.99	2295.90	294.82	79.19	12.22	2791.36	310.73	1250.97	1404.73
201.75	30.40	12.22	349.82	2138.80	1632.56	1593.18	1574.34	2008.64	1908.29	294.82	65.72	26.41	2779.93	317.62	1232.51	1394.80
214.44	30.43	12.22	341.48	1809.10	1383.45	1350.70	1334.60	1693.41	1618.05	294.82	55.71	26.96	2762.46	286.19	1220.56	1387.15
480.39	30.93	12.22	379.26	3319.86	2517.74	2453.06	2424.88	3153.59	2936.99	294.82	106.35	224.16	2490.72	1164.90	996.44	1451.03
308.18	31.27	12.22	398.71	4113.59	3106.57	3023.57	2989.50	3936.31	3619.03	294.82	139.39	131.03	2014.46	921.30	847.21	1488.11
369.97	31.02	12.22	392.59	3884.11	2937.50	2860.04	2827.60	3707.46	3423.63	294.26	127.09	174.29	2311.38	1046.13	956.88	1470.35
504.70	31.64	12.22	386.48	3634.55	2752.40	2680.72	2650.13	3461.27	3209.25	294.26	126.42	257.57	1808.31	1337.52	681.92	1492.70
542.48	32.05	12.22	384.26	3522.92	2668.83	2599.56	2569.84	3352.84	3112.16	294.82	127.91	273.64	1430.89	1394.10	499.24	1508.87
271.10	32.26	12.22	422.59	5103.76	3834.66	3727.37	3686.39	4926.92	4459.91	294.82	193.79	113.32	990.61	999.37	403.44	1562.53

	AVERAGE	SUMS						
29928.79	6063.05	235237	100662	134574.26	579435	100662	7017.47	534.52
	Total							
	Loss	**Total**	**Chemical**	**Sensible and**	**Total**	**Chem**	**Grams Produced**	
H2O Fuel MC	**Rate**	**Loss**	**Loss 1**	**Latent Loss**	**Output**	**Loss 2**	**CO**	**HC**
588.78	5384.17	0	0	0.00	0	0	0.00	0.00
604.12	4507.77	15004	4579	10424.85	51190	4579	311.19	25.78
585.91	6401.66	6071	3522	2549.20	12789	3522	239.74	19.75
570.45	6101.67	0	0	0.00	0	0	0.00	0.00
563.81	5534.68	0	0	0.00	0	0	0.00	0.00
559.07	5118.32	952	459	492.30	2746	459	32.16	2.42
589.53	4712.56	7887	2452	5435.23	25395	2452	170.21	13.14
604.41	5234.13	13626	5660	7966.05	38146	5660	384.67	31.86
582.60	5944.35	6632	3742	2890.14	15556	3742	254.27	21.07
570.22	8328.47	0	0	0.00	0	0	0.00	0.00
563.81	5975.68	0	0	0.00	0	0	0.00	0.00
559.32	5617.78	0	0	0.00	0	0	0.00	0.00
564.75	5391.71	4010	35	3974.89	10782	35	25.01	-3.91
585.93	5452.51	15209	6661	8547.20	40262	6661	458.41	36.46
582.82	7891.32	38006	24516	13489.20	57773	24516	1676.67	136.08
607.01	5107.79	12347	4687	7660.14	35727	4687	318.97	26.30
576.87	5856.30	-3049	-1747	-1302.22	-7305	-1747	-118.70	-9.84
567.60	6639.44	-1111	-707	-404.56	-2217	-707	-48.20	-3.94
562.15	6467.32	-120	-76	-44.44	-250	-76	-5.19	-0.42
558.36	6299.04	-5974	-3719	-2255.13	-12886	-3719	-255.24	-20.47
566.42	10231.73	12557	2855	9702.62	11850	2855	262.31	3.66
598.88	4566.26	15284	4969	10314.71	51280	4969	338.52	27.82
592.88	4091.97	5631	1516	4114.73	21735	1516	103.26	8.49
574.02	5810.84	1081	624	456.86	2617	624	42.38	3.51
565.94	6525.84	0	0	0.00	0	0	0.00	0.00
560.97	6729.97	0	0	0.00	0	0	0.00	0.00
557.66	6543.03	2433	1561	871.95	4963	1561	107.09	8.61
579.02	5758.83	8246	3568	4677.95	20229	3568	249.17	18.86
597.92	3926.27	7301	1321	5980.28	29679	1321	90.93	7.22
582.12	5936.80	5851	3305	2545.51	13748	3305	224.60	18.61

569.74	5744.44	1068	624	444.52	2630	624	42.38	3.51
563.10	6697.37	-996	-648	-348.43	-1962	-648	-44.21	-3.61
558.84	7187.84	0	0	0.00	0	0	0.00	0.00
556.95	5750.63	5667	2567	3100.30	13932	2567	187.92	12.01
599.12	6933.48	11604	6656	4947.16	21678	6656	453.64	37.23
581.88	6289.31	5263	3074	2189.21	11378	3074	209.19	17.24
568.79	6726.03	0	0	0.00	0	0	0.00	0.00
562.39	6948.38	0	0	0.00	0	0	0.00	0.00
558.60	6646.54	0	0	0.00	0	0	0.00	0.00
567.60	5886.01	2189	1065	1123.72	5207	1065	74.68	5.58
591.20	4799.29	5355	1739	3615.42	16833	1739	120.35	9.40
591.44	5698.85	5405	2302	3102.50	13455	2302	158.80	12.53
574.25	6051.90	2363	1344	1018.91	5403	1344	91.83	7.48
565.46	6414.67	1193	748	445.27	2505	748	51.01	4.17
560.73	6377.72	0	0	0.00	0	0	0.00	0.00
557.18	6296.21	117	74	43.30	253	74	5.06	0.41
573.30	7006.90	3779	1867	1911.49	6946	1867	131.75	9.62
581.64	6123.13	5579	2585	2994.52	12541	2585	179.69	13.81
579.25	6665.36	3842	1868	1973.88	7622	1868	130.51	9.87
576.63	6281.07	3387	1332	2054.82	7337	1332	95.58	6.58
575.44	5810.09	8751	2885	5866.45	21203	2885	211.30	13.47
591.91	4854.97	2799	795	2003.75	8665	795	55.76	4.16

Dirigo Laboratories, Inc.

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#3
Control #: 004-hhw-023-1
Test Duration: 510
Output Category: 4

	HHV Basis	LHV Basis
Overall Efficiency	70.7%	76.2%
Combustion Efficiency	87.5%	87.5%
Heat Transfer Efficiency	80.8%	87.1%

HHV Output Rate (kJ/h)	66,820	63,386	**(Btu/h)**
Burn Rate (kg/h)	4.75	10.47	**(lb/h)**
Input (kJ/h)	94,495	89,639	**(Btu/h)**

Test Load Weight (dry kg)	40.4	89.0	**dry lb**
MC wet (%)	18.03		
MC dry (%)	22.00		
Particulate (g)	126.37		
CO (g)	7017		
Test Duration (h)	8.5		

Emissions	**Particulate**	**CO**
g/MJ Output	0.22	12.36
g/kg Dry Fuel	3.13	173.75
g/h	14.87	825.58
lb/MM Btu Output	0.52	28.71

Air/Fuel Ratio (A/F)	7.31

Test Results in Accordance with CSA B415.1-10

Technician: _____

PREBURN

JOB # 004_HHW_023_1
TECHNICIAI BTN
DATE: 3_15_14
RUN #: EPA4
READING INTERVAL: 10
.
Run Time: 220

Model Designation RS7300 E

	Tunnel Traverse Information											
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10	Pt.11	Pt. 12
dP	0.045	0.045	0.050	0.052	0.052	0.046	0.044	0.045	0.045	0.052	0.052	0.045
Temperature	95	95	95	95	95	95	95	95	95	95	95	95

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	80.2	-0.045	6017	6018	6020	6018	6018	6018.2
10	77.1	-0.022	6016	6017	6019	6017	6017	6017.2
20	77.4	-0.019	6016	6016	6019	6016	6017	6016.8
30	76.1	-0.036	6016	6017	6019	6017	6017	6017.2
40	67.5	-0.044	6016	6017	6019	6017	6017	6017.2
50	61.7	-0.039	6016	6016	6019	6016	6017	6016.8
60	57.9	-0.024	6016	6016	6019	6016	6017	6016.8
70	58.1	-0.016	6016	6017	6019	6017	6017	6017.2
80	56.1	-0.03	6016	6017	6019	6017	6017	6017.2
90	46.4	-0.04	6017	6017	6020	6017	6018	6017.8
100	46	-0.032	6017	6018	6020	6017	6018	6018
110	43.1	-0.026	6017	6018	6020	6018	6018	6018.2
120	42.1	-0.019	6018	6019	6021	6019	6020	6019.4
130	42.1	-0.022	6020	6021	6023	6021	6021	6021.2
140	35	-0.036	6021	6022	6024	6022	6023	6022.4
150	25.1	-0.033	6022	6023	6025	6023	6023	6023.2
160	26.1	-0.024	6022	6023	6025	6023	6023	6023.2
170	26.1	-0.016	6022	6023	6025	6023	6024	6023.4
180	30.2	-0.035	6023	6024	6026	6024	6024	6024.2
190	22.6	-0.029	6023	6024	6026	6024	6024	6024.2
200	19	-0.029	6022	6022	6024	6022	6023	6022.6
210	18.1	-0.018	6021	6022	6024	6022	6022	6022.2
220	18.1	-0.027	6022	6022	6025	6022	6023	6022.8

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	14.19113	ft/sec.
Intial Tunnel Flow:	655.8557	scfm
Average Tunnel Flow:	641.8173	scfm

Notes:

Run #	Epa#4
Date:	3/15/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.045	0.045	0.050	0.052	0.052	0.046	0.044	0.045	0.045	0.052	0.052	0.045	0.048
Temperature	95	95	95	95	95	95	95	95	95	95	95	95	95.000

Tunnel Velocity:	14.191	ft/sec.
Intial Tunnel Flow:	655.86	scfm
Average Tunnel Flow	641.82	scfm

JOB #	004-hhw-023-1															
TECHNICIAN	Btn							ROOM TEMP (F)					BEG	MID	END	AVG
DATE:	3/15/2014								BAROMETRIC I				30.31	30.31	30.31	30.31
RUN #:	Epa#4															
READING INTERVAL:		10														
SAMPLE BOX :		A	METER Y FACTOR:		0.995					PROBE MATERIAL:			SS			
FRONT FILTER #:						REAR FILTER #	REAR FILTER #:									
FINAL LEAK RATE (CFM):			@		IN-HG		FINAL LEAK RATE (CFM)			@		IN-HG				
Run Time:		300		AMBIENT FILTER #:				VOLUME		LITERS	FUEL MOISTURE DB			21.2	%	
				FINAL LEAK RATE (CFM):				@		IN-HG						
TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
0		0.000	0.043	0.07	-0.08		NA	109.1	0	86	287	68	6025	6023	75	68
10	1.385	0.138	0.041	2.01	-0.95	13.673	109	103.1	6	99	352	73	6025	6023	76	68
20	2.769	0.138	0.046	1.97	-1.9	14.547	102	89	14.1	104	376	76	6025	6023	81	67
30	4.157	0.139	0.045	2.01	0	14.040	100	86.1	2.9	77	279	71	6024	6023	84	67
40	5.554	0.140	0.044	2	0	13.857	101	86.1	0	75	224	70	6024	6023	87	67
50	6.958	0.140	0.045	1.98	-1.32	14.157	101	85.1	1	86	242	70	6025	6023	90	67
60	8.356	0.140	0.043	1.99	0	14.065	104	75.7	9.4	104	373	75	6025	6023	93	67
70	9.756	0.140	0.048	1.97	0	14.900	99	67.3	8.4	107	388	76	6024	6022	95	67
80	11.167	0.141	0.046	1.97	-2.02	14.169	99	64.1	3.2	75	257	68	6024	6022	96	67
90	12.578	0.141	0.043	1.98	0	13.699	102	65.1	-1	75	213	68	6024	6022	98	68
100	13.994	0.142	0.044	1.99	-0.26	14.063	102	62.1	3	91	283	71	6024	6023	99	68
110	15.403	0.141	0.045	1.98	-1.37	14.388	101	52.6	9.5	104	379	76	6024	6023	100	68
120	16.814	0.141	0.043	1.97	-1.27	13.801	102	43.1	9.5	83	312	72	6025	6023	101	68
130	18.228	0.141	0.046	1.97	0	14.169	98	41.1	2	75	242	69	6025	6023	102	68
140	19.649	0.142	0.048	1.99	-1.89	14.460	96	41.1	0	74	205	69	6025	6023	102	68
150	21.065	0.142	0.044	1.97	-2.12	14.114	102	37.1	4	95	325	73	6025	6023	102	68
160	22.480	0.141	0.042	1.96	-0.94	13.864	105	29.8	7.3	101	361	74	6025	6023	103	69
170	23.894	0.141	0.046	1.96	0	14.182	98	23.1	6.7	76	275	71	6025	6023	103	68
180	25.314	0.142	0.048	1.97	-0.22	14.460	96	23.1	0	74	222	70	6024	6023	104	67
190	26.735	0.142	0.04	1.98	0	13.237	105	24.3	-1.2	77	195	70	6024	6023	104	68
200	28.154	0.142	0.048	2	-0.32	14.728	97	19.9	4.4	94	335	72	6025	6023	104	68
210	29.569	0.142	0.042	1.98	0	13.826	104	13.1	6.8	98	361	73	6024	6023	104	68
220	30.989	0.142	0.044	1.99	-0.82	13.844	100	12	1.1	74	252	70	6024	6022	104	68
230	32.410	0.142	0.048	1.98	0	14.446	96	12.1	-0.1	73	208	70	6025	6023	104	66
240	33.831	0.142	0.047	1.98	-2.02	14.468	98	11.1	1	86	269	70	6024	6023	104	67
250	35.249	0.142	0.045	1.99	-1.31	14.247	100	8	3.1	93	330	72	6024	6023	104	68
260	36.667	0.142	0.048	1.98	-1.23	14.728	97	3	5	94	336	72	6024	6023	104	67
270	38.084	0.142	0.045	1.97	-1.87	14.001	98	2	1	74	249	70	6024	6023	104	67

TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
280	39.506	0.142	0.044	2	0	13.831	100	1.6	0.4	73	205	69	6024	6022	104	67
290	40.925	0.142	0.044	1.97	-1.94	13.999	101	1.1	0.5	86	265	70	6024	6022	104	67
300	42.347	0.142	0.047	1.97	-0.11	14.282	97	-0.2	1.3	72	192	69	6024	6022	104	67
												76				69
	42.347		0.045	1.98		14.141	100.3			86	284				98	68

JOB #	004_HHW_023_1						
TECHNICIAN	BTN						
DATE:	3_15_14						
RUN #:	EPA4						
READING INTERVAL:	10						
SAMPLE BOX :	*B*	METER Y FACTOR:	0.974		PROBE MATERIAL:	**SS**	
FRONT FILTER #:				REAR FILTER #:			
FINAL LEAK RATE (CFM):		@	IN-HG	FINAL LEAK RATE (CFM):		@	IN-HG

Run Time: 300 **Firebox Delta T** **#N/A**

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6022	6022	68	6022	6023	73	
10	1.520	0.152	118	-0.03	2.02	-1	6022	6023	73	6022	6023	74	
20	3.044	0.152	112	-0.04	2	-1.83	6022	6023	76	6022	6023	75	
30	4.454	0.141	101	-0.03	1.99	-2.17	6022	6022	71	6022	6023	80	
40	5.857	0.140	101	-0.01	2.01	-1.48	6021	6022	70	6022	6023	84	
50	7.258	0.140	100	-0.02	2.01	-1	6022	6023	70	6022	6023	87	
60	8.657	0.140	104	-0.04	2.01	-1.75	6022	6022	75	6022	6023	90	
70	10.052	0.140	98	-0.05	2	-2.12	6021	6022	77	6022	6022	92	
80	11.454	0.140	97	-0.02	2	-1.77	6021	6021	69	6021	6022	93	
90	12.860	0.141	100	-0.02	1.99	-1.43	6021	6022	69	6022	6022	95	
100	14.265	0.140	101	-0.03	2	-1.21	6021	6022	72	6022	6023	96	
110	15.670	0.140	100	-0.04	1.98	-2.01	6022	6022	76	6022	6023	97	
120	17.071	0.140	100	-0.04	1.98	-0.99	6022	6023	72	6022	6023	98	
130	18.483	0.141	97	-0.03	2.02	-1.57	6022	6023	70	6022	6023	98	
140	19.902	0.142	95	-0.02	2.02	-2.14	6022	6022	70	6022	6023	99	
150	21.319	0.142	101	-0.04	2.02	-1.28	6022	6022	73	6022	6023	99	
160	22.735	0.142	104	-0.04	2.02	-2.09	6022	6023	74	6023	6023	99	
170	24.154	0.142	97	-0.03	2.01	-2.14	6022	6023	71	6022	6023	100	
180	25.574	0.142	95	-0.02	2.02	-2.08	6021	6022	70	6022	6023	100	
190	26.993	0.142	104	-0.03	2.01	-1.55	6022	6022	70	6022	6023	100	

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
200	28.412	0.142	97	-0.03	2.01	-1.14	6022	6023	72	6022	6023	100	
210	29.833	0.142	104	-0.04	2	-0.99	6021	6022	73	6022	6023	100	
220	31.253	0.142	99	-0.03	2.02	-1.46	6021	6022	71	6022	6023	100	
230	32.673	0.142	95	-0.02	2.02	-1.78	6022	6022	70	6022	6023	101	
240	34.095	0.142	97	-0.03	2.01	-1.93	6021	6022	70	6022	6023	100	
250	35.516	0.142	100	-0.03	2.02	-1.33	6022	6022	72	6022	6023	100	
260	36.934	0.142	96	-0.03	2.02	-0.96	6022	6022	73	6022	6023	101	
270	38.352	0.142	98	-0.02	2.01	-2.19	6022	6022	71	6022	6023	100	
280	39.775	0.142	99	-0.01	2.02	-0.88	6021	6022	69	6022	6022	100	
290	41.196	0.142	100	-0.03	2.02	-2.03	6021	6022	70	6022	6022	101	
300	42.616	0.142	96	-0.01	2.01	-2.16	6021	6022	69	6022	6022	100	
									77				
	42.6164	0.142	100.327	-0.028	2.009	-1.59548	6022	6022	72	6022	6023	95	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT

# Reading		
302		
	T avg BEGIN	167
	T avg END	162.855
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	-4.145
	Cp	1.001206608
	Cpa	1.000831
302	TOTAL MINUTES	300

TOTAL BTU	486717
TOTAL BTU WITH WATER	-9446
TOTAL BTU WITH H20 AND STEEL	-975
BTU/HR	95259

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water	density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
0	13.44	159	175	1.53	56	173	119	91061	2353	4630	8.335616	117	1.001206	12.72849	1	167	1516.517	90991.03
1	13.329	158.45	175.08	1.49	55.56	172.68	118.5	90782.814	2353	4630	8.336045	117.12	1.001206	12.45405	1	166.765	1477.585	88655.09
2	13.262	158.69	174.66	1.54	55.67	172.78	118.542	91319.91	2353	4630	8.335938	117.11	1.001206	12.83734	1	166.675	1523.6	91416.02
3	13.288	157.99	174.49	1.57	55.56	172.38	118.244	92697.583	2353	4630	8.336045	116.82	1.001206	13.1126	1	166.24	1552.357	93141.39
4	13.251	158.05	174.16	1.55	55.56	172.01	118.017	91239.415	2353	4630	8.336045	116.45	1.001207	12.88753	1	166.105	1522.782	91366.95
5	13.273	157.69	173.92	1.55	55.46	171.61	117.775	90983.919	2353	4630	8.336142	116.15	1.001207	12.90435	1	165.805	1521.644	91298.65
6	13.268	157.5	173.87	1.55	55.34	171.63	117.726	91371.107	2353	4630	8.336258	116.29	1.001207	12.93787	1	165.685	1524.962	91497.71
7	13.3	157.44	173.68	1.55	55.48	171.63	117.541	91012.897	2353	4630	8.336122	116.15	1.001207	12.88765	1	165.56	1516.655	90999.31
8	13.331	157.68	174.04	1.54	55.38	171.85	117.846	91065.479	2353	4630	8.336219	116.47	1.001208	12.85445	1	165.86	1516.675	91000.49
9	13.322	158.03	174.53	1.55	55.2	172.24	118.237	91956.834	2353	4630	8.336393	117.04	1.001208	12.92975	1	166.28	1530.621	91837.27
10	13.42	158.82	175.19	1.55	55.07	172.72	118.926	92428.435	2353	4630	8.336518	117.65	1.001208	12.92994	1	167.005	1539.563	92373.79
11	13.259	159.19	175.69	1.56	55.17	173.36	119.693	93312.692	2353	4630	8.336422	118.19	1.001208	13.02149	1	167.44	1560.464	93627.82
12	13.393	159.78	176.54	1.55	55.17	174.27	120.474	93533.149	2353	4630	8.336422	119.1	1.001208	12.93813	1	168.16	1560.591	93635.46
13	13.294	160.06	177.09	1.55	55.05	174.71	121.028	94121.054	2353	4630	8.336538	119.66	1.001208	12.9133	1	168.575	1564.759	93885.51
14	13.301	160.61	178.03	1.55	55.07	175.33	121.781	94612.321	2353	4630	8.336518	120.26	1.001208	12.94661	1	169.32	1578.555	94713.33
15	13.309	161.39	178.68	1.55	55.2	175.99	122.47	94912.691	2353	4630	8.336393	120.79	1.001207	12.91307	1	170.035	1583.373	95002.4
16	13.31	162.21	179.23	1.53	55.29	176.8	123.265	94519.784	2353	4630	8.336306	121.51	1.001208	12.74621	1	170.72	1573.059	94383.55
17	13.307	162.58	180.01	1.49	55.2	177.44	123.912	95935.355	2353	4630	8.336393	122.24	1.001207	12.44623	1	171.295	1544.099	92645.96
18	13.296	163.43	180.85	1.55	55.38	178.27	124.601	96867.605	2353	4630	8.336219	122.89	1.001207	12.88779	1	172.14	1607.77	96466.21
19	13.363	164.13	181.68	1.55	55.42	178.85	125.389	97677.267	2353	4630	8.336181	123.43	1.001207	12.95442	1	172.905	1626.302	97578.15
20	13.303	164.42	181.98	1.55	55.46	179.49	126.085	97592.52	2353	4630	8.336142	124.03	1.001206	12.92102	1	173.2	1631.112	97866.72
21	13.37	165.47	183.02	1.51	55.58	180.32	126.873	96037.766	2353	4630	8.336025	124.74	1.001206	12.59573	1	174.245	1599.986	95999.15
22	13.221	165.68	183.5	1.55	55.66	181.12	127.598	98723.825	2353	4630	8.335948	125.46	1.001206	12.92072	1	174.59	1650.646	99038.78
23	13.284	166.37	184.85	1.55	55.63	181.75	128.414	99496.53	2353	4630	8.335977	126.12	1.001206	12.95411	1	175.61	1665.495	99929.69
24	13.35	167.03	185.25	1.56	55.69	182.41	129.238	100211.756	2353	4630	8.335919	126.72	1.001206	12.96235	1	176.14	1677.249	100635
25	13.257	167.67	185.76	1.55	55.61	182.93	129.835	100611.083	2353	4630	8.335996	127.32	1.001206	12.90412	1	176.715	1677.427	100645.6
26	13.46	167.56	185.64	1.53	55.69	182.83	129.778	101050.898	2353	4630	8.335919	127.14	1.001206	12.77063	1	176.6	1659.346	99560.73
27	13.369	167.41	185.23	1.57	55.61	182.69	129.672	101625.163	2353	4630	8.335996	127.08	1.001206	13.07918	1	176.32	1698.049	101882.9
28	13.434	167.35	184.77	1.54	55.68	182.52	129.231	99676.17	2353	4630	8.335928	126.84	1.001206	12.87067	1	176.06	1665.295	99917.73
29	13.248	167.08	184.37	1.54	55.74	182.03	128.777	97416.218	2353	4630	8.33587	126.29	1.001206	12.83724	1	175.725	1655.135	99308.09
30	13.387	166.23	183.92	1.55	55.68	181.92	128.436	99389.964	2353	4630	8.335928	126.24	1.001207	12.87901	1	175.075	1656.124	99367.45
31	13.262	165.87	183.43	1.56	55.52	181.17	128.045	99763.179	2353	4630	8.336084	125.65	1.001207	12.96261	1	174.65	1661.801	99708.04
32	13.274	165.43	183.11	1.58	55.4	180.64	127.527	101099.808	2353	4630	8.3362	125.24	1.001207	13.18787	1	174.27	1683.839	101030.4
33	13.348	164.87	182.56	1.59	55.37	180.26	127.115	100827.463	2353	4630	8.336229	124.89	1.001207	13.22126	1	173.715	1682.648	100958.9
34	13.316	164.36	181.92	1.58	55.46	179.67	126.525	100343.045	2353	4630	8.336142	124.21	1.001207	13.1711	1	173.14	1668.486	100109.1
35	13.392	163.77	181.46	1.59	55.33	179.31	126.085	99981.549	2353	4630	8.336268	123.98	1.001207	13.21298	1	172.615	1667.97	100078.2
36	13.385	163.97	180.99	1.54	55.39	179.07	125.652	96379.263	2353	4630	8.33621	123.68	1.001207	12.79608	1	172.48	1609.794	96587.65
37	13.359	163.25	180.28	1.58	55.34	178.36	124.963	98974.403	2353	4630	8.336258	123.02	1.001207	13.20463	1	171.765	1652.083	99124.96
38	13.294	162.81	179.7	1.58	55.29	177.46	124.451	98614.243	2353	4630	8.336306	122.17	1.001208	13.19637	1	171.255	1644.285	98657.13
39	13.352	161.92	179.21	1.58	55.13	177.32	123.926	98448.548	2353	4630	8.336461	122.19	1.001207	13.19662	1	170.565	1637.378	98242.71
40	13.277	161.88	178.78	1.58	55.29	176.98	123.365	97887.582	2353	4630	8.336306	121.69	1.001207	13.20471	1	170.33	1630.965	97857.92
41	13.249	161.09	178.12	1.58	55.36	176.13	122.711	97101.955	2353	4630	8.336239	120.77	1.001207	13.2046	1	169.605	1622.306	97338.38

42	13.363	160.74	177.63	1.58	55.26	175.57	122.129	96774.29	2353	4630		8.336335	120.31	1.001207	13.17141	1	169.185	1610.552	96633.13
43	13.213	160.42	177.45	1.59	55.48	175.16	121.518	96449.576	2353	4630		8.336122	119.68	1.001207	13.2461	1	168.935	1611.582	96694.93
44	13.291	159.92	176.68	1.59	55.38	174.64	120.929	95943.556	2353	4630		8.336219	119.26	1.001206	13.24625	1	168.3	1603.788	96227.27
45	13.402	159.16	175.92	1.59	55.68	173.94	120.204	95157.637	2353	4630		8.335928	118.26	1.001207	13.22078	1	167.54	1591.109	95466.52
46	13.264	158.74	175.64	1.57	55.46	173.37	119.594	94885.139	2353	4630		8.336142	117.91	1.001206	13.12109	1	167.19	1571.095	94265.72
47	13.262	158.57	174.94	1.59	55.75	173.22	119.061	94562.752	2353	4630		8.33586	117.47	1.001207	13.21234	1	166.755	1574.972	94498.33
48	13.269	157.94	174.31	1.58	55.51	172.45	118.393	94035.64	2353	4630		8.336093	116.94	1.001206	13.1877	1	166.125	1563.215	93792.89
49	13.274	157.61	173.97	1.59	55.57	171.72	117.754	93471.139	2353	4630		8.336035	116.15	1.001206	13.22095	1	165.79	1558.698	93521.86
50	13.218	157.07	173.57	1.58	55.63	171.53	117.243	92822.506	2353	4630		8.335977	115.9	1.001206	13.18752	1	165.32	1548.009	92880.55
51	13.257	156.54	173.17	1.58	55.56	171.04	116.831	92617.744	2353	4630		8.336045	115.48	1.001206	13.17095	1	164.855	1540.631	92437.86
52	13.349	156.8	172.64	1.56	55.7	170.68	116.419	90810.827	2353	4630		8.335909	114.98	1.001206	12.97067	1	164.72	1511.854	90711.24
53	13.318	156.38	172.61	1.58	55.67	170.65	116.334	92390.544	2353	4630		8.335938	114.98	1.001206	13.17078	1	164.495	1534.057	92043.45
54	13.242	156.53	173.16	1.58	55.69	171.03	116.589	92163.476	2353	4630		8.335919	115.34	1.001206	13.19576	1	164.845	1540.336	92420.17
55	13.271	157.16	173.53	1.58	55.59	171.37	117.214	92722.895	2353	4630		8.336016	115.78	1.001207	13.17924	1	165.345	1546.656	92799.33
56	13.26	157.72	174.35	1.57	55.49	172.01	117.839	92991.167	2353	4630		8.336113	116.52	1.001207	13.09603	1	166.035	1545.086	92705.18
57	13.257	157.84	174.87	1.58	55.34	172.79	118.663	93855.193	2353	4630		8.336258	117.45	1.001207	13.15462	1	166.355	1562.85	93770.98
58	13.248	158.82	175.72	1.55	55.47	173.75	119.636	93346.5	2353	4630		8.336132	118.28	1.001207	12.88766	1	167.27	1543.689	92621.35
59	13.361	159.39	176.02	1.55	55.38	174.21	120.204	93437.639	2353	4630		8.336219	118.83	1.001207	12.95448	1	167.705	1559.06	93543.62
60	13.258	159.99	177.02	1.58	55.38	174.76	120.836	95617.067	2353	4630		8.336219	119.38	1.001206	13.17956	1	168.505	1594.487	95669.22
61	13.302	160.68	177.58	1.57	55.55	175.46	121.547	95460.529	2353	4630		8.336055	119.91	1.001207	13.09594	1	169.13	1593.693	95621.58
62	13.294	160.98	178.27	1.58	55.51	176.09	122.186	96546.119	2353	4630		8.336093	120.58	1.001207	13.17103	1	169.625	1611.257	96675.44
63	13.346	162.03	179.05	1.55	55.43	176.93	123.116	94630.964	2353	4630		8.336171	121.5	1.001206	12.87938	1	170.54	1587.571	95254.26
64	13.403	162.37	179.79	1.55	55.58	177.73	123.912	96837.227	2353	4630		8.336025	122.15	1.001206	12.89583	1	171.08	1599.876	95992.56
65	13.321	163.46	180.75	1.53	55.55	178.48	124.757	95516.055	2353	4630		8.336055	122.93	1.001206	12.73749	1	172.105	1591.008	95460.45
66	13.411	163.52	181.21	1.57	55.68	179.2	125.439	99079.744	2353	4630		8.335928	123.52	1.001206	13.09574	1	172.365	1644.698	98681.88
67	13.321	164.25	182.07	1.58	55.68	179.69	126.22	100168.363	2353	4630		8.335928	124.01	1.001206	13.1791	1	173.16	1665.473	99928.4
68	13.312	164.7	182.65	1.58	55.53	180.46	127.001	100334.838	2353	4630		8.336074	124.93	1.001207	13.19601	1	173.675	1677.929	100675.7
69	13.296	165.73	183.28	1.58	55.37	181.46	128.074	101280.958	2353	4630		8.336229	126.09	1.001207	13.17124	1	174.505	1688.931	101335.8
70	13.229	166.33	184.15	1.58	55.24	182.12	128.897	101713.683	2353	4630		8.336355	126.88	1.001208	13.17978	1	175.24	1700.886	102053.2
71	13.371	166.82	184.91	1.58	55.01	182.7	129.771	102459.836	2353	4630		8.336576	127.69	1.001208	13.13011	1	175.865	1705.966	102358
72	13.242	167.1	185.05	1.58	55.02	182.77	130.076	101961.411	2353	4630		8.336566	127.75	1.001209	13.13009	1	176.075	1709.974	102598.5
73	13.346	166.59	184.54	1.58	54.9	182.42	129.856	102761.181	2353	4630		8.336682	127.52	1.001209	13.18863	1	175.565	1714.693	102881.6
74	13.331	166.7	184.39	1.58	54.81	182.34	129.906	102980.437	2353	4630		8.336768	127.53	1.001209	13.14708	1	175.545	1709.95	102597
75	13.407	166.12	184.08	1.58	54.76	181.94	129.437	102446.946	2353	4630		8.336816	127.18	1.001209	13.14716	1	175.1	1703.787	102227.2
76	13.266	165.81	183.63	1.58	54.71	181.59	129.217	102231.771	2353	4630		8.336864	126.88	1.00121	13.17224	1	174.72	1704.137	102248.2
77	13.279	165.49	183.31	1.55	54.59	181.24	128.812	100327.07	2353	4630		8.336978	126.65	1.001209	12.95566	1	174.4	1670.863	100251.8
78	13.27	165.11	182.93	1.58	54.8	180.95	128.386	101594.603	2353	4630		8.336778	126.15	1.001209	13.13042	1	174.02	1687.8	101268
79	13.276	164.66	182.35	1.59	54.89	180.6	127.868	101071.147	2353	4630		8.336691	125.71	1.001209	13.25534	1	173.505	1696.982	101818.9
80	13.366	164.4	182.09	1.58	54.89	180.06	127.307	100731.662	2353	4630		8.336691	125.17	1.001208	13.1553	1	173.245	1676.785	100607.1
81	13.271	164.01	181.43	1.59	55.03	179.59	126.731	100814.456	2353	4630		8.336557	124.56	1.001208	13.22178	1	172.72	1677.633	100658
82	13.269	163.53	181.22	1.59	55.15	179.15	126.184	99996.699	2353	4630		8.336441	124	1.001207	13.23827	1	172.375	1672.475	100348.5
83	13.392	163.07	180.36	1.58	55.28	178.48	125.439	99104.384	2353	4630		8.336316	123.2	1.001207	13.1297	1	171.715	1648.964	98937.86
84	13.248	162.98	180.14	1.56	55.33	177.98	124.799	97322.995	2353	4630		8.336268	122.65	1.001207	12.9629	1	171.56	1619.708	97182.51
85	13.246	162.48	179.5	1.58	55.49	177.76	124.246	97851.986	2353	4630		8.336113	122.27	1.001206	13.17939	1	170.99	1639.463	98367.76
86	13.161	161.93	179.22	1.58	55.53	177.32	123.684	97809.963	2353	4630		8.336074	121.79	1.001207	13.171	1	170.575	1631.007	97860.42
87	13.339	161.65	178.55	1.57	55.52	176.89	123.081	97074.815	2353	4630		8.336084	121.37	1.001206	13.09599	1	170.1	1613.811	96828.66
88	13.489	160.88	178.3	1.58	55.68	176.42	122.513	96852.386	2353	4630		8.335928	120.74	1.001206	13.17077	1	169.59	1615.536	96932.18
89	13.301	160.7	177.72	1.58	55.62	175.77	121.944	96581.366	2353	4630		8.335987	120.15	1.001206	13.2042	1	169.21	1612.116	96726.94
90	13.244	160.01	177.17	1.58	55.59	175.14	121.376	96434.68	2353	4630		8.336016	119.55	1.001206	13.17924	1	168.59	1601.573	96094.4
91	13.39	159.83	176.6	1.58	55.55	174.61	120.851	95612.654	2353	4630		8.336055	119.06	1.001206	13.19597	1	168.215	1596.67	95800.23
92	13.291	159.2	176.23	1.58	55.58	174.22	120.226	95116.92	2353	4630		8.336025	118.64	1.001206	13.14591	1	167.715	1582.386	94943.16
93	13.345	159.1	175.73	1.58	55.75	173.82	119.693	94971.097	2353	4630		8.33586	118.07	1.001206	13.17066	1	167.415	1578.336	94700.18
94	13.322	158.34	175.23	1.58	55.78	173.3	119.089	94152.17	2353	4630		8.335831	117.52	1.001206	13.15394	1	166.785	1568.379	94102.75
95	13.275	158.31	174.68	1.56	55.61	172.79	118.493	92378.343	2353	4630		8.335996	117.18	1.001206	12.99582	1	166.495	1541.771	92506.24

96	13.195	157.83	174.07	1.58	55.67	172.11	117.882	92664.369	2353	4630		8.335938	116.44	1.001206	13.17078	1	165.95	1554.471	93268.25
97	13.297	156.66	173.43	1.58	55.62	171.52	117.243	92638.627	2353	4630		8.335987	115.9	1.001206	13.16252	1	165.045	1545.075	92704.51
98	13.364	156.43	173.06	1.59	55.58	171.12	116.81	93152.389	2353	4630		8.336025	115.54	1.001206	13.2126	1	164.745	1545.226	92713.54
99	13.335	156.29	172.65	1.58	55.57	170.87	116.405	91675.837	2353	4630		8.336035	115.3	1.001206	13.1626	1	164.47	1534.041	92042.44
100	13.208	155.97	172.6	1.59	55.59	170.46	116.192	92785.69	2353	4630		8.336016	114.87	1.001206	13.25427	1	164.285	1541.896	92513.79
101	13.224	156.12	172.62	1.59	55.74	170.54	116.156	91865.195	2353	4630		8.33587	114.8	1.001207	13.21235	1	164.37	1536.546	92192.75
102	13.309	156.28	172.64	1.57	55.5	170.68	116.248	91122.783	2353	4630		8.336103	115.18	1.001206	13.05434	1	164.46	1519.37	91162.22
103	13.381	156.6	173.23	1.58	55.76	171.22	116.66	92383.386	2353	4630		8.33585	115.46	1.001206	13.1373	1	164.915	1534.446	92066.74
104	13.426	156.98	173.74	1.57	55.67	171.75	117.165	92511.184	2353	4630		8.335938	116.08	1.001206	13.05408	1	165.36	1531.325	91879.51
105	13.413	157.8	174.43	1.58	55.77	172.32	117.946	93134.969	2353	4630		8.335841	116.55	1.001206	13.15396	1	166.115	1553.328	93199.66
106	13.344	158.35	174.98	1.58	55.66	173.01	118.649	93908.185	2353	4630		8.335948	117.35	1.001206	13.1708	1	166.665	1564.586	93875.19
107	13.315	159.1	175.6	1.57	55.68	173.76	119.494	94113.168	2353	4630		8.335928	118.08	1.001206	13.12075	1	167.35	1569.742	94184.51
108	13.338	159.36	175.99	1.58	55.68	174.55	120.233	94931.805	2353	4630		8.335928	118.87	1.001206	13.16243	1	167.675	1584.468	95068.06
109	13.375	160.42	177.45	1.56	55.55	175.28	121.199	94181.577	2353	4630		8.336055	119.73	1.001207	12.98757	1	168.935	1575.98	94558.8
110	13.24	160.98	177.61	1.58	55.51	175.85	121.959	96471.236	2353	4630		8.336093	120.34	1.001206	13.19604	1	169.295	1611.317	96679
111	13.305	161.13	178.29	1.58	55.6	176.47	122.619	96833.625	2353	4630		8.336006	120.87	1.001206	13.12921	1	169.71	1611.832	96709.9
112	13.37	162.08	179.23	1.57	55.75	177.52	123.45	97497.359	2353	4630		8.33586	121.77	1.001205	13.0873	1	170.655	1617.574	97054.45
113	13.302	162.59	180.28	1.58	55.95	178.3	124.189	97996.26	2353	4630		8.335665	122.35	1.001205	13.13701	1	171.435	1633.438	98006.28
114	13.349	163.3	181.26	1.59	55.93	179.07	125.041	99192.887	2353	4630		8.335685	123.14	1.001205	13.22873	1	172.28	1656.127	99367.62
115	13.302	163.93	181.62	1.58	55.97	179.58	125.68	99346.381	2353	4630		8.335646	123.61	1.001205	13.15365	1	172.775	1655.142	99308.51
116	13.331	164.84	182.53	1.50	56.08	180.53	126.575	99690.032	2353	4630		8.335538	124.45	1.001204	12.46163	1	173.685	1579.231	94753.84
117	13.382	166.05	183.34	1.56	56.1	181.27	127.449	97535.192	2353	4630		8.335518	125.17	1.001205	12.9784	1	174.695	1656.078	99364.65
118	13.378	166.1	183.92	1.58	55.95	181.98	128.216	101206.283	2353	4630		8.335665	126.03	1.001205	13.16202	1	175.01	1689.614	101376.9
119	13.417	166.77	184.72	1.58	55.96	182.65	129.089	102125.625	2353	4630		8.335655	126.69	1.001205	13.13699	1	175.745	1697.885	101873.1
120	13.388	167.15	185.11	1.58	55.95	183.18	129.565	102199.4	2353	4630		8.335665	127.23	1.001206	13.12867	1	176.13	1703.069	102184.1
121	13.436	166.97	184.66	1.58	55.56	182.84	129.707	102151.389	2353	4630		8.336045	127.28	1.001207	13.12927	1	175.815	1705.014	102300.8
122	13.379	166.54	184.23	1.58	55.4	182.15	129.274	101893.366	2353	4630		8.3362	126.75	1.001207	13.13785	1	175.385	1700.433	102026
123	13.331	166.52	184.08	1.58	55.31	182.13	129.231	102131.608	2353	4630		8.336287	126.82	1.001208	13.19634	1	175.3	1707.436	102446.2
124	13.366	166.47	183.5	1.57	55.19	181.72	128.841	101742.487	2353	4630		8.336403	126.53	1.001208	13.1215	1	174.985	1692.63	101557.8
125	13.366	165.74	183.43	1.58	54.99	181.35	128.564	101901.638	2353	4630		8.336595	126.36	1.001208	13.15515	1	174.585	1693.322	101599.3
126	13.362	165.45	183	1.58	54.95	181.09	128.393	101618.804	2353	4630		8.336634	126.14	1.001208	13.18022	1	174.225	1694.292	101657.5
127	13.316	165.13	182.69	1.57	55.17	180.92	127.903	101141.267	2353	4630		8.336422	125.75	1.001208	13.12153	1	173.91	1680.31	100818.6
128	13.367	164.76	182.05	1.58	55.06	180.39	127.569	101111.228	2353	4630		8.336528	125.33	1.001209	13.18005	1	173.405	1683.399	101003.9
129	13.365	164.3	181.85	1.58	54.73	179.8	127.15	100171.819	2353	4630		8.336845	125.07	1.001209	13.15554	1	173.075	1674.749	100484.9
130	13.353	164.07	181.36	1.58	54.89	179.52	126.745	100073.843	2353	4630		8.336691	124.63	1.001208	13.13029	1	172.715	1666.209	99972.57
131	13.356	163.56	180.98	1.59	54.98	179.06	126.099	99984.111	2353	4630		8.336605	124.08	1.001208	13.23019	1	172.27	1670.329	100219.8
132	13.416	163.32	180.35	1.57	55.08	178.54	125.616	99092.624	2353	4630		8.336509	123.46	1.001208	13.12166	1	171.835	1650.282	99016.92
133	13.351	162.84	179.86	1.58	55.12	178.1	124.991	98694.603	2353	4630		8.33647	122.98	1.001207	13.15495	1	171.35	1646.235	98774.13
134	13.468	162.55	179.31	1.57	55.3	177.78	124.423	97911.163	2353	4630		8.336297	122.48	1.001207	13.06298	1	170.93	1627.297	97637.8
135	13.324	161.89	178.79	1.57	55.37	177.11	123.713	97645.792	2353	4630		8.336229	121.74	1.001207	13.07121	1	170.34	1619.03	97141.77
136	13.316	161.47	178.49	1.58	55.47	176.78	123.23	97522.524	2353	4630		8.336132	121.31	1.001206	13.18776	1	169.98	1627.088	97625.3
137	13.295	161.14	178.03	1.57	55.54	176.3	122.605	96337.593	2353	4630		8.336064	120.76	1.001207	13.07928	1	169.585	1605.521	96331.23
138	13.357	160.84	177.47	1.57	55.5	175.84	122.051	96099.419	2353	4630		8.336103	120.34	1.001207	13.07935	1	169.155	1598.273	95896.4
139	13.32	160.44	176.94	1.58	55.5	175.24	121.447	96083.394	2353	4630		8.336103	119.74	1.001206	13.14603	1	168.69	1598.472	95908.33
140	13.333	159.88	176.64	1.57	55.61	174.9	120.822	95342.834	2353	4630		8.335996	119.29	1.001206	13.06251	1	168.26	1580.141	94808.49
141	13.321	159.62	175.98	1.57	55.67	174.36	120.275	95015.144	2353	4630		8.335938	118.69	1.001206	13.11243	1	167.8	1578.999	94739.95
142	13.446	159.09	175.46	1.57	55.74	173.81	119.679	94166.53	2353	4630		8.33587	118.07	1.001206	13.08732	1	167.275	1568.165	94089.91
143	13.426	158.78	175.02	1.57	55.77	173.23	119.075	93644.406	2353	4630		8.335841	117.46	1.001206	13.0706	1	166.9	1558.258	93495.48
144	13.324	158.39	174.62	1.58	55.77	172.74	118.422	93317.749	2353	4630		8.335841	116.97	1.001205	13.13728	1	166.505	1557.619	93457.13
145	13.246	157.47	173.84	1.57	55.84	172.15	117.719	92851.854	2353	4630		8.335772	116.31	1.001205	13.06216	1	165.655	1539.517	92371.01
146	13.15	157.03	173.26	1.58	55.93	171.8	117.136	92570.981	2353	4630		8.335685	115.87	1.001205	13.14537	1	165.145	1541.652	92499.12
147	13.22	156.87	172.98	1.58	55.97	171.23	116.675	92213.577	2353	4630		8.335646	115.26	1.001205	13.17032	1	164.925	1538.499	92309.92
148	13.243	157.01	173.11	1.57	55.97	171.29	116.653	91923.228	2353	4630		8.335646	115.32	1.001205	13.07863	1	165.06	1527.5	91649.97
149	13.208	156.86	173.36	1.57	55.96	171.71	116.937	92144.995	2353	4630		8.335655	115.75	1.001205	13.07031	1	165.11	1530.244	91814.66

150	13.313	157.23	173.6	1.58	55.93	172.1	117.271	92720.143	2353	4630		8.335685	116.17	1.001204	13.15371	1	165.415	1544.406	92664.39
151	13.437	157.85	174.61	1.57	56.16	172.8	117.981	92932.901	2353	4630		8.33546	116.64	1.001204	13.10334	1	166.23	1547.807	92868.45
152	13.272	158.53	175.03	1.58	56.11	173.18	118.514	93325.662	2353	4630		8.335509	117.07	1.001205	13.12843	1	166.78	1557.777	93466.62
153	13.313	158.92	175.81	1.58	55.97	173.9	119.281	94312.932	2353	4630		8.335646	117.93	1.001205	13.19533	1	167.365	1575.848	94550.9
154	13.282	159.45	176.6	1.57	55.97	174.62	120.048	94579.832	2353	4630		8.335646	118.65	1.001206	13.11197	1	168.025	1575.963	94557.81
155	13.306	160.07	177.23	1.57	55.8	174.96	120.723	94838.451	2353	4630		8.335811	119.16	1.001205	13.09556	1	168.65	1582.84	94970.41
156	13.367	160.63	177.53	1.58	55.97	175.9	121.469	95847.747	2353	4630		8.335646	119.93	1.001205	13.17032	1	169.08	1601.714	96102.82
157	13.265	161.29	178.58	1.58	55.9	176.5	122.186	96201.993	2353	4630		8.335714	120.6	1.001204	13.15376	1	169.935	1609.14	96548.42
158	13.305	161.84	179.26	1.57	56.19	177.31	123.017	96828.197	2353	4630		8.33543	121.12	1.001205	13.06995	1	170.55	1609.764	96585.85
159	13.269	162.51	180.07	1.57	55.93	177.98	123.798	97655.897	2353	4630		8.335685	122.05	1.001205	13.07869	1	171.29	1621.067	97264.01
160	13.407	163.27	180.83	1.57	55.9	178.68	124.565	97898.596	2353	4630		8.335714	122.78	1.001205	13.0704	1	172.05	1630.076	97804.57
161	13.338	163.92	181.48	1.57	55.96	179.33	125.353	99075.447	2353	4630		8.335655	123.37	1.001204	13.09531	1	172.7	1643.514	98610.85
162	13.343	164.4	182.09	1.57	56.11	180.43	126.305	99479.064	2353	4630		8.335509	124.32	1.001204	13.09508	1	173.245	1655.966	99357.95
163	13.305	165.4	182.82	1.57	56.25	181.1	127.086	100137.38	2353	4630		8.335371	124.85	1.001204	13.09487	1	174.11	1666.178	99970.66
164	13.203	165.93	184.15	1.58	56.32	181.89	127.995	100862.898	2353	4630		8.335302	125.57	1.001205	13.16144	1	175.04	1686.628	101197.7
165	13.239	166.43	184.65	1.58	56.02	182.53	128.727	101639.2	2353	4630		8.335597	126.51	1.001204	13.18691	1	175.54	1699.556	101973.4
166	13.31	167.3	185.26	1.58	56.11	183.32	129.572	102243.261	2353	4630		8.335509	127.21	1.001204	13.1451	1	176.28	1705.288	102317.3
167	13.211	167.3	184.99	1.57	56.11	183.32	129.7	102570.244	2353	4630		8.335509	127.21	1.001205	13.12009	1	176.145	1703.726	102223.6
168	13.296	167.31	184.74	1.58	55.98	183.09	129.409	102079.19	2353	4630		8.335636	127.11	1.001204	13.16197	1	176.025	1705.328	102319.7
169	13.249	166.73	184.55	1.57	56.26	182.85	129.103	101832.974	2353	4630		8.335361	126.59	1.001205	13.10319	1	175.64	1693.699	101621.9
170	13.322	166.68	183.97	1.57	56.07	182.51	128.656	101452.172	2353	4630		8.335548	126.44	1.001204	13.12015	1	175.325	1690.019	101401.1
171	13.318	166.51	183.94	1.55	56.24	182.06	128.393	100045.568	2353	4630		8.335381	125.82	1.001204	12.94485	1	175.225	1664.029	99841.74
172	13.329	165.9	183.59	1.57	56.22	181.68	127.91	100729.711	2353	4630		8.335401	125.46	1.001204	13.06991	1	174.745	1673.785	100427.1
173	13.363	166.02	183.18	1.57	56.2	181.42	127.541	100502.794	2353	4630		8.33542	125.22	1.001204	13.0616	1	174.6	1667.896	100073.7
174	13.368	165.45	182.74	1.57	56.23	180.9	127.058	99892.252	2353	4630		8.335391	124.67	1.001204	13.10323	1	174.095	1666.876	100012.6
175	13.321	165.36	182.25	1.58	56.14	180.46	126.696	99985.187	2353	4630		8.335479	124.32	1.001204	13.12838	1	173.805	1665.317	99919
176	13.359	164.87	181.63	1.55	56.11	179.77	126.106	98046.724	2353	4630		8.335509	123.66	1.001205	12.9117	1	173.25	1630.205	97812.3
177	13.316	164.41	181.31	1.57	55.98	179.6	125.709	98802.943	2353	4630		8.335636	123.62	1.001204	13.08695	1	172.86	1647.128	98827.7
178	13.264	163.73	181.02	1.58	56.16	179.22	125.197	98463.748	2353	4630		8.33546	123.06	1.001205	13.12835	1	172.375	1645.61	98736.58
179	13.334	163.19	180.22	1.57	56.08	178.72	124.686	98021.009	2353	4630		8.335538	122.64	1.001204	13.07012	1	171.705	1631.624	97897.46
180	13.335	163.14	180.04	1.579	56.1	178.31	124.217	97863.712	2353	4630		8.335518	122.21	1.001205	13.16178	1	171.59	1636.887	98213.19
181	13.289	162.6	179.76	1.573	56.09	177.88	123.706	97316.413	2353	4630		8.335528	121.79	1.001205	13.11179	1	171.18	1623.961	97437.64
182	13.307	162.35	179.11	1.572	56.03	177.59	123.273	96987.92	2353	4630		8.335587	121.56	1.001204	13.10354	1	170.73	1617.258	97035.48
183	13.344	161.67	178.83	1.573	56.21	177.09	122.683	96670.48	2353	4630		8.335411	120.88	1.001205	13.1116	1	170.25	1610.509	96630.52
184	13.356	161.57	177.93	1.563	55.98	176.39	122.172	95430.835	2353	4630		8.335636	120.41	1.001205	13.0286	1	169.75	1593.648	95618.87
185	13.318	160.9	177.4	1.572	55.97	175.9	121.788	95993.093	2353	4630		8.335646	119.93	1.001205	13.10363	1	169.15	1597.789	95867.34
186	13.388	160.54	176.91	1.575	55.87	175.57	121.369	95559.698	2353	4630		8.335743	119.7	1.001206	13.1288	1	168.725	1595.35	95721.02
187	13.229	160.02	176.52	1.575	55.68	174.97	120.836	95220.636	2353	4630		8.335928	119.29	1.001206	13.12909	1	168.27	1588.379	95302.74
188	13.398	159.47	176.1	1.568	55.79	174.4	120.268	94897.264	2353	4630		8.335821	118.61	1.001206	13.07057	1	167.785	1573.867	94432
189	13.362	159.19	175.56	1.57	55.71	173.91	119.7	94425.835	2353	4630		8.335899	118.2	1.001206	13.08736	1	167.375	1568.447	94106.79
190	13.334	158.6	174.97	1.572	55.65	173.3	119.189	93874.85	2353	4630		8.335957	117.65	1.001206	13.10413	1	166.785	1563.752	93825.1
191	13.489	158.53	174.11	1.536	55.57	172.75	118.635	90931.34	2353	4630		8.336035	117.18	1.001206	12.80415	1	166.32	1520.853	91251.16
192	13.277	157.68	173.91	1.578	55.58	172.21	117.967	92932.644	2353	4630		8.336025	116.63	1.001207	13.15425	1	165.795	1553.64	93218.39
193	13.335	157.61	173.44	1.579	55.44	171.66	117.555	92696.372	2353	4630		8.336161	116.22	1.001207	13.1628	1	165.525	1549.22	92953.22
194	13.29	157.1	173.33	1.577	55.39	171.38	117.427	92601.853	2353	4630		8.33621	115.99	1.001206	13.1462	1	165.215	1545.582	92734.9
195	13.378	156.9	173.4	1.574	55.53	171.62	117.442	92537.776	2353	4630		8.336074	116.09	1.001206	13.12098	1	165.15	1542.813	92568.78
196	13.279	157.22	173.72	1.582	55.59	171.91	117.605	92605.431	2353	4630		8.336016	116.32	1.001207	13.18758	1	165.47	1552.797	93167.8
197	13.336	157.74	173.97	1.573	55.44	172.15	117.939	93083.982	2353	4630		8.336161	116.71	1.001207	13.11278	1	165.855	1548.375	92902.51
198	13.234	157.96	174.59	1.569	55.33	172.47	118.436	93142.982	2353	4630		8.336268	117.14	1.001207	13.0796	1	166.275	1550.966	93057.97
199	13.349	158.86	175.09	1.581	55.3	173.42	119.253	93750.931	2353	4630		8.336297	118.12	1.001206	13.17968	1	166.975	1573.613	94416.78
200	13.315	158.85	176	1.571	55.56	173.89	119.828	94425.957	2353	4630		8.336045	118.33	1.001206	13.09593	1	167.425	1571.152	94269.11
201	13.289	159.62	176.78	1.564	55.54	174.6	120.488	94593.989	2353	4630		8.336064	119.06	1.001206	13.0376	1	168.2	1572.769	94366.14
202	13.36	160.01	177.3	1.567	55.74	175.33	121.149	95227.989	2353	4630		8.33587	119.59	1.001206	13.06231	1	168.655	1584.394	95063.64
203	13.289	160.74	177.89	1.577	55.67	175.87	121.859	95852.523	2353	4630		8.335938	120.2	1.001206	13.14577	1	169.315	1603.863	96231.78

204	13.35	161.38	178.8	1.569	55.65	176.82	122.839	96960.497	2353	4630
205	13.321	162.06	179.48	1.579	55.6	177.5	123.677	97736.667	2353	4630
206	13.489	162.98	180.14	1.575	55.6	178.29	124.437	97836.956	2353	4630
207	13.407	163.59	181.01	1.569	55.68	179.09	125.282	98469.202	2353	4630
208	13.339	164.3	181.59	1.567	55.8	179.8	126.028	98909.025	2353	4630
209	13.4	164.72	182.54	1.566	55.75	180.48	126.795	99690.896	2353	4630
210	13.36	165.72	183.54	1.577	55.84	181.4	127.761	100234.793	2353	4630
211	13.382	166.34	183.63	1.562	55.8	181.96	128.429	100614.808	2353	4630
212	13.365	167.03	184.98	1.571	55.83	182.71	129.366	101694.762	2353	4630
213	13.309	167.52	185.34	1.565	55.85	183.33	129.892	102103.165	2353	4630
214	13.506	167.35	185.17	1.568	55.81	183.42	129.963	102443.579	2353	4630
215	13.426	167.16	184.59	1.568	55.83	183.07	129.615	102012.222	2353	4630
216	13.395	167.05	184.48	1.562	55.85	182.85	129.402	101323.598	2353	4630
217	13.374	166.35	183.78	1.579	55.87	182.33	128.947	101594.97	2353	4630
218	13.367	166.18	183.6	1.578	55.97	182.05	128.514	101032.347	2353	4630
219	13.431	166.07	183.36	1.577	55.99	181.53	127.953	100764.234	2353	4630
220	13.474	165.52	183.21	1.57	56.1	181.27	127.513	100169.203	2353	4630
221	13.456	165.4	182.43	1.571	56.18	180.86	127.051	99880.091	2353	4630
222	13.446	164.76	181.92	1.572	56.13	180.51	126.611	99602.475	2353	4630
223	13.345	164.47	181.76	1.574	56.04	179.89	126.021	98834.316	2353	4630
224	13.375	163.81	181.1	1.577	56.18	179.65	125.517	98808.426	2353	4630
225	13.416	163.37	180.66	1.565	56.19	178.7	124.963	98230.383	2353	4630
226	13.375	163.01	180.17	1.57	56.03	178.5	124.473	98134.194	2353	4630
227	13.433	163.06	179.69	1.565	55.82	177.94	123.983	97241.671	2353	4630
228	13.388	162.21	178.97	1.569	55.89	177.4	123.5	97081.084	2353	4630
229	13.411	161.92	178.42	1.57	55.73	176.84	122.861	96551.154	2353	4630
230	13.29	161.6	178.1	1.575	55.81	176.36	122.477	96376.297	2353	4630
231	13.362	160.97	177.6	1.573	55.64	175.66	121.881	95933.698	2353	4630
232	13.254	160.37	177.13	1.57	55.5	174.93	121.419	95519.572	2353	4630
233	13.259	160.03	176.27	1.571	55.56	174.56	120.773	95088.983	2353	4630
234	13.343	159.66	176.02	1.579	55.72	174.28	120.247	94643.422	2353	4630
235	13.477	159.27	175.77	1.573	55.86	174.1	119.714	93602.762	2353	4630
236	13.362	158.72	175.09	1.567	55.9	173.54	119.132	93282.951	2353	4630
237	13.392	158.16	174.52	1.572	55.73	172.89	118.578	93019.307	2353	4630
238	13.28	157.83	174.06	1.567	55.87	172.47	118.06	92674.444	2353	4630
239	13.325	157.55	173.78	1.572	55.85	172.33	117.754	92486.157	2353	4630
240	13.375	157.44	173.67	1.563	56	172.17	117.399	92363.134	2353	4630
241	13.384	157.63	173.86	1.573	56	172.04	117.385	92511.381	2353	4630
242	13.318	157.39	173.76	1.57	55.83	172.07	117.42	92384.962	2353	4630
243	13.322	157.74	173.97	1.577	55.84	172.15	117.562	92758.409	2353	4630
244	13.391	157.48	174.37	1.561	55.84	172.39	117.768	92480.894	2353	4630
245	13.391	157.81	174.57	1.566	55.91	172.82	118.166	92924.237	2353	4630
246	13.233	158.3	175.06	1.572	55.94	173.39	118.613	93321.111	2353	4630
247	13.449	159.03	175.4	1.573	55.81	173.57	119.224	94308.548	2353	4630
248	13.326	159.66	176.02	1.566	55.65	174.03	119.821	94343.696	2353	4630
249	13.294	160.03	176.8	1.566	55.69	174.92	120.524	94491.123	2353	4630
250	13.373	160.16	177.31	1.57	55.88	175.46	121.092	95189.461	2353	4630
251	13.352	160.64	177.67	1.566	55.64	175.85	121.632	95876.452	2353	4630
252	13.366	161.43	178.45	1.571	55.83	176.56	122.335	96174.942	2353	4630
253	13.386	161.92	179.08	1.575	56	177.26	123.038	96741.071	2353	4630
254	13.392	162.15	179.97	1.559	55.96	177.59	123.457	96845.057	2353	4630
255	13.409	162.81	180.1	1.569	56.03	178.25	124.217	97627.817	2353	4630
256	13.343	163.59	180.75	1.571	56.02	178.9	124.771	98096.829	2353	4630
257	13.313	164.14	181.3	1.574	56.11	179.41	125.467	98765.408	2353	4630

8.335957	121.17	1.001206	13.07912	1	170.09	1608.564	96513.82	
8.336006	121.9	1.001206	13.16255	1	170.77	1629.869	97792.13	
8.336006	122.69	1.001206	13.12921	1	171.56	1635.73	98143.78	
8.335928	123.41	1.001206	13.07907	1	172.3	1640.548	98432.86	
8.335811	124	1.001206	13.06222	1	172.945	1648.19	98891.39	
8.33586	124.73	1.001205	13.05396	1	173.63	1657.172	99430.3	
8.335772	125.56	1.001206	13.14551	1	174.63	1681.509	100890.5	
8.335811	126.16	1.001205	13.02054	1	174.985	1674.23	100453.8	
8.335782	126.88	1.001205	13.09551	1	176.005	1696.156	101769.4	
8.335763	127.48	1.001206	13.04547	1	176.43	1696.545	101792.7	
8.335802	127.61	1.001205	13.07054	1	176.26	1700.734	102044	
8.335782	127.24	1.001205	13.07051	1	175.875	1696.176	101770.5	
8.335763	127	1.001205	13.02046	1	175.765	1686.905	101214.3	
8.335743	126.46	1.001205	13.16214	1	175.065	1699.263	101955.8	
8.335646	126.08	1.001205	13.15365	1	174.89	1692.465	101547.9	
8.335626	125.54	1.001204	13.14528	1	174.715	1684.004	101040.3	
8.335518	125.17	1.001204	13.08676	1	174.365	1670.742	100244.5	
8.33544	124.68	1.001204	13.09498	1	173.915	1665.734	99944.02	
8.335489	124.38	1.001205	13.10339	1	173.34	1661.032	99661.91	
8.335577	123.85	1.001204	13.1202	1	173.115	1655.412	99324.7	
8.33544	123.47	1.001204	13.14499	1	172.455	1651.906	99114.38	
8.33543	122.51	1.001205	13.04495	1	172.015	1632.1	97925.98	
8.335587	122.47	1.001205	13.08687	1	171.59	1630.926	97855.55	
8.335792	122.12	1.001205	13.04551	1	171.375	1619.371	97162.28	
8.335724	121.51	1.001206	13.07875	1	170.59	1617.173	97030.4	
8.33588	121.11	1.001206	13.08733	1	170.17	1609.861	96591.66	
8.335802	120.55	1.001206	13.12889	1	169.85	1609.926	96595.57	
8.335967	120.02	1.001207	13.11248	1	169.285	1600.09	96005.4	
8.336103	119.43	1.001206	13.08768	1	168.75	1591.01	95460.62	
8.336045	119	1.001206	13.09593	1	168.15	1583.541	95012.49	
8.335889	118.56	1.001205	13.16237	1	167.84	1584.643	95078.59	
8.335753	118.24	1.001205	13.11214	1	167.52	1571.598	94295.91	
8.335714	117.64	1.001206	13.06206	1	166.905	1557.986	93479.17	
8.33588	117.16	1.001205	13.104	1	166.34	1555.719	93343.16	
8.335743	116.6	1.001205	13.06211	1	165.945	1543.971	92638.29	
8.335763	116.48	1.001205	13.10382	1	165.665	1544.886	92693.17	
8.335616	116.17	1.001205	13.02857	1	165.555	1531.384	91883.02	
8.335616	116.04	1.001205	13.11192	1	165.745	1540.999	92459.91	
8.335782	116.24	1.001205	13.08718	1	165.575	1538.549	92312.93	
8.335772	116.31	1.001205	13.14551	1	165.855	1547.276	92836.54	
8.335772	116.55	1.001205	13.01214	1	165.925	1534.261	92055.64	
8.335704	116.91	1.001205	13.05371	1	166.19	1544.364	92661.83	
8.335675	117.45	1.001206	13.10368	1	166.68	1556.141	93368.43	
8.335802	117.76	1.001206	13.11222	1	167.215	1565.176	93910.58	
8.335957	118.38	1.001206	13.05411	1	167.84	1566.043	93962.56	
8.335919	119.23	1.001205	13.05405	1	168.415	1575.222	94513.34	
8.335733	119.58	1.001206	13.0871	1	168.735	1586.655	95199.28	
8.335967	120.21	1.001205	13.05412	1	169.155	1589.713	95382.8	
8.335782	120.73	1.001205	13.09551	1	169.94	1603.97	96238.19	
8.335616	121.26	1.001205	13.1286	1	170.5	1617.263	97035.75	
8.335655	121.63	1.001205	12.99529	1	171.06	1606.292	96377.52	
8.335587	122.22	1.001205	13.07854	1	171.455	1626.534	97592.02	
8.335597	122.88	1.001204	13.09522	1	172.17	1635.872	98152.32	
8.335509	123.3	1.001205	13.12009	1	172.72	1648.122	98887.29	

258	13.393	164.46	182.15	1.572	56.03	180.13	126.014	99154.819	2353	4630
259	13.273	165.07	182.63	1.579	55.91	180.44	126.682	99144.513	2353	4630
260	13.329	165.74	183.03	1.57	55.99	181.23	127.463	100079.878	2353	4630
261	13.401	165.92	183.61	1.567	55.98	181.58	127.946	100062.018	2353	4630
262	13.301	166.59	184.02	1.566	55.92	182.31	128.649	100985.252	2353	4630
263	13.384	166.93	184.62	1.57	55.79	182.62	129.26	101923.324	2353	4630
264	13.439	167.37	184.92	1.562	55.7	182.9	129.615	101819.193	2353	4630
265	13.312	167.36	184.92	1.566	55.77	182.96	129.828	101842.369	2353	4630
266	13.348	167.13	184.69	1.568	55.86	182.86	129.544	101644.782	2353	4630
267	13.393	166.76	184.71	1.557	56.02	182.7	129.174	100784.027	2353	4630
268	13.327	166.45	184.01	1.552	56.04	182.24	128.748	100709.777	2353	4630
269	13.257	164.76	183.77	1.665	55.93	181.9	128.194	107868.197	2353	4630
270	13.393	165.27	183.22	1.617	55.98	181.46	127.868	103761.995	2353	4630
271	13.371	165.23	182.79	1.624	55.88	181.13	127.463	103207.681	2353	4630
272	13.409	164.25	182.2	1.617	55.88	180.71	126.902	102693.809	2353	4630
273	13.489	163.97	181.65	1.609	55.73	180.15	126.447	102310.673	2353	4630
274	13.397	163.57	181.39	1.613	55.73	179.79	126	102257.42	2353	4630
275	13.187	163.23	180.78	1.618	55.98	179.35	125.346	101051.414	2353	4630
276	13.375	162.69	180.51	1.619	56.04	178.74	124.771	101044.163	2353	4630
277	13.312	162.54	179.69	1.618	55.95	178.18	124.132	100718.173	2353	4630
278	13.241	161.97	179.26	1.632	56.04	177.6	123.528	100316.456	2353	4630
279	13.221	161.76	178.79	1.621	56.04	177.29	123.173	99761.237	2353	4630
280	13.467	161.04	177.94	1.614	55.84	176.57	122.484	99331.609	2353	4630
281	13.464	160.53	177.68	1.614	55.99	176.1	121.824	98841.688	2353	4630
282	13.471	159.88	177.03	1.617	55.8	175.56	121.376	98363.879	2353	4630
283	13.418	159.65	176.41	1.621	56.04	174.87	120.702	97687.338	2353	4630
284	13.377	159.17	176.2	1.622	55.82	174.37	120.176	97400.871	2353	4630
285	13.336	158.46	175.62	1.623	55.77	174.14	119.636	97039.558	2353	4630
286	13.177	158.1	174.99	1.624	56	173.44	119.025	96718.775	2353	4630
287	13.298	157.85	174.62	1.624	55.75	172.98	118.429	96100.27	2353	4630
288	13.376	157.41	174.3	1.621	55.9	172.51	118.06	95801.538	2353	4630
289	13.315	157.32	173.95	1.624	55.95	172.36	117.697	95471.086	2353	4630
290	13.287	157.03	173.93	1.621	56.06	172.22	117.506	95270.24	2353	4630
291	13.352	156.99	173.75	1.627	55.82	172.18	117.584	95283.9	2353	4630
292	13.327	157.22	173.99	1.619	55.79	172.03	117.562	95401.256	2353	4630
293	13.351	157.1	174	1.617	55.86	172.29	117.662	95491.287	2353	4630
294	13.307	156.94	173.7	1.622	55.83	172.01	117.591	95617.662	2353	4630
295	13.285	156.82	173.58	1.62	55.91	171.78	117.236	95171.959	2353	4630
296	13.363	156.21	172.97	1.62	55.89	171.34	116.739	94705.416	2353	4630
297	13.305	155.66	172.55	1.616	55.87	170.96	116.341	94519.383	2353	4630
298	13.341	155.11	172.27	1.665	55.85	170.27	115.723	97433.772	2353	4630
299	13.288	154.77	171.53	1.664	55.84	169.89	115.219	96020.293	2353	4630
300	13.296	154.54	171.17	1.663	55.68	169.44	114.878	95639.414	2353	4630

8.335587	124.1	1.001205	13.10354	1	173.305	1653.22	99193.19	
8.335704	124.53	1.001205	13.16208	1	173.85	1669.407	100164.4	
8.335626	125.24	1.001205	13.08693	1	174.385	1670.11	100206.6	
8.335636	125.6	1.001205	13.06194	1	174.765	1673.237	100394.2	
8.335694	126.39	1.001206	13.0537	1	175.305	1681.37	100882.2	
8.335821	126.83	1.001206	13.08724	1	175.775	1693.696	101621.8	
8.335909	127.2	1.001206	13.02069	1	176.145	1689.711	101382.7	
8.335841	127.19	1.001205	13.05393	1	176.14	1696.808	101808.5	
8.335753	127	1.001205	13.07046	1	175.91	1695.24	101714.4	
8.335597	126.68	1.001205	12.97852	1	175.735	1678.508	100710.5	
8.335577	126.2	1.001205	12.93682	1	175.23	1667.596	100055.8	
8.335685	125.97	1.001205	13.87891	1	174.265	1781.337	106880.2	
8.335636	125.48	1.001205	13.47872	1	174.245	1725.575	103534.5	
8.335733	125.25	1.001205	13.53723	1	174.01	1727.576	103654.5	
8.335733	124.83	1.001206	13.47888	1	173.225	1712.559	102753.6	
8.33588	124.42	1.001206	13.41243	1	172.81	1698.007	101880.4	
8.33588	124.06	1.001205	13.44577	1	172.48	1696.209	101772.5	
8.335636	123.37	1.001205	13.48706	1	172.005	1692.585	101555.1	
8.335577	122.7	1.001205	13.4953	1	171.6	1685.851	101151.1	
8.335665	122.23	1.001205	13.48711	1	171.115	1676.198	100571.9	
8.335577	121.56	1.001205	13.60366	1	170.615	1682.458	100947.5	
8.335577	121.25	1.001205	13.51197	1	170.275	1666.316	99978.97	
8.335772	120.73	1.001205	13.45394	1	169.49	1649.877	98992.65	
8.335626	120.11	1.001206	13.4537	1	169.105	1640.959	98457.57	
8.335811	119.76	1.001205	13.47901	1	168.455	1637.999	98279.93	
8.335577	118.83	1.001205	13.51197	1	168.03	1632.888	97973.27	
8.335792	118.55	1.001206	13.52065	1	167.685	1626.817	97609.03	
8.335841	118.37	1.001205	13.52907	1	167.04	1620.514	97230.83	
8.335616	117.44	1.001206	13.53704	1	166.545	1613.189	96791.34	
8.33586	117.23	1.001205	13.53744	1	166.235	1605.157	96309.44	
8.335714	116.61	1.001205	13.51219	1	165.855	1597.172	95830.3	
8.335665	116.41	1.001205	13.53712	1	165.635	1595.198	95711.86	
8.335558	116.16	1.001205	13.51194	1	165.48	1589.648	95378.87	
8.335792	116.36	1.001206	13.56233	1	165.37	1596.636	95798.16	
8.335821	116.24	1.001205	13.49569	1	165.605	1588.493	95309.59	
8.335753	116.43	1.001205	13.47891	1	165.55	1587.868	95272.05	
8.335782	116.18	1.001205	13.52064	1	165.32	1591.822	95509.29	
8.335704	115.87	1.001205	13.50384	1	165.2	1585.044	95102.66	
8.335724	115.45	1.001205	13.50387	1	164.59	1578.329	94699.72	
8.335743	115.09	1.001205	13.47056	1	164.105	1569.068	94144.05	
8.335763	114.42	1.001205	13.87904	1	163.69	1608.061	96483.64	
8.335772	114.05	1.001206	13.87073	1	163.15	1600.098	96005.91	
8.335928	113.76	1.0014	13.86265	1	162.855	1594.743	95684.57	

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: BTN
DATE: 3_15_14
RUN NUMBER: EPA4

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	1495.264	Liters
Total Sample Volume - Vm	52.805	ft^3
Average Sample Rate	0.18	Liters/min
Sample Time	300.00	Minutes
Average Meter Temperature	85	°F
Total Sample Volume (Standard Conditions) - Vmstd	52.861	dscf
Total Particulates	0.4	mg
Particulate Concentration (dry-standard)	0.000007567	grams/dscf
Particulate Emission Rate	0.000080000	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA4

DATE: 3_15_14

BURN RATE 8.17 KG/HR DRY

FILTER A PARTICULATE 9 mg

FILTER B PARTICULATE 9 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	42.35		42.62	
Average Gas Velocity in Dilution Tunnel - vs	14.19	feet/second	14.19	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	38509.04	dscf/hour	38509.04	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	40.58	dscf	40.23	dscf
Average Tunnel Temperature	85.6	F	85.6	F
Average Delta p	0.045		0.045	
Average Gas Meter Temperature	98	F	95	F
Average Delta H	1.98	in-h20	2.01	in-h20
Total Time of Test	300	min	300	min
Total Particulates	9	mg	9	mg
Particulate Concentration (dry-standard)	0.000221779	grams/dscf	0.000223718	grams/dscf
Ambient Train (dry-standard)	0.000007567	grams/dscf	0.000007567	grams/dscf
Net (dry-standard)	0.000214212	grams/dscf	0.000216151	grams/dscf
Particulate Emission Rate	8.25	grams/hour	8.32	grams/hour
Total PM Emissions	41.25	grams	41.62	grams
Average Total PM Emissions	41.43	grams		
AVERAGE PARTICLATE EMISSIONS RATE	8.29	grams/hour		
% OF AVERAGE	99.5		100.5	
Emissions Factor	1.010	g/Kg -Dry	1.019	g/Kg -Dry

Heat Output	95259	Btu/hr	100.4366901	MJ/hr				
Emissions	0.1918	lb/MMBtu Out	0.0825	g/MJ	1.0147	g/dry kg	8.2864	g/hr
Qin	774142	BTU	816	MJ				
Qin LHV	719052	BTU	758	MJ				
Delivered Efficiency	61.53%	ndel	66.24%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#4
Control #: 004-hhw-023-1
est Duration: 300
urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)
Weight Units lb (kg or lb)

Wood Moisture (% DRY):	21.2
Wood Moisture (% wet):	17.49
Load Weight (lb wet):	109.10
Burn Rate (dry kg/h):	8.17
Total Particulate Emissions:	41.43 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

○ Douglas
◉ Oak

Averages		**283.6**	**67.5**	**6.41**	**15.50**	**3.35**
		Temp. (F)				
Elapsed Time (min)	**Fuel Weight Remaining (lb)**	**Flue Gas**	**Room Temp**	**Flue Gas Composition (%) O2**	**CO2**	**CO**
0	109.1	287.0	68.0	2.76	15.98	1.74
10	103.1	352.0	68.0	0.49	19.78	1.44
20	89.0	376.0	67.0	1.56	19.71	0.55
30	86.1	279.0	67.0	8.03	16.56	5.00
40	86.1	224.0	67.0	12.32	10.86	2.95
50	85.1	242.0	67.0	15.51	4.64	1.01
60	75.7	373.0	67.0	0.50	19.54	3.23
70	67.3	388.0	67.0	0.68	19.72	2.77
80	64.1	257.0	67.0	11.59	15.88	5.00
90	65.1	213.0	68.0	13.70	11.05	3.46
100	62.1	283.0	68.0	8.88	11.11	1.47
110	52.6	379.0	68.0	0.79	19.57	2.38
120	43.1	312.0	68.0	1.05	19.73	5.00
130	41.1	242.0	68.0	7.08	20.00	5.00
140	41.1	205.0	68.0	11.03	15.45	5.00
150	37.1	325.0	68.0	2.03	17.55	1.89
160	29.8	361.0	69.0	0.67	17.73	5.00

170	23.1	275.0	68.0	2.72	20.00	5.00
180	23.1	222.0	67.0	9.83	19.03	5.00
190	24.3	195.0	68.0	12.68	12.96	5.00
200	19.9	335.0	68.0	1.61	17.84	1.93
210	13.1	361.0	68.0	1.55	18.71	1.46
220	12.0	252.0	68.0	6.10	18.56	5.00
230	12.1	208.0	66.0	11.73	12.68	5.00
240	11.1	269.0	67.0	8.75	10.48	3.24
250	8.0	330.0	68.0	3.19	16.17	2.28
260	3.0	336.0	67.0	4.38	14.65	3.38
270	2.0	249.0	67.0	5.68	14.95	4.71
280	1.6	205.0	67.0	10.03	12.75	4.52
290	1.1	265.0	67.0	8.83	10.35	2.83
300	-0.2	192.0	67.0	13.06	6.62	1.51

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: EPA#4
Control #: 004-hhw-023-1
Test Duration: 300 min

	HHV	LHV
Eff	72.7%	78.3%
Comb Eff	88.5%	88.5%
HT Eff	82.2%	88.5%
Output	118,122	kJ/h
Burn Rate	8.17	kg/h
Grams CO	6,411	g
Input	162,446	kJ/h
MC wet	17.49	

Ultimate CO2
CO2-ult 19.80
Fo
1.055

Overall Heating Efficiency:	72.7%	Air Fuel Ratio (A/F)		
Combustion Efficiency:	88.5%	Dry Molecular Weight (Md)	30.59	
Heat Transfer Efficiency:	82.2%	Dry Moles Exhaust Gas (Nr):	210.71	%HC
		Air Fuel Ratio (A/F)	5.94	1.32

Heat Output:	112,051	Btu/h	118,122	kJ/h
Heat Input:	154,098	Btu/h	162,446	kJ/h
Burn Duration:	5	h		
Burn Rate:	18.0	lb/h	8.2	kg/h
Stack Temp:	283.5	Deg. F	139.7	Deg. C

	Averages	3.35	15.50	16.9%	19.86	2.68	139.8	19.7	85.0%	82.8%	70.3%	6.9	18.91	61.80	0.49	61.80	816326	4.17
INPUT DATA				**Oxygen Calculation**			**Input Data**		**Combust**	**Heat**	**Net**	**Air**	**Wet Wt**	**% Wet**	**Dry Wt.**	**% Dry**	**Fuel Properti**	
Elapsed Time	**Weight Remaining (kg)**	**% CO [e]**	**% CO2 [d]**	**Excess Air EA**	**Total O2**	**Calc. % O2 [g]**	**Flue Gas (ºC)**	**Room Temp (ºC)**	**Eff %**	**Transfer %**	**Eff %**	**Fuel Ratio**	**Now Wt**	**Consumed x**	**Now Wtdn**	**Comsumed y**	**Total Input**	**Carbon /12= [a]**
0	49.50	1.74	15.98	11.8%	19.92	3.07	141.7	20.0	91.7%	83.6%	76.7%	6.7	49.50	0.00	40.84	0.00	0	4.17
10	46.78	1.44	19.78	-6.7%	19.72	-0.78	177.8	20.0	94.2%	83.2%	78.3%	5.7	46.78	5.50	38.60	5.50	97155	4.17
20	40.38	0.55	19.71	-2.3%	19.78	-0.21	191.1	19.4	97.7%	82.8%	80.9%	6.0	40.38	18.42	33.32	18.42	63281	4.17
30	39.07	5.00	16.56	-8.2%	19.70	0.64	137.2	19.4	80.6%	83.1%	66.9%	5.3	39.07	21.08	32.23	21.08	10795	4.17
40	39.07	2.95	10.86	43.4%	20.15	7.81	106.7	19.4	82.2%	83.0%	68.3%	8.4	39.07	21.08	32.23	21.08	3722	4.17
50	38.61	1.01	4.64	250.5%	20.62	15.47	116.7	19.4	85.6%	75.8%	64.9%	20.9	38.61	22.00	31.86	22.00	38713	4.17
60	34.35	3.23	19.54	-13.0%	19.63	-1.52	189.4	19.4	87.9%	82.2%	72.2%	5.2	34.35	30.61	28.34	30.61	66259	4.17
70	30.54	2.77	19.72	-12.0%	19.65	-1.46	197.8	19.4	89.5%	82.0%	73.4%	5.3	30.54	38.31	25.19	38.31	43180	4.17
80	29.08	5.00	15.88	-5.2%	19.74	1.36	125.0	19.4	80.0%	83.4%	66.7%	5.5	29.08	41.25	24.00	41.25	8189	4.17
90	29.54	3.46	11.05	36.5%	20.11	7.33	100.6	20.0	80.2%	83.4%	66.8%	8.0	29.54	40.33	24.37	40.33	7445	4.17
100	28.18	1.47	11.11	57.4%	20.22	8.37	139.4	20.0	90.2%	81.7%	73.7%	9.5	28.18	43.08	23.25	43.08	46530	4.17
110	23.87	2.38	19.57	-9.8%	19.68	-1.08	192.8	20.0	90.7%	82.3%	74.6%	5.4	23.87	51.79	19.69	51.79	70726	4.17
120	19.56	5.00	19.73	-19.9%	19.52	-2.71	155.6	20.0	83.0%	83.2%	69.0%	4.7	19.56	60.49	16.13	60.49	42808	4.17
130	18.65	5.00	20.00	-20.8%	19.50	-3.00	116.7	20.0	83.1%	84.8%	70.5%	4.6	18.65	62.33	15.39	62.33	7445	4.17
140	18.65	5.00	15.45	-3.2%	19.77	1.82	96.1	20.0	79.6%	84.7%	67.4%	5.6	18.65	62.33	15.39	62.33	14890	4.17
150	16.83	1.89	17.55	1.9%	19.82	1.33	162.8	20.0	91.7%	83.1%	76.2%	6.1	16.83	65.99	13.89	65.99	42063	4.17
160	13.52	5.00	17.73	-12.9%	19.63	-0.60	182.8	20.6	81.5%	81.4%	66.4%	5.1	13.52	72.69	11.16	72.69	52114	4.17
170	10.48	5.00	20.00	-20.8%	19.50	-3.00	135.0	20.0	83.1%	84.1%	69.9%	4.6	10.48	78.83	8.65	78.83	24940	4.17
180	10.48	5.00	19.03	-17.6%	19.56	-1.97	105.6	19.4	82.5%	85.1%	70.2%	4.8	10.48	78.83	8.65	78.83	-4467	4.17
190	11.03	5.00	12.96	10.3%	19.91	4.45	90.6	20.0	76.9%	84.2%	64.7%	6.3	11.03	77.73	9.10	77.73	11912	4.17
200	9.03	1.93	17.84	0.2%	19.80	1.00	168.3	20.0	91.7%	82.9%	76.0%	6.0	9.03	81.76	7.45	81.76	41691	4.17
210	5.94	1.46	18.71	-1.8%	19.78	0.34	182.8	20.0	93.8%	82.7%	77.5%	6.0	5.94	87.99	4.90	87.99	29407	4.17
220	5.44	5.00	18.56	-15.9%	19.59	-1.47	122.2	20.0	82.2%	84.3%	69.3%	4.9	5.44	89.00	4.49	89.00	3722	4.17
230	5.49	5.00	12.68	12.0%	19.92	4.74	97.8	18.9	76.5%	83.6%	64.0%	6.4	5.49	88.91	4.53	88.91	3350	4.17
240	5.04	3.24	10.48	44.3%	20.15	8.05	131.7	19.4	80.4%	81.1%	65.2%	8.4	5.04	89.83	4.16	89.83	15262	4.17
250	3.63	2.28	16.17	7.3%	19.88	2.57	165.6	20.0	89.5%	82.4%	73.8%	6.4	3.63	92.67	2.99	92.67	30152	4.17
260	1.36	3.38	14.65	9.8%	19.90	3.56	168.9	19.4	84.2%	81.2%	68.4%	6.5	1.36	97.25	1.12	97.25	22335	4.17
270	0.91	4.71	14.95	0.7%	19.81	2.51	120.6	19.4	80.0%	83.4%	66.7%	5.8	0.91	98.17	0.75	98.17	5211	4.17
280	0.73	4.52	12.75	14.7%	19.95	4.94	96.1	19.4	78.2%	83.9%	65.7%	6.6	0.73	98.53	0.60	98.53	3350	4.17
290	0.50	2.83	10.35	50.2%	20.18	8.42	129.4	19.4	82.1%	81.3%	66.8%	8.8	0.50	98.99	0.41	98.99	10051	4.17
300	-0.09	1.51	6.62	143.6%	20.47	13.10	88.9	19.4	84.8%	82.1%	69.6%	14.5	-0.09	100.18	-0.07	100.18	4095	4.17

																Moisture Content MCwb:	17.49		
Combustion Efficiency:	88.5%							Moisture of Wood (wet basis):	17.49							Dry kg :	40.84		
Total Input (kJ):	812,231	770,362	(Btu)					Initial Dry Weight Wtdo (kg):	40.84							CA:	50.00		
Total Output (kJ):	590,610	560,165	(Btu)					Moisture Content Dry	21.20							HY:	6.60		
Efficiency:	72.7%															OX:	42.90		
Total CO (g):	6410.68																		
								Load Weight (kg):	49.50										
								Fuel Heating:	HHV	LHV				HHV	LHV				
								Value in kJ/kg - CV:	19887.00	18463.91		Btu/lb		8555.61	7943.38				

6.60	2.68	19887.00	17.49	78.47	20.81	4.64	14.35	0.48	0.46	33.56	10.96	7.29	1.03	189.39	31.10	11.78	412.93	4791.94	3601.83
es			Mw	Mass Balance					kg Wood per	Moles per kg of Dry Wood							Stack	Heat Content Cha	
Hydrogen	Oxygen	Calorific	Moisture	(moles/100 mole dry flue gas)					100 mole dfp							Moisture	Temp		F
/1= [b]	/16= [c]	Value	Fuel Burnt	[h]	[u]	[w]	[j]	[k]	Nk	CO2	O2	CO	HC	N2	H2O	Present	K	CO2	O2
6.60	2.68	19887.00	17.49	79.21	21.01	4.31	13.74	0.25	0.43	37.25	7.16	4.06	0.57	184.62	32.02	11.78	414.82	4843.00	3646.09
6.60	2.68	19887.00	17.49	79.56	21.10	5.14	16.55	0.21	0.51	38.65	-1.52	2.81	0.41	155.47	32.35	11.78	450.93	6363.04	4753.90
6.60	2.68	19887.00	17.49	79.95	21.21	4.88	15.95	0.08	0.49	40.58	-0.43	1.13	0.16	164.60	32.84	11.78	464.26	6954.97	5182.25
6.60	2.68	19887.00	17.49	77.80	20.64	5.35	16.21	0.72	0.53	31.13	1.21	9.40	1.35	146.23	30.46	11.78	410.37	4679.67	3526.90
6.60	2.68	19887.00	17.49	78.38	20.79	3.41	10.44	0.41	0.34	31.98	23.00	8.69	1.21	230.77	30.74	11.78	379.82	3426.96	2599.91
6.60	2.68	19887.00	17.49	78.88	20.92	1.39	4.33	0.12	0.14	33.67	112.26	7.33	0.88	572.38	31.41	11.78	389.82	3833.95	2902.36
6.60	2.68	19887.00	17.49	78.75	20.89	5.58	17.47	0.47	0.55	35.21	-2.74	5.82	0.84	141.92	31.48	11.78	462.59	6883.34	5130.66
6.60	2.68	19887.00	17.49	78.97	20.95	5.49	17.33	0.40	0.55	36.07	-2.67	5.07	0.73	144.46	31.70	11.78	470.93	7242.31	5388.85
6.60	2.68	19887.00	17.49	77.76	20.63	5.18	15.67	0.72	0.52	30.79	2.64	9.69	1.39	150.77	30.38	11.78	398.15	4175.33	3155.09
6.60	2.68	19887.00	17.49	78.16	20.73	3.60	10.90	0.49	0.36	30.86	20.46	9.66	1.36	218.26	30.45	11.78	373.71	3158.54	2399.17
6.60	2.68	19887.00	17.49	79.05	20.97	3.07	9.72	0.20	0.31	36.41	27.44	4.82	0.65	259.05	31.87	11.78	412.59	4750.70	3578.30
6.60	2.68	19887.00	17.49	79.13	20.99	5.35	16.97	0.34	0.53	36.76	-2.03	4.47	0.65	148.63	31.87	11.78	465.93	7005.56	5217.52
6.60	2.68	19887.00	17.49	77.98	20.68	6.11	18.71	0.72	0.61	32.46	-4.46	8.23	1.19	128.29	30.78	11.78	428.71	5423.16	4070.78
6.60	2.68	19887.00	17.49	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18	126.96	30.81	11.78	389.82	3812.82	2886.02
6.60	2.68	19887.00	17.49	77.73	20.62	5.08	15.33	0.72	0.51	30.57	3.59	9.89	1.42	153.79	30.33	11.78	369.26	2979.37	2265.28
6.60	2.68	19887.00	17.49	79.23	21.02	4.73	15.07	0.27	0.47	37.29	2.82	4.02	0.57	168.34	32.02	11.78	435.93	5727.05	4292.31
6.60	2.68	19887.00	17.49	77.87	20.65	5.63	17.13	0.72	0.56	31.66	-1.06	8.93	1.29	139.04	30.59	11.78	455.93	6555.35	4891.87
6.60	2.68	19887.00	17.49	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18	126.96	30.81	11.78	408.15	4566.52	3442.85
6.60	2.68	19887.00	17.49	77.94	20.67	5.94	18.16	0.72	0.59	32.19	-3.33	8.46	1.22	131.85	30.72	11.78	378.71	3381.91	2566.36
6.60	2.68	19887.00	17.49	77.59	20.58	4.48	13.36	0.71	0.45	29.06	9.98	11.21	1.60	174.01	29.97	11.78	363.71	2756.21	2098.17
6.60	2.68	19887.00	17.49	79.23	21.02	4.81	15.32	0.28	0.48	37.27	2.09	4.03	0.58	165.51	32.01	11.78	441.48	5961.84	4463.03
6.60	2.68	19887.00	17.49	79.49	21.08	4.89	15.72	0.21	0.49	38.45	0.70	3.00	0.43	163.33	32.30	11.78	455.93	6576.49	4908.21
6.60	2.68	19887.00	17.49	77.91	20.67	5.83	17.79	0.72	0.58	32.01	-2.54	8.62	1.25	134.36	30.67	11.78	395.37	4040.19	3054.44
6.60	2.68	19887.00	17.49	77.58	20.58	4.41	13.14	0.71	0.44	28.87	10.80	11.38	1.62	176.62	29.92	11.78	370.93	3088.74	2348.16
6.60	2.68	19887.00	17.49	78.23	20.75	3.40	10.32	0.45	0.34	30.96	23.79	9.57	1.34	231.12	30.48	11.78	404.82	4449.89	3357.73
6.60	2.68	19887.00	17.49	78.98	20.95	4.51	14.22	0.32	0.45	36.07	5.73	5.09	0.72	176.16	31.72	11.78	438.71	5844.33	4377.63
6.60	2.68	19887.00	17.49	78.41	20.80	4.44	13.70	0.48	0.44	33.14	8.06	7.65	1.09	177.37	30.99	11.78	442.04	6006.50	4496.46
6.60	2.68	19887.00	17.49	77.83	20.65	4.88	14.76	0.67	0.49	30.79	5.16	9.70	1.39	160.29	30.39	11.78	393.71	3993.01	3020.22
6.60	2.68	19887.00	17.49	77.79	20.63	4.30	12.90	0.64	0.43	29.81	11.54	10.57	1.50	181.86	30.16	11.78	369.26	3000.50	2281.63
6.60	2.68	19887.00	17.49	78.40	20.80	3.26	9.96	0.39	0.32	31.93	25.97	8.73	1.22	241.87	30.73	11.78	402.59	4358.23	3290.14
6.60	2.68	19887.00	17.49	78.77	20.89	2.00	6.20	0.20	0.20	33.29	65.87	7.59	0.99	396.15	31.19	11.78	362.04	2710.57	2064.43

					SUMS							AVERAGE	SUMS						
3501.42	3462.84	4622.71	4189.66	292.88	5085.89	936.36	64653.10	19476.51	28621.75	46452.22	17583.40	5897.07	221622	93680	127941.91	594704	93680	6410.68	519.24
nge - Ambient to Stack Temperature				Room	Energy Losses (kJ/kg of Dry Fuel)							Total							
lue Gas Constituent				Temp	Flue Gas Constituent							Loss	Total	Chemical	Sensible and	Total	Chem	Grams Produced	
CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb	H2O Fuel MC	Rate	Loss	Loss 1	Latent Loss	Output	Loss 2	CO	HC
3545.89	3506.52	4659.11	4243.33	293.15	180.39	26.11	1161.96	647.39	512.62	1543.76	567.84	4640.07	0	0	0.00	0	0	0.00	0.00
4614.28	4564.93	6201.48	5519.01	293.15	245.96	-7.24	809.34	709.73	365.54	1600.95	582.86	4307.15	21042	5664	15378.02	76113	5664	384.93	31.88
5026.61	4973.57	6808.81	6011.09	292.59	282.23	-2.23	326.14	818.66	146.93	1641.26	588.66	3801.66	12097	1484	10613.32	51184	1484	100.89	8.34
3430.90	3392.61	4493.70	4106.02	292.59	145.66	4.25	2691.81	496.10	1209.51	1464.46	566.22	6578.01	3571	2097	1473.76	7224	2097	142.84	11.74
2533.35	2504.19	3253.26	3033.19	292.59	109.58	59.80	2480.03	577.90	1085.22	1444.68	553.59	6310.79	1181	662	518.77	2541	662	45.52	3.64
2826.52	2794.31	3653.47	3383.71	292.59	129.09	325.82	2094.76	1599.42	784.15	1487.41	557.71	6978.35	13584	5558	8026.77	25129	5558	399.48	27.33
4977.01	4924.40	6734.77	5951.92	292.59	242.38	-14.08	1676.18	698.87	755.97	1571.51	587.96	5518.80	18387	7988	10399.43	47872	7988	543.01	44.93
5225.14	5170.40	7106.52	6247.92	292.59	261.26	-14.36	1460.48	746.90	658.79	1591.75	591.45	5296.26	11500	4533	6966.94	31680	4533	308.07	25.51
3071.25	3036.55	3991.25	3676.25	292.59	128.56	8.32	2773.21	457.81	1244.98	1447.52	561.16	6621.55	2727	1640	1086.60	5463	1640	111.78	9.17
2338.46	2311.40	2992.07	2800.07	293.15	97.46	49.08	2756.72	504.48	1214.05	1423.99	550.84	6596.62	2469	1477	992.99	4975	1477	101.27	8.14
3480.38	3441.65	4566.58	4165.07	293.15	172.97	98.18	1380.03	891.55	581.88	1533.80	566.92	5225.32	12226	4544	7681.66	34304	4544	315.59	24.35
5060.21	5006.95	6863.63	6051.09	293.15	257.51	-10.59	1287.70	744.20	580.57	1594.21	589.13	5042.73	17934	6548	11385.85	52792	6548	445.15	36.83
3955.94	3912.64	5243.69	4733.10	293.15	176.03	-18.15	2360.34	501.95	1067.37	1499.13	573.61	6160.27	13260	7295	5965.49	29548	7295	495.77	41.06
2810.52	2778.51	3634.09	3364.53	293.15	124.13	-14.08	2326.20	352.77	1054.91	1458.12	557.49	5859.55	2194	1256	937.99	5251	1256	85.31	7.07
2208.50	2182.83	2817.52	2644.62	293.15	91.06	8.13	2821.11	335.69	1267.36	1413.67	549.01	6486.03	4856	3042	1814.44	10033	3042	207.37	17.00
4169.60	4124.30	5551.94	4988.21	293.15	213.54	12.11	1153.10	694.27	514.12	1567.51	576.61	4731.25	10007	3484	6522.95	32056	3484	237.81	19.42
4746.78	4696.31	6401.41	5677.04	293.71	207.54	-5.21	2569.03	652.99	1154.67	1518.67	584.72	6682.42	17511	9625	7886.00	34603	9625	655.11	54.00
3349.45	3312.00	4382.35	4008.64	293.15	148.67	-16.79	2330.59	420.51	1055.80	1477.97	565.07	5981.81	7502	4206	3295.59	17438	4206	285.80	23.68
2500.81	2471.99	3209.14	2994.27	292.59	108.88	-8.56	2414.89	325.94	1093.33	1442.63	553.13	5930.24	-1332	-782	-549.65	-3135	-782	-53.20	-4.40
2046.20	2022.28	2600.89	2450.47	293.15	80.11	20.93	3196.11	351.89	1427.92	1391.05	546.72	7014.72	4202	2753	1448.20	7710	2753	188.05	15.33
4334.15	4287.33	5791.04	5184.65	293.15	222.18	9.32	1158.41	709.59	517.39	1573.45	578.93	4769.26	9998	3469	6528.78	31693	3470	236.66	19.37
4762.78	4712.11	6420.80	5696.22	293.15	252.83	3.44	863.26	769.64	386.48	1604.37	584.95	4464.98	6602	1823	4779.62	22805	1823	124.21	10.20
2973.63	2939.95	3858.85	3559.51	293.15	129.32	-7.76	2465.79	395.02	1114.12	1457.86	559.78	6114.13	1144	664	480.05	2578	664	45.19	3.73
2289.22	2262.63	2921.58	2741.27	292.04	89.17	25.36	3247.61	399.63	1449.25	1397.59	550.15	7158.76	1206	786	419.92	2144	786	53.70	4.37
3267.32	3230.65	4264.28	3910.57	292.59	137.78	79.87	2740.19	746.67	1199.56	1459.54	563.92	6927.53	5316	2995	2321.31	9946	2995	205.69	16.47
4251.85	4205.79	5671.27	5086.41	293.15	210.79	25.09	1460.79	740.91	648.13	1555.98	577.77	5219.46	7913	3158	4755.04	22238	3158	215.89	17.55
4366.61	4319.45	5834.42	5223.49	292.59	199.06	36.25	2197.21	766.14	975.45	1524.40	579.38	6277.90	7051	3518	3532.04	15284	3518	240.44	19.56
2940.68	2907.30	3810.61	3520.18	292.59	122.93	15.58	2773.43	466.01	1241.81	1443.08	559.32	6622.17	1735	1043	692.01	3476	1043	71.17	5.82
2224.50	2198.63	2836.89	2663.81	292.59	89.43	26.34	3013.73	399.83	1342.91	1406.36	549.24	6827.84	1150	729	420.98	2200	729	49.84	4.05
3201.94	3165.92	4172.99	3832.43	292.59	139.15	85.44	2498.60	765.73	1087.86	1469.08	563.00	6608.87	3340	1796	1544.17	6711	1796	123.54	9.84
2013.54	1989.96	2555.61	2411.44	292.59	90.24	135.99	2164.33	788.33	883.11	1446.48	546.26	6054.75	1247	624	622.86	2848	624	43.78	3.26

Dirigo Laboratories, Inc.

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#4
Control #: 004-hhw-023-1
Test Duration: 300
Output Category: 4

	HHV Basis	LHV Basis	
Overall Efficiency	72.7%	78.3%	
Combustion Efficiency	88.5%	88.5%	
Heat Transfer Efficiency	82.2%	88.5%	
HHV Output Rate (kJ/h)	118,122	112,051	**(Btu/h)**
Burn Rate (kg/h)	8.17	18.00	**(lb/h)**
Input (kJ/h)	162,446	154,098	**(Btu/h)**
Test Load Weight (dry kg)	40.8	90.0	**dry lb**
MC wet (%)	17.49		
MC dry (%)	21.20		
Particulate (g)	41.43		
CO (g)	6411		
Test Duration (h)	5		

Emissions	**Particulate**	**CO**
g/MJ Output	0.07	10.85
g/kg Dry Fuel	1.01	156.96
g/h	8.29	1282.14
lb/MM Btu Output	0.16	25.23

Air/Fuel Ratio (A/F)	5.94

Test Results in Accordance with CSA B415.1-10

Technician: _____

PREBURN

JOB # 004_HHW_023_1
TECHNICIAN Btn
DATE: 4_2_14
RUN #: EPA#5
READING INTERVAL: 10
.
Run Time: 380

Model Designation GreenTech

	Tunnel Traverse Information											
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10	Pt.11	Pt. 12
dP	0.045	0.045	0.048	0.048	0.044	0.042	0.044	0.048	0.050	0.050	0.048	0.048
Temperature	80	80	80	80	80	80	80	80	80	80	80	80

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	79.1	-0.038	6014	6015	6017	6015	6015	6015.2
10	71.1	-0.037	6014	6015	6017	6015	6015	6015.2
20	71.1	-0.021	6014	6015	6017	6015	6015	6015.2
30	71.1	-0.015	6014	6015	6017	6015	6015	6015.2
40	71.1	-0.015	6014	6015	6017	6015	6015	6015.2
50	71.1	-0.018	6014	6015	6017	6015	6015	6015.2
60	65.2	-0.043	6014	6015	6017	6015	6016	6015.4
70	60.1	-0.034	6015	6015	6018	6015	6016	6015.8
80	60.1	-0.021	6016	6017	6019	6016	6017	6017
90	60.1	-0.013	6015	6016	6018	6016	6017	6016.4
100	60.1	-0.013	6015	6016	6018	6016	6017	6016.4
110	60.1	-0.004	6015	6016	6018	6016	6017	6016.4
120	58.1	-0.016	6015	6016	6018	6016	6016	6016.2
130	53.1	-0.038	6014	6015	6017	6015	6016	6015.4
140	47.1	-0.033	6014	6015	6017	6015	6016	6015.4
150	47.1	-0.02	6015	6016	6018	6016	6017	6016.4
160	47.1	-0.009	6019	6019	6022	6019	6020	6019.8
170	47.1	-0.005	6019	6020	6022	6020	6021	6020.4
180	47.1	-0.003	6020	6021	6023	6021	6021	6021.2
190	46.1	-0.021	6021	6022	6024	6022	6022	6022.2
200	40.1	-0.036	6022	6023	6025	6022	6023	6023
210	33.1	-0.03	6022	6023	6025	6023	6024	6023.4
220	33.1	-0.015	6023	6024	6026	6023	6024	6024
230	33.1	-0.008	6023	6024	6026	6024	6024	6024.2
240	33.1	-0.005	6023	6024	6026	6024	6025	6024.4
250	33.1	-0.023	6018	6019	6021	6019	6020	6019.4
260	29	-0.033	6015	6016	6018	6016	6016	6016.2
270	21.6	-0.035	6013	6014	6016	6013	6014	6014
280	22.1	-0.02	6016	6017	6019	6017	6018	6017.4

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	13.58546	ft/sec.
Intial Tunnel Flow:	654.4319	scfm
Average Tunnel Flow:	614.2491	scfm

Notes:

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
290	21.1	-0.009	6019	6020	6022	6020	6020	6020.2
300	21.1	0.002	6020	6021	6023	6021	6022	6021.4
310	22.1	-0.013	6021	6022	6024	6022	6022	6022.2
320	20.7	-0.012	6021	6022	6024	6022	6023	6022.4
330	23.1	-0.038	6017	6018	6020	6018	6019	6018.4
340	19.1	-0.024	6015	6016	6018	6016	6016	6016.2
350	19.1	-0.014	6014	6015	6017	6015	6016	6015.4
360	19.1	-0.013	6018	6019	6021	6019	6019	6019.2
370	19.1	-0.004	6020	6021	6023	6020	6021	6021
380	19.1	-0.001	6020	6021	6023	6021	6021	6021.2

Run #	EPA#5
Date:	4/2/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.045	0.045	0.048	0.048	0.044	0.042	0.044	0.048	0.050	0.050	0.048	0.048	0.047
Temperature	80	80	80	80	80	80	80	80	80	80	80	80	80.000

Tunnel Velocity:	13.585	ft/sec.
Intial Tunnel Flow:	654.43	scfm
Average Tunnel Flow	614.25	scfm

JOB #	004-hhw-023-1															
TECHNICIAN	Btn							ROOM TEMP (F)		67.0			BEG	MID	END	AVG
DATE:	4/2/2014								BAROMETRIC I				30.03	30.03	30.03	30.03
RUN #:	Epa#5															
READING INTERVAL:		10														
SAMPLE BOX :		A	METER Y FACTOR:		0.995					PROBE MATERIAL:			SS			
FRONT FILTER #:						REAR FILTER #	REAR FILTER #:									
FINAL LEAK RATE (CFM):			@		IN-HG		FINAL LEAK RATE (CFM)			@		IN-HG				
Run Time:		560		AMBIENT FILTER #:				VOLUME		LITERS	FUEL MOISTURE DB			22.3	%	
				FINAL LEAK RATE (CFM):				@		IN-HG						
TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
0		0.000	0.04	0.05	-0.15		NA	107	0	88	294	67	6024	6022	73	66
10	1.382	0.138	0.041	2.01	-2.02	13.700	104	99.1	7.9	96	330	72	6023	6021	74	65
20	2.769	0.139	0.038	1.96	-0.37	13.010	106	90.1	9	81	334	67	6019	6017	79	65
30	4.160	0.139	0.041	1.97	-2.07	13.451	101	90.1	0	76	235	68	6022	6020	82	65
40	5.555	0.139	0.043	1.97	0	13.788	98	90.1	0	77	196	70	6024	6022	85	67
50	6.951	0.140	0.045	1.98	-2.09	14.105	96	90.1	0	77	173	71	6025	6023	88	67
60	8.354	0.140	0.042	1.99	-1.68	13.627	99	91.1	-1	77	158	72	6025	6024	91	66
70	9.762	0.141	0.043	1.95	-1.82	14.055	100	86.3	4.8	98	330	76	6025	6024	94	66
80	11.163	0.140	0.042	2	0	14.015	101	74.9	11.4	108	372	79	6025	6023	96	66
90	12.592	0.143	0.042	2	0	13.627	100	73.1	1.8	77	249	73	6025	6024	98	66
100	14.020	0.143	0.042	2.03	0	13.627	99	73.1	0	77	206	72	6025	6024	99	66
110	15.455	0.144	0.042	2.02	-1.44	13.614	100	72.9	0.2	76	181	71	6025	6024	100	66
120	16.892	0.144	0.043	2.02	-2.22	13.763	98	73.1	-0.2	75	165	71	6026	6024	101	66
130	18.326	0.143	0.037	2.02	-1.69	12.766	106	73.1	0	75	154	71	6026	6024	102	66
140	19.762	0.144	0.042	2.02	-1.83	13.853	101	68.3	4.8	95	310	74	6025	6023	103	65
150	21.194	0.143	0.043	2.01	0	14.156	100	57.2	11.1	106	373	78	6025	6023	103	65
160	22.627	0.143	0.042	2.02	-1.72	13.602	99	55.1	2.1	75	249	71	6025	6023	104	65
170	24.065	0.144	0.04	2.03	-2.08	13.274	101	55.1	0	75	205	71	6025	6023	104	66
180	25.506	0.144	0.04	2.02	-1.18	13.261	102	55.1	0	74	182	71	6026	6024	104	66
190	26.946	0.144	0.041	2.01	-2.04	13.426	100	55.1	0	74	165	71	6026	6024	104	66
200	28.382	0.144	0.038	2.02	0	12.926	104	55.1	0	74	154	71	6025	6024	105	66
210	29.821	0.144	0.038	2.02	0	13.106	105	52.1	3	89	264	73	6026	6024	105	66
220	31.255	0.143	0.043	2	-1.21	14.093	100	44.1	8	101	354	76	6026	6024	105	67
230	32.690	0.143	0.041	2	0	13.464	100	38.1	6	77	266	72	6025	6024	105	66
240	34.127	0.144	0.045	2.01	-0.73	14.092	95	38.1	0	76	215	71	6025	6023	105	66
250	35.567	0.144	0.043	2.02	-2.17	13.763	98	38.1	0	75	187	70	6025	6023	105	66
260	37.003	0.144	0.042	2.03	-0.51	13.602	99	38.1	0	75	168	70	6025	6023	105	67
270	38.441	0.144	0.04	2.01	-0.08	13.274	101	38.1	0	75	155	70	6025	6023	106	66

TEST START TIME:										1	2	3	4	5	6	
										TEMPERATURES						
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP
280	39.882	0.144	0.041	2.02	-1.83	13.589	101	36.1	2	87	257	71	6025	6023	105	66
290	41.316	0.143	0.04	2	0	13.556	103	32	4.1	98	344	74	6025	6024	106	66
300	42.749	0.143	0.04	2.01	0	13.299	101	26.1	5.9	77	256	72	6025	6023	106	66
310	44.189	0.144	0.04	2	-2.04	13.274	101	26.1	0	75	206	71	6025	6023	106	67
320	45.629	0.144	0.04	2.01	-1.71	13.274	101	26.1	0	75	179	71	6025	6023	106	66
330	47.065	0.144	0.04	2	-0.04	13.261	101	26.1	0	74	162	69	6024	6023	106	66
340	48.503	0.144	0.042	2.01	-0.89	13.602	99	27.1	-1	75	150	70	6025	6023	105	66
350	49.940	0.144	0.042	2.02	-0.64	13.828	100	23.1	4	93	317	72	6025	6023	105	65
360	51.372	0.143	0.043	1.99	0	13.839	98	18.1	5	81	300	72	6025	6023	106	68
370	52.811	0.144	0.044	2.01	-1.19	13.935	96	17.1	1	76	221	72	6027	6025	106	70
380	54.249	0.144	0.043	2	-1.73	13.763	97	17.1	0	75	187	71	6027	6025	106	70
390	55.682	0.143	0.04	2.01	-1.51	13.261	101	18.1	-1	74	167	71	6027	6025	106	70
400	57.118	0.144	0.042	2.01	-1.68	13.589	98	17.1	1	74	153	71	6027	6025	106	70
410	58.557	0.144	0.041	2.01	-2.1	13.514	100	17.3	-0.2	81	211	72	6027	6025	106	70
420	59.990	0.143	0.041	2	-1.04	13.663	101	13.1	4.2	93	313	73	6027	6025	106	71
430	61.422	0.143	0.041	2	-0.64	13.464	100	10.1	3	77	268	73	6027	6026	106	70
440	62.861	0.144	0.039	1.99	-1.44	13.095	102	10.1	0	74	207	71	6027	6025	106	70
450	64.297	0.144	0.039	2	-2.13	13.095	102	10.1	0	74	178	71	6027	6026	106	70
460	65.732	0.143	0.038	2.01	-1.32	12.926	103	10.1	0	74	161	71	6027	6025	106	70
470	67.170	0.144	0.042	2.02	-1.43	13.576	98	10.1	0	73	147	70	6027	6025	106	69
480	68.608	0.144	0.039	2.02	-1.82	13.241	103	8.1	2	86	261	71	6026	6025	106	69
490	70.039	0.143	0.045	2	-0.89	14.314	96	4.8	3.3	93	320	73	6027	6025	106	70
500	71.473	0.143	0.039	2.01	-2.31	13.107	102	3.1	1.7	75	248	72	6027	6025	106	70
510	72.911	0.144	0.044	2.01	-2.08	13.896	96	3.1	0	73	198	71	6027	6025	105	69
520	74.345	0.143	0.039	2	0	13.082	102	3.1	0	73	172	70	6027	6025	106	69
530	75.782	0.144	0.041	1.99	0	13.414	99	4.1	-1	73	156	70	6027	6025	106	70
540	77.220	0.144	0.039	1.99	0	13.095	102	3.1	1	74	145	70	6026	6025	106	69
550	78.653	0.143	0.039	2.02	0	13.253	103	1.4	1.7	87	271	71	6027	6025	105	69
560	80.088	0.144	0.043	2.01	-1.17	13.954	99	0	1.4	90	291	73	6027	6025	106	70
												79				71
	80.088		0.041	2.01		13.532	100.3			81	229				102	67

JOB #	004_HHW_023_1						
TECHNICIAN	Btn						
DATE:	4_2_14						
RUN #:	EPA#5						
READING INTERVAL:	10						
SAMPLE BOX :	*B*	METER Y FACTOR:	0.974		PROBE MATERIAL:	**SS**	
FRONT FILTER #:				REAR FILTER #:			
FINAL LEAK RATE (CFM):		@	IN-HG	FINAL LEAK RATE (CFM):		@	IN-HG

Run Time: 560 **Firebox Delta T** **#N/A**

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6021	6022	64	6021	6022	72	
10	1.582	0.158	117	-0.04	2.03	-1.51	6020	6021	70	6021	6021	73	
20	3.100	0.152	115	-0.04	2.01	-1.09	6016	6017	66	6017	6017	74	
30	4.539	0.144	104	0	2.02	-1	6019	6020	66	6020	6020	78	
40	5.956	0.142	99	-0.01	2.03	-1.71	6021	6022	68	6021	6022	82	
50	7.367	0.141	96	-0.01	2.02	-2	6022	6023	70	6022	6023	86	
60	8.780	0.141	99	0	2	-1.91	6023	6023	71	6023	6024	89	
70	10.190	0.141	99	-0.04	2	-1.83	6022	6023	74	6023	6024	91	
80	11.603	0.141	101	-0.05	2.03	-1.58	6022	6023	78	6023	6024	94	
90	13.037	0.143	99	-0.02	2.05	-1.84	6023	6023	71	6023	6024	96	
100	14.474	0.144	99	-0.02	2.06	-0.92	6023	6023	70	6023	6024	97	
110	15.916	0.144	99	-0.02	2.05	-1.45	6023	6023	70	6023	6024	98	
120	17.357	0.144	98	-0.01	2.05	-2.08	6023	6024	70	6023	6024	99	
130	18.797	0.144	105	-0.01	2.03	-2.14	6023	6023	69	6023	6024	100	
140	20.241	0.144	100	-0.04	2.06	-1.18	6022	6023	73	6023	6024	100	
150	21.677	0.144	100	-0.05	2.02	-0.84	6022	6023	76	6023	6024	101	
160	23.120	0.144	98	-0.03	2.04	-1.19	6022	6023	69	6023	6024	102	
170	24.561	0.144	101	-0.02	2.06	-2.18	6022	6023	69	6023	6023	102	
180	26.008	0.145	101	-0.02	2.04	-2	6023	6023	69	6023	6024	102	
190	27.450	0.144	99	-0.01	2.04	-1.9	6023	6024	69	6023	6024	102	

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
200	28.898	0.145	104	-0.01	2.04	-2.09	6022	6023	69	6023	6024	102	
210	30.339	0.144	104	-0.03	2.05	-0.88	6023	6024	71	6024	6024	103	
220	31.783	0.144	99	-0.05	2.04	-1.86	6023	6024	73	6024	6024	102	
230	33.224	0.144	99	-0.03	2.03	-2.16	6023	6023	70	6023	6024	103	
240	34.668	0.144	95	-0.02	2.04	-2.13	6022	6023	69	6023	6023	103	
250	36.113	0.144	97	-0.01	2.05	-2.23	6022	6023	69	6023	6023	103	
260	37.557	0.144	98	-0.01	2.06	-1.68	6022	6023	69	6023	6023	103	
270	39.003	0.145	101	-0.01	2.04	-2.04	6022	6023	69	6023	6023	103	
280	40.445	0.144	100	-0.03	2.04	-1.17	6022	6023	71	6023	6024	103	
290	41.890	0.144	103	-0.04	2.04	-1.84	6023	6023	73	6023	6024	103	
300	43.331	0.144	101	-0.03	2.05	-0.83	6022	6023	71	6023	6024	103	
310	44.778	0.145	101	-0.02	2.04	-1.13	6022	6023	70	6023	6023	103	
320	46.220	0.144	100	-0.01	2.05	-1.34	6022	6023	70	6023	6024	103	
330	47.668	0.145	101	-0.02	2.05	-0.78	6022	6022	69	6022	6023	103	
340	49.111	0.144	98	-0.01	2.04	-1.58	6022	6023	69	6023	6023	103	
350	50.557	0.145	100	-0.04	2.04	-2.19	6022	6023	71	6023	6023	103	
360	51.997	0.144	97	-0.03	2.04	-1.15	6022	6023	71	6023	6024	103	
370	53.444	0.145	96	-0.03	2.03	-1.53	6024	6025	71	6024	6025	103	
380	54.885	0.144	97	-0.02	2.04	-1.87	6024	6025	71	6025	6025	103	
390	56.331	0.145	101	-0.01	2.04	-2.02	6024	6025	71	6025	6025	103	
400	57.773	0.144	98	-0.01	2.05	-1.74	6024	6025	71	6025	6025	104	
410	59.219	0.145	100	-0.03	2.04	-2.11	6024	6025	71	6025	6025	103	
420	60.660	0.144	101	-0.03	2.05	-1	6024	6025	74	6025	6025	103	
430	62.103	0.144	99	-0.03	2.02	-1.44	6025	6025	73	6025	6026	104	
440	63.547	0.144	102	-0.02	2.05	-2.17	6024	6025	72	6025	6026	103	
450	64.990	0.144	102	-0.02	2.04	-1.56	6024	6025	71	6025	6026	104	
460	66.434	0.144	103	-0.01	2.04	-1.15	6024	6025	71	6025	6026	103	
470	67.876	0.144	98	-0.01	2.04	-1.99	6024	6025	71	6024	6025	103	
480	69.321	0.144	103	-0.03	2.03	-2.12	6024	6024	71	6024	6025	103	
490	70.761	0.144	96	-0.03	2.04	-1.85	6024	6025	73	6025	6025	103	
500	72.207	0.145	102	-0.02	2.05	-0.9	6024	6025	72	6025	6026	103	
510	73.647	0.144	95	-0.01	2.02	-0.9	6024	6025	71	6025	6025	103	

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
520	75.093	0.145	102	-0.01	2.04	-2.05	6024	6025	71	6024	6025	103	
530	76.534	0.144	99	-0.01	2.03	-1.48	6024	6025	71	6025	6025	103	
540	77.981	0.145	102	-0.01	2.04	-2.2	6023	6024	70	6024	6025	103	
550	79.420	0.144	103	-0.03	2.04	-1.91	6024	6025	72	6024	6025	103	
560	80.865	0.144	98	-0.03	2.05	-1.91	6024	6025	73	6025	6025	103	
									78				
	80.86475	0.144	100.367	-0.022	2.038571	-1.61982	6023	6023	71	6023	6024	99	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	DT

# Reading		
562		
	T avg BEGIN	170.5
	T avg END	175.94
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	5.44
	Cp	1.001191516
	Cpa	1.000802391
562	TOTAL MINUTES	560

TOTAL BTU	415806
TOTAL BTU WITH WATER	12397
TOTAL BTU WITH H20 AND STEEL	1280
BTU/HR	46016

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water	density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
0	13.324	166	175	0.78	59	173	115	44557	2353	4630	8.332608	114	1.001193	6.466104	1	170.5	744.489	44669.34
1	13.402	166.01	175.38	0.77	59.41	172.83	115.212	44691.492	2353	4630	8.332185	113.42	1.001193	6.440779	1	170.695	742.9405	44576.43
2	13.365	166.08	175.58	0.77	59.34	173.38	115.766	44987.255	2353	4630	8.332258	114.04	1.001193	6.432503	1	170.83	745.5532	44733.19
3	13.335	166.7	175.81	0.78	59.5	173.77	116.014	45102.671	2353	4630	8.332092	114.27	1.001193	6.499032	1	171.255	754.8781	45292.69
4	13.325	166.81	175.92	0.78	59.42	173.93	116.057	45302.24	2353	4630	8.332175	114.51	1.001192	6.457436	1	171.365	750.3242	45019.45
5	13.247	166.7	175.94	0.78	59.57	173.83	116.021	45146.71	2353	4630	8.332019	114.26	1.001193	6.457315	1	171.32	750.0778	45004.67
6	13.353	166.46	176.09	0.78	59.46	173.78	116.064	45176.229	2353	4630	8.332133	114.32	1.001192	6.457403	1	171.275	750.3653	45021.92
7	13.206	166.33	176.22	0.78	59.72	174.09	116.092	45263.411	2353	4630	8.331864	114.37	1.001192	6.523849	1	171.275	758.2697	45496.18
8	13.346	166.49	176.39	0.78	59.62	174.24	116.369	45335.49	2353	4630	8.331968	114.62	1.001192	6.523931	1	171.44	760.0882	45605.29
9	13.357	167.09	176.59	0.78	59.69	174.55	116.547	45565.039	2353	4630	8.331895	114.86	1.001192	6.50721	1	171.84	759.2998	45557.99
10	13.346	167.69	177.19	0.78	59.7	175.04	117.058	45648.113	2353	4630	8.331884	115.34	1.001192	6.49887	1	172.44	761.6515	45699.09
11	13.364	168.26	178.29	0.78	59.68	176.04	117.974	45995.277	2353	4630	8.331905	116.36	1.00119	6.482222	1	173.275	765.6434	45938.61
12	13.357	168.95	179.25	0.78	60.37	177.28	118.706	46310.901	2353	4630	8.331184	116.91	1.00119	6.47333	1	174.1	769.3376	46160.26
13	13.344	169.76	180.19	0.77	60.25	177.95	119.586	46310.769	2353	4630	8.33131	117.7	1.00119	6.440103	1	174.975	771.0623	46263.74
14	13.368	170.93	181.1	0.78	60.36	179.2	120.46	46735.814	2353	4630	8.331195	118.84	1.001191	6.48167	1	176.015	781.7115	46902.69
15	13.344	170.99	181.68	0.77	60.08	179.37	121.327	47131.476	2353	4630	8.331488	119.29	1.001191	6.373589	1	176.335	774.2095	46452.57
16	13.197	172.21	182.5	0.78	59.91	180.18	122.278	47385.733	2353	4630	8.331666	120.27	1.00119	6.482036	1	177.355	793.5535	47613.21
17	13.355	173.19	183.48	0.78	60.3	181.2	123.301	48032.25	2353	4630	8.331258	120.9	1.001191	6.465056	1	178.335	798.0969	47885.82
18	13.343	173.78	184.34	0.78	60.1	181.92	124.125	48526.608	2353	4630	8.331467	121.82	1.00119	6.498545	1	179.06	807.5916	48455.49
19	13.406	174.66	185.75	0.78	60.32	183.32	125.155	48846.02	2353	4630	8.331237	123	1.001189	6.506696	1	180.205	815.314	48918.84
20	13.384	175.66	186.35	0.78	60.46	184.28	126.149	49139.266	2353	4630	8.33109	123.82	1.00119	6.531574	1	181.005	824.9321	49495.92
21	13.4	175.86	186.95	0.78	60.26	184.77	126.88	49650.394	2353	4630	8.3313	124.51	1.001191	6.531739	1	181.405	829.7339	49784.03
22	13.376	175.85	186.81	0.79	60.05	184.52	126.944	49474.272	2353	4630	8.33152	124.47	1.001192	6.548574	1	181.33	832.293	49937.58
23	13.337	175.94	186.37	0.78	59.74	183.88	126.816	49394.764	2353	4630	8.331843	124.14	1.001192	6.46551	1	181.155	820.9076	49254.46
24	13.38	175.31	186.01	0.78	59.64	183.49	126.554	49420.765	2353	4630	8.331947	123.85	1.001192	6.523914	1	180.66	826.6119	49596.72
25	13.347	175.7	186.13	0.78	59.57	183.25	126.483	49302.172	2353	4630	8.332019	123.68	1.001193	6.532303	1	180.915	827.2106	49632.64
26	13.359	175.28	185.71	0.78	59.54	182.98	126.12	49077.718	2353	4630	8.332051	123.44	1.001193	6.498999	1	180.495	820.6315	49237.89
27	13.419	175.19	185.22	0.76	59.46	182.6	125.829	47712.127	2353	4630	8.332133	123.14	1.001193	6.340754	1	180.205	798.8029	47928.17
28	13.392	175.01	185.04	0.76	59.27	182.08	125.602	47853.537	2353	4630	8.33233	122.81	1.001194	6.357568	1	180.025	799.4767	47968.6
29	13.505	174.82	184.46	0.76	59.09	181.67	125.353	47845.704	2353	4630	8.332515	122.58	1.001194	6.332712	1	179.64	794.7722	47686.33
30	13.36	174.31	184.21	0.77	59.11	181.57	125.162	47873.66	2353	4630	8.332495	122.46	1.001194	6.399356	1	179.26	801.9127	48114.76
31	13.327	174.33	184.23	0.76	59.06	181.64	124.956	47705.423	2353	4630	8.332546	122.58	1.001194	6.357733	1	179.28	795.3851	47723.11
32	13.428	173.89	183.79	0.76	59.22	181.49	124.814	47374.695	2353	4630	8.332381	122.27	1.001194	6.33261	1	178.84	791.3424	47480.55
33	13.293	173.66	183.69	0.76	58.99	181.22	124.629	47217.403	2353	4630	8.332618	122.23	1.001194	6.316125	1	178.675	788.1126	47286.75
34	13.551	173.51	183.41	0.76	58.97	181.02	124.459	47176.948	2353	4630	8.332639	122.05	1.001195	6.299475	1	178.46	784.9632	47097.79
35	13.353	173.26	183.29	0.76	58.85	180.97	124.345	47384.216	2353	4630	8.332762	122.12	1.001195	6.349565	1	178.275	790.4798	47428.79
36	13.405	173.14	183.17	0.76	58.93	180.87	124.224	47444.753	2353	4630	8.33268	121.94	1.001196	6.366167	1	178.155	791.7762	47506.57
37	13.286	172.95	182.58	0.76	58.67	180.21	123.976	47285.31	2353	4630	8.332946	121.54	1.001196	6.324706	1	177.765	785.0496	47102.97
38	13.39	172.69	182.19	0.77	58.54	179.79	123.684	47311.059	2353	4630	8.333079	121.25	1.001197	6.391472	1	177.44	791.4687	47488.12

39	13.419	172.04	182.07	0.76	58.35	179.44	123.379	46995.741	2353	4630		8.333272	121.09	1.001197	6.349954	1	177.055	784.3884	47063.3
40	13.415	172.12	181.75	0.76	58.37	179.15	123.13	46839.989	2353	4630		8.333252	120.78	1.001196	6.316605	1	176.935	778.6941	46721.64
41	13.373	171.91	181.28	0.76	58.43	178.9	122.882	46848.664	2353	4630		8.333191	120.47	1.001197	6.341558	1	176.595	780.196	46811.76
42	13.375	171.71	181.34	0.77	58.29	178.72	122.548	46697.662	2353	4630		8.333333	120.43	1.001196	6.375	1	176.525	782.1781	46930.69
43	13.366	171.34	180.58	0.76	58.45	178.44	122.186	46597.477	2353	4630		8.333171	119.99	1.001196	6.358209	1	175.96	777.8134	46668.8
44	13.357	171.2	180.43	0.76	58.51	178.07	121.944	46383.349	2353	4630		8.33311	119.56	1.001196	6.349829	1	175.815	775.2494	46514.97
45	13.367	170.78	180.15	0.76	58.63	177.93	121.547	46339.85	2353	4630		8.332987	119.3	1.001196	6.366402	1	175.465	774.7427	46484.56
46	13.355	170.38	179.88	0.76	58.49	177.57	121.142	46049.809	2353	4630		8.33313	119.08	1.001195	6.349845	1	175.13	770.1522	46209.13
47	13.487	170.36	179.73	0.76	58.81	177.55	120.794	45992.417	2353	4630		8.332803	118.74	1.001194	6.324597	1	175.045	764.8857	45893.14
48	13.375	170.17	179.41	0.76	59.08	177.56	120.496	45857.673	2353	4630		8.332526	118.48	1.001194	6.349385	1	174.79	765.989	45959.34
49	13.271	169.64	179.27	0.76	59.08	177.2	120.155	45826.042	2353	4630		8.332526	118.12	1.001194	6.341052	1	174.455	762.8187	45769.12
50	13.355	169.72	179.22	0.75	59.16	177.15	119.906	45309.677	2353	4630		8.332443	117.99	1.001194	6.282662	1	174.47	754.2281	45253.69
51	13.394	169.97	178.81	0.73	59.21	176.83	119.565	43271.451	2353	4630		8.332392	117.62	1.001194	6.082646	1	174.39	728.1402	43688.41
52	13.347	169.25	178.62	0.74	59.02	176.18	119.274	44289.332	2353	4630		8.332587	117.16	1.001195	6.199445	1	173.935	740.3165	44418.99
53	13.381	168.76	178.12	0.74	58.72	175.9	119.04	44281.399	2353	4630		8.332895	117.18	1.001195	6.174675	1	173.44	735.912	44154.72
54	13.455	168.68	177.79	0.74	58.72	175.54	118.748	44167.715	2353	4630		8.332895	116.82	1.001196	6.199674	1	173.235	737.0791	44224.75
55	13.428	168.27	177.37	0.74	58.63	175.16	118.429	44117.37	2353	4630		8.332987	116.53	1.001195	6.174743	1	172.82	732.1429	43928.57
56	13.38	168.26	176.97	0.75	58.69	174.97	118.166	43869.955	2353	4630		8.332926	116.28	1.001195	6.224696	1	172.615	736.4264	44185.58
57	13.391	168.04	177.02	0.74	58.81	174.83	117.91	43777.495	2353	4630		8.332803	116.02	1.001194	6.141276	1	172.53	724.9827	43498.96
58	13.396	167.71	176.81	0.74	59	174.89	117.591	43782.225	2353	4630		8.332608	115.89	1.001194	6.19946	1	172.26	729.8712	43792.27
59	13.344	167.47	176.57	0.75	59.09	174.78	117.378	43603.912	2353	4630		8.332515	115.69	1.001194	6.207724	1	172.02	729.5203	43771.22
60	13.381	167.47	176.57	0.74	59.09	174.54	117.037	43586.107	2353	4630		8.332515	115.45	1.001194	6.199391	1	172.02	726.4243	43585.46
61	13.393	167.04	176.01	0.74	59.19	174.33	116.66	43325.413	2353	4630		8.332412	115.14	1.001194	6.199315	1	171.525	724.0756	43444.54
62	13.527	166.82	176.05	0.74	59.1	173.94	116.419	43494.571	2353	4630		8.332505	114.84	1.001194	6.182719	1	171.435	720.6452	43238.71
63	13.397	166.69	175.67	0.74	59.17	173.77	116.106	43149.606	2353	4630		8.332433	114.6	1.001193	6.190998	1	171.18	719.6696	43180.18
64	13.421	166.41	175.38	0.74	59.35	173.51	115.801	43210.656	2353	4630		8.332247	114.16	1.001193	6.182527	1	170.895	716.7973	43007.84
65	13.292	166.05	175.16	0.75	59.26	173.3	115.517	42968.916	2353	4630		8.33234	114.04	1.001193	6.23259	1	170.605	720.8294	43249.76
66	13.408	165.94	174.91	0.74	59.28	173.02	115.105	42547.549	2353	4630		8.33232	113.74	1.001193	6.157584	1	170.425	709.6145	42576.87
67	13.396	165.86	174.7	0.74	59.33	172.76	114.935	42544.218	2353	4630		8.332268	113.43	1.001193	6.157546	1	170.28	708.5618	42513.71
68	13.365	165.68	174.52	0.74	59.42	172.72	114.849	42558.674	2353	4630		8.332175	113.3	1.001193	6.190806	1	170.1	711.8559	42711.36
69	13.346	165.98	174.82	0.74	59.46	172.93	115.006	42693.735	2353	4630		8.332133	113.47	1.001193	6.157447	1	170.4	708.9879	42539.27
70	13.415	166.08	175.45	0.73	59.49	173.21	115.325	42759.002	2353	4630		8.332102	113.72	1.001193	6.107431	1	170.765	705.1798	42310.79
71	13.332	166.75	175.99	0.73	59.37	173.89	115.979	43147.053	2353	4630		8.332227	114.52	1.001193	6.040864	1	171.37	701.4493	42086.96
72	13.411	167.49	176.72	0.74	59.38	174.62	116.937	43441.835	2353	4630		8.332216	115.24	1.001192	6.174172	1	172.105	722.85	43371
73	13.342	167.97	177.61	0.74	59.6	175.25	117.456	43567.474	2353	4630		8.331988	115.65	1.001193	6.165671	1	172.79	725.0588	43503.53
74	13.333	168.86	178.23	0.75	59.49	176	118.273	43879.978	2353	4630		8.332102	116.51	1.001193	6.215748	1	173.545	736.032	44161.92
75	13.403	169.64	179.27	0.74	59.48	176.83	119.196	44392.45	2353	4630		8.332113	117.35	1.001192	6.165763	1	174.455	735.8104	44148.63
76	13.443	170.47	179.97	0.74	59.66	177.66	120.162	44640.814	2353	4630		8.331926	118	1.001193	6.198953	1	175.22	745.7674	44746.04
77	13.377	171.2	180.7	0.75	59.33	178.51	121.163	45085.265	2353	4630		8.332268	119.18	1.001193	6.20754	1	175.95	753.0213	45181.28
78	13.383	172.05	181.42	0.74	59.44	179.34	122.101	45407.579	2353	4630		8.332154	119.9	1.001193	6.174126	1	176.735	754.766	45285.96
79	13.263	172.78	182.68	0.75	59.52	180.31	123.01	45896.352	2353	4630		8.332071	120.79	1.001193	6.207393	1	177.73	764.4821	45868.93
80	13.309	173.42	183.32	0.75	59.5	181.01	123.919	46202.867	2353	4630		8.332092	121.51	1.001192	6.224073	1	178.37	772.2005	46332.03
81	13.408	173.98	184.15	0.75	59.6	181.71	124.665	46395.916	2353	4630		8.331988	122.11	1.001193	6.215663	1	179.065	775.7997	46547.98
82	13.389	175.1	185.27	0.74	59.53	182.73	125.772	46566.692	2353	4630		8.332061	123.2	1.001192	6.190721	1	180.185	779.5474	46772.85
83	13.417	175.48	185.51	0.75	59.71	183.25	126.291	47104.141	2353	4630		8.331874	123.54	1.001192	6.215578	1	180.495	785.9075	47154.45
84	13.414	175.83	185.6	0.75	59.6	183.64	126.511	47179.262	2353	4630		8.331988	124.04	1.001192	6.273987	1	180.715	794.6745	47680.47
85	13.377	176	185.76	0.74	59.7	183.67	126.497	47287.65	2353	4630		8.331884	123.97	1.001192	6.19059	1	180.88	784.0242	47041.45
86	13.362	175.84	185.88	0.74	59.82	183.71	126.504	47017.065	2353	4630		8.33176	123.89	1.001192	6.198829	1	180.86	785.1111	47106.67
87	13.389	175.62	185.52	0.75	59.79	183.5	126.255	47348.611	2353	4630		8.331791	123.71	1.001192	6.28217	1	180.57	794.1009	47646.05
88	13.394	175.63	185.13	0.75	59.67	183.33	126.142	47287.194	2353	4630		8.331916	123.66	1.001192	6.232273	1	180.38	787.0883	47225.3
89	13.345	175.19	184.96	0.75	59.76	183.18	125.95	47290.441	2353	4630		8.331822	123.42	1.001192	6.257198	1	180.075	789.0333	47342
90	13.537	175.22	184.86	0.75	59.79	183.2	125.78	47234.336	2353	4630		8.331791	123.41	1.001192	6.215516	1	180.04	782.7193	46963.16
91	13.404	175.17	184.28	0.71	59.74	182.98	125.481	44709.837	2353	4630		8.331843	123.24	1.001191	5.873949	1	179.725	737.9471	44276.82
92	13.386	175.13	184.5	0.73	59.9	182.88	125.368	46037.911	2353	4630		8.331676	122.98	1.001191	6.107119	1	179.815	766.5494	45992.96

93	13.425	174.79	184.29	0.73	59.88	182.68	125.076	45909.328	2353	4630		8.331697	122.8	1.001192	6.115466	1	179.54	765.8096	45948.57
94	13.408	174.39	184.16	0.73	59.75	182.2	124.878	45729.023	2353	4630		8.331832	122.45	1.001192	6.107233	1	179.275	763.5682	45814.09
95	13.268	174.63	184.01	0.74	59.66	182.01	124.721	45620.926	2353	4630		8.331926	122.35	1.001191	6.132298	1	179.32	765.7375	45944.25
96	13.407	174.37	183.74	0.74	59.86	181.89	124.487	45710.95	2353	4630		8.331718	122.03	1.001192	6.123813	1	179.055	763.2438	45794.63
97	13.35	174.12	183.62	0.73	59.67	181.71	124.338	45753.175	2353	4630		8.331916	122.04	1.001191	6.115626	1	178.87	761.3103	45678.62
98	13.396	174.16	183.4	0.73	59.98	181.69	124.018	45518.447	2353	4630		8.331593	121.71	1.001192	6.098726	1	178.78	757.2533	45435.2
99	13.388	174.29	183.26	0.68	59.72	181.27	123.777	41652.905	2353	4630		8.331864	121.55	1.001192	5.63234	1	178.775	697.985	41879.1
100	13.323	173.73	183.1	0.72	59.75	181.3	123.592	43900.703	2353	4630		8.331832	121.55	1.001191	5.973924	1	178.415	739.2088	44352.53
101	13.446	173.6	182.84	0.71	59.88	181.18	123.422	43612.68	2353	4630		8.331697	121.3	1.001191	5.915505	1	178.22	730.9733	43858.4
102	13.519	173.51	182.75	0.71	59.86	180.92	123.102	43503.61	2353	4630		8.331718	121.06	1.001191	5.882193	1	178.13	724.9723	43498.34
103	13.432	173.48	182.45	0.70	59.89	180.71	122.861	43430.614	2353	4630		8.331687	120.82	1.001191	5.865507	1	177.965	721.5002	43290.01
104	13.393	172.82	182.06	0.70	60.03	180.41	122.548	43311.066	2353	4630		8.331541	120.38	1.001191	5.865405	1	177.44	719.6495	43178.97
105	13.439	172.7	182.08	0.70	60.05	180.19	122.278	43201.703	2353	4630		8.33152	120.14	1.001191	5.86539	1	177.39	718.0623	43083.74
106	13.384	172.51	181.75	0.72	59.99	179.83	121.98	43303.207	2353	4630		8.331582	119.84	1.00119	5.957081	1	177.13	727.5098	43650.59
107	13.48	172.32	181.29	0.71	60.13	179.83	121.76	42913.171	2353	4630		8.331436	119.7	1.00119	5.873662	1	176.805	716.0284	42961.7
108	13.431	172.44	181.15	0.71	60.18	179.7	121.405	42839.098	2353	4630		8.331384	119.52	1.00119	5.89862	1	176.795	716.9739	43018.43
109	13.393	172.08	181.18	0.70	60.35	179.73	121.128	42710.7	2353	4630		8.331205	119.38	1.00119	5.856837	1	176.63	710.271	42616.26
110	13.433	171.95	180.93	0.71	60.36	179.32	120.801	42710.959	2353	4630		8.331195	118.96	1.001189	5.898486	1	176.44	713.3905	42803.43
111	13.383	171.49	180.99	0.70	60.42	179.01	120.567	42501.075	2353	4630		8.331132	118.59	1.001189	5.848455	1	176.24	705.9692	42358.15
112	13.407	171.49	180.46	0.70	60.48	178.83	120.29	42506.725	2353	4630		8.331069	118.35	1.00119	5.856741	1	175.975	705.3459	42320.76
113	13.431	171.27	180.25	0.70	60.2	178.51	119.998	42424.425	2353	4630		8.331363	118.31	1.00119	5.840285	1	175.76	701.6563	42099.38
114	13.464	170.84	179.81	0.72	60.36	178.12	119.658	42427.848	2353	4630		8.331195	117.76	1.00119	5.965136	1	175.325	714.6254	42877.52
115	13.314	170.6	179.44	0.71	60.33	177.9	119.395	42429.182	2353	4630		8.331226	117.57	1.001189	5.915171	1	175.02	707.0817	42424.9
116	13.275	170.41	179.52	0.70	60.46	177.97	119.16	41902.421	2353	4630		8.33109	117.51	1.001189	5.856756	1	174.965	698.7206	41923.24
117	13.43	170.12	179.22	0.71	60.63	177.7	118.798	42177.776	2353	4630		8.330911	117.07	1.001189	5.931608	1	174.67	705.501	42330.06
118	13.401	170.25	178.82	0.71	60.57	177.39	118.578	41921.156	2353	4630		8.330974	116.82	1.001189	5.889999	1	174.535	699.2545	41955.27
119	13.433	169.88	178.59	0.70	60.6	177.12	118.294	41738.736	2353	4630		8.330942	116.52	1.00119	5.864983	1	174.235	694.6178	41677.07
120	13.447	169.36	178.34	0.70	60.34	176.65	117.96	41713.733	2353	4630		8.331216	116.31	1.001189	5.856845	1	173.85	691.6948	41501.69
121	13.402	169.39	178.37	0.71	60.57	176.67	117.775	41672.111	2353	4630		8.330974	116.1	1.001189	5.881668	1	173.88	693.537	41612.22
122	13.41	169.27	178.11	0.70	60.58	176.62	117.47	41368.656	2353	4630		8.330963	116.04	1.001189	5.856667	1	173.69	688.8007	41328.04
123	13.384	168.87	177.71	0.70	60.57	176.43	117.186	41417.487	2353	4630		8.330974	115.86	1.001189	5.856675	1	173.29	687.1363	41228.18
124	13.436	168.63	177.61	0.71	60.54	175.91	116.845	41218.142	2353	4630		8.331006	115.37	1.001189	5.88169	1	173.12	688.0631	41283.79
125	13.439	168.4	177.37	0.70	60.57	175.4	116.618	41223.304	2353	4630		8.330974	114.83	1.001188	5.865006	1	172.885	684.778	41086.68
126	13.427	168.08	176.79	0.70	60.72	175.35	116.327	41114.295	2353	4630		8.330816	114.63	1.001188	5.864894	1	172.435	683.0563	40983.38
127	13.406	168.17	176.74	0.71	60.73	175.18	116.05	41036.055	2353	4630		8.330805	114.45	1.001189	5.873218	1	172.455	682.397	40943.82
128	13.422	167.89	176.6	0.71	60.66	175.05	115.758	40855.622	2353	4630		8.330879	114.39	1.001188	5.87327	1	172.245	680.6858	40841.15
129	13.361	167.66	176.1	0.71	60.75	174.72	115.496	40956.165	2353	4630		8.330784	113.97	1.001188	5.939849	1	171.88	686.844	41210.64
130	13.375	167.33	176.17	0.71	60.76	174.6	115.254	40750.287	2353	4630		8.330773	113.84	1.001188	5.881526	1	171.75	678.6748	40720.49
131	13.365	167.09	175.8	0.70	60.78	174.44	114.991	40442.147	2353	4630		8.330752	113.66	1.001188	5.856519	1	171.445	674.2472	40454.83
132	13.316	166.62	175.46	0.71	60.77	174.19	114.615	40347.911	2353	4630		8.330763	113.42	1.001188	5.881519	1	171.04	674.9111	40494.67
133	13.316	166.73	175.31	0.71	60.82	173.75	114.26	40110.384	2353	4630		8.33071	112.93	1.001189	5.881481	1	171.02	672.8168	40369.01
134	13.328	166.19	175.16	0.70	60.66	173.36	114.04	40005.015	2353	4630		8.330879	112.7	1.001188	5.831615	1	170.675	665.8277	39949.66
135	13.335	166.2	175.17	0.71	60.74	173.25	113.727	39879.517	2353	4630		8.330795	112.51	1.001188	5.881541	1	170.685	669.6845	40181.07
136	13.36	165.82	174.79	0.70	60.89	173.15	113.479	40001.276	2353	4630		8.330636	112.26	1.001188	5.839776	1	170.305	663.479	39808.74
137	13.349	165.7	174.54	0.71	60.9	173.1	113.315	40030.153	2353	4630		8.330625	112.2	1.001187	5.881421	1	170.12	667.2446	40034.67
138	13.455	165.75	174.59	0.71	61.02	173.02	113.202	39988.54	2353	4630		8.330498	112	1.001188	5.873001	1	170.17	665.6251	39937.51
139	13.386	165.51	174.48	0.71	60.91	172.86	113.266	39943.647	2353	4630		8.330615	111.95	1.001188	5.898075	1	169.995	668.845	40130.7
140	13.357	166.08	174.93	0.70	60.83	173.03	113.656	40023.411	2353	4630		8.330699	112.2	1.001188	5.814828	1	170.505	661.6753	39700.52
141	13.585	166.51	175.62	0.70	60.79	173.42	114.047	40243.049	2353	4630		8.330742	112.63	1.001188	5.848181	1	171.065	667.7597	40065.58
142	13.418	167.06	176.03	0.71	60.88	174.29	114.849	40517.971	2353	4630		8.330646	113.41	1.001188	5.873106	1	171.545	675.3215	40519.29
143	13.383	167.6	176.7	0.70	60.89	174.78	115.545	40642.504	2353	4630		8.330636	113.89	1.001188	5.864768	1	172.15	678.4496	40706.98
144	13.413	168.46	177.43	0.70	60.83	175.45	116.383	41163.26	2353	4630		8.330699	114.62	1.001188	5.823159	1	172.945	678.5219	40711.31
145	13.443	169.23	178.47	0.70	60.81	176.28	117.25	41338.664	2353	4630		8.330721	115.47	1.001188	5.864827	1	173.85	688.4679	41308.07
146	13.409	170.34	179.44	0.70	60.86	177.42	118.386	41771.245	2353	4630		8.330668	116.56	1.001188	5.839798	1	174.89	692.1718	41530.31

147	13.546	170.93	180.43	0.71	60.78	178.32	119.253	42246.829	2353	4630	
148	13.392	172.01	181.24	0.70	60.81	179.12	120.219	42359.903	2353	4630	
149	13.426	172.85	182.22	0.70	60.79	179.83	121.227	42601.719	2353	4630	
150	13.355	173.62	183.12	0.71	60.77	180.78	122.392	43228.555	2353	4630	
151	13.369	174.21	184.11	0.71	60.7	181.62	123.436	43656.953	2353	4630	
152	13.424	175.36	185.26	0.71	60.86	182.84	124.544	44146.273	2353	4630	
153	13.535	176.22	185.46	0.71	60.8	183.39	125.176	44095.816	2353	4630	
154	13.448	176.31	185.55	0.70	60.82	183.71	125.439	44255.559	2353	4630	
155	13.434	176.21	185.98	0.71	60.99	184.04	125.538	44262.175	2353	4630	
156	13.452	176.08	185.58	0.71	60.65	183.86	125.403	44339.75	2353	4630	
157	13.45	176.01	185.51	0.70	60.91	183.91	125.353	44263.338	2353	4630	
158	13.377	176.21	185.32	0.70	60.92	183.86	125.297	44161.326	2353	4630	
159	13.338	175.88	185.26	0.71	60.86	183.5	125.126	44418.915	2353	4630	
160	13.389	175.92	185.03	0.71	60.9	183.36	124.991	44187.96	2353	4630	
161	13.494	175.69	185.06	0.71	60.86	183.39	124.906	44042.386	2353	4630	
162	13.415	175.64	184.88	0.70	60.94	183.34	124.736	43951.639	2353	4630	
163	13.445	175.06	184.57	0.70	60.69	183.06	124.444	43769.575	2353	4630	
164	13.424	175.18	184.56	0.71	60.82	182.75	124.238	43979.567	2353	4630	
165	13.454	175.04	184.02	0.71	61.01	182.68	124.047	43776.519	2353	4630	
166	13.447	174.75	184.12	0.70	60.98	182.47	123.791	43734.186	2353	4630	
167	13.358	174.53	183.77	0.71	60.83	182.27	123.585	43733.263	2353	4630	
168	13.417	174.52	183.63	0.71	61.02	182.08	123.443	43399.201	2353	4630	
169	13.464	174.38	183.62	0.70	61.01	181.95	123.223	43351.66	2353	4630	
170	13.465	174.23	183.47	0.70	61.05	182.05	123.109	43325.848	2353	4630	
171	13.492	174.17	183.28	0.71	61.06	181.82	122.861	43172.406	2353	4630	
172	13.412	173.67	182.78	0.70	60.89	181.48	122.562	43191.29	2353	4630	
173	13.433	173.84	182.82	0.71	60.99	181.22	122.406	43152.736	2353	4630	
174	13.399	173.57	182.54	0.70	60.98	180.91	122.179	42898.594	2353	4630	
175	13.409	173.41	182.38	0.72	60.89	180.58	121.959	43188.265	2353	4630	
176	13.439	172.8	182.17	0.71	60.81	180.45	121.774	42758.373	2353	4630	
177	13.423	172.87	181.97	0.71	60.95	180.33	121.575	42806.774	2353	4630	
178	13.434	172.56	181.54	0.70	60.64	180.05	121.291	42919.786	2353	4630	
179	13.51	172.38	181.75	0.70	60.79	179.83	121.042	42400.059	2353	4630	
180	13.672	172.21	181.18	0.709	60.88	179.55	120.787	42762.825	2353	4630	
181	13.466	172.03	180.88	0.708	60.71	179.21	120.517	42495.158	2353	4630	
182	13.415	171.58	180.68	0.701	60.71	179.1	120.283	42284.288	2353	4630	
183	13.582	171.53	180.5	0.701	60.79	178.99	120.133	42480.67	2353	4630	
184	13.445	171.24	180.35	0.707	60.71	178.73	119.8	42209.173	2353	4630	
185	13.506	171.27	180.11	0.707	60.67	178.46	119.572	42317.291	2353	4630	
186	13.538	170.92	179.63	0.705	60.71	178.19	119.281	41916.473	2353	4630	
187	13.461	170.7	179.81	0.703	60.9	178.06	119.089	41893.991	2353	4630	
188	13.469	170.68	179.53	0.707	60.81	178.16	118.834	41922.648	2353	4630	
189	13.488	170.22	179.19	0.697	60.74	177.61	118.585	41484.865	2353	4630	
190	13.416	170.16	179	0.704	60.68	177.31	118.315	41696.64	2353	4630	
191	13.478	169.99	178.7	0.698	60.91	177.28	118.081	41413.729	2353	4630	
192	13.493	169.75	178.46	0.698	60.67	176.94	117.861	41536.507	2353	4630	
193	13.483	169.33	178.44	0.702	60.78	176.68	117.541	41250.015	2353	4630	
194	13.605	169.1	177.94	0.71	60.74	176.52	117.264	41394.987	2353	4630	
195	13.42	169.07	177.91	0.702	60.84	176.5	117.008	41141.45	2353	4630	
196	13.578	168.77	177.61	0.702	60.93	176.03	116.703	41142.517	2353	4630	
197	13.433	168.52	177.1	0.704	60.82	175.81	116.483	40980.539	2353	4630	
198	13.488	168.08	176.79	0.697	60.51	175.35	116.248	40923.004	2353	4630	
199	13.425	167.81	176.65	0.7	60.7	175.04	115.9	40753.055	2353	4630	
200	13.544	167.76	176.73	0.699	60.72	175.05	115.723	40692.293	2353	4630	

8.330752	117.54	1.001188	5.881511	1	175.68	702.2211	42133.27
8.330721	118.31	1.001188	5.864827	1	176.625	705.9014	42354.08
8.330742	119.04	1.001188	5.848181	1	177.535	709.7998	42587.99
8.330763	120.01	1.001188	5.881519	1	178.37	720.7063	43242.38
8.330837	120.92	1.001188	5.889902	1	179.16	727.8895	43673.37
8.330668	121.98	1.001188	5.931435	1	180.31	739.6024	44376.14
8.330731	122.59	1.001188	5.873165	1	180.84	736.0528	44163.17
8.33071	122.89	1.001187	5.831497	1	180.93	732.3658	43941.95
8.33053	123.05	1.001189	5.873024	1	181.095	738.164	44289.84
8.33089	123.21	1.001188	5.881608	1	180.83	738.4473	44306.84
8.330615	123	1.001188	5.864753	1	180.76	736.0375	44162.25
8.330604	122.94	1.001188	5.864745	1	180.765	735.7079	44142.47
8.330668	122.64	1.001188	5.906443	1	180.57	739.9274	44395.65
8.330625	122.46	1.001188	5.898083	1	180.475	738.083	44284.98
8.330668	122.53	1.001188	5.881451	1	180.375	735.501	44130.06
8.330583	122.4	1.001188	5.831408	1	180.26	728.251	43695.06
8.330847	122.37	1.001188	5.864917	1	179.815	730.7208	43843.25
8.33071	121.93	1.001187	5.939796	1	179.87	738.8246	44329.48
8.330509	121.67	1.001187	5.881339	1	179.53	730.4288	43825.73
8.33054	121.49	1.001188	5.8647	1	179.435	726.8596	43611.58
8.330699	121.44	1.001187	5.931458	1	179.15	733.9096	44034.58
8.330498	121.06	1.001187	5.881332	1	179.075	726.8713	43612.28
8.330509	120.94	1.001187	5.848017	1	179	721.4657	43287.94
8.330466	121	1.001187	5.822996	1	178.85	717.7143	43062.86
8.330456	120.76	1.001188	5.872971	1	178.725	722.4162	43344.97
8.330636	120.59	1.001187	5.864768	1	178.225	719.6512	43179.07
8.33053	120.23	1.001187	5.881354	1	178.33	720.7679	43246.07
8.33054	119.93	1.001188	5.823048	1	178.055	712.2992	42737.95
8.330636	119.69	1.001188	5.981397	1	177.895	730.3518	43821.11
8.330721	119.64	1.001188	5.873158	1	177.485	716.0473	42962.84
8.330572	119.38	1.001189	5.898045	1	177.42	717.9072	43074.43
8.3309	119.41	1.001188	5.864954	1	177.05	712.2113	42732.68
8.330742	119.04	1.001188	5.823188	1	177.065	705.6876	42341.26
8.330646	118.67	1.001188	5.906428	1	176.695	714.2676	42856.06
8.330826	118.5	1.001188	5.898225	1	176.455	711.6812	42700.87
8.330826	118.39	1.001188	5.839909	1	176.13	703.2764	42196.58
8.330742	118.2	1.001188	5.83985	1	176.015	702.3924	42143.55
8.330826	118.02	1.001189	5.889894	1	175.795	706.448	42386.88
8.330868	117.79	1.001188	5.889924	1	175.69	705.107	42306.42
8.330826	117.48	1.001188	5.873232	1	175.275	701.3971	42083.83
8.330625	117.16	1.001188	5.85643	1	175.255	698.2649	41895.9
8.330721	117.35	1.001188	5.889819	1	175.105	700.7425	42044.55
8.330795	116.87	1.001189	5.806564	1	174.705	689.3898	41363.39
8.330858	116.63	1.001188	5.864924	1	174.58	694.7327	41683.96
8.330615	116.37	1.001189	5.814769	1	174.345	687.4298	41245.79
8.330868	116.27	1.001188	5.814946	1	174.105	686.1697	41170.18
8.330752	115.9	1.001188	5.848188	1	173.885	688.2187	41293.12
8.330795	115.78	1.001188	5.914864	1	173.52	694.4246	41665.48
8.330689	115.66	1.001188	5.848144	1	173.49	685.0923	41105.54
8.330593	115.1	1.001188	5.848077	1	173.19	683.2989	40997.93
8.33071	114.99	1.001189	5.86482	1	172.81	683.9642	41037.85
8.331037	114.84	1.001188	5.806733	1	172.435	675.8233	40549.4
8.330837	114.34	1.001188	5.831586	1	172.23	676.684	40601.04
8.330816	114.33	1.001189	5.82324	1	172.245	674.6837	40481.02

201	13.468	167.39	176.24	0.706	60.68	174.66	115.403	40645.523	2353	4630
202	13.516	167.3	175.75	0.705	60.73	174.51	115.148	40574.836	2353	4630
203	13.45	166.98	175.69	0.704	60.73	174.09	114.885	40429.671	2353	4630
204	13.377	166.64	175.35	0.7	60.59	173.79	114.572	40387.108	2353	4630
205	13.409	166.3	175.27	0.706	60.64	173.59	114.274	40286.438	2353	4630
206	13.302	166.34	175.05	0.704	60.89	173.63	114.068	40177.217	2353	4630
207	13.4	166.12	174.57	0.704	60.74	173.25	113.798	40053.257	2353	4630
208	13.403	165.45	174.3	0.705	60.46	172.81	113.5	39916.247	2353	4630
209	13.443	165.45	174.03	0.696	60.59	172.75	113.315	39812.064	2353	4630
210	13.45	165.63	174.07	0.706	60.5	172.55	113.308	40007.039	2353	4630
211	13.524	165.75	174.46	0.7	60.49	172.72	113.443	39936.401	2353	4630
212	13.504	165.98	174.96	0.702	60.73	173.12	113.869	40179.866	2353	4630
213	13.488	166.26	175.23	0.706	60.54	173.43	114.26	40286.309	2353	4630
214	13.415	166.69	175.93	0.706	60.58	174.02	114.906	40632.527	2353	4630
215	13.327	167.34	176.71	0.706	60.64	174.61	115.474	40768.552	2353	4630
216	13.459	168.29	177.52	0.692	60.59	175.24	116.383	40999.14	2353	4630
217	13.359	168.96	178.06	0.703	60.47	176.09	117.2	41081.553	2353	4630
218	13.421	169.76	178.73	0.696	60.61	176.77	118.145	41508.332	2353	4630
219	13.457	170.85	180.08	0.698	60.44	177.64	119.246	41885.198	2353	4630
220	13.49	171.53	180.63	0.704	60.13	178.39	120.219	42274.107	2353	4630
221	13.364	172.31	181.81	0.7	60.32	179.58	121.213	42526.494	2353	4630
222	13.373	173.02	182.39	0.702	60.5	180.47	122.243	43080.359	2353	4630
223	13.436	174.26	183.63	0.703	60.29	181.3	123.202	43368.707	2353	4630
224	13.583	174.83	184.6	0.702	60.39	182.36	124.345	43790.82	2353	4630
225	13.399	175.92	185.43	0.706	60.5	183.36	125.311	44143.156	2353	4630
226	13.466	176.57	186.08	0.708	60.49	183.95	125.971	44399.218	2353	4630
227	13.408	176.69	185.93	0.702	60.6	184.24	126.113	44347.583	2353	4630
228	13.495	176.68	186.05	0.708	60.66	184.23	126.113	44510.268	2353	4630
229	13.477	176.5	185.74	0.705	60.42	184.13	126.028	44372.505	2353	4630
230	13.496	176.31	185.95	0.697	60.62	184.25	126.007	44290.006	2353	4630
231	13.481	176.66	185.63	0.7	60.7	184.09	125.886	43960.205	2353	4630
232	13.611	176.1	185.73	0.7	60.61	183.94	125.737	44138.212	2353	4630
233	13.448	176.17	185.67	0.701	60.75	184	125.723	44105.349	2353	4630
234	13.573	175.98	185.08	0.697	60.55	183.53	125.524	44255.887	2353	4630
235	13.519	176.05	185.29	0.7	60.62	183.89	125.488	44080.757	2353	4630
236	13.485	176.06	185.17	0.7	60.83	183.72	125.24	43944.905	2353	4630
237	13.371	175.74	185.12	0.704	60.58	183.49	125.197	44120.665	2353	4630
238	13.448	175.6	184.31	0.698	60.5	183.06	124.885	43973.687	2353	4630
239	13.476	175.37	184.47	0.698	60.47	182.97	124.672	43856.931	2353	4630
240	13.454	174.99	184.36	0.702	60.49	182.75	124.508	43815.821	2353	4630
241	13.463	175.04	184.15	0.702	60.47	182.43	124.331	43623.728	2353	4630
242	13.43	174.93	183.77	0.708	60.43	182.45	124.118	43651.027	2353	4630
243	13.485	174.82	183.93	0.701	60.38	182.23	123.912	43689.379	2353	4630
244	13.485	174.56	183.67	0.705	60.52	182.06	123.727	43667.883	2353	4630
245	13.458	174.28	183.52	0.707	60.3	181.68	123.521	43602.504	2353	4630
246	13.494	174.07	183.44	0.709	60.56	181.61	123.365	43641.043	2353	4630
247	13.437	173.82	183.19	0.711	60.44	181.5	123.088	43773.983	2353	4630
248	13.448	173.88	182.99	0.708	60.5	181.44	122.925	43389.862	2353	4630
249	13.378	173.92	182.77	0.708	60.74	181.29	122.669	43336.274	2353	4630
250	13.467	173.41	182.65	0.705	60.55	181.06	122.513	43189.074	2353	4630
251	13.441	172.7	182.46	0.751	60.3	180.66	122.356	45979.995	2353	4630
252	13.46	172.57	182.08	0.749	60.38	180.48	122.122	45989.316	2353	4630
253	13.467	172.38	182.02	0.752	60.32	180.19	121.937	45931.202	2353	4630
254	13.421	172.3	181.41	0.756	60.44	180.05	121.66	45899.737	2353	4630

8.330858	113.98	1.001188	5.881586	1	171.815	679.5592	40773.55	
8.330805	113.78	1.001188	5.873218	1	171.525	677.0929	40625.58	
8.330805	113.36	1.001189	5.864887	1	171.335	674.5885	40475.31	
8.330953	113.2	1.001189	5.831667	1	170.995	668.94	40136.4	
8.3309	112.95	1.001188	5.881615	1	170.785	672.9141	40374.84	
8.330636	112.74	1.001188	5.864768	1	170.695	669.7773	40186.64	
8.330795	112.51	1.001189	5.864879	1	170.345	668.2053	40092.32	
8.33109	112.35	1.001189	5.873418	1	169.875	667.4255	40045.53	
8.330953	112.16	1.001189	5.798343	1	169.74	657.8206	39469.23	
8.331048	112.05	1.001189	5.88172	1	169.85	667.2384	40034.31	
8.331058	112.23	1.001188	5.831741	1	170.105	662.3563	39741.38	
8.330805	112.39	1.001189	5.848225	1	170.47	666.7234	40003.4	
8.331006	112.89	1.001189	5.88169	1	170.745	672.8409	40370.45	
8.330963	113.44	1.001189	5.88166	1	171.31	676.6414	40598.48	
8.3309	113.97	1.001189	5.881615	1	172.025	679.9811	40798.87	
8.330953	114.65	1.001189	5.765019	1	172.905	671.7482	40304.89	
8.331079	115.62	1.001189	5.856749	1	173.51	687.2269	41233.62	
8.330932	116.16	1.001189	5.798329	1	174.245	685.8583	41151.5	
8.331111	117.2	1.00119	5.815115	1	175.465	694.2547	41655.28	
8.331436	118.26	1.00119	5.865331	1	176.08	705.9632	42357.79	
8.331237	119.26	1.001189	5.831866	1	177.06	707.7386	42464.31	
8.331048	119.97	1.00119	5.848395	1	177.705	715.7761	42946.57	
8.331268	121.01	1.00119	5.856882	1	178.945	722.4379	43346.27	
8.331163	121.97	1.001189	5.848477	1	179.715	728.0936	43685.62	
8.331048	122.86	1.001189	5.88172	1	180.675	737.9207	44275.24	
8.331058	123.46	1.001189	5.898389	1	181.325	743.9093	44634.56	
8.330942	123.64	1.001189	5.848321	1	181.31	738.426	44305.56	
8.330879	123.57	1.001189	5.898262	1	181.365	744.7323	44683.94	
8.331132	123.71	1.001189	5.873448	1	181.12	741.0988	44465.93	
8.330921	123.63	1.001188	5.806652	1	181.13	732.5484	43952.9	
8.330837	123.39	1.001189	5.831586	1	181.145	734.9877	44099.26	
8.330932	123.33	1.001188	5.831652	1	180.915	734.1258	44047.55	
8.330784	123.25	1.001189	5.83988	1	180.92	735.0801	44104.81	
8.330995	122.98	1.001189	5.806704	1	180.53	729.7471	43784.83	
8.330921	123.27	1.001188	5.831645	1	180.67	732.6708	43960.25	
8.330699	122.89	1.001189	5.83149	1	180.615	731.204	43872.24	
8.330963	122.91	1.001189	5.864998	1	180.43	735.1534	44109.2	
8.331048	122.56	1.001189	5.815071	1	179.955	727.0788	43624.73	
8.331079	122.5	1.001189	5.815093	1	179.92	725.8415	43550.49	
8.331058	122.26	1.001189	5.848403	1	179.675	729.0389	43742.34	
8.331079	121.96	1.001189	5.848418	1	179.595	728.0045	43680.27	
8.331121	122.02	1.00119	5.898434	1	179.35	732.9727	43978.36	
8.331174	121.85	1.001189	5.840153	1	179.375	724.5255	43471.53	
8.331027	121.54	1.00119	5.873374	1	179.115	727.5596	43653.57	
8.331258	121.38	1.001189	5.890199	1	178.9	728.4283	43705.7	
8.330984	121.05	1.001189	5.906668	1	178.755	729.5428	43772.57	
8.331111	121.06	1.001189	5.92342	1	178.505	729.9689	43798.13	
8.331048	120.94	1.001188	5.898382	1	178.435	725.9202	43555.21	
8.330795	120.55	1.001189	5.898203	1	178.345	724.3869	43463.21	
8.330995	120.51	1.00119	5.873351	1	178.03	720.4181	43225.08	
8.331258	120.36	1.00119	6.256775	1	177.58	766.4646	45987.88	
8.331174	120.1	1.00119	6.240049	1	177.325	762.954	45777.24	
8.331237	119.87	1.001189	6.26509	1	177.2	764.8549	45891.29	
8.331111	119.61	1.00119	6.29832	1	176.855	767.1652	46029.91	

255	13.456	171.96	181.07	0.755	60.36	179.81	121.312	45516.69	2353	4630
256	13.468	171.7	181.07	0.747	60.23	179.57	121.121	45374.568	2353	4630
257	13.389	171.26	180.9	0.751	60.26	179.29	120.9	45380.59	2353	4630
258	13.478	171.12	180.49	0.753	60.31	179.1	120.581	45386.083	2353	4630
259	13.465	170.92	180.42	0.75	60.31	178.67	120.29	45196.495	2353	4630
260	13.48	170.55	180.06	0.747	60.27	178.58	120.055	45067.35	2353	4630
261	13.492	170.5	179.87	0.75	60.29	178.29	119.814	44981.593	2353	4630
262	13.595	170.17	179.54	0.75	60.15	177.86	119.494	45228.245	2353	4630
263	13.401	170.03	179.01	0.756	60.15	177.74	119.217	44856.649	2353	4630
264	13.513	169.68	178.92	0.753	60.06	177.48	118.997	44821.568	2353	4630
265	13.46	169.3	178.54	0.756	59.94	177.19	118.72	44861.036	2353	4630
266	13.464	169.14	178.25	0.75	60.11	176.86	118.443	44487.681	2353	4630
267	13.455	168.96	178.2	0.756	60.19	176.69	118.138	44544.862	2353	4630
268	13.454	168.56	177.8	0.753	60.13	176.39	117.818	44345.916	2353	4630
269	13.396	168.2	177.3	0.756	60.16	176.12	117.477	44239.626	2353	4630
270	13.442	167.78	177.41	0.751	60.14	175.98	117.214	44078.317	2353	4630
271	13.359	167.65	177.15	0.751	60.27	175.61	116.909	43978.623	2353	4630
272	13.471	167.69	176.93	0.75	60.31	175.53	116.66	43824.916	2353	4630
273	13.433	167.4	176.51	0.75	60.16	174.91	116.263	43728.665	2353	4630
274	13.431	167.03	176.13	0.751	60.25	174.62	115.943	43401.995	2353	4630
275	13.443	166.61	175.98	0.75	60.16	174.36	115.652	43555.32	2353	4630
276	13.412	166.5	175.61	0.757	60.18	174.26	115.375	43498.421	2353	4630
277	13.363	166.32	175.42	0.753	60.13	173.85	115.077	43247.927	2353	4630
278	13.41	166.01	175.12	0.754	60.22	173.81	114.785	42995.676	2353	4630
279	13.563	165.63	175.13	0.748	60.3	173.52	114.537	43060.586	2353	4630
280	13.429	165.53	174.89	0.754	60.06	173.18	114.224	43015.216	2353	4630
281	13.421	165.41	174.65	0.744	60.28	173.02	114.061	42572.673	2353	4630
282	13.389	165.65	174.75	0.75	60.25	173.11	114.175	42966.099	2353	4630
283	13.437	165.95	175.32	0.744	60.29	173.51	114.537	43005.643	2353	4630
284	13.358	166.34	175.71	0.75	60.28	173.8	114.956	43241.679	2353	4630
285	13.484	166.59	176.09	0.749	60.27	174.22	115.581	43369.806	2353	4630
286	13.391	167.68	177.05	0.754	60.17	174.98	116.426	43836.256	2353	4630
287	13.434	168.18	177.55	0.755	60	175.55	117.186	44080.795	2353	4630
288	13.279	168.87	178.37	0.752	59.97	176.19	118.131	44441.672	2353	4630
289	13.449	169.74	179.51	0.76	59.92	176.81	118.919	44758.317	2353	4630
290	13.494	170.6	180.37	0.752	60.06	178.14	120.098	45080.499	2353	4630
291	13.537	171.64	181.27	0.754	60.04	179.15	121.199	45596.909	2353	4630
292	13.43	172.38	182.41	0.742	60.05	179.95	122.179	45799.756	2353	4630
293	13.598	173.38	183.41	0.749	59.99	180.92	123.273	46371.796	2353	4630
294	13.511	174.15	184.18	0.752	59.97	181.98	124.274	46888.131	2353	4630
295	13.553	174.85	185.14	0.746	60.08	182.86	125.254	47047.531	2353	4630
296	13.51	175.83	185.73	0.754	60.27	183.76	125.978	47274.641	2353	4630
297	13.539	175.65	185.42	0.755	60.09	184.01	126.213	47463.904	2353	4630
298	13.506	175.74	185.77	0.746	60.25	183.98	126.199	47436.125	2353	4630
299	13.484	175.67	185.57	0.755	60.11	183.79	126.255	47474.083	2353	4630
300	13.439	175.73	185.63	0.751	60.1	183.91	126.17	47375.307	2353	4630
301	13.519	175.75	185.26	0.753	60.19	183.8	125.95	47373.508	2353	4630
302	13.483	175.45	185.22	0.751	60.02	183.47	125.794	47280.616	2353	4630
303	13.463	175.45	185.22	0.756	60.08	183.47	125.73	47703.846	2353	4630
304	13.542	174.97	184.87	0.75	60.27	183.39	125.417	47084.993	2353	4630
305	13.478	174.65	184.68	0.755	60.21	183.16	125.24	47090.663	2353	4630
306	13.461	174.86	184.49	0.753	60.09	182.93	125.055	47184.078	2353	4630
307	13.512	174.45	184.35	0.746	60.21	182.8	124.743	47066.366	2353	4630
308	13.65	174.31	184.34	0.746	60.2	182.61	124.629	46855.387	2353	4630

8.331195	119.45	1.00119	6.290052	1	176.515	763.9669	45838.02	
8.331331	119.34	1.00119	6.223504	1	176.385	754.6941	45281.65	
8.3313	119.03	1.00119	6.256806	1	176.08	757.3479	45440.87	
8.331247	118.79	1.00119	6.273429	1	175.805	757.3564	45441.39	
8.331247	118.36	1.00119	6.248436	1	175.67	752.5187	45151.12	
8.331289	118.31	1.00119	6.223473	1	175.305	748.0481	44882.89	
8.331268	118	1.00119	6.248451	1	175.185	749.5431	44972.59	
8.331415	117.71	1.00119	6.248561	1	174.855	747.5544	44853.26	
8.331415	117.59	1.001191	6.29855	1	174.52	751.7883	45107.3	
8.331509	117.42	1.001191	6.273626	1	174.3	747.4319	44845.92	
8.331635	117.25	1.001191	6.298716	1	173.92	748.6738	44920.43	
8.331457	116.75	1.00119	6.248593	1	173.695	740.983	44458.98	
8.331373	116.5	1.00119	6.298518	1	173.58	744.9801	44698.81	
8.331436	116.26	1.00119	6.273571	1	173.18	740.0195	44401.17	
8.331405	115.96	1.00119	6.298542	1	172.75	740.8146	44448.88	
8.331426	115.84	1.00119	6.256901	1	172.595	734.2691	44056.14	
8.331289	115.34	1.00119	6.256798	1	172.4	732.3464	43940.78	
8.331247	115.22	1.00119	6.248436	1	172.31	729.8102	43788.61	
8.331405	114.75	1.00119	6.248553	1	171.955	727.3401	43640.41	
8.33131	114.37	1.00119	6.256814	1	171.58	726.2973	43577.84	
8.331405	114.2	1.00119	6.248553	1	171.295	723.5179	43411.07	
8.331384	114.08	1.00119	6.306857	1	171.055	728.5199	43711.19	
8.331436	113.72	1.00119	6.273571	1	170.87	722.803	43368.18	
8.331342	113.59	1.00119	6.281832	1	170.565	721.918	43315.08	
8.331258	113.22	1.001191	6.231781	1	170.38	714.6194	42877.16	
8.331509	113.12	1.00119	6.281958	1	170.21	718.4042	43104.25	
8.331279	112.74	1.00119	6.198471	1	170.03	707.8452	42470.71	
8.33131	112.86	1.00119	6.248483	1	170.2	714.2694	42856.16	
8.331268	113.22	1.00119	6.198464	1	170.635	710.7982	42647.89	
8.331279	113.52	1.00119	6.248459	1	171.025	719.1526	43149.16	
8.331289	113.95	1.00119	6.240136	1	171.34	722.0996	43325.98	
8.331394	114.81	1.001191	6.281871	1	172.365	732.2441	43934.65	
8.331572	115.55	1.001191	6.290337	1	172.865	738.0173	44281.04	
8.331603	116.22	1.001191	6.265366	1	173.62	741.0155	44460.93	
8.331655	116.89	1.001191	6.332058	1	174.625	753.8986	45233.92	
8.331509	118.08	1.001191	6.265295	1	175.485	753.3454	45200.72	
8.33153	119.11	1.001191	6.281974	1	176.455	762.2755	45736.53	
8.331152	119.9	1.001191	6.181988	1	177.395	756.2086	45372.52	
8.331582	120.93	1.001191	6.240355	1	178.395	770.1835	46211.01	
8.331603	122.01	1.001191	6.265366	1	179.165	779.5491	46772.95	
8.331488	122.78	1.00119	6.21529	1	179.995	779.4163	46764.98	
8.331289	123.49	1.001191	6.281792	1	180.78	792.3098	47538.59	
8.331478	123.92	1.00119	6.290266	1	180.535	794.8581	47691.49	
8.33131	123.73	1.001191	6.215157	1	180.755	785.2804	47116.83	
8.331457	123.68	1.001191	6.29025	1	180.62	795.121	47707.26	
8.331467	123.81	1.00119	6.256932	1	180.68	790.3767	47422.6	
8.331373	123.61	1.001191	6.273524	1	180.505	791.0913	47465.48	
8.331551	123.45	1.001191	6.256995	1	180.335	788.0295	47281.77	
8.331488	123.39	1.00119	6.298605	1	180.335	792.866	47571.96	
8.331289	123.12	1.00119	6.248467	1	179.92	784.5967	47075.8	
8.331352	122.95	1.001191	6.290171	1	179.665	788.7189	47323.14	
8.331478	122.84	1.00119	6.273603	1	179.675	785.4791	47128.75	
8.331352	122.59	1.00119	6.215189	1	179.4	776.2241	46573.44	
8.331363	122.41	1.00119	6.215197	1	179.325	775.5154	46530.92	

309	13.403	174.33	183.83	0.752	60.29	182.45	124.437	46736.678	2353	4630
310	13.466	174.04	183.8	0.751	60.12	182.18	124.26	46785.582	2353	4630
311	13.434	173.9	183.67	0.753	60.19	182.06	124.011	46565.97	2353	4630
312	13.494	173.65	183.42	0.753	60.07	181.71	123.798	46402.009	2353	4630
313	13.444	173.59	183.22	0.742	60.2	181.59	123.564	46287.177	2353	4630
314	13.454	173.38	183.01	0.748	60.19	181.46	123.365	46344.731	2353	4630
315	13.462	173.27	182.65	0.756	60.09	181.12	123.123	46729.308	2353	4630
316	13.497	172.83	182.33	0.755	60.1	181.02	122.875	46292.588	2353	4630
317	13.408	172.71	182.21	0.754	60.25	180.79	122.612	46006.43	2353	4630
318	13.453	172.72	181.95	0.754	59.92	180.43	122.47	46120.767	2353	4630
319	13.447	172.52	181.63	0.756	60.13	180.26	122.157	45887.825	2353	4630
320	13.403	172.26	181.63	0.75	60.06	180.02	121.881	45769.89	2353	4630
321	13.45	171.88	181.52	0.748	60.28	179.91	121.667	45736.864	2353	4630
322	13.506	171.7	180.81	0.749	60.23	179.69	121.362	45562.734	2353	4630
323	13.447	171.45	180.82	0.741	60.04	179.45	121.071	45355.225	2353	4630
324	13.437	171.13	180.63	0.759	60.19	179.23	120.801	45434.064	2353	4630
325	13.502	171.27	180.51	0.751	60.33	179.05	120.524	45282.584	2353	4630
326	13.445	170.7	180.07	0.744	60.08	178.71	120.268	45036.162	2353	4630
327	13.482	170.46	179.96	0.75	60.24	178.61	119.97	44875.447	2353	4630
328	13.539	169.99	179.75	0.748	60.36	178.3	119.771	44911.739	2353	4630
329	13.453	170.08	179.58	0.752	60.32	178.08	119.487	44914.29	2353	4630
330	13.46	169.71	179.08	0.752	60.08	177.5	119.189	44786.412	2353	4630
331	13.433	169.63	178.87	0.753	60.2	177.31	118.898	44748.665	2353	4630
332	13.492	169.1	178.74	0.747	60.2	177.13	118.599	44441.403	2353	4630
333	13.428	169.14	178.25	0.751	60.04	176.62	118.386	44598.287	2353	4630
334	13.442	168.96	178.2	0.752	59.79	176.15	118.159	44464.083	2353	4630
335	13.393	168.43	177.8	0.749	60.06	176.27	117.733	44212.759	2353	4630
336	13.407	168.56	177.4	0.754	60.06	175.97	117.506	44229.563	2353	4630
337	13.441	167.91	177.15	0.75	60	175.74	117.236	44057.842	2353	4630
338	13.49	168.05	177.03	0.75	60.01	175.56	116.994	43933.87	2353	4630
339	13.589	167.61	176.71	0.747	59.9	175.27	116.689	43786.776	2353	4630
340	13.462	167.37	176.61	0.747	59.99	175.06	116.391	43775.038	2353	4630
341	13.429	167.17	176.14	0.742	59.99	174.81	116.121	43650.302	2353	4630
342	13.351	166.72	175.95	0.75	59.99	174.57	115.787	43432.015	2353	4630
343	13.409	166.33	175.7	0.758	60.2	174.34	115.567	43624.748	2353	4630
344	13.596	166.51	175.62	0.748	60.12	174.08	115.332	43313.547	2353	4630
345	13.444	166.18	175.15	0.753	59.98	173.66	114.97	43283.885	2353	4630
346	13.384	166.04	175.28	0.751	59.98	173.72	115.084	43237.058	2353	4630
347	13.489	166.52	175.36	0.75	60.07	173.67	115.261	43210.946	2353	4630
348	13.417	166.47	175.84	0.748	59.81	174.11	115.709	43423.828	2353	4630
349	13.439	167.01	176.51	0.747	59.96	174.66	116.348	43644.432	2353	4630
350	13.412	167.77	177.27	0.754	59.93	175.3	116.923	43916.091	2353	4630
351	13.445	168.25	177.75	0.752	59.94	175.86	117.555	44125.871	2353	4630
352	13.364	169.23	178.87	0.749	60.14	176.88	118.479	44476.695	2353	4630
353	13.387	169.83	179.6	0.75	60.21	177.37	119.238	44751.194	2353	4630
354	13.4	170.63	180.66	0.745	60.09	178.41	120.304	45106.268	2353	4630
355	13.425	171.35	181.64	0.75	60	179.18	121.213	45404.986	2353	4630
356	13.509	172.37	182.4	0.745	60.04	180.18	122.307	45888.441	2353	4630
357	13.447	173.27	183.3	0.748	60.08	181.17	123.351	46211.865	2353	4630
358	13.287	174.12	184.28	0.753	60.14	182.07	124.352	46658.102	2353	4630
359	13.465	175.11	185.28	0.75	60.01	182.8	125.446	47096.755	2353	4630
360	13.437	175.97	186	0.751	59.74	183.52	126.426	47549.521	2353	4630
361	13.448	176.39	186.29	0.753	59.84	183.97	126.703	47396.392	2353	4630
362	13.471	176.44	185.95	0.768	59.82	184.13	126.994	47744.939	2353	4630

8.331268	122.16	1.00119	6.265114	1	179.08	780.5401	46832.4	
8.331446	122.06	1.00119	6.256916	1	178.92	778.4098	46704.59	
8.331373	121.87	1.001191	6.273524	1	178.785	778.9123	46734.74	
8.331499	121.64	1.00119	6.273619	1	178.535	777.5858	46655.15	
8.331363	121.39	1.00119	6.181871	1	178.405	764.7659	45885.95	
8.331373	121.27	1.001191	6.231867	1	178.195	769.7096	46182.58	
8.331478	121.03	1.001191	6.298597	1	177.96	776.4255	46585.53	
8.331467	120.92	1.00119	6.290258	1	177.58	773.8352	46430.11	
8.33131	120.54	1.001191	6.281808	1	177.46	771.1425	46268.55	
8.331655	120.51	1.00119	6.282068	1	177.335	770.2808	46216.85	
8.331436	120.13	1.001191	6.298566	1	177.075	770.33	46219.8	
8.331509	119.96	1.00119	6.248632	1	176.945	762.4957	45749.74	
8.331279	119.63	1.00119	6.231797	1	176.7	759.1063	45546.38	
8.331331	119.46	1.001191	6.240167	1	176.255	758.2209	45493.26	
8.33153	119.41	1.00119	6.173664	1	176.135	748.3413	44900.48	
8.331373	119.04	1.00119	6.323512	1	175.88	764.7954	45887.73	
8.331226	118.72	1.001191	6.256751	1	175.89	754.9865	45299.19	
8.331488	118.63	1.00119	6.198627	1	175.385	746.3837	44783.02	
8.331321	118.37	1.00119	6.248491	1	175.21	750.5232	45031.39	
8.331195	117.94	1.00119	6.231734	1	174.87	747.269	44836.14	
8.331237	117.76	1.001191	6.26509	1	174.83	749.4881	44969.29	
8.331488	117.42	1.00119	6.265279	1	174.395	747.6412	44858.47	
8.331363	117.11	1.00119	6.273516	1	174.25	746.7963	44807.78	
8.331363	116.93	1.001191	6.223528	1	173.92	738.9831	44338.99	
8.33153	116.58	1.001192	6.256979	1	173.695	741.6214	44497.29	
8.331791	116.36	1.001191	6.265507	1	173.58	741.2075	44472.45	
8.331509	116.21	1.001191	6.2403	1	173.115	735.5641	44133.84	
8.331509	115.91	1.001191	6.281958	1	172.98	739.0468	44342.81	
8.331572	115.74	1.001191	6.248679	1	172.53	733.4425	44006.55	
8.331561	115.55	1.001191	6.248671	1	172.54	731.9279	43915.67	
8.331676	115.37	1.001191	6.223762	1	172.16	727.1095	43626.57	
8.331582	115.07	1.001191	6.223692	1	171.99	725.2444	43514.67	
8.331582	114.82	1.001191	6.182034	1	171.655	718.7189	43123.13	
8.331582	114.58	1.00119	6.248687	1	171.335	724.3778	43462.67	
8.331363	114.14	1.00119	6.315173	1	171.015	730.6944	43841.67	
8.331446	113.96	1.001191	6.231922	1	171.065	719.596	43175.76	
8.331593	113.68	1.001191	6.273689	1	170.665	722.1451	43328.71	
8.331593	113.74	1.001191	6.257026	1	170.66	720.941	43256.46	
8.331499	113.6	1.001192	6.248624	1	170.94	721.0809	43264.85	
8.33177	114.3	1.001191	6.232164	1	171.155	721.9763	43318.58	
8.331614	114.7	1.001191	6.223715	1	171.76	724.9794	43498.76	
8.331645	115.37	1.001191	6.28206	1	172.52	735.3922	44123.53	
8.331635	115.92	1.00119	6.265389	1	173	737.4046	44244.28	
8.331426	116.74	1.00119	6.240238	1	174.05	740.2171	44413.02	
8.331352	117.16	1.001191	6.248514	1	174.715	745.9474	44756.84	
8.331478	118.32	1.001191	6.206951	1	175.645	747.6103	44856.62	
8.331572	119.18	1.001191	6.248679	1	176.495	758.323	45499.38	
8.33153	120.14	1.001191	6.20699	1	177.385	760.0622	45603.73	
8.331488	121.09	1.00119	6.231953	1	178.285	769.6328	46177.97	
8.331426	121.93	1.001191	6.273563	1	179.2	781.0592	46863.55	
8.331561	122.79	1.001192	6.248671	1	180.195	784.805	47088.3	
8.331843	123.78	1.001191	6.257214	1	180.985	792.0171	47521.02	
8.331739	124.13	1.001192	6.273799	1	181.34	795.8564	47751.38	
8.33176	124.31	1.001192	6.398791	1	181.195	813.5766	48814.6	

363	13.422	176.21	185.98	0.756	59.72	184.04	126.959	47462.038	2353	4630
364	13.404	176.45	186.09	0.753	59.63	184.14	126.909	47512.575	2353	4630
365	13.541	176.41	185.92	0.745	59.73	184.11	126.788	47465.368	2353	4630
366	13.442	175.94	185.85	0.75	59.66	183.63	126.689	47479.799	2353	4630
367	13.49	175.81	185.45	0.743	59.4	183.09	126.497	47405.216	2353	4630
368	13.487	175.83	185.21	0.757	59.62	183.29	126.27	47267.161	2353	4630
369	13.481	175.84	184.95	0.747	59.7	183.18	126.078	47211.592	2353	4630
370	13.427	175.74	184.98	0.749	59.53	183.03	125.858	47155.858	2353	4630
371	13.521	175.28	184.52	0.745	59.72	182.72	125.581	47096.466	2353	4630
372	13.477	174.96	184.6	0.741	59.81	182.8	125.382	46944.607	2353	4630
373	13.409	174.99	184.1	0.753	59.84	182.7	125.183	46923.431	2353	4630
374	13.417	174.64	183.88	0.746	59.75	182.26	124.92	46480.788	2353	4630
375	13.434	174.67	183.91	0.735	59.71	182.05	124.693	46674.52	2353	4630
376	13.569	174.42	183.8	0.751	59.86	181.95	124.501	46905.821	2353	4630
377	13.423	173.95	183.58	0.749	59.85	181.81	124.288	46569.601	2353	4630
378	13.382	173.92	183.29	0.748	59.82	181.48	124.018	46507.574	2353	4630
379	13.407	173.89	183.13	0.745	59.79	181.46	123.876	46442.32	2353	4630
380	13.442	173.72	182.57	0.747	59.89	181.19	123.585	46292.369	2353	4630
381	13.408	173.39	182.63	0.745	59.95	181	123.301	46104.025	2353	4630
382	13.44	173.27	182.51	0.745	59.9	180.77	123.067	46117.665	2353	4630
383	13.286	173.05	182.43	0.753	59.75	180.46	122.853	46106.031	2353	4630
384	13.427	172.76	182.13	0.743	59.78	180.25	122.548	45889.766	2353	4630
385	13.448	172.55	181.92	0.748	59.97	180.23	122.307	45829.699	2353	4630
386	13.451	172.67	181.51	0.742	59.89	179.98	122.094	45782.158	2353	4630
387	13.423	172.26	181.37	0.755	59.95	179.73	121.831	45538.695	2353	4630
388	13.426	172.09	181.19	0.745	59.84	179.51	121.596	45659.931	2353	4630
389	13.427	171.59	181.09	0.748	59.67	179.18	121.398	45432.524	2353	4630
390	13.495	171.29	180.39	0.75	59.63	179.02	121.156	45390.927	2353	4630
391	13.566	171.35	180.06	0.747	59.76	178.71	120.815	45212.693	2353	4630
392	13.438	171.05	180.29	0.741	59.79	178.44	120.581	45138.452	2353	4630
393	13.405	170.95	180.06	0.744	59.69	178.23	120.304	44793.434	2353	4630
394	13.432	170.79	179.63	0.747	59.72	177.84	120.062	44905.727	2353	4630
395	13.44	170.56	179.4	0.748	59.76	177.93	119.814	44790.383	2353	4630
396	13.429	170.03	179	0.75	59.76	177.57	119.501	44670.399	2353	4630
397	13.417	169.76	178.74	0.75	59.69	177.08	119.16	44698.742	2353	4630
398	13.447	169.74	178.72	0.741	59.67	176.88	118.94	44383.388	2353	4630
399	13.48	169.43	178.14	0.743	59.75	176.66	118.72	44238.828	2353	4630
400	13.398	169.06	178.04	0.748	59.78	176.38	118.358	44289.788	2353	4630
401	13.43	168.63	177.73	0.751	59.67	176.22	118.074	44260.863	2353	4630
402	13.444	168.64	177.34	0.749	59.75	175.99	117.804	44148.583	2353	4630
403	13.389	168.35	177.32	0.744	59.8	175.85	117.541	43903.672	2353	4630
404	13.393	167.82	176.93	0.75	59.66	175.24	117.214	43739.403	2353	4630
405	13.429	167.75	176.86	0.751	59.59	175.12	117.051	43842.55	2353	4630
406	13.421	167.42	176.52	0.748	59.65	174.99	116.774	43590.154	2353	4630
407	13.367	167.12	176.1	0.748	59.76	174.72	116.454	43539.831	2353	4630
408	13.423	166.89	175.86	0.748	59.65	174.57	116.17	43506.653	2353	4630
409	13.43	166.77	175.74	0.746	59.66	174.21	115.837	43259.859	2353	4630
410	13.568	166.84	175.28	0.743	59.67	173.91	115.652	43084.633	2353	4630
411	13.278	166.53	175.24	0.745	59.69	173.57	115.339	43101.051	2353	4630
412	13.471	166.36	175.07	0.747	59.72	173.6	115.169	42917.066	2353	4630
413	13.404	166.29	175.13	0.744	59.58	173.29	115.183	42964.478	2353	4630
414	13.245	166.17	175.27	0.752	59.52	173.48	115.354	43060.2	2353	4630
415	13.471	166.38	175.35	0.744	59.47	173.86	115.645	43217.272	2353	4630
416	13.255	167.01	175.85	0.751	59.44	174.01	116.014	43426.053	2353	4630

8.331864	124.32	1.001192	6.298889	1	181.095	800.654	48039.24	
8.331957	124.51	1.001192	6.273964	1	181.27	797.1714	47830.29	
8.331853	124.38	1.001192	6.207231	1	181.165	787.9405	47276.43	
8.331926	123.97	1.001193	6.248945	1	180.895	792.617	47557.02	
8.332196	123.69	1.001192	6.190821	1	180.63	784.054	47043.24	
8.331968	123.67	1.001192	6.307299	1	180.52	797.372	47842.32	
8.331884	123.48	1.001193	6.223918	1	180.395	785.6349	47138.09	
8.332061	123.5	1.001192	6.240714	1	180.36	786.3799	47182.79	
8.331864	123	1.001192	6.207238	1	179.9	780.44	46826.4	
8.33177	122.99	1.001191	6.173842	1	179.78	775.0109	46500.65	
8.331739	122.86	1.001192	6.273799	1	179.545	786.309	47178.54	
8.331832	122.51	1.001192	6.215547	1	179.26	777.3716	46642.3	
8.331874	122.34	1.001191	6.123927	1	179.29	764.5206	45871.24	
8.331718	122.09	1.001191	6.25712	1	179.11	779.9459	46796.75	
8.331728	121.96	1.001192	6.240465	1	178.765	776.539	46592.34	
8.33176	121.66	1.001192	6.232156	1	178.605	773.8206	46429.23	
8.331791	121.67	1.001191	6.207184	1	178.51	769.8372	46190.23	
8.331687	121.3	1.001191	6.22377	1	178.145	770.0807	46204.84	
8.331624	121.05	1.001191	6.20706	1	178.01	766.2484	45974.9	
8.331676	120.87	1.001192	6.207099	1	177.89	764.7994	45887.96	
8.331832	120.71	1.001192	6.27387	1	177.74	771.6822	46300.93	
8.331801	120.47	1.001191	6.190528	1	177.445	759.5404	45572.42	
8.331603	120.26	1.001191	6.232039	1	177.235	763.13	45787.8	
8.331687	120.09	1.001191	6.182112	1	177.09	755.6977	45341.86	
8.331624	119.78	1.001191	6.290376	1	176.815	767.2759	46036.55	
8.331739	119.67	1.001192	6.207145	1	176.64	755.6638	45339.83	
8.331916	119.51	1.001192	6.232273	1	176.34	757.4875	45449.25	
8.331957	119.39	1.001192	6.248968	1	175.84	758.0022	45480.13	
8.331822	118.95	1.001192	6.223871	1	175.705	752.833	45169.98	
8.331791	118.65	1.001192	6.173857	1	175.67	745.3372	44720.23	
8.331895	118.54	1.001192	6.19893	1	175.505	746.6449	44798.69	
8.331864	118.12	1.001192	6.223902	1	175.21	748.1447	44888.68	
8.331822	118.17	1.001192	6.232203	1	174.98	747.595	44855.7	
8.331822	117.81	1.001192	6.248867	1	174.515	747.6359	44858.15	
8.331895	117.39	1.001192	6.248921	1	174.25	745.5091	44730.54	
8.331916	117.21	1.001192	6.17395	1	174.23	735.2047	44112.28	
8.331832	116.91	1.001192	6.190552	1	173.785	735.8181	44149.09	
8.331801	116.6	1.001192	6.232187	1	173.55	738.5085	44310.51	
8.331916	116.55	1.001192	6.257269	1	173.18	739.7012	44382.07	
8.331832	116.24	1.001192	6.240543	1	172.99	736.0369	44162.21	
8.33178	116.05	1.001192	6.198845	1	172.835	729.487	43769.22	
8.331926	115.58	1.001192	6.248945	1	172.375	733.3371	44000.23	
8.331999	115.53	1.001192	6.257331	1	172.305	733.3	43998	
8.331936	115.34	1.001192	6.232288	1	171.97	728.6366	43718.19	
8.331822	114.96	1.001192	6.232203	1	171.61	726.6302	43597.81	
8.331936	114.92	1.001192	6.232288	1	171.375	724.868	43492.08	
8.331926	114.55	1.001192	6.215617	1	171.255	720.8567	43251.4	
8.331916	114.24	1.001192	6.190613	1	171.06	716.8102	43008.61	
8.331895	113.88	1.001192	6.207262	1	170.885	716.7927	43007.56	
8.331864	113.88	1.001192	6.223902	1	170.715	717.6553	43059.32	
8.332009	113.71	1.001193	6.199015	1	170.71	714.8726	42892.36	
8.332071	113.96	1.001193	6.265718	1	170.72	723.6377	43418.26	
8.332123	114.39	1.001193	6.1991	1	170.865	717.75	43065	
8.332154	114.57	1.001193	6.257448	1	171.43	726.8174	43609.05	

417	13.325	167.09	176.2	0.746	59.46	174.39	116.44	43488.195	2353	4630
418	13.319	167.58	176.69	0.748	59.22	174.6	117.023	43772.952	2353	4630
419	13.455	168.16	177.66	0.745	59.34	175.31	117.591	43841.24	2353	4630
420	13.367	168.99	178.23	0.747	59.65	176.44	118.592	44318.206	2353	4630
421	13.314	169.54	179.31	0.751	59.53	177	119.366	44572.502	2353	4630
422	13.351	170.46	179.96	0.744	59.53	177.72	120.283	44853.733	2353	4630
423	13.344	171.22	180.72	0.747	59.43	178.3	121.021	45108.677	2353	4630
424	13.295	171.98	181.48	0.746	59.33	179.36	122.058	45548.786	2353	4630
425	13.427	173.06	182.83	0.742	59.49	180.22	123.017	45846.62	2353	4630
426	13.442	173.9	183.54	0.743	59.61	181.29	124.174	46265.15	2353	4630
427	13.379	174.96	184.46	0.745	59.54	182.2	125.183	46699.029	2353	4630
428	13.487	175.52	185.55	0.743	59.44	183.07	126.014	47021.057	2353	4630
429	13.357	175.78	185.55	0.751	59.64	183.67	126.54	47352.752	2353	4630
430	13.546	176.12	185.63	0.744	59.72	183.86	126.696	47572.596	2353	4630
431	13.462	176.1	185.74	0.747	59.77	183.9	126.781	47306.724	2353	4630
432	13.418	175.71	185.48	0.748	59.77	183.9	126.653	47306.417	2353	4630
433	13.454	175.89	185.53	0.738	59.75	183.83	126.518	47181.994	2353	4630
434	13.55	175.91	185.41	0.742	59.77	183.6	126.305	47158.762	2353	4630
435	13.51	175.77	185.4	0.74	59.89	183.53	126.106	46549.434	2353	4630
436	13.422	175.5	185.01	0.755	59.82	183.23	125.971	47049.503	2353	4630
437	13.442	175.3	184.81	0.741	59.75	183.11	125.815	46796.115	2353	4630
438	13.412	175.31	184.82	0.747	59.7	182.88	125.538	46706.242	2353	4630
439	13.372	175.22	184.46	0.744	59.67	182.73	125.219	46611.166	2353	4630
440	13.422	174.58	184.35	0.746	59.95	182.75	125.02	46538.744	2353	4630
441	13.468	174.66	184.03	0.738	59.9	182.46	124.828	46476.168	2353	4630
442	13.411	174.29	183.67	0.743	59.87	182.07	124.586	46463.232	2353	4630
443	13.468	174.03	183.27	0.739	59.73	181.95	124.317	46358.209	2353	4630
444	13.407	174.13	183.37	0.748	59.77	181.62	124.089	46408.319	2353	4630
445	13.45	173.93	183.17	0.745	59.76	181.5	123.898	45924.522	2353	4630
446	13.468	173.73	182.97	0.745	59.84	181.5	123.699	46070.148	2353	4630
447	13.479	173.47	182.71	0.742	59.77	181.02	123.422	45812.032	2353	4630
448	13.556	172.95	182.46	0.741	59.71	180.73	123.152	45763.857	2353	4630
449	13.441	173.12	182.35	0.747	59.68	180.51	123.01	45924.236	2353	4630
450	13.58	172.64	182.01	0.743	59.4	180.08	122.719	45575.012	2353	4630
451	13.503	172.21	181.44	0.745	59.43	179.56	122.42	45892.105	2353	4630
452	13.427	172.57	181.55	0.745	59.53	179.72	122.157	45341.402	2353	4630
453	13.428	172.11	181.22	0.74	59.6	179.6	121.902	45377.877	2353	4630
454	13.438	171.99	181.36	0.745	59.68	179.31	121.696	45280.058	2353	4630
455	13.473	171.73	180.7	0.742	59.48	178.95	121.419	45295.653	2353	4630
456	13.458	171.32	180.69	0.739	59.53	178.82	121.256	45181.221	2353	4630
457	13.406	171.19	180.56	0.746	59.67	178.69	120.979	45068.097	2353	4630
458	13.463	170.87	180.11	0.735	59.55	178.41	120.709	44896.152	2353	4630
459	13.424	170.67	180.04	0.744	59.61	178.22	120.432	44913.876	2353	4630
460	13.399	170.34	179.71	0.747	59.68	178.1	120.176	44737.259	2353	4630
461	13.414	170.27	179.25	0.753	59.67	177.85	119.863	44770.933	2353	4630
462	13.29	169.77	179.13	0.747	59.63	177.45	119.608	44630.936	2353	4630
463	13.453	169.92	179.16	0.748	59.58	177.35	119.395	44393.736	2353	4630
464	13.42	169.83	178.8	0.739	59.62	177.14	119.118	44206.324	2353	4630
465	13.438	169.3	178.53	0.744	59.62	176.84	118.805	44297.826	2353	4630
466	13.476	169.24	178.47	0.743	59.62	176.54	118.507	44116.702	2353	4630
467	13.485	168.7	178.07	0.745	59.55	176.29	118.23	44124.41	2353	4630
468	13.422	168.51	177.75	0.748	59.76	175.94	117.917	43913.863	2353	4630
469	13.397	168.3	177.54	0.747	59.55	175.86	117.783	43814.52	2353	4630
470	13.285	168.32	177.29	0.741	59.7	175.7	117.491	43762.637	2353	4630

8.332133	114.93	1.001194	6.215772	1	171.645	724.6283	43477.7	
8.332381	115.38	1.001193	6.232621	1	172.135	730.2303	43813.82	
8.332258	115.97	1.001192	6.207532	1	172.91	730.8201	43849.2	
8.331936	116.79	1.001193	6.223957	1	173.61	738.9917	44339.5	
8.332061	117.47	1.001193	6.257378	1	174.425	747.8089	44868.53	
8.332061	118.19	1.001193	6.199053	1	175.21	746.5302	44791.81	
8.332165	118.87	1.001193	6.224127	1	175.97	754.1489	45248.93	
8.332268	120.03	1.001193	6.215872	1	176.73	759.6018	45576.11	
8.332102	120.73	1.001192	6.18242	1	177.945	761.4495	45686.97	
8.331978	121.68	1.001193	6.19066	1	178.72	769.6357	46178.14	
8.332051	122.66	1.001193	6.207378	1	179.71	777.9851	46679.1	
8.332154	123.63	1.001192	6.190791	1	180.535	781.0563	46863.38	
8.331947	124.03	1.001192	6.257292	1	180.665	792.7415	47564.49	
8.331864	124.14	1.001192	6.198907	1	180.875	786.3126	47178.76	
8.331812	124.13	1.001192	6.223863	1	180.92	790.0079	47400.48	
8.331812	124.13	1.001192	6.232195	1	180.595	790.2669	47416.01	
8.331832	124.08	1.001192	6.148892	1	180.71	778.8726	46732.36	
8.331812	123.83	1.001191	6.182204	1	180.66	781.7735	46906.41	
8.331687	123.64	1.001192	6.165448	1	180.585	778.4264	46705.59	
8.33176	123.41	1.001192	6.290479	1	180.255	793.3623	47601.74	
8.331832	123.36	1.001192	6.173888	1	180.055	777.6936	46661.61	
8.331884	123.18	1.001192	6.223918	1	180.065	782.2696	46936.17	
8.331916	123.06	1.001191	6.198945	1	179.84	777.1503	46629.02	
8.331624	122.8	1.001191	6.215392	1	179.465	777.9739	46678.43	
8.331676	122.56	1.001191	6.148777	1	179.345	768.454	46107.24	
8.331708	122.2	1.001192	6.190459	1	178.98	772.1637	46329.82	
8.331853	122.22	1.001192	6.15724	1	178.65	766.3617	45981.7	
8.331812	121.85	1.001192	6.232195	1	178.75	774.2685	46456.11	
8.331822	121.74	1.001191	6.207207	1	178.55	769.9769	46198.61	
8.331739	121.66	1.001192	6.207145	1	178.35	768.7327	46123.96	
8.331812	121.25	1.001192	6.182204	1	178.09	763.9295	45835.77	
8.331874	121.02	1.001192	6.173919	1	177.705	761.2368	45674.21	
8.331905	120.83	1.001193	6.223933	1	177.735	766.5194	45991.16	
8.332196	120.68	1.001193	6.190821	1	177.325	760.6377	45638.26	
8.332165	120.13	1.001193	6.207463	1	176.825	760.8238	45649.43	
8.332061	120.19	1.001192	6.207385	1	177.06	759.1797	45550.78	
8.331988	120	1.001192	6.165671	1	176.665	752.5036	45150.22	
8.331905	119.63	1.001193	6.207269	1	176.675	756.3008	45378.05	
8.332113	119.47	1.001193	6.182428	1	176.215	751.5594	45093.56	
8.332061	119.29	1.001192	6.157393	1	176.005	747.5109	44850.65	
8.331916	119.02	1.001192	6.215609	1	175.875	752.8549	45171.29	
8.33204	118.86	1.001192	6.12405	1	175.49	740.1092	44406.55	
8.331978	118.61	1.001192	6.198992	1	175.355	747.4469	44846.81	
8.331905	118.42	1.001192	6.223933	1	175.025	748.859	44931.54	
8.331916	118.18	1.001192	6.273932	1	174.76	752.9089	45174.53	
8.331957	117.82	1.001192	6.223972	1	174.45	745.3245	44719.47	
8.332009	117.77	1.001192	6.232343	1	174.54	744.9977	44699.86	
8.331968	117.52	1.001192	6.157324	1	174.315	734.3226	44059.35	
8.331968	117.22	1.001192	6.198984	1	173.915	737.3483	44240.9	
8.331968	116.92	1.001192	6.190652	1	173.855	734.5104	44070.63	
8.33204	116.74	1.001192	6.20737	1	173.385	734.772	44086.32	
8.331822	116.18	1.001192	6.232203	1	173.13	735.759	44145.54	
8.33204	116.31	1.001192	6.224034	1	172.92	733.9592	44037.55	
8.331884	116	1.001192	6.173926	1	172.805	726.2456	43574.73	

471	13.45	167.8	177.17	0.751	59.64	175.46	117.257	43859.604	2353	4630
472	13.561	167.78	176.62	0.74	59.62	174.9	116.859	43392.913	2353	4630
473	13.425	167.5	176.47	0.741	59.6	174.7	116.589	43323.663	2353	4630
474	13.446	166.84	176.07	0.744	59.73	174.46	116.298	43201.092	2353	4630
475	13.384	167.09	175.93	0.743	59.59	174.2	116.035	43306.033	2353	4630
476	13.483	166.62	175.73	0.736	59.51	174.08	115.751	43126.903	2353	4630
477	13.383	166.55	175.53	0.741	59.51	173.83	115.481	43143.371	2353	4630
478	13.611	166.15	175.25	0.747	59.7	173.52	115.325	43095.283	2353	4630
479	13.373	166.03	175.4	0.746	59.52	173.48	115.24	42909.349	2353	4630
480	13.336	166.1	175.2	0.745	59.51	173.35	115.226	42965.932	2353	4630
481	13.385	166.38	175.35	0.751	59.47	173.37	115.403	42940.784	2353	4630
482	13.396	166.71	175.68	0.743	59.26	173.73	115.9	43085.715	2353	4630
483	13.359	166.74	175.97	0.744	59.16	173.76	116.263	43374.741	2353	4630
484	13.354	167.15	176.39	0.745	58.99	173.78	116.781	43569.575	2353	4630
485	13.381	167.75	176.99	0.745	59.06	174.82	117.413	43749.958	2353	4630
486	13.384	168.23	178	0.742	59.41	175.62	117.925	43912.708	2353	4630
487	13.438	169.1	178.6	0.746	59.42	176.36	118.805	44086.533	2353	4630
488	13.388	169.62	179.12	0.743	59.34	176.95	119.459	44335.758	2353	4630
489	13.393	170.15	179.78	0.749	59.41	177.74	120.176	44713.354	2353	4630
490	13.252	170.96	180.86	0.744	59.37	178.3	121.05	44919.215	2353	4630
491	13.389	171.98	181.74	0.745	59.26	178.99	121.952	45296.485	2353	4630
492	13.286	172.81	182.31	0.733	59.23	179.75	122.818	45556.249	2353	4630
493	13.459	173.5	183.27	0.74	59.27	180.68	123.841	46022.019	2353	4630
494	13.412	174.31	184.08	0.741	59.22	181.55	124.814	46187.13	2353	4630
495	13.428	175.03	184.93	0.742	59.34	182.38	125.716	46595.757	2353	4630
496	13.454	175.71	185.61	0.737	59.1	182.88	126.582	47084.402	2353	4630
497	13.426	175.87	185.64	0.743	59.06	183.27	126.909	46981.599	2353	4630
498	13.426	175.99	185.76	0.749	59.25	183.68	126.916	47153.904	2353	4630
499	13.443	176.22	185.86	0.736	59.48	183.83	126.944	47014.782	2353	4630
500	13.333	175.91	185.55	0.744	59.36	183.6	126.696	47238.563	2353	4630
501	13.433	176.26	185.5	0.74	59.46	183.56	126.745	47132.459	2353	4630
502	13.421	175.84	185.47	0.745	59.22	183.35	126.405	47074.451	2353	4630
503	13.477	175.3	184.94	0.743	59.48	183.28	126.234	46987.007	2353	4630
504	13.452	175.51	185.15	0.748	59.56	183.12	125.978	46807.541	2353	4630
505	13.453	175.45	184.95	0.741	59.5	182.94	125.9	46952.594	2353	4630
506	13.385	174.86	184.76	0.743	59.5	182.7	125.545	46731.395	2353	4630
507	13.387	174.8	184.44	0.743	59.51	182.35	125.247	46571.088	2353	4630
508	13.48	175	183.98	0.733	59.58	182.29	125.055	46272.466	2353	4630
509	13.452	174.67	183.91	0.743	59.64	182.29	124.956	46346.786	2353	4630
510	13.283	174.03	183.8	0.742	59.46	181.76	124.665	46237.489	2353	4630
511	13.407	174.21	183.19	0.746	59.45	181.57	124.423	46121.675	2353	4630
512	13.411	173.93	183.03	0.738	59.16	181.07	124.167	46037.025	2353	4630
513	13.337	173.64	183.15	0.739	59.41	181.11	123.969	45856.884	2353	4630
514	13.386	173.55	182.66	0.747	59.45	181.03	123.763	45990.052	2353	4630
515	13.46	173.24	182.74	0.737	59.39	180.74	123.542	45768.912	2353	4630
516	13.387	173.2	182.31	0.738	59.43	180.41	123.216	45722.194	2353	4630
517	13.442	172.97	182.47	0.741	59.39	180.26	122.967	45454.923	2353	4630
518	13.471	172.7	181.8	0.728	59.52	180.25	122.74	45209.67	2353	4630
519	13.517	172.43	181.67	0.744	59.32	179.89	122.498	45373.783	2353	4630
520	13.471	172.32	181.56	0.738	59.54	179.78	122.179	45203.796	2353	4630
521	13.438	172.25	181.36	0.74	59.6	179.72	121.98	45132.177	2353	4630
522	13.483	171.89	181.13	0.735	59.7	179.51	121.653	44896.196	2353	4630
523	13.489	171.58	180.69	0.743	59.32	178.8	121.447	45243.814	2353	4630
524	13.411	171.24	180.47	0.733	59.11	178.31	121.192	44851.991	2353	4630

8.331947	115.82	1.001192	6.257292	1	172.485	734.586	44075.16	
8.331968	115.28	1.001192	6.165656	1	172.2	721.3715	43282.29	
8.331988	115.1	1.001192	6.174003	1	171.985	720.6788	43240.73	
8.331853	114.73	1.001192	6.198899	1	171.455	721.7791	43306.75	
8.331999	114.61	1.001193	6.190675	1	171.51	719.1917	43151.5	
8.332082	114.57	1.001193	6.132412	1	171.175	710.6794	42640.76	
8.332082	114.32	1.001192	6.174073	1	171.04	713.8379	42830.27	
8.331884	113.82	1.001193	6.223918	1	170.7	718.6293	43117.76	
8.332071	113.96	1.001193	6.215725	1	170.715	717.1544	43029.27	
8.332082	113.84	1.001193	6.207401	1	170.65	716.1071	42966.43	
8.332123	113.9	1.001193	6.257424	1	170.865	722.9874	43379.24	
8.33234	114.47	1.001194	6.190929	1	171.195	718.3852	43103.11	
8.332443	114.6	1.001194	6.199338	1	171.355	721.6145	43296.87	
8.332618	114.79	1.001194	6.207801	1	171.77	725.8189	43549.13	
8.332546	115.76	1.001193	6.207747	1	172.37	729.7397	43784.38	
8.332185	116.21	1.001193	6.182481	1	173.115	729.9388	43796.33	
8.332175	116.94	1.001193	6.215802	1	173.85	739.3495	44360.97	
8.332258	117.61	1.001193	6.190867	1	174.37	740.4371	44426.22	
8.332185	118.33	1.001193	6.240807	1	174.965	750.89	45053.4	
8.332227	118.93	1.001193	6.199177	1	175.91	751.3059	45078.36	
8.33234	119.73	1.001194	6.207593	1	176.86	757.932	45475.92	
8.332371	120.52	1.001193	6.107628	1	177.56	751.0219	45061.31	
8.33233	121.41	1.001194	6.165924	1	178.385	764.5056	45870.34	
8.332381	122.33	1.001193	6.174295	1	179.195	771.5579	46293.48	
8.332258	123.04	1.001194	6.182535	1	179.98	778.1716	46690.3	
8.332505	123.78	1.001194	6.141056	1	180.66	778.2755	46696.53	
8.332546	124.21	1.001194	6.191082	1	180.755	786.6418	47198.51	
8.332351	124.43	1.001193	6.240931	1	180.875	793.0187	47581.12	
8.332113	124.35	1.001193	6.132435	1	181.04	779.4046	46764.28	
8.332237	124.24	1.001193	6.199184	1	180.73	786.3487	47180.92	
8.332133	124.1	1.001194	6.165779	1	180.88	782.4144	46944.87	
8.332381	124.13	1.001193	6.207624	1	180.655	785.6106	47136.64	
8.332113	123.8	1.001192	6.19076	1	180.12	782.4162	46944.97	
8.33203	123.56	1.001193	6.232358	1	180.33	786.0764	47164.59	
8.332092	123.44	1.001193	6.17408	1	180.2	778.2438	46694.63	
8.332092	123.2	1.001193	6.190744	1	179.81	778.1439	46688.64	
8.332082	122.84	1.001192	6.190737	1	179.62	776.2957	46577.74	
8.332009	122.71	1.001192	6.107363	1	179.49	764.6668	45880.01	
8.331947	122.65	1.001193	6.190636	1	179.29	774.4799	46468.79	
8.332133	122.3	1.001193	6.182443	1	178.915	771.6536	46299.22	
8.332144	122.12	1.001194	6.215779	1	178.7	774.3092	46458.55	
8.332443	121.91	1.001193	6.149343	1	178.48	764.4564	45867.38	
8.332185	121.7	1.001193	6.157485	1	178.395	764.2478	45854.87	
8.332144	121.58	1.001193	6.224111	1	178.105	771.2337	46274.02	
8.332206	121.35	1.001193	6.140836	1	177.99	759.5561	45573.37	
8.332165	120.98	1.001193	6.149137	1	177.755	758.576	45514.56	
8.332206	120.87	1.001193	6.174165	1	177.72	760.1239	45607.44	
8.332071	120.73	1.001193	6.065748	1	177.25	745.3983	44723.9	
8.332278	120.57	1.001193	6.199215	1	177.05	760.297	45617.82	
8.332051	120.24	1.001192	6.149053	1	176.94	752.1809	45130.86	
8.331988	120.12	1.001192	6.165671	1	176.805	752.985	45179.1	
8.331884	119.81	1.001193	6.123935	1	176.51	745.8841	44753.04	
8.332278	119.48	1.001194	6.190883	1	176.135	752.7619	45165.71	
8.332495	119.2	1.001194	6.107719	1	175.855	741.0902	44465.41	

525	13.415	170.73	180.1	0.741	59.2	178.09	120.829	44947.631	2353	4630
526	13.386	170.78	180.02	0.742	59.32	178.07	120.595	44870.72	2353	4630
527	13.431	170.78	179.75	0.736	59.38	178.01	120.396	44744.933	2353	4630
528	13.472	170.36	179.6	0.74	59.49	177.81	120.055	44361.646	2353	4630
529	13.395	170.32	179.43	0.736	59.52	177.53	119.771	44321.272	2353	4630
530	13.446	170.01	178.98	0.735	59.53	177.12	119.501	44251.572	2353	4630
531	13.292	169.77	178.88	0.736	59.43	176.97	119.253	44119.092	2353	4630
532	13.433	169.59	178.7	0.738	59.44	176.68	118.962	43963.614	2353	4630
533	13.386	169.43	178.53	0.74	59.41	176.41	118.72	44037.453	2353	4630
534	13.42	169.08	178.19	0.736	59.46	176.46	118.436	43625.573	2353	4630
535	13.427	168.64	177.88	0.744	59.62	176.05	118.159	43700.87	2353	4630
536	13.44	168.49	177.6	0.738	59.47	175.85	117.854	43549.133	2353	4630
537	13.539	168.18	177.15	0.738	59.35	175.27	117.584	43598.942	2353	4630
538	13.37	168.21	176.92	0.744	59.25	174.87	117.3	43534.522	2353	4630
539	13.485	167.78	176.62	0.735	59.48	175.08	117.008	43215.949	2353	4630
540	13.443	167.58	176.81	0.739	59.68	175.01	116.703	43231.344	2353	4630
541	13.376	166.96	176.33	0.735	59.45	174.51	116.412	43298.536	2353	4630
542	13.313	166.97	175.94	0.744	59.46	174.03	116.142	43191.501	2353	4630
543	13.311	166.69	175.93	0.741	59.39	173.9	115.865	42825.257	2353	4630
544	13.334	166.31	175.55	0.736	59.46	173.67	115.531	42494.893	2353	4630
545	13.404	166.54	175.38	0.739	59.43	173.4	115.332	42506.493	2353	4630
546	13.206	166.31	175.02	0.743	59.53	173.24	115.098	42776.773	2353	4630
547	13.372	165.92	175.16	0.74	59.41	173.01	115.055	42725.511	2353	4630
548	13.336	166.1	175.07	0.746	59.45	173.17	115.105	42741.569	2353	4630
549	13.318	166.22	175.19	0.742	59.51	173.28	115.29	42619.386	2353	4630
550	13.359	166.26	175.5	0.735	59.41	173.44	115.545	42473.747	2353	4630
551	13.361	167.02	175.99	0.739	59.18	173.9	116.085	43009.998	2353	4630
552	13.406	167.01	176.51	0.734	59.1	174.07	116.582	43049.628	2353	4630
553	13.359	167.8	176.78	0.741	59.04	174.68	117.165	43428.482	2353	4630
554	13.341	168.16	177.39	0.74	59.13	175.12	117.74	43668.356	2353	4630
555	13.376	168.78	177.75	0.739	59.15	175.69	118.258	43745.171	2353	4630
556	13.434	169.34	178.7	0.739	59.19	176.32	119.047	44024.463	2353	4630
557	13.413	169.74	179.11	0.731	59.06	176.7	119.53	44043.348	2353	4630
558	13.39	169.99	179.62	0.745	58.91	177.16	120.062	44318.995	2353	4630
559	13.344	170.52	180.16	0.736	58.92	177.48	120.702	44538.902	2353	4630
560	13.407	170.99	180.89	0.745	59.13	178.39	121.362	45023.238	2353	4630

8.332402	118.89	1.001193	6.17431	1	175.415	746.9259	44815.56
8.332278	118.75	1.001193	6.18255	1	175.4	746.4742	44788.45
8.332216	118.63	1.001193	6.132511	1	175.265	739.2104	44352.62
8.332102	118.32	1.001193	6.165756	1	174.98	741.1126	44466.76
8.332071	118.01	1.001193	6.132404	1	174.875	735.3601	44121.61
8.332061	117.59	1.001193	6.124065	1	174.495	732.7049	43962.29
8.332165	117.54	1.001193	6.132473	1	174.325	732.1882	43931.29
8.332154	117.24	1.001193	6.14913	1	174.145	732.3854	43943.13
8.332185	117	1.001193	6.165817	1	173.98	732.8789	43972.74
8.332133	117	1.001192	6.13245	1	173.635	727.1688	43630.13
8.331968	116.43	1.001193	6.198984	1	173.26	733.3394	44000.36
8.332123	116.38	1.001193	6.149107	1	173.045	725.5615	43533.69
8.332247	115.92	1.001194	6.149198	1	172.665	723.9103	43434.62
8.332351	115.62	1.001193	6.199269	1	172.565	728.0415	43682.49
8.332113	115.6	1.001192	6.124103	1	172.2	717.4232	43045.39
8.331905	115.33	1.001193	6.157278	1	172.195	719.4299	43165.8
8.332144	115.06	1.001193	6.124126	1	171.645	713.7721	42826.32
8.332133	114.57	1.001193	6.199107	1	171.455	720.8357	43250.14
8.332206	114.51	1.001193	6.174165	1	171.31	716.2229	42973.37
8.332133	114.21	1.001193	6.13245	1	170.93	709.3333	42560
8.332165	113.97	1.001193	6.15747	1	170.96	711.0002	42660.01
8.332061	113.71	1.001193	6.190721	1	170.665	713.3897	42803.38
8.332185	113.6	1.001193	6.165817	1	170.54	710.2543	42615.26
8.332144	113.72	1.001193	6.215779	1	170.585	716.3205	42979.23
8.332082	113.77	1.001193	6.182405	1	170.705	713.6197	42817.18
8.332185	114.03	1.001194	6.124156	1	170.88	708.4603	42507.62
8.332423	114.72	1.001194	6.15766	1	171.505	715.6655	42939.93
8.332505	114.97	1.001194	6.116059	1	171.76	713.8739	42832.43
8.332567	115.64	1.001194	6.174432	1	172.29	724.2911	43457.46
8.332474	115.99	1.001194	6.166031	1	172.775	726.8552	43611.31
8.332454	116.54	1.001194	6.157683	1	173.265	729.0646	43743.87
8.332412	117.13	1.001194	6.157653	1	174.02	733.9255	44035.53
8.332546	117.64	1.001195	6.091091	1	174.425	728.938	43736.28
8.3327	118.25	1.001195	6.207862	1	174.805	746.2187	44773.12
8.33269	118.56	1.001194	6.13286	1	175.34	741.1323	44467.94
8.332474	119.26	1.0014	6.207693	1	175.94	754.4328	45265.97

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: Btn
DATE: 4_2_14
RUN NUMBER: EPA#5

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	2741.321	Liters
Total Sample Volume - Vm	96.809	ft³
Average Sample Rate	0.17	Liters/min
Sample Time	560.00	Minutes
Average Meter Temperature	90	°F
Total Sample Volume (Standard Conditions) - Vmstd	95.144	dscf
Total Particulates	0.2	mg
Particulate Concentration (dry-standard)	0.000002102	grams/dscf
Particulate Emission Rate	0.000021429	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA#5

DATE: 4_2_14

BURN RATE 4.25 KG/HR DRY

FILTER A PARTICULATE 11.9 mg

FILTER B PARTICULATE 12.3 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	80.09		80.86	
Average Gas Velocity in Dilution Tunnel - vs	13.59	feet/second	13.59	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	36854.95	dscf/hour	36854.95	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	75.56	dscf	75.02	dscf
Average Tunnel Temperature	80.8	F	80.8	F
Average Delta p	0.041		0.041	
Average Gas Meter Temperature	102	F	99	F
Average Delta H	2.01	in-h20	2.04	in-h20
Total Time of Test	560	min	560	min
Total Particulates	11.9	mg	12.3	mg
Particulate Concentration (dry-standard)	0.000157495	grams/dscf	0.000163947	grams/dscf
Ambient Train (dry-standard)	0.000002102	grams/dscf	0.000002102	grams/dscf
Net (dry-standard)	0.000155393	grams/dscf	0.000161845	grams/dscf
Particulate Emission Rate	5.73	grams/hour	5.96	grams/hour
Total PM Emissions	53.45	grams	55.67	grams
Average Total PM Emissions		54.56	grams	
AVERAGE PARTICLATE EMISSIONS RATE		5.85	grams/hour	
% OF AVERAGE	98.0		102.0	
Emissions Factor	1.347	g/Kg -Dry	1.403	g/Kg -Dry

Heat Output	46016	Btu/hr	48.51705517	MJ/hr				
Emissions	0.2801	lb/MMBtu Out	0.1205	g/MJ	1.3749	g/dry kg	5.8459	g/hr
Qin	752412	BTU	793	MJ				
Qin LHV	698868	BTU	737	MJ				
Delivered Efficiency	57.08%	ndel	61.45%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech

Model: Crown Royal RS7300E

Date:

Run: EPA#5

Control #: 004-hhw-023-1

est Duration: 560

urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)

Weight Units lb (kg or lb)

Wood Moisture (% DRY):	22.3
Wood Moisture (% wet):	18.23
Load Weight (lb wet):	107.00
Burn Rate (dry kg/h):	4.25
Total Particulate Emissions:	54.56 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

Douglas
Oak

Averages		229.3	67.3	7.67	15.05	3.87
		Temp. (F)				
Elapsed Time (min)	Fuel Weight Remaining (lb)	Flue Gas	Room Temp	Flue Gas Composition (%) O2	CO2	CO
0	107.0	294.0	66.0	4.41	14.21	1.12
10	99.1	330.0	65.0	0.00	19.00	4.65
20	90.1	334.0	65.0	0.09	19.93	2.84
30	90.1	235.0	65.0	9.59	14.26	4.78
40	90.1	196.0	67.0	11.09	11.85	3.57
50	90.1	173.0	67.0	11.61	10.12	2.72
60	91.1	158.0	66.0	11.37	9.39	2.28
70	86.3	330.0	66.0	0.81	18.99	2.07
80	74.9	372.0	66.0	0.02	19.30	5.00
90	73.1	249.0	66.0	10.01	18.35	5.00
100	73.1	206.0	66.0	11.72	13.89	4.61
110	72.9	181.0	66.0	11.79	12.11	3.41
120	73.1	165.0	66.0	12.19	10.20	2.56
130	73.1	154.0	66.0	12.35	8.99	2.08
140	68.3	310.0	65.0	2.91	16.71	1.19
150	57.2	373.0	65.0	0.00	19.56	4.62
160	55.1	249.0	65.0	7.02	20.00	5.00
170	55.1	205.0	66.0	10.75	19.09	5.00
180	55.1	182.0	66.0	10.88	17.01	5.00

190	55.1	165.0	66.0	11.91	13.65	4.70
200	55.1	154.0	66.0	12.08	11.85	4.02
210	52.1	264.0	66.0	6.50	12.78	1.63
220	44.1	354.0	67.0	0.00	18.79	5.00
230	38.1	266.0	66.0	2.67	20.00	5.00
240	38.1	215.0	66.0	7.90	20.00	5.00
250	38.1	187.0	66.0	10.22	19.99	5.00
260	38.1	168.0	67.0	11.39	16.28	5.00
270	38.1	155.0	66.0	12.03	13.47	5.00
280	36.1	257.0	66.0	10.55	8.90	1.80
290	32.0	344.0	66.0	0.00	18.14	5.00
300	26.1	256.0	66.0	2.74	20.00	5.00
310	26.1	206.0	67.0	8.65	20.00	5.00
320	26.1	179.0	66.0	11.08	15.55	5.00
330	26.1	162.0	66.0	11.63	13.26	4.61
340	27.1	150.0	66.0	11.91	11.48	3.66
350	23.1	317.0	65.0	1.11	17.96	1.84
360	18.1	300.0	68.0	1.08	18.30	2.69
370	17.1	221.0	70.0	5.98	20.00	5.00
380	17.1	187.0	70.0	10.48	16.48	5.00
390	18.1	167.0	70.0	11.66	13.66	5.00
400	17.1	153.0	70.0	11.54	12.69	4.77
410	17.3	211.0	70.0	12.76	8.16	2.25
420	13.1	313.0	71.0	2.56	17.04	0.83
430	10.1	268.0	70.0	1.43	18.66	5.00
440	10.1	207.0	70.0	6.63	19.34	5.00
450	10.1	178.0	70.0	10.67	14.38	5.00
460	10.1	161.0	70.0	11.10	12.84	5.00
470	10.1	147.0	69.0	11.08	11.64	4.40
480	8.1	261.0	69.0	7.03	11.68	2.61
490	4.8	320.0	70.0	3.32	16.36	0.92
500	3.1	248.0	70.0	3.61	15.65	5.00
510	3.1	198.0	69.0	9.56	11.82	5.00
520	3.1	172.0	69.0	10.60	10.91	4.53
530	4.1	156.0	70.0	10.80	10.08	3.88
540	3.1	145.0	69.0	10.70	9.50	3.41
550	1.4	271.0	69.0	7.02	11.76	2.48
560	0.0	291.0	70.0	6.86	11.92	2.88

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: EPA#5
Control #: 004-hhw-023-1
Test Duration: 560 min

	HHV	LHV
Eff	71.3%	76.8%
Comb Eff	86.3%	86.3%
HT Eff	82.7%	89.1%
Output	60,348	kJ/h
Burn Rate	4.25	kg/h
Grams CO	7,408	g
Input	84,582	kJ/h
MC wet	18.23	

Ultimate CO2
CO2-ult 19.80
F_0
1.055

Overall Heating Efficiency: 71.3%
Combustion Efficiency: 86.3%
Heat Transfer Efficiency: 82.7%

Air Fuel Ratio (A/F)	
Dry Molecular Weight (Md)	30.52
Dry Moles Exhaust Gas (Nr):	210.00
Air Fuel Ratio (A/F)	5.90

Heat Output: 57,247 Btu/h 60,348 kJ/h
Heat Input: 80,235 Btu/h 84,582 kJ/h
Burn Duration: 9.333333333 h
Burn Rate: 9.4 lb/h 4.3 kg/h
Stack Temp: 228.1 Deg. F 109.0 Deg. C

Averages	3.87	15.05	11.2%	19.85	2.87	109.6	19.6	82.9%	84.0%	#DIV/0!	6.5	18.26	62.39	0.87

INPUT DATA				Oxygen Calculation			Input Data		Combust	Heat	Net	Air	Wet Wt	% Wet	Dry Wt.
Elapsed Time	Weight Remaining (kg)	% CO [e]	% CO2 [d]	Excess Air EA	Total O2	Calc. % O2 [g]	Flue Gas (ºC)	Room Temp (ºC)	Eff %	Transfer %	Eff %	Fuel Ratio	Now Wt	Consumed x	Now Wtdn
0	48.55	1.12	14.21	29.2%	20.06	5.29	145.6	18.9	93.8%	82.8%	77.7%	7.8	48.55	0.00	39.70
10	44.96	4.65	19.00	-16.3%	19.58	-1.74	165.6	18.3	83.4%	82.4%	68.8%	4.9	44.96	7.38	36.77
20	40.88	2.84	19.93	-13.0%	19.63	-1.72	167.8	18.3	89.4%	83.1%	74.2%	5.2	40.88	15.79	33.43
30	40.88	4.78	14.26	4.0%	19.85	3.20	112.8	18.3	79.1%	83.3%	#DIV/0!	6.0	40.88	15.79	33.43
40	40.88	3.57	11.85	28.4%	20.05	6.42	91.1	19.4	80.7%	84.0%	#DIV/0!	7.5	40.88	15.79	33.43
50	40.88	2.72	10.12	54.2%	20.20	8.72	78.3	19.4	82.4%	84.5%	69.6%	9.1	40.88	15.79	33.43
60	41.33	2.28	9.39	69.7%	20.27	9.74	70.0	18.9	83.8%	84.9%	71.1%	10.0	41.33	14.86	33.80
70	39.16	2.07	18.99	-6.0%	19.73	-0.29	165.6	18.9	91.6%	83.1%	76.1%	5.7	39.16	19.35	32.02
80	33.98	5.00	19.30	-18.5%	19.54	-2.26	188.9	18.9	82.7%	81.5%	67.3%	4.8	33.98	30.00	27.79
90	33.17	5.00	18.35	-15.2%	19.60	-1.25	120.6	18.9	82.0%	84.1%	69.0%	4.9	33.17	31.68	27.12
100	33.17	4.61	13.89	7.0%	19.88	3.68	96.7	18.9	79.2%	84.1%	66.6%	6.2	33.17	31.68	27.12
110	33.08	3.41	12.11	27.6%	20.05	6.23	82.8	18.9	81.7%	84.7%	#DIV/0!	7.5	33.08	31.87	27.05
120	33.17	2.56	10.20	55.2%	20.21	8.73	73.9	18.9	83.3%	84.8%	70.7%	9.1	33.17	31.68	27.12
130	33.17	2.08	8.99	78.9%	20.30	10.27	67.8	18.9	84.4%	85.0%	71.7%	10.6	33.17	31.68	27.12
140	30.99	1.19	16.71	10.6%	19.91	2.61	154.4	18.3	94.3%	83.2%	78.5%	6.7	30.99	36.17	25.34
150	25.95	4.62	19.56	-18.1%	19.55	-2.32	189.4	18.3	83.9%	81.6%	68.4%	4.8	25.95	46.54	21.22
160	25.00	5.00	20.00	-20.8%	19.50	-3.00	120.6	18.3	83.1%	84.4%	70.2%	4.6	25.00	48.50	20.44
170	25.00	5.00	19.09	-17.8%	19.56	-2.03	96.1	18.9	82.5%	85.3%	#DIV/0!	4.8	25.00	48.50	20.44
180	25.00	5.00	17.01	-10.0%	19.68	0.17	83.3	18.9	81.0%	85.4%	#DIV/0!	5.2	25.00	48.50	20.44
190	25.00	4.70	13.65	7.9%	19.89	3.89	73.9	18.9	78.7%	85.2%	#DIV/0!	6.2	25.00	48.50	20.44
200	25.00	4.02	11.85	24.8%	20.03	6.17	67.8	18.9	78.9%	85.2%	67.3%	7.2	25.00	48.50	20.44
210	23.64	1.63	12.78	37.4%	20.11	6.52	128.9	18.9	90.5%	82.9%	75.0%	8.3	23.64	51.31	19.33
220	20.01	5.00	18.79	-16.8%	19.57	-1.72	178.9	19.4	82.3%	81.7%	67.3%	4.9	20.01	58.79	16.36
230	17.29	5.00	20.00	-20.8%	19.50	-3.00	130.0	18.9	83.1%	84.1%	69.9%	4.6	17.29	64.39	14.13
240	17.29	5.00	20.00	-20.8%	19.50	-3.00	101.7	18.9	83.1%	85.2%	#DIV/0!	4.6	17.29	64.39	14.13
250	17.29	5.00	19.99	-20.8%	19.50	-2.99	86.1	18.9	83.1%	85.9%	#DIV/0!	4.6	17.29	64.39	14.13
260	17.29	5.00	16.28	-6.9%	19.72	0.94	75.6	19.4	80.3%	85.6%	#DIV/0!	5.4	17.29	64.39	14.13
270	17.29	5.00	13.47	7.2%	19.88	3.91	68.3	18.9	77.5%	85.3%	66.1%	6.2	17.29	64.39	14.13
280	16.38	1.80	8.90	85.1%	20.33	10.53	125.0	18.9	86.0%	80.7%	69.5%	11.0	16.38	66.26	13.39
290	14.52	5.00	18.14	-14.4%	19.61	-1.03	173.3	18.9	81.8%	81.7%	66.9%	5.0	14.52	70.09	11.87

300	11.84	5.00	20.00	-20.8%	19.50	-3.00	124.4	18.9	83.1%	84.3%	70.1%	4.6	11.84	75.61	9.68
310	11.84	5.00	20.00	-20.8%	19.50	-3.00	96.7	19.4	83.1%	85.5%	#DIV/0!	4.6	11.84	75.61	9.68
320	11.84	5.00	15.55	-3.6%	19.76	1.71	81.7	18.9	79.7%	85.2%	#DIV/0!	5.6	11.84	75.61	9.68
330	11.84	4.61	13.26	10.8%	19.91	4.35	72.2	18.9	78.5%	85.2%	66.9%	6.4	11.84	75.61	9.68
340	12.30	3.66	11.48	30.8%	20.07	6.76	65.6	18.9	79.9%	85.4%	68.2%	7.6	12.30	74.67	10.05
350	10.48	1.84	17.96	0.0%	19.80	0.92	158.3	18.3	92.1%	83.2%	76.6%	6.0	10.48	78.41	8.57
360	8.21	2.69	18.30	-5.7%	19.73	0.09	148.9	20.0	89.1%	83.5%	74.4%	5.6	8.21	83.08	6.71
370	7.76	5.00	20.00	-20.8%	19.50	-3.00	105.0	21.1	83.1%	85.2%	70.8%	4.6	7.76	84.02	6.34
380	7.76	5.00	16.48	-7.8%	19.71	0.73	86.1	21.1	80.5%	85.3%	68.7%	5.4	7.76	84.02	6.34
390	8.21	5.00	13.66	6.1%	19.87	3.71	75.0	21.1	77.7%	85.1%	#DIV/0!	6.1	8.21	83.08	6.71
400	7.76	4.77	12.69	13.4%	19.94	4.86	67.2	21.1	77.3%	85.3%	66.0%	6.5	7.76	84.02	6.34
410	7.85	2.25	8.16	90.2%	20.34	11.06	99.4	21.1	82.1%	82.1%	67.4%	11.2	7.85	83.83	6.42
420	5.94	0.83	17.04	10.8%	19.91	2.46	156.1	21.7	96.0%	83.5%	80.2%	6.8	5.94	87.76	4.86
430	4.58	5.00	18.66	-16.3%	19.58	-1.58	131.1	21.1	82.2%	83.8%	68.9%	4.9	4.58	90.56	3.75
440	4.58	5.00	19.34	-18.6%	19.54	-2.30	97.2	21.1	82.7%	85.4%	#DIV/0!	4.8	4.58	90.56	3.75
450	4.58	5.00	14.38	2.2%	19.83	2.95	81.1	21.1	78.5%	85.0%	#DIV/0!	5.9	4.58	90.56	3.75
460	4.58	5.00	12.84	11.0%	19.92	4.58	71.7	21.1	76.7%	85.1%	#DIV/0!	6.4	4.58	90.56	3.75
470	4.58	4.40	11.64	23.5%	20.02	6.18	63.9	20.6	77.2%	85.3%	65.9%	7.1	4.58	90.56	3.75
480	3.68	2.61	11.68	38.6%	20.12	7.13	127.2	20.6	84.7%	82.2%	69.7%	8.2	3.68	92.43	3.01
490	2.18	0.92	16.36	14.6%	19.95	3.13	160.0	21.1	95.5%	83.0%	79.3%	7.0	2.18	95.51	1.78
500	1.41	5.00	15.65	-4.1%	19.75	1.60	120.0	21.1	79.8%	83.5%	66.6%	5.6	1.41	97.10	1.15
510	1.41	5.00	11.82	17.7%	19.97	5.65	92.2	20.6	75.4%	83.5%	#DIV/0!	6.8	1.41	97.10	1.15
520	1.41	4.53	10.91	28.3%	20.05	6.88	77.8	20.6	75.7%	84.1%	63.7%	7.4	1.41	97.10	1.15
530	1.86	3.88	10.08	41.9%	20.14	8.12	68.9	21.1	77.0%	84.7%	#DIV/0!	8.2	1.86	96.17	1.52
540	1.41	3.41	9.50	53.4%	20.20	8.99	62.8	20.6	78.1%	85.0%	66.4%	8.9	1.41	97.10	1.15
550	0.64	2.48	11.76	39.1%	20.12	7.12	132.8	20.6	85.4%	82.0%	70.0%	8.2	0.64	98.69	0.52
560	0.00	2.88	11.92	33.8%	20.09	6.73	143.9	21.1	83.7%	81.3%	68.0%	7.9	0.00	100.00	0.00

Moisture Cont

%HC						
1.32	Combustion Efficiency:	86.3%			Moisture of Wood (wet basis):	18.23
	Total Input (kJ):	789,433	748,739	(Btu)	Initial Dry Weight Wtdo (kg):	39.70
	Total Output (kJ):	563,249	534,214	(Btu)	Moisture Content Dry	22.30
	Efficiency:	71.3%				
	Total CO (g):	7407.56				

Load Weight (kg):	48.55					
Fuel Heating:	HHV	LHV		HHV	LHV	
Value in kJ/kg - CV:	19887.00	18463.91	Btu/lb	8555.61	7943.38	

62.39	794597	4.17	6.60	2.68	19887.00	18.23	78.21	20.75	4.67	14.32	0.55	0.46	32.37	8.98	8.32	1.18
% Dry	**Fuel Properties**					**Mw**	**Mass Balance**					**kg Wood per**				
Comsumed	**Total**	**Carbon**	**Hydrogen**	**Oxygen**	**Calorific**	**Moisture**	**(moles/100 mole dry flue gas)**					**100 mole dfp**	**Moles per kg of Dry Woo**			
y	**Input**	**/12= [a]**	**/1= [b]**	**/16= [c]**	**Value**	**Fuel Burnt**	**[h]**	**[u]**	**[w]**	**[j]**	**[k]**	**Nk**	**CO2**	**O2**	**CO**	**HC**
0.00	0	4.17	6.60	2.68	19887.00	18.23	79.38	21.06	3.72	11.96	0.15	0.37	38.43	14.31	3.03	0.41
7.38	91486	4.17	6.60	2.68	19887.00	18.23	78.09	20.71	5.84	17.92	0.67	0.58	32.71	-3.00	8.01	1.16
15.79	33200	4.17	6.60	2.68	19887.00	18.23	78.95	20.94	5.56	17.54	0.41	0.55	36.00	-3.10	5.13	0.74
15.79	0	4.17	6.60	2.68	19887.00	18.23	77.76	20.63	4.73	14.25	0.68	0.47	30.28	6.79	10.15	1.45
15.79	0	4.17	6.60	2.68	19887.00	18.23	78.16	20.73	3.82	11.60	0.50	0.38	31.16	16.88	9.39	1.33
15.79	-3689	4.17	6.60	2.68	19887.00	18.23	78.44	20.81	3.17	9.71	0.38	0.32	32.06	27.63	8.62	1.20
14.86	14018	4.17	6.60	2.68	19887.00	18.23	78.59	20.85	2.88	8.86	0.31	0.29	32.81	34.04	7.97	1.09
19.35	59761	4.17	6.60	2.68	19887.00	18.23	79.23	21.02	5.13	16.32	0.30	0.51	37.23	-0.58	4.06	0.59
30.00	48694	4.17	6.60	2.68	19887.00	18.23	77.96	20.68	6.01	18.37	0.72	0.60	32.30	-3.78	8.37	1.21
31.68	6640	4.17	6.60	2.68	19887.00	18.23	77.90	20.66	5.78	17.62	0.72	0.57	31.92	-2.18	8.70	1.26
31.68	738	4.17	6.60	2.68	19887.00	18.23	77.82	20.64	4.60	13.86	0.66	0.46	30.36	8.05	10.08	1.44
31.87	0	4.17	6.60	2.68	19887.00	18.23	78.25	20.76	3.84	11.71	0.48	0.38	31.69	16.31	8.92	1.26
31.68	-738	4.17	6.60	2.68	19887.00	18.23	78.51	20.83	3.15	9.68	0.35	0.31	32.57	27.87	8.17	1.13
31.68	17707	4.17	6.60	2.68	19887.00	18.23	78.66	20.86	2.72	8.43	0.28	0.27	33.16	37.90	7.67	1.04
36.17	58654	4.17	6.60	2.68	19887.00	18.23	79.49	21.09	4.34	13.97	0.17	0.43	38.73	6.04	2.76	0.39
46.54	48694	4.17	6.60	2.68	19887.00	18.23	78.14	20.73	5.96	18.34	0.67	0.59	32.96	-3.91	7.79	1.13
48.50	7747	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
48.50	0	4.17	6.60	2.68	19887.00	18.23	77.94	20.67	5.96	18.21	0.72	0.59	32.22	-3.43	8.44	1.22
48.50	0	4.17	6.60	2.68	19887.00	18.23	77.82	20.64	5.46	16.56	0.72	0.54	31.34	0.30	9.21	1.33
48.50	0	4.17	6.60	2.68	19887.00	18.23	77.76	20.63	4.57	13.72	0.67	0.45	30.05	8.55	10.35	1.48
48.50	11067	4.17	6.60	2.68	19887.00	18.23	77.96	20.68	3.95	11.88	0.57	0.39	30.19	15.71	10.24	1.45
51.31	40578	4.17	6.60	2.68	19887.00	18.23	79.07	20.97	3.51	11.14	0.22	0.35	36.57	18.65	4.66	0.64
58.79	51645	4.17	6.60	2.68	19887.00	18.23	77.93	20.67	5.88	17.97	0.72	0.59	32.10	-2.93	8.54	1.24
64.39	22134	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
64.39	0	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
64.39	0	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.55	-4.86	8.14	1.18
64.39	0	4.17	6.60	2.68	19887.00	18.23	77.78	20.63	5.28	15.99	0.72	0.53	30.99	1.78	9.52	1.37
64.39	7378	4.17	6.60	2.68	19887.00	18.23	77.62	20.59	4.60	13.77	0.71	0.46	29.40	8.53	10.91	1.56
66.26	22503	4.17	6.60	2.68	19887.00	18.23	78.77	20.90	2.63	8.18	0.24	0.26	34.06	40.28	6.89	0.93
70.09	36889	4.17	6.60	2.68	19887.00	18.23	77.89	20.66	5.73	17.45	0.72	0.57	31.83	-1.81	8.77	1.27

75.61	21765	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
75.61	0	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
75.61	0	4.17	6.60	2.68	19887.00	18.23	77.74	20.62	5.10	15.41	0.72	0.51	30.62	3.37	9.85	1.41
75.61	-3689	4.17	6.60	2.68	19887.00	18.23	77.78	20.63	4.45	13.36	0.66	0.44	29.97	9.83	10.42	1.49
74.67	11067	4.17	6.60	2.68	19887.00	18.23	78.10	20.72	3.76	11.37	0.52	0.37	30.71	18.08	9.79	1.38
78.41	33200	4.17	6.60	2.68	19887.00	18.23	79.28	21.03	4.82	15.36	0.26	0.48	37.49	1.93	3.84	0.55
83.08	22134	4.17	6.60	2.68	19887.00	18.23	78.92	20.93	5.13	16.16	0.39	0.51	35.85	0.17	5.27	0.76
84.02	3689	4.17	6.60	2.68	19887.00	18.23	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
84.02	-3689	4.17	6.60	2.68	19887.00	18.23	77.79	20.64	5.33	16.14	0.72	0.53	31.09	1.37	9.43	1.36
83.08	0	4.17	6.60	2.68	19887.00	18.23	77.63	20.59	4.65	13.92	0.71	0.46	29.52	8.01	10.81	1.54
84.02	2951	4.17	6.60	2.68	19887.00	18.23	77.68	20.60	4.35	13.01	0.68	0.43	29.30	11.22	11.01	1.57
83.83	14756	4.17	6.60	2.68	19887.00	18.23	78.53	20.83	2.57	7.87	0.31	0.26	31.89	43.21	8.79	1.20
87.76	26560	4.17	6.60	2.68	19887.00	18.23	79.67	21.13	4.32	14.01	0.12	0.43	39.67	5.72	1.93	0.27
90.56	11067	4.17	6.60	2.68	19887.00	18.23	77.92	20.67	5.85	17.87	0.72	0.58	32.05	-2.71	8.59	1.24
90.56	0	4.17	6.60	2.68	19887.00	18.23	77.96	20.68	6.02	18.40	0.72	0.60	32.31	-3.84	8.35	1.21
90.56	0	4.17	6.60	2.68	19887.00	18.23	77.67	20.60	4.82	14.48	0.72	0.48	29.97	6.14	10.42	1.49
90.56	0	4.17	6.60	2.68	19887.00	18.23	77.58	20.58	4.45	13.27	0.71	0.44	28.98	10.33	11.29	1.61
90.56	7378	4.17	6.60	2.68	19887.00	18.23	77.78	20.63	4.00	11.95	0.62	0.40	29.25	15.53	11.06	1.57
92.43	19551	4.17	6.60	2.68	19887.00	18.23	78.58	20.84	3.52	10.88	0.36	0.35	33.38	20.39	7.46	1.04
95.51	18445	4.17	6.60	2.68	19887.00	18.23	79.59	21.11	4.18	13.53	0.13	0.42	39.36	7.52	2.21	0.31
97.10	6271	4.17	6.60	2.68	19887.00	18.23	77.75	20.62	5.13	15.49	0.72	0.51	30.67	3.14	9.80	1.41
97.10	0	4.17	6.60	2.68	19887.00	18.23	77.53	20.56	4.21	12.46	0.71	0.42	28.23	13.50	11.94	1.70
97.10	-3689	4.17	6.60	2.68	19887.00	18.23	77.68	20.61	3.86	11.45	0.64	0.38	28.41	17.91	11.80	1.67
96.17	0	4.17	6.60	2.68	19887.00	18.23	77.92	20.67	3.48	10.40	0.55	0.35	29.10	23.43	11.20	1.58
97.10	9960	4.17	6.60	2.68	19887.00	18.23	78.10	20.72	3.21	9.65	0.48	0.32	29.72	28.13	10.67	1.49
98.69	16600	4.17	6.60	2.68	19887.00	18.23	78.64	20.86	3.50	10.86	0.35	0.35	33.76	20.45	7.12	0.99
100.00	5165	4.17	6.60	2.68	19887.00	18.23	78.47	20.81	3.65	11.23	0.40	0.36	32.83	18.54	7.93	1.11

ent MCwb: 18.23

Dry kg : 39.70
CA: 50.00
HY: 6.60
OX: 42.90

											SUMS					
178.85	30.80	12.39	382.76	3559.86	2689.91	2618.41	2588.82	3403.12	3134.19	292.77	6727.46	1037.01	135361.58	25452.29	60305.85	82719.73
ıd		Moisture	Stack Temp	Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent						Room Temp	Energy Losses (kJ/kg of Dry Fuel) Flue Gas Constituent					
N2	H2O	Present	K	CO2	O2	CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb
214.70	32.34	12.39	418.71	5047.13	3797.51	3692.60	3651.71	4860.43	4418.72	292.04	193.98	54.33	868.31	784.01	370.21	1564.79
134.45	30.85	12.39	438.71	5907.69	4426.66	4299.85	4253.19	5729.34	5143.95	291.48	193.25	-13.29	2300.03	571.86	1037.51	1515.12
142.61	31.68	12.39	440.93	6001.68	4494.97	4365.68	4318.42	5825.12	5222.54	291.48	216.07	-13.95	1474.21	615.86	666.60	1558.28
165.10	30.26	12.39	385.93	3717.57	2817.31	2744.44	2713.01	3535.86	3285.69	291.48	112.55	19.12	2899.86	447.93	1296.94	1430.09
205.54	30.51	12.39	364.26	2799.62	2131.21	2078.42	2054.13	2641.85	2489.06	292.59	87.24	35.98	2676.29	422.21	1183.49	1417.65
248.50	30.77	12.39	351.48	2289.55	1747.84	1705.74	1685.56	2149.75	2043.13	292.59	73.41	48.30	2453.33	418.86	1068.49	1415.84
274.64	30.98	12.39	343.15	1980.57	1514.95	1479.18	1461.53	1853.10	1771.99	292.04	64.99	51.56	2266.61	401.40	975.59	1416.98
155.35	31.99	12.39	438.71	5886.58	4410.32	4283.85	4237.39	5710.00	5124.77	292.04	219.17	-2.55	1165.90	658.27	524.60	1570.74
130.46	30.74	12.39	462.04	6880.60	5129.81	4976.48	4923.82	6729.48	5951.38	292.04	222.23	-19.37	2409.50	642.34	1086.46	1534.71
135.52	30.65	12.39	393.71	4014.13	3036.56	2956.68	2923.10	3829.97	3539.36	292.04	128.14	-6.61	2487.18	396.13	1123.27	1456.27
170.09	30.29	12.39	369.82	3043.98	2314.69	2256.74	2230.49	2878.01	2702.41	292.04	92.42	18.63	2874.33	379.39	1284.91	1413.59
204.77	30.65	12.39	355.93	2487.55	1897.36	1851.26	1829.44	2339.23	2217.31	292.04	78.84	30.95	2541.98	374.62	1124.23	1415.45
250.69	30.90	12.39	347.04	2134.36	1631.18	1592.33	1573.39	2000.08	1907.42	292.04	69.51	45.45	2326.23	394.44	1011.03	1417.55
290.12	31.08	12.39	340.93	1892.88	1448.59	1414.57	1397.65	1769.49	1694.63	292.04	62.77	54.89	2181.97	405.48	932.02	1419.04
184.25	32.39	12.39	427.59	5439.90	4085.76	3971.10	3927.51	5254.59	4751.42	291.48	210.69	24.68	791.49	723.64	347.18	1578.07
131.68	30.91	12.39	462.59	6925.57	5163.34	5009.01	4956.00	6773.46	5990.28	291.48	228.28	-20.18	2242.28	652.61	1011.56	1544.25
126.96	30.81	12.39	393.71	4035.25	3052.90	2972.68	2938.90	3849.31	3558.54	291.48	131.37	-14.89	2327.52	373.14	1055.17	1464.10
131.54	30.72	12.39	369.26	3021.62	2297.97	2240.50	2214.43	2856.25	2682.99	292.04	97.35	-7.89	2406.84	291.29	1090.41	1433.32
143.38	30.51	12.39	356.48	2509.70	1914.02	1867.46	1845.46	2360.58	2236.69	292.04	78.65	0.58	2624.02	264.60	1183.95	1409.86
171.20	30.21	12.39	347.04	2134.36	1631.18	1592.33	1573.39	2000.08	1907.42	292.04	64.14	13.95	2944.73	269.37	1317.74	1386.01
198.59	30.27	12.39	340.93	1892.88	1448.59	1414.57	1397.65	1769.49	1694.63	292.04	57.14	22.76	2912.39	277.56	1293.47	1382.03
226.26	31.88	12.39	402.04	4356.45	3289.59	3201.60	3165.54	4169.57	3832.08	292.04	159.31	61.35	1334.87	716.25	574.39	1523.96
133.12	30.70	12.39	452.04	6431.54	4804.52	4663.27	4613.42	6269.47	5577.56	292.59	206.45	-14.09	2457.04	614.16	1107.22	1520.86
126.96	30.81	12.39	403.15	4402.25	3323.37	3234.28	3197.90	4215.14	3871.14	292.04	143.32	-16.21	2329.65	406.02	1055.60	1473.73
126.96	30.81	12.39	374.82	3245.67	2465.36	2402.97	2375.16	3074.61	2877.32	292.04	105.67	-12.02	2322.88	301.56	1054.25	1443.11
127.01	30.80	12.39	359.26	2620.58	1997.36	1948.48	1925.58	2467.55	2333.63	292.04	85.31	-9.71	2320.09	244.57	1053.92	1426.33
148.06	30.43	12.39	348.71	2179.29	1664.70	1624.85	1605.57	2043.98	1946.31	292.59	67.54	2.97	2708.94	237.73	1220.78	1397.17
169.44	30.05	12.39	341.48	1914.79	1465.18	1430.72	1413.61	1790.36	1713.97	292.04	56.30	12.50	3104.28	239.52	1390.30	1372.70
301.46	31.31	12.39	398.15	4196.45	3171.43	3087.25	3052.35	4010.61	3695.43	292.04	142.93	127.74	1970.64	920.17	830.05	1492.34
136.69	30.63	12.39	446.48	6216.17	4649.60	4514.39	4465.83	6046.44	5399.96	292.04	197.89	-8.40	2522.78	610.44	1135.43	1512.27

126.96	30.81	12.39	397.59	4173.63	3154.56	3070.92	3036.19	3987.97	3675.91	292.04	135.88	-15.39	2328.32	385.49	1055.33	1467.72
126.96	30.81	12.39	369.82	3022.86	2298.35	2240.74	2214.69	2858.65	2683.23	292.59	98.41	-11.21	2321.56	281.19	1054.00	1437.14
153.07	30.34	12.39	354.82	2443.27	1864.05	1818.87	1797.41	2296.60	2178.55	292.04	74.81	6.27	2803.99	275.13	1260.95	1400.12
175.81	30.19	12.39	345.37	2068.40	1581.35	1543.83	1525.44	1936.99	1849.37	292.04	61.99	15.54	2964.80	268.18	1325.14	1383.48
208.89	30.40	12.39	338.71	1805.34	1382.28	1349.98	1333.79	1686.15	1617.31	292.04	55.43	24.99	2783.52	278.62	1232.06	1385.95
165.47	32.07	12.39	431.48	5603.22	4204.95	4086.08	4041.41	5419.97	4888.72	291.48	210.04	8.10	1102.49	668.71	492.73	1566.65
154.60	31.65	12.39	422.04	5143.99	3866.71	3758.98	3717.55	4961.74	4497.87	293.15	184.40	0.67	1511.02	574.73	679.24	1533.89
126.96	30.81	12.39	378.15	3295.99	2500.55	2436.53	2408.49	3128.93	2917.27	294.26	107.31	-12.20	2323.16	305.79	1054.32	1444.35
146.75	30.45	12.39	359.26	2536.04	1931.99	1884.47	1862.37	2390.03	2256.90	294.26	78.84	2.65	2686.94	273.30	1210.80	1407.70
167.79	30.08	12.39	348.15	2093.85	1599.04	1560.66	1542.16	1964.71	1869.40	294.26	61.82	12.82	3075.19	258.77	1377.53	1378.71
179.33	30.03	12.39	340.37	1786.45	1366.63	1334.41	1318.47	1671.10	1598.57	294.26	52.34	15.34	3130.97	236.43	1398.83	1368.34
306.88	30.77	12.39	372.59	3071.40	2332.99	2273.95	2247.64	2909.53	2722.83	294.26	97.93	100.80	2508.10	689.75	1069.78	1436.71
185.50	32.63	12.39	429.26	5383.04	4038.76	3924.36	3881.50	5209.07	4695.15	294.82	213.57	23.12	554.47	720.02	241.11	1587.78
133.82	30.68	12.39	404.26	4363.54	3291.79	3202.96	3167.06	4183.26	3833.48	294.26	139.84	-8.93	2457.62	423.82	1110.21	1466.73
130.25	30.75	12.39	370.37	2981.82	2266.04	2208.97	2183.35	2822.26	2645.11	294.26	96.35	-8.70	2382.53	284.38	1080.10	1433.23
161.86	30.18	12.39	354.26	2336.61	1782.02	1738.67	1718.19	2197.78	2082.44	294.26	70.02	10.94	2966.68	278.10	1330.69	1389.99
175.12	29.95	12.39	344.82	1961.89	1499.37	1463.66	1446.25	1838.46	1753.29	294.26	56.86	15.48	3210.24	253.26	1435.53	1369.25
195.46	30.03	12.39	337.04	1676.38	1283.55	1253.55	1238.52	1565.71	1501.79	293.71	49.04	19.93	3142.92	242.08	1398.37	1365.46
224.53	31.08	12.39	400.37	4224.44	3189.90	3104.58	3069.62	4043.22	3715.96	293.71	140.99	65.03	2133.76	689.23	931.75	1482.14
191.47	32.55	12.39	433.15	5567.70	4174.35	4055.38	4011.25	5394.24	4851.68	294.26	219.12	31.40	635.29	768.03	274.81	1589.22
152.37	30.35	12.39	393.15	3906.85	2954.34	2876.36	2843.75	3729.94	3443.13	294.26	119.83	9.28	2801.20	433.29	1257.35	1439.08
185.18	29.77	12.39	365.37	2801.92	2131.93	2078.86	2054.62	2646.30	2489.51	293.71	79.11	28.79	3404.68	380.48	1516.91	1382.96
202.28	29.82	12.39	350.93	2225.21	1698.52	1657.55	1637.95	2089.80	1985.39	293.71	63.22	30.42	3357.73	331.33	1490.79	1370.55
224.95	30.01	12.39	342.04	1852.17	1416.39	1382.86	1366.37	1733.73	1656.57	294.26	53.90	33.19	3185.23	307.36	1405.89	1369.37
244.30	30.18	12.39	335.93	1632.72	1250.43	1221.28	1206.62	1524.25	1463.15	293.71	48.52	35.18	3031.69	294.77	1330.32	1371.23
225.77	31.18	12.39	405.93	4453.50	3358.85	3268.02	3231.42	4271.26	3911.28	293.71	150.36	68.68	2038.19	729.56	888.34	1492.88
216.13	30.94	12.39	417.04	4893.17	3681.23	3579.42	3539.81	4713.12	4283.25	294.26	160.65	68.23	2273.16	765.05	996.20	1492.89

	AVERAGE	SUMS						
33262.97	6050.30	226184	108484	117699.90	568413	108484	7407.56	604.24
	Total							
	Loss	**Total**	**Chemical**	**Sensible and**	**Total**	**Chem**	**Grams Produced**	
H2O Fuel MC	**Rate**	**Loss**	**Loss 1**	**Latent Loss**	**Output**	**Loss 2**	**CO**	**HC**
599.47	4435.10	0	0	0.00	0	0	0.00	0.00
608.46	6212.93	28581	15165	13416.51	62904	15165	1031.22	85.24
609.43	5126.51	8558	3529	5029.12	24642	3529	239.81	19.87
585.44	6791.92	0	0	0.00	0	0	0.00	0.00
575.57	6398.43	0	0	0.00	0	0	0.00	0.00
570.04	6048.26	-1122	-650	-471.85	-2567	-650	-44.76	-3.55
566.68	5743.82	4049	2276	1773.08	9969	2276	157.26	12.33
608.22	4744.35	14257	5018	9239.19	45504	5018	341.48	28.15
618.46	6494.33	15902	8438	7463.52	32792	8438	573.65	47.46
588.58	6172.96	2061	1195	865.79	4579	1195	81.32	6.71
578.21	6641.48	246	153	93.09	491	153	10.47	0.85
572.20	6138.27	0	0	0.00	0	0	0.00	0.00
568.36	5832.58	-216	-123	-93.14	-521	-123	-8.49	-0.67
565.73	5621.90	5006	2761	2244.29	12701	2761	191.27	14.89
603.60	4279.35	12621	3320	9301.34	46033	3320	227.78	18.30
618.94	6277.75	15371	7853	7518.35	33323	7853	533.78	44.18
588.82	5925.22	2308	1306	1001.62	5439	1306	88.77	7.36
577.97	5889.29	0	0	0.00	0	0	0.00	0.00
572.44	6134.11	0	0	0.00	0	0	0.00	0.00
568.36	6564.31	0	0	0.00	0	0	0.00	0.00
565.73	6511.08	3623	2331	1292.31	7443	2331	159.56	12.91
592.21	4962.34	10125	3860	6265.57	30453	3860	266.48	20.97
613.83	6505.47	16894	9133	7761.66	34751	9133	621.09	51.32
592.69	5984.80	6661	3733	2928.06	15473	3733	253.64	21.02
580.38	5795.83	0	0	0.00	0	0	0.00	0.00
573.64	5694.15	0	0	0.00	0	0	0.00	0.00
568.84	6203.96	0	0	0.00	0	0	0.00	0.00
565.97	6741.56	2501	1661	840.44	4877	1661	113.37	9.25
590.51	6074.37	6873	3141	3732.52	15629	3141	218.24	16.81
611.63	6582.03	12209	6698	5511.24	24680	6698	455.74	37.60

590.27	5947.62	6509	3671	2838.57	15256	3671	249.41	20.67
577.97	5759.06	0	0	0.00	0	0	0.00	0.00
571.72	6392.99	0	0	0.00	0	0	0.00	0.00
567.64	6586.78	-1222	-792	-429.57	-2467	-792	-54.12	-4.41
564.77	6325.35	3520	2226	1294.00	7547	2226	152.53	12.30
605.30	4654.01	7770	2632	5137.69	25431	2632	179.52	14.70
600.46	5084.40	5659	2411	3247.33	16475	2411	164.21	13.51
580.87	5803.59	1077	622	454.40	2612	622	42.27	3.50
572.69	6232.92	-1156	-719	-437.06	-2533	-719	-48.99	-4.03
567.89	6732.72	0	0	0.00	0	0	0.00	0.00
564.54	6766.79	1004	670	334.53	1947	670	45.76	3.72
578.46	6481.54	4809	2637	2171.88	9947	2637	182.66	14.22
602.90	3942.96	5266	1051	4215.53	21294	1051	72.27	5.75
592.22	6181.52	3440	1967	1472.67	7627	1967	133.80	11.05
577.50	5845.39	0	0	0.00	0	0	0.00	0.00
570.53	6616.95	0	0	0.00	0	0	0.00	0.00
566.45	6907.08	0	0	0.00	0	0	0.00	0.00
563.34	6781.14	2516	1679	837.02	4862	1679	114.86	9.31
590.77	6033.66	5932	2987	2944.97	13620	2987	205.30	16.39
604.84	4122.72	3824	834	2989.48	14621	834	57.47	4.55
587.39	6647.43	2096	1269	826.92	4175	1269	86.52	7.10
575.57	7368.51	0	0	0.00	0	0	0.00	0.00
569.33	7213.36	-1338	-895	-442.94	-2351	-895	-61.27	-4.96
565.25	6920.20	0	0	0.00	0	0	0.00	0.00
562.86	6674.57	3343	2177	1165.88	6617	2177	149.59	11.96
593.19	5961.19	4976	2420	2556.08	11624	2420	166.41	13.26
597.80	6353.97	1650	840	809.79	3514	840	57.68	4.63

Dirigo Laboratories, Inc.

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: EPA#5
Control #: 004-hhw-023-1
Test Duration: 560
Output Category: 4

	HHV Basis	LHV Basis
Overall Efficiency	71.3%	76.8%
Combustion Efficiency	86.3%	86.3%
Heat Transfer Efficiency	82.7%	89.1%

HHV Output Rate (kJ/h)	60,348	57,247	**(Btu/h)**
Burn Rate (kg/h)	4.25	9.37	**(lb/h)**
Input (kJ/h)	84,582	80,235	**(Btu/h)**

Test Load Weight (dry kg)	39.7	87.5	**dry lb**
MC wet (%)	18.23		
MC dry (%)	22.30		
Particulate (g)	54.56		
CO (g)	7408		
Test Duration (h)	9.333333333		

Emissions	**Particulate**	**CO**
g/MJ Output	0.10	13.15
g/kg Dry Fuel	1.37	186.61
g/h	5.85	793.67
lb/MM Btu Output	0.23	30.57

Air/Fuel Ratio (A/F)	5.90

Test Results in Accordance with CSA B415.1-10

Technician: _____

PREBURN

JOB # 004_HHW_023_1
TECHNICIAI Btn
DATE: 4_3_14
RUN #: EPA#6
READING INTERVAL: 10
.
Run Time: 490

Model Designation GreenTech

	Tunnel Traverse Information											
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt. 9	Pt.10	Pt.11	Pt. 12
dP	0.042	0.042	0.044	0.048	0.050	0.050	0.042	0.048	0.052	0.052	0.048	0.047
Temperature	80	80	80	80	80	80	80	80	80	80	80	80

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
0	62.1	-0.038	6021	6022	6024	6022	6022	6022.2
10	61.1	-0.022	6022	6022	6024	6022	6023	6022.6
20	62.1	-0.026	6022	6022	6024	6022	6023	6022.6
30	61.1	-0.027	6022	6023	6025	6022	6023	6023
40	52.1	-0.045	6022	6023	6025	6023	6024	6023.4
50	44.1	-0.03	6023	6024	6026	6023	6024	6024
60	44.1	-0.03	6023	6024	6026	6024	6024	6024.2
70	43.9	-0.019	6023	6024	6026	6024	6024	6024.2
80	44.1	-0.014	6022	6023	6025	6023	6024	6023.4
90	44.1	-0.011	6022	6023	6025	6023	6023	6023.2
100	42.1	-0.033	6022	6023	6025	6023	6023	6023.2
110	32.1	-0.036	6023	6023	6025	6023	6024	6023.6
120	31.1	-0.019	6023	6024	6026	6023	6024	6024
130	31.1	-0.02	6023	6024	6026	6023	6024	6024
140	31.1	-0.017	6023	6023	6026	6023	6024	6023.8
150	31.1	-0.007	6023	6024	6026	6024	6024	6024.2
160	30.1	-0.033	6023	6024	6026	6024	6024	6024.2
170	36.1	-0.04	6023	6024	6026	6024	6025	6024.4
180	32.1	-0.029	6021	6021	6023	6021	6022	6021.6
190	32.1	-0.014	6020	6020	6023	6020	6021	6020.8
200	31.1	-0.017	6019	6019	6022	6019	6020	6019.8
210	31.1	-0.013	6020	6021	6023	6021	6022	6021.4
220	31.1	-0.002	6021	6021	6023	6021	6022	6021.6
230	26.1	-0.033	6021	6022	6024	6022	6022	6022.2
240	21.1	-0.033	6021	6022	6024	6022	6023	6022.4
250	20.1	-0.021	6022	6023	6025	6022	6023	6023
260	20.1	-0.019	6022	6023	6025	6022	6023	6023
270	20.1	-0.003	6022	6022	6025	6022	6023	6022.8
280	20.1	-0.011	6022	6023	6025	6023	6024	6023.4
290	28	-0.033	6023	6024	6026	6024	6024	6024.2
300	20.1	-0.016	6023	6024	6026	6024	6025	6024.4
310	20.1	-0.015	6024	6024	6026	6024	6025	6024.6

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Tunnel Velocity:	13.66755	ft/sec.
Intial Tunnel Flow:	656.6552	scfm
Average Tunnel Flow:	614.4654	scfm

Notes:

			1	2	3	4	5	
			TEMPERATURES					
ET	SCALE READING	FLUE DRAFT	LEFT SIDE	RIGHT SIDE	BACK	TOP	BOTTOM	STOVE AVG T
320	20.1	-0.013	6022	6022	6024	6022	6023	6022.6
330	20.1	-0.015	6022	6023	6025	6022	6023	6023
340	20.1	-0.011	6021	6021	6023	6021	6022	6021.6
350	16.5	-0.037	6020	6021	6023	6020	6021	6021
360	46.1	-0.02	6021	6021	6023	6021	6022	6021.6
370	45.1	-0.013	6019	6020	6022	6020	6021	6020.4
380	45.1	-0.013	6019	6020	6022	6020	6020	6020.2
390	45.1	-0.007	6019	6019	6021	6019	6020	6019.6
400	45.1	-0.023	6019	6020	6022	6020	6021	6020.4
410	38.5	-0.035	6020	6021	6023	6021	6021	6021.2
420	34.1	-0.021	6021	6022	6024	6022	6022	6022.2
430	34.1	-0.021	6022	6023	6025	6023	6023	6023.2
440	34.1	-0.013	6022	6022	6025	6022	6023	6022.8
450	34.1	-0.01	6022	6022	6024	6022	6023	6022.6
460	35.1	-0.017	6022	6023	6025	6023	6023	6023.2
470	25.1	-0.033	6020	6021	6023	6021	6021	6021.2
480	20.1	-0.028	6023	6023	6025	6023	6024	6023.6
490	19.1	-0.014	6024	6024	6026	6024	6025	6024.6
500	20.1	-0.012	6024	6025	6027	6025	6025	
510	20	-0.013	6024	6025	6027	6025	6026	
520	20.1	-0.002	6024	6025	6027	6025	6026	

Run #	Epa#6
Date:	4/3/14

Dilution Tunnel MW(dry):	29.00	lb/lb-mole
Dilution Tunnel MW(wet):	28.78	lb/lb-mole
Dilution Tunnel H2O:	2.00	%
Dilution Tunnel Static:	-0.400	In H20
Tunnel Area:	0.7854	ft^2
Pitot Tube Cp:	0.99	

Dilution Tunnel Traverse Data													
	Pt.1	Pt.2	Pt.3	Pt.4	Pt.5	Pt.6	Pt.7	Pt.8	Pt.9	Pt.10	Pt.11	Pt.12	
dP	0.042	0.042	0.044	0.048	0.050	0.050	0.042	0.048	0.052	0.052	0.048	0.047	0.047
Temperature	80	80	80	80	80	80	80	80	80	80	80	80	80.000

Tunnel Velocity:	13.668	ft/sec.
Intial Tunnel Flow:	656.66	scfm
Average Tunnel Flow	614.47	scfm

JOB #	004-hhw-023-1							ROOM TEMP (F)		72.0			BEG	MID	END	AVG		
TECHNICIA	Btn								BAROMETRIC				29.99	29.99	29.99	29.99		
DATE:	4/3/2014																	
RUN #:	Epa#6																	
READING INTERVAL:	10																	
SAMPLE BOX :	A	METER Y FACTOR:	0.995							PROBE MATERIAL:			SS					
FRONT FILTER #:					REAR FILTER #	REAR FILTER #:												
FINAL LEAK RATE (CFM):		@		IN-HG		FINAL LEAK RATE (CFM)				@		IN-HG						
Run Time:		560		AMBIENT FILTER #:				VOLUME		LITERS	FUEL MOISTURE DB			21.4	%			
				FINAL LEAK RATE (CFM):				@		IN-HG								
TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		
0		0.000	0.042	0.07	-0.16		NA	104.1	0	88	277	70	6027	6026	75	70		
10	1.240	0.124	0.042	1.98	-0.13	13.850	92	92.4	11.7	94	307	74	6026	6024	77	68		
20	2.628	0.139	0.037	2	-0.7	13.105	109	84.1	8.3	103	352	73	6021	6019	81	67		
30	4.019	0.139	0.041	1.97	0	13.523	101	83.1	1	81	238	69	6025	6023	84	69		
40	5.419	0.140	0.041	1.98	-1.98	13.498	101	83.1	0	79	199	70	6026	6025	87	71		
50	6.820	0.140	0.041	1.97	0	13.485	101	83.1	0	78	177	72	6027	6025	90	71		
60	8.234	0.141	0.043	1.98	-1.4	13.823	99	83.1	0	79	162	72	6028	6026	93	72		
70	9.650	0.142	0.042	1.99	-1.99	13.863	101	81.1	2	95	301	75	6028	6027	95	72		
80	11.061	0.141	0.042	1.98	0	14.024	102	70.5	10.6	108	371	79	6029	6027	97	73		
90	12.480	0.142	0.041	1.98	-0.27	13.510	101	68	2.5	80	256	75	6029	6028	99	73		
100	13.902	0.142	0.038	1.99	0	12.995	104	68.1	-0.1	79	210	74	6030	6028	100	73		
110	15.327	0.143	0.04	1.98	-0.25	13.320	102	67.1	1	78	185	74	6030	6028	101	72		
120	16.756	0.143	0.044	1.98	-1.74	13.957	97	67.1	0	77	167	74	6030	6028	102	72		
130	18.179	0.142	0.045	1.99	-2.02	14.128	95	68.1	-1	78	156	73	6030	6028	103	72		
140	19.608	0.143	0.043	1.99	0	14.065	100	62.5	5.6	98	324	77	6030	6028	104	73		
150	21.028	0.142	0.043	1.97	0	14.178	100	53.1	9.4	107	372	78	6030	6028	104	73		
160	22.464	0.144	0.044	2	-1.68	13.983	97	52.1	1	79	243	75	6030	6029	104	73		
170	23.903	0.144	0.044	2.01	-0.1	13.970	97	51.8	0.3	78	203	74	6031	6029	105	73		
180	25.338	0.144	0.043	2	0	13.810	98	51.1	0.7	78	180	74	6031	6029	105	73		
190	26.777	0.144	0.04	2.01	-0.52	13.307	102	51.1	0	77	165	74	6030	6029	105	72		
200	28.217	0.144	0.04	2.01	-1.38	13.406	103	51.1	0	85	168	76	6031	6029	105	73		
210	29.652	0.143	0.041	2.01	-1.37	13.684	102	47.8	3.3	94	298	76	6031	6029	106	72		
220	31.083	0.143	0.043	2.01	0	14.102	100	38.5	9.3	101	343	78	6031	6029	106	73		
230	32.522	0.144	0.043	2.01	-2.07	13.810	98	35.1	3.4	78	241	75	6031	6029	106	73		
240	33.960	0.144	0.038	2	-0.78	12.970	104	35.1	0	77	201	74	6031	6029	106	72		
250	35.396	0.144	0.044	1.99	-1.26	13.957	97	35.7	-0.6	77	178	73	6031	6029	106	72		
260	36.835	0.144	0.041	2.01	-2.17	13.473	100	36	-0.3	77	164	74	6031	6029	106	72		
270	38.277	0.144	0.04	2.01	-1.96	13.295	102	35.2	0.8	76	153	73	6030	6029	106	72		
280	39.712	0.143	0.042	2	-1.98	13.863	101	32.1	3.1	95	307	76	6031	6029	106	73		
290	41.148	0.144	0.042	1.99	-0.04	13.913	101	25.1	7	99	344	77	6030	6029	106	72		
300	42.588	0.144	0.039	2	-1.68	13.140	103	24.1	1	77	229	74	6030	6029	106	72		
310	44.022	0.143	0.04	2.01	-2.13	13.320	101	24.1	0	78	193	74	6031	6029	106	72		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		
320	45.459	0.144	0.044	2	-2.11	13.957	97	24.1	0	77	172	74	6030	6029	106	72		
330	46.900	0.144	0.042	2	-1.22	13.623	99	24.1	0	76	158	73	6030	6029	106	72		
340	48.340	0.144	0.04	2	-1.37	13.295	102	24.1	0	76	148	73	6030	6028	106	72		
350	49.773	0.143	0.042	1.99	-0.04	13.825	100	21.1	3	92	301	75	6030	6028	106	71		
360	51.207	0.143	0.04	2	-1.04	13.431	102	16.1	5	87	314	75	6030	6028	106	72		
370	52.649	0.144	0.043	2.01	-0.38	13.797	98	16	0.1	77	222	74	6030	6028	106	72		
380	54.084	0.144	0.038	2.01	-1.88	12.970	104	15.1	0.9	77	189	73	6030	6028	106	71		
390	55.522	0.144	0.041	2.01	-1.94	13.460	100	16.1	-1	76	169	73	6030	6029	106	72		
400	56.962	0.144	0.043	2	-1.34	13.785	98	15.1	1	76	156	73	6030	6028	106	71		
410	58.396	0.143	0.037	2.01	-0.17	12.787	105	15.1	0	76	146	73	6030	6029	106	72		
420	59.831	0.143	0.039	2.02	0	13.334	104	13	2.1	93	309	75	6030	6028	106	71		
430	61.268	0.144	0.04	2	0	13.357	102	9.1	3.9	81	288	75	6030	6029	106	72		
440	62.704	0.144	0.045	2	-1.97	14.101	96	9.1	0	76	212	74	6030	6028	106	71		
450	64.138	0.143	0.045	2.01	-2.12	14.115	96	9.1	0	77	182	73	6030	6029	106	72		
460	65.578	0.144	0.041	2	-1.86	13.460	100	9.1	0	76	164	73	6030	6028	106	72		
470	67.015	0.144	0.042	1.99	-1.49	13.623	99	9.1	0	76	151	73	6030	6028	106	71		
480	68.449	0.143	0.039	2.02	0	13.213	103	8.6	0.5	83	200	74	6030	6028	106	72		
490	69.885	0.144	0.04	2.01	-2.09	13.468	103	6.1	2.5	90	282	75	6030	6028	106	72		
500	71.320	0.144	0.043	2	-0.4	14.014	99	2.9	3.2	94	293	76	6030	6029	106	72		
510	72.753	0.143	0.042	2	0	13.636	99	1	1.9	77	216	74	6030	6029	106	72		
520	74.188	0.144	0.042	2	-0.11	13.623	99	1.2	-0.2	76	183	74	6030	6029	106	72		
530	75.626	0.144	0.042	2.01	-2.15	13.649	99	2.1	-0.9	78	164	73	6030	6028	106	73		
540	77.060	0.143	0.04	1.98	0	13.320	101	2.1	0	78	151	74	6031	6029	106	72		
550	78.496	0.144	0.042	1.99	-2.12	13.623	99	2.1	0	76	140	73	6030	6028	106	72		
560	79.933	0.144	0.039	1.99	-1.79	13.274	104	0	2.1	88	236	75	6030	6029	106	72		
																67		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		

TEST START TIME:										1	2	3	4	5	6			
										TEMPERATURES								
	GAS METER	SAMPLE	TUNNEL	ORIFICE	FILTER	TUNNEL VEL	Proportional	Scale	Weight	TUNNEL	FLUE	FILTER	FB REAR	FB	METER	AMBIENT		
ET	VOLUME	RATE(FT3/MIN)	DELTA P	DELTA H	VAC	FT/SEC	Rate (%)	Weight	Chg	TEMP	TEMP	TEMP	TEMP	INT	TEMP	TEMP		
	79.933		0.041	2.00		13.608	100.4			83	225				102	72		

JOB #	004_HHW_023_1												
TECHNICIAN	Btn												
DATE:	4_3_14												
RUN #:	EPA#6												
READING INTERVAL:	10												
SAMPLE BOX :	B	METER Y FACTOR:	0.974			PROBE MATERIAL:	SS						
FRONT FILTER #:					REAR FILTER #:								
FINAL LEAK RATE (CFM):		@		IN-HG	FINAL LEAK RATE (CFM):		@		IN-HG				

Run Time: 560 Firebox Delta T #N/A

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
0	0	0	NA	0	0	-1	6025	6025	71	6025	6026	74	
10	1.392	0.139	102	-0.03	2	-1.63	6023	6024	74	6024	6025	75	
20	2.873	0.148	116	-0.04	2.02	-2.24	6018	6019	72	6019	6020	76	
30	4.298	0.143	103	-0.02	2	-1.3	6022	6023	69	6023	6023	79	
40	5.706	0.141	101	-0.01	2.02	-1.91	6024	6024	71	6024	6025	84	
50	7.120	0.141	101	-0.01	2	-1.36	6024	6025	72	6025	6026	88	
60	8.542	0.142	98	-0.01	2.01	-1.08	6025	6026	73	6026	6026	91	
70	9.964	0.142	101	-0.03	2.06	-1.79	6026	6026	75	6026	6027	93	
80	11.396	0.143	102	-0.05	2.03	-2.06	6026	6027	79	6027	6027	95	
90	12.834	0.144	101	-0.03	2.04	-1.08	6027	6027	75	6027	6028	97	
100	14.274	0.144	105	-0.02	2.04	-1.57	6027	6028	75	6027	6028	98	
110	15.716	0.144	102	-0.01	2.03	-1.49	6027	6028	74	6028	6028	99	
120	17.159	0.144	97	-0.01	2.04	-2.12	6027	6028	74	6028	6028	100	
130	18.603	0.144	96	-0.01	2.04	-2.09	6027	6028	74	6028	6028	101	
140	20.048	0.144	100	-0.03	2.06	-1.03	6027	6028	76	6028	6028	101	
150	21.486	0.144	100	-0.04	2.04	-2.17	6027	6028	79	6028	6029	102	
160	22.936	0.145	97	-0.02	2.03	-2.19	6028	6028	75	6028	6029	102	
170	24.379	0.144	97	-0.02	2.03	-1.28	6028	6028	75	6028	6029	103	
180	25.827	0.145	98	-0.02	2.03	-2.17	6028	6029	74	6028	6029	103	
190	27.271	0.144	101	-0.01	2.03	-1.66	6028	6028	74	6028	6029	103	
200	28.719	0.145	102	-0.03	2.04	-2.05	6028	6029	75	6028	6029	104	
210	30.163	0.144	101	-0.04	2.04	-2.2	6028	6029	76	6029	6029	103	
220	31.608	0.144	100	-0.04	2.02	-1.41	6028	6029	78	6029	6029	104	
230	33.051	0.144	97	-0.03	2.03	-2.03	6028	6029	76	6029	6029	104	
240	34.498	0.145	104	-0.02	2.03	-1.79	6028	6029	75	6029	6029	104	
250	35.945	0.145	96	-0.02	2.03	-1.91	6028	6029	74	6028	6029	104	
260	37.391	0.145	100	-0.01	2.04	-1.78	6028	6029	74	6029	6029	104	
270	38.841	0.145	101	-0.01	2.02	-1.56	6028	6028	74	6028	6029	104	
280	40.285	0.144	100	-0.03	2.03	-0.9	6028	6029	75	6028	6029	104	
290	41.730	0.145	101	-0.04	2.03	-1.3	6028	6028	77	6028	6029	104	
300	43.174	0.144	102	-0.03	2.04	-0.79	6028	6028	74	6028	6029	104	
310	44.623	0.145	101	-0.02	2.05	-1.34	6028	6029	74	6028	6029	104	
320	46.067	0.144	96	-0.01	2.04	-1.47	6028	6028	74	6028	6029	104	
330	47.516	0.145	99	-0.01	2.03	-0.95	6027	6028	73	6028	6029	104	
340	48.960	0.144	101	-0.01	2.04	-1.36	6027	6028	73	6028	6029	104	
350	50.407	0.145	100	-0.03	2.03	-1.96	6027	6028	75	6028	6029	104	
360	51.848	0.144	102	-0.03	2.03	-1.36	6027	6028	75	6028	6029	104	
370	53.298	0.145	98	-0.02	2.02	-2.01	6027	6028	74	6028	6028	104	

							1	2	3	4	5	6											
							TEMPERATURES																
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T										
380	54.742	0.144	104	-0.01	2.03	-2.18	6027	6028	74	6028	6029	104											
390	56.191	0.145	100	-0.02	2.05	-1.96	6028	6028	73	6028	6029	104											
400	57.635	0.144	97	-0.01	2.03	-0.9	6027	6028	73	6028	6029	104											
410	59.083	0.145	105	-0.01	2.05	-2.21	6028	6028	73	6028	6029	104											
420	60.527	0.144	104	-0.03	2.02	-1.8	6027	6028	75	6028	6029	104											
430	61.971	0.144	101	-0.02	2.03	-1.05	6028	6028	75	6028	6029	104											
440	63.418	0.145	95	-0.02	2.04	-1.65	6027	6028	74	6028	6029	104											
450	64.864	0.145	95	-0.01	2.05	-2.14	6028	6028	73	6028	6029	104											
460	66.310	0.145	100	-0.01	2.02	-1.08	6027	6028	73	6028	6029	104											
470	67.755	0.144	99	-0.01	2.02	-2.27	6027	6028	73	6028	6029	104											
480	69.204	0.145	103	-0.02	2.04	-2.27	6027	6028	73	6028	6029	104											
490	70.646	0.144	102	-0.03	2.03	-1.24	6027	6028	74	6028	6028	104											
500	72.094	0.145	99	-0.03	2.04	-1.13	6027	6028	76	6028	6029	104											
510	73.536	0.144	98	-0.02	2.02	-2	6027	6028	74	6028	6029	104											
520	74.984	0.145	99	-0.01	2.04	-1.34	6027	6028	74	6028	6029	104											
530	76.428	0.144	99	-0.01	2.03	-1.46	6027	6028	74	6028	6029	104											
540	77.875	0.145	101	-0.01	2.04	-1.37	6028	6029	74	6028	6029	104											
550	79.319	0.144	98	-0.01	2.03	-2.26	6027	6028	74	6028	6029	104											
560	80.766	0.145	104	-0.02	2.05	-0.87	6028	6028	75	6028	6029	104											

							1	2	3	4	5	6										
							TEMPERATURES															
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T									

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T

							1	2	3	4	5	6	
							TEMPERATURES						
ET	GAS METER VOLUME	SAMPLE RATE(FT3/MIN)	PROPORTIONAL RATE	FLUE DRAFT	ORIFICE DELTA H	FILTER VAC	LEFT SIDE	RIGHT SIDE	FILTER	FB REAR	FB BOT	METER	STOVE AVG T
	80.76556	0.144	100.407	-0.020	2.032143	-1.624035	6027	6028	74	6027	6028	100	#N/A
	TOTAL	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	AVG	**DT**

#N/A

# Reading		
562		
	T avg BEGIN	169.5
	T avg END	170.31
	APPL WT + WATER	4630
	APPL WEIGHT	2353
	WATER WEIGHT	2277
	APPL DELTA Tavg	0.81
	Cp	1.001192392
	Cpa	1.000813828
562	TOTAL MINUTES	560

TOTAL BTU	413197
TOTAL BTU WITH WATER	1846
TOTAL BTU WITH H20 AND STEEL	191
BTU/HR	44489

ET	APPL GPM	APPL Tin	APPL Tout	LOAD GPM	LOAD Tin	LOAD Tout	T PILE	LD BTU/HR	Appl Dry	Appl + Water	density	dT	cp	Mi	MINUTES	T avg	BTU	BTU/HR
0	13.412	165	174	0.77	59	172	115	44319	2353	4630	8.332608	113	1.001194	6.39111	1	169.5	735.8555	44151.33
1	13.448	165.05	174.55	0.78	59	172.21	114.856	45094.891	2353	4630	8.332608	113.21	1.001194	6.491102	1	169.8	746.4325	44785.95
2	13.439	165.57	174.93	0.78	58.99	172.57	115.432	45259.274	2353	4630	8.332618	113.58	1.001195	6.49111	1	170.25	750.1772	45010.63
3	13.447	165.85	175.09	0.78	58.81	172.71	115.588	45196.578	2353	4630	8.332803	113.9	1.001195	6.499586	1	170.47	752.1721	45130.33
4	13.384	165.81	175.45	0.79	58.77	172.8	115.751	45643.12	2353	4630	8.332844	114.03	1.001195	6.557948	1	170.63	759.996	45599.76
5	13.408	166.13	175.5	0.78	58.89	173.03	115.95	45674.382	2353	4630	8.332721	114.14	1.001195	6.516188	1	170.815	756.4549	45387.29
6	13.293	166.44	175.55	0.79	58.81	173.26	116.348	45608.524	2353	4630	8.332803	114.45	1.001195	6.566249	1	170.995	764.8829	45892.97
7	13.346	166.43	176.2	0.78	58.8	173.61	116.646	45773.14	2353	4630	8.332813	114.81	1.001195	6.507927	1	171.315	760.0309	45601.85
8	13.357	166.71	176.47	0.78	58.81	174.05	117.008	45865.674	2353	4630	8.332803	115.24	1.001194	6.474588	1	171.59	758.4828	45508.97
9	13.524	167.34	176.97	0.78	59.25	175.17	117.506	45969.618	2353	4630	8.332351	115.92	1.001192	6.532563	1	172.155	768.5303	46111.82
10	13.434	168.14	177.9	0.78	59.71	176.55	118.116	46303.627	2353	4630	8.331874	116.84	1.001191	6.532189	1	173.02	772.4752	46348.51
11	13.342	168.81	178.97	0.78	59.91	177.52	118.649	45770.825	2353	4630	8.331666	117.61	1.00119	6.457041	1	173.89	767.0334	46022.01
12	13.468	169.25	179.81	0.78	60.15	178.22	119.409	46944.903	2353	4630	8.331415	118.07	1.001191	6.515167	1	174.53	778.8959	46733.76
13	13.438	169.93	180.36	0.78	60.03	178.6	120.133	47190.021	2353	4630	8.331541	118.57	1.001191	6.515265	1	175.145	783.6308	47017.85
14	13.423	170.56	181.25	0.78	59.86	178.99	120.765	47345.774	2353	4630	8.331718	119.13	1.001192	6.515403	1	175.905	787.7703	47266.22
15	13.532	171.21	181.64	0.78	59.78	179.7	121.547	47673.224	2353	4630	8.331801	119.92	1.001192	6.532132	1	176.425	794.9073	47694.44
16	13.472	171.37	182.19	0.78	59.73	180.26	122.342	48127.945	2353	4630	8.331853	120.53	1.001192	6.532173	1	176.78	800.1114	48006.68
17	13.413	172.49	183.05	0.79	59.8	180.98	123.138	48373.884	2353	4630	8.33178	121.18	1.001193	6.548779	1	177.77	807.3653	48441.92
18	13.455	172.94	183.76	0.78	59.51	181.15	123.89	48613.327	2353	4630	8.332082	121.64	1.001194	6.474027	1	178.35	803.0246	48181.48
19	13.39	173.39	183.94	0.78	59.23	181.26	124.537	48872.897	2353	4630	8.332371	122.03	1.001194	6.515914	1	178.665	812.4409	48746.46
20	13.292	174.25	184.81	0.78	59.24	181.75	125.183	49154.384	2353	4630	8.332361	122.51	1.001194	6.524239	1	179.53	817.6991	49061.94
21	13.448	174.79	185.48	0.79	59.06	182.24	126.028	49495.032	2353	4630	8.332546	123.18	1.001195	6.574379	1	180.135	829.5456	49772.74
22	13.341	175.47	186.3	0.79	58.95	182.87	126.724	49741.749	2353	4630	8.332659	123.92	1.001194	6.566136	1	180.885	833.0805	49984.83
23	13.444	175.75	186.31	0.78	59.1	183.07	127.101	49924.579	2353	4630	8.332505	123.97	1.001195	6.507686	1	181.03	828.1216	49687.3
24	13.438	175.83	186.52	0.79	58.91	183.2	127.122	49914.431	2353	4630	8.3327	124.29	1.001195	6.557835	1	181.175	834.6411	50078.47
25	13.451	175.67	186.1	0.78	58.89	183.18	126.944	49516.131	2353	4630	8.332721	124.29	1.001195	6.474524	1	180.885	822.8838	49373.03
26	13.496	175.72	186.02	0.78	58.94	182.86	126.831	49575.05	2353	4630	8.33267	123.92	1.001194	6.516148	1	180.87	827.4366	49646.2
27	13.478	175.71	185.61	0.78	59	182.85	126.632	49280.593	2353	4630	8.332608	123.85	1.001195	6.507767	1	180.66	825.0761	49504.56
28	13.471	175.29	185.45	0.78	58.91	182.59	126.334	49631.168	2353	4630	8.3327	123.68	1.001194	6.499506	1	180.37	822.0892	49325.35
29	13.398	175.24	185.14	0.78	59.06	182.37	126.071	49266.782	2353	4630	8.332546	123.31	1.001195	6.516051	1	180.19	822.4665	49347.99
30	13.409	174.65	185.07	0.79	58.93	182.19	125.865	49376.461	2353	4630	8.33268	123.26	1.001195	6.541154	1	179.86	824.2858	49457.15
31	13.504	174.51	184.68	0.79	58.94	181.83	125.602	49460.914	2353	4630	8.33267	122.89	1.001195	6.549478	1	179.595	823.6106	49416.63
32	13.374	174.22	184.25	0.78	58.84	181.51	125.325	49192.779	2353	4630	8.332772	122.67	1.001195	6.507895	1	179.235	816.5763	48994.58
33	13.427	174.16	183.92	0.78	58.91	181.27	125.027	49253.419	2353	4630	8.3327	122.36	1.001194	6.516172	1	179.04	815.6703	48940.22
34	13.489	173.52	183.68	0.78	59.07	181.17	124.693	48973.412	2353	4630	8.332536	122.1	1.001194	6.499378	1	178.6	811.3948	48683.69
35	13.335	173.49	183.52	0.79	59.04	180.9	124.451	48700.454	2353	4630	8.332567	121.86	1.001194	6.541065	1	178.505	815.014	48900.84
36	13.459	173.31	183.21	0.77	59.13	180.81	124.16	48743.16	2353	4630	8.332474	121.68	1.001194	6.449335	1	178.26	801.7058	48102.35
37	13.382	173.25	182.89	0.78	59.01	180.51	123.94	48613.474	2353	4630	8.332598	121.5	1.001194	6.524424	1	178.07	809.6025	48576.15
38	13.392	173.14	182.78	0.78	59.16	180.23	123.663	48316.425	2353	4630	8.332443	121.07	1.001194	6.507638	1	177.96	805.7153	48342.92
39	13.388	172.63	182.27	0.79	58.98	180.01	123.407	48526.916	2353	4630	8.332629	121.03	1.001194	6.549446	1	177.45	809.2124	48552.75
40	13.405	172.46	182.36	0.78	59.14	179.85	123.102	48339.76	2353	4630	8.332464	120.71	1.001194	6.524319	1	177.41	804.1155	48246.93

41	13.442	172.04	181.8	0.79	59.18	179.52	122.832	48369.6	2353	4630		8.332423	120.34	1.001194	6.549284	1	176.92	805.422	48325.32
42	13.412	171.99	181.62	0.78	59.2	179.3	122.548	48130.234	2353	4630		8.332402	120.1	1.001194	6.515938	1	176.805	799.4685	47968.11
43	13.226	171.89	181.27	0.78	59.17	179.09	122.264	47968.436	2353	4630		8.332433	119.92	1.001194	6.515963	1	176.58	797.6185	47857.11
44	13.308	171.55	180.92	0.79	59.23	179.02	121.923	47821.465	2353	4630		8.332371	119.79	1.001193	6.557576	1	176.235	800.4734	48028.41
45	13.429	171.16	180.67	0.78	59.3	178.85	121.66	47666.878	2353	4630		8.332299	119.55	1.001193	6.482529	1	175.915	789.605	47376.3
46	13.35	170.89	180.52	0.79	59.49	178.54	121.319	47631.213	2353	4630		8.332102	119.05	1.001193	6.557365	1	175.705	796.4821	47788.93
47	13.356	170.94	180.44	0.78	59.34	178.1	121.028	47429.034	2353	4630		8.332258	118.76	1.001193	6.53249	1	175.69	791.5574	47493.44
48	13.371	170.66	179.9	0.79	59.39	177.78	120.659	47322.783	2353	4630		8.332206	118.39	1.001193	6.590775	1	175.28	796.1848	47771.09
49	13.378	170.19	179.82	0.79	59.46	177.6	120.375	47349.766	2353	4630		8.332133	118.14	1.001193	6.607382	1	175.005	796.3127	47778.76
50	13.374	170.12	179.49	0.78	59.32	177.35	120.091	47049.096	2353	4630		8.332278	118.03	1.001193	6.507509	1	174.805	782.4256	46945.54
51	13.392	169.73	179.24	0.78	59.4	177.06	119.764	46832.812	2353	4630		8.332196	117.66	1.001193	6.499113	1	174.485	779.2879	46757.28
52	13.391	169.14	178.77	0.79	59.53	176.87	119.423	46787.209	2353	4630		8.332061	117.34	1.001193	6.565664	1	173.955	785.0266	47101.6
53	13.395	169.32	178.82	0.78	59.44	176.68	119.111	46655.359	2353	4630		8.332154	117.24	1.001193	6.49908	1	174.07	775.0353	46502.12
54	13.423	169.13	178.23	0.78	59.45	176.26	118.834	46631.723	2353	4630		8.332144	116.81	1.001192	6.524069	1	173.68	776.2056	46572.34
55	13.487	168.83	178.07	0.78	59.56	176.05	118.443	46398.123	2353	4630		8.33203	116.49	1.001193	6.498983	1	173.45	770.6773	46240.64
56	13.438	168.46	178.09	0.79	59.45	175.65	118.202	46354.221	2353	4630		8.332144	116.2	1.001193	6.540733	1	173.275	774.05	46443
57	13.514	168.11	177.48	0.78	59.43	175.28	117.889	46299.491	2353	4630		8.332165	115.85	1.001193	6.524085	1	172.795	770.0356	46202.13
58	13.538	167.88	177.38	0.78	59.33	175.18	117.648	46184.354	2353	4630		8.332268	115.85	1.001192	6.524166	1	172.63	768.4702	46108.21
59	13.426	167.76	176.86	0.78	59.61	174.89	117.25	46044.317	2353	4630		8.331978	115.28	1.001193	6.523939	1	172.31	765.8441	45950.64
60	13.413	167.93	176.77	0.74	59.52	174.75	116.966	43380.429	2353	4630		8.332071	115.23	1.001193	6.174065	1	172.35	723.0172	43381.03
61	13.41	167.57	176.54	0.74	59.41	174.47	116.696	43280.016	2353	4630		8.332185	115.06	1.001192	6.190814	1	172.055	723.3045	43398.27
62	13.468	167.42	176.13	0.74	59.6	174.15	116.327	43149.513	2353	4630		8.331988	114.55	1.001192	6.190667	1	171.775	721.0005	43260.03
63	13.411	167.23	175.81	0.74	59.55	173.93	115.986	42941.346	2353	4630		8.33204	114.38	1.001192	6.16571	1	171.52	715.9886	42959.32
64	13.432	166.84	175.42	0.74	59.61	173.5	115.751	42974.967	2353	4630		8.331978	113.89	1.001192	6.182328	1	171.13	716.4638	42987.83
65	13.413	166.58	175.43	0.76	59.62	173.33	115.432	42940.026	2353	4630		8.331968	113.71	1.001192	6.315631	1	171.005	729.8948	43793.69
66	13.292	166.45	175.29	0.75	59.76	173.21	115.155	42696.098	2353	4630		8.331822	113.45	1.001192	6.223871	1	170.87	717.5642	43053.85
67	13.325	166.04	174.88	0.73	59.67	172.76	114.771	42214.692	2353	4630		8.331916	113.09	1.001192	6.107294	1	170.46	701.7755	42106.53
68	13.226	165.95	174.92	0.74	59.78	172.56	114.558	42132.27	2353	4630		8.331801	112.78	1.001192	6.123874	1	170.435	702.3751	42142.51
69	13.352	165.59	174.3	0.74	59.62	172.3	114.338	42113.502	2353	4630		8.331968	112.68	1.001192	6.14066	1	169.945	702.9477	42176.86
70	13.243	166	174.58	0.74	59.7	172.19	114.317	42240.899	2353	4630		8.331884	112.49	1.001193	6.173926	1	170.29	706.6268	42397.61
71	13.363	165.95	174.66	0.73	59.39	172.45	114.615	42129.276	2353	4630		8.332206	113.06	1.001193	6.115839	1	170.305	701.8034	42108.21
72	13.441	166.19	175.42	0.74	59.29	172.6	114.998	42670.688	2353	4630		8.332309	113.31	1.001193	6.149244	1	170.805	707.9945	42479.67
73	13.413	166.92	175.89	0.74	59.37	173.22	115.709	42866.019	2353	4630		8.332227	113.85	1.001193	6.190844	1	171.405	717.1909	43031.45
74	13.388	167.31	176.42	0.74	59.43	173.94	116.355	43210.202	2353	4630		8.332165	114.51	1.001193	6.165802	1	171.865	718.2775	43096.65
75	13.324	168.09	177.19	0.74	59.48	174.53	116.98	43425.689	2353	4630		8.332113	115.05	1.001193	6.165763	1	172.64	722.1315	43327.89
76	13.403	168.85	178.09	0.74	59.38	175.47	118.01	43765.709	2353	4630		8.332216	116.09	1.001193	6.157508	1	173.47	727.5142	43650.85
77	13.468	169.34	178.58	0.74	59.48	176.23	118.763	44048.825	2353	4630		8.332113	116.75	1.001193	6.165763	1	173.96	733.1379	43988.28
78	13.292	170.14	179.51	0.74	59.48	177.02	119.586	44194.821	2353	4630		8.332113	117.54	1.001192	6.157431	1	174.825	737.2206	44233.23
79	13.443	171.29	180.39	0.73	59.58	177.95	120.638	44540.783	2353	4630		8.332009	118.37	1.001192	6.115695	1	175.84	738.6649	44319.9
80	13.396	172.13	181.63	0.74	59.56	178.84	121.689	45201.258	2353	4630		8.33203	119.28	1.001193	6.124042	1	176.88	746.1173	44767.04
81	13.301	172.82	182.32	0.74	59.53	179.72	122.626	45596.507	2353	4630		8.332061	120.19	1.001193	6.182389	1	177.57	759.0259	45541.56
82	13.494	173.35	183.25	0.74	59.46	180.56	123.628	45815.976	2353	4630		8.332133	121.1	1.001193	6.165779	1	178.3	763.1722	45790.33
83	13.58	174.69	184.19	0.74	59.42	181.54	124.75	46358.484	2353	4630		8.332175	122.12	1.001193	6.174142	1	179.44	771.1429	46268.57
84	13.69	174.93	184.57	0.75	59.46	182.13	125.332	46563.734	2353	4630		8.332133	122.67	1.001193	6.207439	1	179.75	778.9188	46735.13
85	13.575	175.18	184.55	0.74	59.44	182.47	125.68	46736.859	2353	4630		8.332154	123.03	1.001193	6.140798	1	179.865	772.6963	46361.78
86	13.417	175.23	184.86	0.75	59.36	182.52	125.822	46825.358	2353	4630		8.332237	123.16	1.001193	6.215849	1	180.045	783.0239	46981.44
87	13.459	175.32	184.43	0.74	59.26	182.42	125.765	46544.792	2353	4630		8.33234	123.16	1.001193	6.165932	1	179.875	776.3836	46583.02
88	13.458	175.29	184.53	0.75	59.36	182.28	125.666	46567.693	2353	4630		8.332237	122.92	1.001194	6.207516	1	179.91	781.0049	46860.29
89	13.475	175.03	184.54	0.74	59.23	182.16	125.595	46614.306	2353	4630		8.332371	122.93	1.001194	6.165955	1	179.785	775.3378	46520.27
90	13.339	174.76	184.26	0.75	59.09	181.91	125.339	46497.496	2353	4630		8.332515	122.82	1.001194	6.232722	1	179.51	782.1356	46928.13
91	13.4	174.87	183.98	0.74	59.21	181.83	125.24	46245.958	2353	4630		8.332392	122.62	1.001194	6.157638	1	179.425	772.1033	46326.2
92	13.337	174.59	183.96	0.74	59.12	181.75	125.169	46392.482	2353	4630		8.332485	122.63	1.001194	6.132709	1	179.275	768.5414	46112.48
93	13.503	174.31	183.55	0.74	59.17	181.5	124.913	46427.712	2353	4630		8.332433	122.33	1.001194	6.174333	1	178.93	772.1753	46330.52
94	13.433	174.27	183.51	0.74	59.13	181.28	124.707	46270.798	2353	4630		8.332474	122.15	1.001194	6.199361	1	178.89	774.0266	46441.6

95	13.408	174.1	183.07	0.74	59.16	181.25	124.494	46156.776	2353	4630		8.332443	122.09	1.001194	6.157676	1	178.585	767.5087	46050.52
96	13.438	174.57	183.14	0.69	59.23	181.01	124.388	43257.071	2353	4630		8.332371	121.78	1.001194	5.782666	1	178.855	720.153	43209.18
97	13.467	173.88	183.12	0.73	59.14	180.81	124.111	45382.272	2353	4630		8.332464	121.67	1.001194	6.057701	1	178.5	752.725	45163.5
98	13.417	173.4	182.64	0.73	59.12	180.55	123.826	45308.429	2353	4630		8.332485	121.43	1.001194	6.107711	1	178.02	757.1965	45431.79
99	13.49	173.65	182.49	0.73	59.11	180.3	123.684	45209.328	2353	4630		8.332495	121.19	1.001194	6.082721	1	178.07	753.2335	45194.01
100	13.438	173.49	182.34	0.73	59.15	180.22	123.478	45087.106	2353	4630		8.332454	121.07	1.001195	6.057694	1	177.915	748.8854	44933.12
101	13.499	173.24	182.22	0.73	58.96	180.05	123.23	44962.953	2353	4630		8.332649	121.09	1.001193	6.049503	1	177.73	746.3697	44782.18
102	13.398	172.79	182.16	0.73	59.38	179.94	122.932	44929.819	2353	4630		8.332216	120.56	1.001193	6.099182	1	177.475	750.6793	45040.76
103	13.371	172.58	181.82	0.73	59.36	179.74	122.662	44778.89	2353	4630		8.332237	120.38	1.001193	6.074201	1	177.2	745.9628	44757.77
104	13.377	172.76	181.6	0.72	59.27	179.42	122.434	44534.885	2353	4630		8.33233	120.15	1.001193	6.024275	1	177.18	738.4558	44307.35
105	13.43	172.22	181.46	0.72	59.47	179.24	122.179	44534.073	2353	4630		8.332123	119.77	1.001193	6.024125	1	176.84	736.8997	44213.98
106	13.473	172.22	181.19	0.73	59.39	178.99	121.788	44579.934	2353	4630		8.332206	119.6	1.001193	6.090843	1	176.705	742.6767	44560.6
107	13.448	171.66	180.9	0.73	59.3	178.66	121.561	44067.631	2353	4630		8.332299	119.36	1.001192	6.074246	1	176.28	739.2719	44356.31
108	13.423	171.65	180.62	0.73	59.56	178.59	121.27	44209.999	2353	4630		8.33203	119.03	1.001193	6.065718	1	176.135	736.4668	44188.01
109	13.437	171.62	180.46	0.73	59.52	178.32	121.057	44342.54	2353	4630		8.332071	118.8	1.001193	6.040752	1	176.04	732.1475	43928.85
110	13.468	171.18	180.02	0.73	59.48	178.04	120.709	44030.513	2353	4630		8.332113	118.56	1.001192	6.065778	1	175.6	733.0668	43984.01
111	13.37	171.3	179.88	0.73	59.67	177.97	120.417	43908.21	2353	4630		8.331916	118.3	1.001192	6.048971	1	175.59	729.267	43756.02
112	13.429	171.1	179.94	0.73	59.73	177.84	120.155	43877.006	2353	4630		8.331853	118.11	1.001192	6.040594	1	175.52	726.6728	43600.37
113	13.459	170.69	179.66	0.72	59.65	177.53	119.878	43707.871	2353	4630		8.331936	117.88	1.001192	6.032322	1	175.175	724.0047	43440.28
114	13.427	170.12	179.36	0.74	59.68	177.2	119.608	43751.271	2353	4630		8.331905	117.52	1.001192	6.190606	1	174.74	741.3286	44479.71
115	13.41	170.33	179.04	0.72	59.69	177.02	119.381	43538.586	2353	4630		8.331895	117.33	1.001192	6.032292	1	174.685	720.9995	43259.97
116	13.467	169.89	179.13	0.73	59.65	176.81	119.082	43328.279	2353	4630		8.331936	117.16	1.001192	6.048986	1	174.51	721.1839	43271.04
117	13.467	169.73	178.44	0.73	59.69	176.6	118.784	43235.716	2353	4630		8.331895	116.91	1.001192	6.082283	1	174.085	723.3391	43400.35
118	13.436	169.61	178.06	0.73	59.7	176.36	118.564	43051.098	2353	4630		8.331884	116.66	1.001192	6.05728	1	173.835	719.0316	43141.9
119	13.435	169.32	177.9	0.73	59.61	176.1	118.258	43156.152	2353	4630		8.331978	116.49	1.001191	6.082344	1	173.61	720.1428	43208.57
120	13.457	169.04	177.75	0.73	59.86	175.96	117.981	43024.726	2353	4630		8.331718	116.1	1.001192	6.073822	1	173.395	717.4497	43046.98
121	13.465	168.67	177.38	0.73	59.75	175.68	117.712	42794.748	2353	4630		8.331832	115.93	1.001192	6.082238	1	173.025	716.8055	43008.33
122	13.434	168.51	177.49	0.73	59.79	175.3	117.427	42819.524	2353	4630		8.331791	115.51	1.001192	6.065544	1	173	713.1074	42786.44
123	13.458	168.49	177.07	0.73	59.77	175.16	117.214	42772.933	2353	4630		8.331812	115.39	1.001192	6.082223	1	172.78	713.7711	42826.27
124	13.459	168.2	176.78	0.73	59.81	174.83	116.916	42714.686	2353	4630		8.33177	115.02	1.001191	6.090524	1	172.49	712.928	42775.68
125	13.531	167.9	176.61	0.73	59.9	174.61	116.589	42447.64	2353	4630		8.331676	114.71	1.001191	6.082124	1	172.255	709.9536	42597.21
126	13.52	167.71	176.42	0.73	59.85	174.32	116.27	42446.276	2353	4630		8.331728	114.47	1.001191	6.098825	1	172.065	709.9553	42597.32
127	13.384	167.64	176.09	0.74	59.84	174.19	116.042	42358.963	2353	4630		8.331739	114.35	1.001191	6.123828	1	171.865	711.468	42688.08
128	13.478	167.17	175.88	0.72	59.83	173.94	115.801	42070.826	2353	4630		8.331749	114.11	1.001191	6.015523	1	171.525	697.4336	41846.01
129	13.456	167.17	175.88	0.73	59.83	173.76	115.51	42123.525	2353	4630		8.331749	113.93	1.001191	6.04885	1	171.525	699.5347	41972.08
130	13.416	166.83	175.28	0.73	60.03	173.51	115.197	41974.997	2353	4630		8.331541	113.48	1.001191	6.048698	1	171.055	697.6218	41857.31
131	13.351	166.51	175.09	0.72	59.97	173.34	114.92	41822.698	2353	4630		8.331603	113.37	1.001191	6.007086	1	170.8	691.1565	41469.39
132	13.528	166.25	174.69	0.73	59.97	172.97	114.587	41485.094	2353	4630		8.331603	113	1.001191	6.057076	1	170.47	694.8887	41693.32
133	13.357	166	174.71	0.73	59.99	172.69	114.302	41705.724	2353	4630		8.331582	112.7	1.001191	6.082055	1	170.355	696.019	41761.14
134	13.42	165.99	174.31	0.72	59.98	172.44	114.018	41526.275	2353	4630		8.331593	112.46	1.001191	6.007078	1	170.15	685.7307	41143.84
135	13.46	165.42	174	0.72	60	172.21	113.805	41371.117	2353	4630		8.331572	112.21	1.001191	6.023726	1	169.71	686.3468	41180.81
136	13.44	165.61	174.19	0.73	59.93	172.03	113.621	41327.147	2353	4630		8.331645	112.1	1.001191	6.040443	1	169.9	687.1384	41228.31
137	13.341	165.18	174.02	0.73	60.02	172.17	113.621	41536.668	2353	4630		8.331551	112.15	1.001192	6.048706	1	169.6	688.0789	41284.74
138	13.434	165.64	174.21	0.73	59.82	171.92	113.67	41339.382	2353	4630		8.33176	112.1	1.001191	6.048857	1	169.925	688.3926	41303.56
139	13.294	165.63	174.47	0.73	59.94	172.22	113.997	41571.7	2353	4630		8.331635	112.28	1.001191	6.098756	1	170.05	696.0681	41764.08
140	13.401	166.27	175.11	0.73	59.93	172.45	114.359	41573.769	2353	4630		8.331645	112.52	1.001191	6.048774	1	170.69	692.5558	41553.35
141	13.482	166.76	175.87	0.73	59.89	173.14	115.162	42038.973	2353	4630		8.331687	113.25	1.001192	6.098795	1	171.315	703.1864	42191.18
142	13.42	167.24	176.21	0.73	59.77	173.71	115.709	41707.393	2353	4630		8.331812	113.94	1.001192	6.048895	1	171.725	700.7457	42044.74
143	13.52	168.03	176.87	0.72	59.77	174.44	116.589	42490.647	2353	4630		8.331812	114.67	1.001192	6.032232	1	172.45	704.1298	42247.79
144	13.467	168.67	177.78	0.73	59.82	175.2	117.356	42631.986	2353	4630		8.33176	115.38	1.001191	6.048857	1	173.225	710.7155	42642.93
145	13.448	169.68	178.39	0.73	59.83	176	118.322	43033.779	2353	4630		8.331749	116.17	1.001191	6.073845	1	174.035	719.5258	43171.55
146	13.388	170.4	179.51	0.73	59.84	177.03	119.224	43411.835	2353	4630		8.331739	117.19	1.001191	6.057174	1	174.955	723.0206	43381.24
147	13.411	170.88	180.38	0.73	59.98	177.83	120.169	43687.728	2353	4630		8.331593	117.85	1.001191	6.073731	1	175.63	730.7437	43844.62
148	13.55	171.83	181.06	0.72	59.87	178.58	121.035	43924.223	2353	4630		8.331708	118.71	1.001191	6.032156	1	176.445	730.9719	43858.31

149	13.496	173.07	182.44	0.72	59.86	179.65	122.257	44566.784	2353	4630		8.331718	119.79	1.001191	6.032164	1	177.755	738.3529	44301.17
150	13.585	173.86	183.23	0.73	59.86	180.55	123.28	44983.399	2353	4630		8.331718	120.69	1.001192	6.090486	1	178.545	751.7298	45103.79
151	13.504	174.65	183.76	0.73	59.79	181.4	124.189	45185.471	2353	4630		8.331791	121.61	1.001192	6.04888	1	179.205	752.0996	45125.98
152	13.487	175.29	184.53	0.73	59.77	182.34	125.14	45723.907	2353	4630		8.331812	122.57	1.001192	6.048895	1	179.91	757.8607	45471.64
153	13.443	175.39	184.5	0.73	59.8	182.49	125.41	45560.646	2353	4630		8.33178	122.69	1.001192	6.048873	1	179.945	759.4934	45569.61
154	13.438	175.84	184.82	0.73	59.66	182.66	125.623	45695.893	2353	4630		8.331926	123	1.001192	6.05731	1	180.33	761.8447	45710.68
155	13.499	175.6	185.24	0.72	59.62	182.69	125.701	45747.828	2353	4630		8.331968	123.07	1.001192	6.032345	1	180.42	759.1758	45550.55
156	13.468	175.66	184.77	0.73	59.61	182.56	125.588	45783.392	2353	4630		8.331978	122.95	1.001193	6.040684	1	180.215	759.5423	45572.54
157	13.428	175.51	184.62	0.73	59.47	182.37	125.481	45720.291	2353	4630		8.332123	122.9	1.001192	6.057453	1	180.065	761.001	45660.06
158	13.542	175.33	184.44	0.73	59.82	182.32	125.353	45540.4	2353	4630		8.33176	122.5	1.001193	6.065521	1	179.885	761.2382	45674.29
159	13.466	175.3	184.28	0.73	59.45	182.24	125.261	45689.865	2353	4630		8.332144	122.79	1.001192	6.049136	1	179.79	758.6244	45517.47
160	13.336	175	184.25	0.72	59.55	182.03	124.977	45564.393	2353	4630		8.33204	122.48	1.001192	6.032397	1	179.625	754.8095	45288.57
161	13.475	174.82	183.93	0.73	59.7	182.04	124.849	45554.211	2353	4630		8.331884	122.34	1.001192	6.107271	1	179.375	763.3954	45803.73
162	13.505	174.47	183.85	0.73	59.75	181.78	124.693	45174.533	2353	4630		8.331832	122.03	1.001192	6.040579	1	179.16	754.1157	45246.94
163	13.498	174.67	183.52	0.72	59.68	181.78	124.551	45203.95	2353	4630		8.331905	122.1	1.001192	6.032299	1	179.095	752.2248	45133.49
164	13.473	174.24	183.48	0.72	59.58	181.39	124.253	45123.062	2353	4630		8.332009	121.81	1.001192	5.957386	1	178.86	741.1057	44466.34
165	13.721	174.21	183.19	0.73	59.62	181.12	124.004	45179.271	2353	4630		8.331968	121.5	1.001193	6.05734	1	178.7	752.0304	45121.82
166	13.514	174.17	183.15	0.73	59.45	180.85	123.819	45068.516	2353	4630		8.332144	121.4	1.001192	6.049136	1	178.66	749.8909	44993.46
167	13.495	173.83	182.94	0.73	59.64	180.72	123.613	45118.629	2353	4630		8.331947	121.08	1.001193	6.057325	1	178.385	749.6571	44979.43
168	13.488	173.53	182.63	0.73	59.53	180.62	123.422	44953.164	2353	4630		8.332061	121.09	1.001192	6.115733	1	178.08	755.7158	45342.95
169	13.493	173.37	182.35	0.73	59.64	180.54	123.244	44782.567	2353	4630		8.331947	120.9	1.001193	6.098985	1	177.86	752.5599	45153.59
170	13.502	173.2	182.04	0.73	59.46	180.32	123.067	44916.767	2353	4630		8.332133	120.86	1.001192	6.082457	1	177.62	749.4422	44966.53
171	13.495	172.89	182.13	0.73	59.62	180.16	122.889	44831.086	2353	4630		8.331968	120.54	1.001192	6.090668	1	177.51	749.3684	44962.11
172	13.453	173.04	181.62	0.72	59.64	179.93	122.655	44634.223	2353	4630		8.331947	120.29	1.001192	6.015666	1	177.33	738.7309	44323.86
173	13.442	172.72	182.09	0.72	59.71	179.81	122.47	44702.267	2353	4630		8.331874	120.1	1.001192	6.032277	1	177.405	739.6538	44379.23
174	13.486	172.4	181.51	0.73	59.59	179.53	122.221	44524.875	2353	4630		8.331999	119.94	1.001193	6.065695	1	176.955	742.2396	44534.37
175	13.485	172.21	181.19	0.73	59.47	179.36	121.966	44457.341	2353	4630		8.332123	119.89	1.001193	6.090782	1	176.7	743.7542	44625.25
176	13.476	172.01	180.99	0.73	59.53	178.93	121.774	44386.159	2353	4630		8.332061	119.4	1.001193	6.049076	1	176.5	737.4989	44249.93
177	13.443	171.99	180.84	0.73	59.45	178.8	121.447	44235.869	2353	4630		8.332144	119.35	1.001193	6.115794	1	176.415	743.6305	44617.83
178	13.528	171.81	180.65	0.72	59.53	178.69	121.206	43973.821	2353	4630		8.332061	119.16	1.001192	5.98242	1	176.23	725.9698	43558.19
179	13.456	171.8	180.24	0.73	59.58	178.5	120.957	44057.521	2353	4630		8.332009	118.92	1.001192	6.065703	1	176.02	734.5639	44073.83
180	13.449	171.38	180.22	0.728	59.63	178.17	120.595	43970.006	2353	4630		8.331957	118.54	1.001192	6.065665	1	175.8	732.3608	43941.65
181	13.484	171.04	180.02	0.727	59.69	177.99	120.389	43960.564	2353	4630		8.331895	118.3	1.001191	6.057288	1	175.53	730.0997	43805.98
182	13.438	170.33	179.97	0.762	59.83	177.76	120.084	45695.132	2353	4630		8.331749	117.93	1.001191	6.348793	1	175.15	763.2968	45797.81
183	13.464	170.39	179.37	0.746	59.83	177.57	119.757	44263.538	2353	4630		8.331749	117.74	1.001192	6.215485	1	174.88	745.2348	44714.09
184	13.515	170.17	179.41	0.737	59.81	177.19	119.487	44138.178	2353	4630		8.33177	117.38	1.001192	6.140515	1	174.79	734.586	44075.16
185	13.415	170.01	178.72	0.742	59.78	176.92	119.203	44110.435	2353	4630		8.331801	117.14	1.001191	6.182197	1	174.365	737.8143	44268.86
186	13.468	169.99	178.57	0.742	59.89	176.78	118.962	43944.902	2353	4630		8.331687	116.89	1.001191	6.182112	1	174.28	736.3124	44178.75
187	13.417	169.74	178.71	0.732	59.9	176.67	118.585	43691.942	2353	4630		8.331676	116.77	1.001191	6.098787	1	174.225	724.0862	43445.17
188	13.462	169.54	178.25	0.739	59.91	176.43	118.308	43713.743	2353	4630		8.331666	116.52	1.001191	6.157101	1	173.895	729.3019	43758.11
189	13.459	169.22	177.93	0.74	59.98	176.07	117.989	43717.461	2353	4630		8.331593	116.09	1.001191	6.165379	1	173.575	728.3132	43698.79
190	13.463	168.98	177.69	0.739	60	175.91	117.719	43543.897	2353	4630		8.331572	115.91	1.00119	6.157032	1	173.335	725.6624	43539.74
191	13.43	168.66	177.51	0.734	60.15	175.62	117.449	43403.292	2353	4630		8.331415	115.47	1.001191	6.115259	1	173.085	719.0864	43145.18
192	13.447	168.3	177.27	0.733	59.98	175.35	117.101	43353.967	2353	4630		8.331593	115.37	1.001191	6.107058	1	172.785	715.9944	42959.67
193	13.477	168.23	177.2	0.744	59.91	175.1	116.866	43351.511	2353	4630		8.331666	115.19	1.00119	6.198759	1	172.715	725.2866	43517.19
194	13.498	167.93	176.78	0.744	60.15	174.95	116.561	43108.271	2353	4630		8.331415	114.8	1.001191	6.198573	1	172.355	723.3723	43402.34
195	13.474	167.9	176.35	0.74	59.98	174.62	116.305	43204.101	2353	4630		8.331593	114.64	1.00119	6.165379	1	172.125	717.918	43075.08
196	13.47	167.65	175.96	0.741	60.12	174.33	115.986	42803.569	2353	4630		8.331446	114.21	1.001191	6.173602	1	171.805	716.9039	43014.24
197	13.492	166.95	175.92	0.739	60.08	174.11	115.716	42768.937	2353	4630		8.331488	114.03	1.001191	6.15697	1	171.435	713.3084	42798.51
198	13.444	167.12	175.83	0.74	59.99	173.78	115.496	42756.163	2353	4630		8.331582	113.79	1.001191	6.165371	1	171.475	712.9234	42775.41
199	13.458	166.76	175.34	0.737	60.1	173.45	115.155	42466.602	2353	4630		8.331467	113.35	1.001191	6.140291	1	171.05	707.9277	42475.66
200	13.503	166.57	175.02	0.738	59.84	173.16	114.892	42530.484	2353	4630		8.331739	113.32	1.001191	6.148823	1	170.795	707.2923	42437.54
201	13.431	166.26	174.7	0.74	59.86	172.93	114.558	42392.957	2353	4630		8.331718	113.07	1.001191	6.165471	1	170.48	707.145	42428.7
202	13.378	166.07	174.65	0.73	60.07	172.7	114.231	41730.76	2353	4630		8.331499	112.63	1.001191	6.081994	1	170.36	695.5795	41734.77

203	13.436	165.89	174.33	0.737	60.08	172.65	114.033	42117.5	2353	4630
204	13.392	165.56	174.01	0.738	60.22	172.23	113.642	41968.192	2353	4630
205	13.318	165.18	173.89	0.739	59.96	171.87	113.386	41918.011	2353	4630
206	13.398	165.22	173.8	0.744	60.07	171.79	113.223	41844.192	2353	4630
207	13.319	165.03	173.87	0.742	60.01	171.56	113.138	41858.339	2353	4630
208	13.388	165	173.84	0.745	59.92	171.59	113.273	41925.893	2353	4630
209	13.427	165.5	174.07	0.744	60.15	171.99	113.557	42153.812	2353	4630
210	13.355	165.72	174.56	0.748	60.05	172.31	113.876	42402.178	2353	4630
211	13.387	166.48	175.19	0.739	60.08	172.83	114.43	42499.7	2353	4630
212	13.364	166.91	175.88	0.744	60.11	173.47	115.183	42915.395	2353	4630
213	13.428	167.61	176.32	0.747	60.09	173.99	115.872	43148.557	2353	4630
214	13.34	168.01	177.12	0.744	60.09	174.36	116.497	43106.497	2353	4630
215	13.395	168.63	177.87	0.732	59.98	175.23	117.172	43225.674	2353	4630
216	13.388	169.59	178.96	0.742	59.95	176.23	118.287	43809.325	2353	4630
217	13.384	170.47	179.84	0.75	60.11	177.22	119.331	44406.634	2353	4630
218	13.334	171.18	180.55	0.745	60.03	178.17	120.425	44801.852	2353	4630
219	13.342	171.88	181.52	0.745	60.07	179	121.241	45001.894	2353	4630
220	13.331	172.58	182.48	0.743	60.05	179.7	122.278	45543.592	2353	4630
221	13.395	173.89	183.26	0.742	60.03	180.65	123.23	45631.259	2353	4630
222	13.499	174.83	184.34	0.739	59.98	181.51	124.309	46217.335	2353	4630
223	13.468	175.73	184.83	0.737	60.02	182.51	125.204	46509.135	2353	4630
224	13.398	175.95	185.19	0.744	59.98	182.83	125.68	46705.154	2353	4630
225	13.476	175.87	185.38	0.739	59.9	183.18	125.9	46687.489	2353	4630
226	13.417	175.97	185.35	0.75	60.2	183.33	125.851	46751.908	2353	4630
227	13.432	175.86	184.97	0.742	59.96	183.11	125.751	46683.179	2353	4630
228	13.34	175.82	185.06	0.742	59.98	182.95	125.723	46810.804	2353	4630
229	13.485	175.77	184.88	0.742	60.06	182.79	125.581	46686.2	2353	4630
230	13.51	175.57	184.68	0.743	60	182.79	125.481	46622.588	2353	4630
231	13.43	175.27	184.64	0.743	60.02	182.69	125.346	46625.371	2353	4630
232	13.369	175.06	184.43	0.741	59.81	182.44	125.226	46618.157	2353	4630
233	13.426	174.98	183.95	0.746	59.66	182.48	125.226	46684.864	2353	4630
234	13.404	174.83	183.94	0.737	59.72	182.23	124.942	46514.864	2353	4630
235	13.423	174.77	183.87	0.742	59.58	181.81	124.764	45995.417	2353	4630
236	13.279	174.59	183.83	0.738	59.73	181.77	124.444	46010.758	2353	4630
237	13.414	174.38	183.49	0.738	59.73	181.46	124.267	46118.451	2353	4630
238	13.516	174.22	183.33	0.743	59.83	181.31	124.004	46014.703	2353	4630
239	13.505	174.29	183.27	0.745	60.03	181.14	123.805	45706.672	2353	4630
240	13.444	173.87	182.85	0.751	59.88	181.06	123.578	46175.327	2353	4630
241	13.428	173.69	182.66	0.74	59.96	180.89	123.358	45746.617	2353	4630
242	13.461	173.43	182.67	0.746	60.04	180.66	123.088	45643.751	2353	4630
243	13.483	173.37	182.47	0.742	59.97	180.59	122.96	45699.465	2353	4630
244	13.421	173.28	182.25	0.741	59.81	180.21	122.704	45588.202	2353	4630
245	13.441	173.19	182.04	0.743	60.13	180.19	122.427	45687.981	2353	4630
246	13.353	172.6	181.97	0.746	59.93	180.01	122.236	45731.241	2353	4630
247	13.413	172.46	181.3	0.746	59.92	179.64	121.937	45318.739	2353	4630
248	13.546	172.4	181.24	0.742	59.85	179.52	121.71	45258.108	2353	4630
249	13.419	172.26	181.11	0.743	59.92	179.22	121.454	45246.198	2353	4630
250	13.354	171.96	180.94	0.749	59.95	179.07	121.22	45051.956	2353	4630
251	13.279	171.78	180.62	0.743	59.83	178.72	120.993	45042.699	2353	4630
252	13.448	171.23	180.34	0.741	59.95	178.58	120.694	44855.731	2353	4630
253	13.506	171.43	180.01	0.74	59.88	178.34	120.474	44559.341	2353	4630
254	13.542	171.03	179.87	0.745	59.87	178.03	120.183	44816.481	2353	4630
255	13.451	170.76	179.61	0.744	59.87	177.91	119.991	45023.905	2353	4630
256	13.415	170.92	179.63	0.744	59.83	177.69	119.785	44578.329	2353	4630

8.331488	112.57	1.00119	6.140307	1	170.11	701.0309	42061.86	
8.331342	112.01	1.001191	6.14853	1	169.785	699.5635	41973.81	
8.331614	111.91	1.001191	6.157063	1	169.535	698.9559	41937.35	
8.331499	111.72	1.001191	6.198635	1	169.51	702.6638	42159.83	
8.331561	111.55	1.001191	6.182019	1	169.45	700.2544	42015.26	
8.331655	111.67	1.00119	6.207083	1	169.42	703.9319	42235.91	
8.331415	111.84	1.001191	6.198573	1	169.785	704.7295	42283.77	
8.33152	112.26	1.001191	6.231977	1	170.14	710.5175	42631.05	
8.331488	112.75	1.001191	6.15697	1	170.835	705.3808	42322.85	
8.331457	113.36	1.001191	6.198604	1	171.395	714.8238	42889.43	
8.331478	113.9	1.001191	6.223614	1	171.965	722.0012	43320.07	
8.331478	114.27	1.001191	6.19862	1	172.565	722.9806	43378.84	
8.331593	115.25	1.001191	6.098726	1	173.25	715.4511	42927.06	
8.331624	116.28	1.001191	6.182065	1	174.275	732.1285	43927.71	
8.331457	117.11	1.001191	6.248593	1	175.155	746.5387	44792.32	
8.331541	118.14	1.001191	6.206998	1	175.865	748.3677	44902.06	
8.331499	118.93	1.001191	6.206967	1	176.7	753.4349	45206.09	
8.33152	119.65	1.001191	6.190319	1	177.53	757.8412	45470.47	
8.331541	120.62	1.001191	6.182003	1	178.575	762.7155	45762.93	
8.331593	121.53	1.001191	6.157047	1	179.585	766.2878	45977.27	
8.331551	122.49	1.001191	6.140353	1	180.28	769.7124	46182.74	
8.331593	122.85	1.001191	6.198705	1	180.57	779.9813	46798.88	
8.331676	123.28	1.00119	6.157109	1	180.625	776.1026	46566.16	
8.331363	123.13	1.001191	6.248522	1	180.66	787.3194	47239.16	
8.331614	123.15	1.001191	6.182057	1	180.415	778.3258	46699.55	
8.331593	122.97	1.001191	6.182042	1	180.44	778.1503	46689.02	
8.331509	122.73	1.001191	6.18198	1	180.325	777.2638	46635.83	
8.331572	122.79	1.001191	6.190358	1	180.125	777.6973	46661.84	
8.331551	122.67	1.001192	6.190342	1	179.955	776.8592	46611.55	
8.33177	122.63	1.001192	6.173842	1	179.745	774.0471	46442.83	
8.331926	122.82	1.001192	6.215617	1	179.465	779.2845	46757.07	
8.331864	122.51	1.001192	6.140584	1	179.385	768.1316	46087.9	
8.332009	122.23	1.001192	6.182351	1	179.32	772.2541	46335.25	
8.331853	122.04	1.001192	6.148908	1	179.21	766.1067	45966.4	
8.331853	121.73	1.001191	6.148908	1	178.935	765.0167	45901	
8.331749	121.48	1.001191	6.19049	1	178.775	768.5596	46113.58	
8.331541	121.11	1.001191	6.206998	1	178.78	769.3728	46162.37	
8.331697	121.18	1.001191	6.257105	1	178.36	774.1614	46449.69	
8.331614	120.93	1.001191	6.165394	1	178.175	761.4563	45687.38	
8.33153	120.62	1.001191	6.215321	1	178.05	765.9426	45956.56	
8.331603	120.62	1.001192	6.18205	1	177.92	761.0506	45663.03	
8.33177	120.4	1.00119	6.173842	1	177.765	758.4569	45507.41	
8.331436	120.06	1.001191	6.190257	1	177.615	758.7573	45525.44	
8.331645	120.08	1.001191	6.215407	1	177.285	760.6515	45639.09	
8.331655	119.72	1.001191	6.215415	1	176.88	758.792	45527.52	
8.331728	119.67	1.001191	6.182142	1	176.82	753.3248	45199.49	
8.331655	119.3	1.001191	6.19042	1	176.685	752.7468	45164.81	
8.331624	119.12	1.001191	6.240386	1	176.45	757.361	45441.66	
8.331749	118.89	1.001191	6.19049	1	176.2	749.898	44993.88	
8.331624	118.63	1.001191	6.173733	1	175.785	746.0203	44761.22	
8.331697	118.46	1.001191	6.165456	1	175.72	743.662	44619.72	
8.331708	118.16	1.001191	6.207122	1	175.45	746.8793	44812.76	
8.331708	118.04	1.001191	6.19879	1	175.185	744.6853	44681.12	
8.331749	117.86	1.001192	6.198821	1	175.275	743.4106	44604.64	

257	13.563	170.23	179.07	0.742	59.8	177.12	119.487	44413.273	2353	4630
258	13.366	169.96	178.8	0.746	59.66	176.87	119.21	44339.943	2353	4630
259	13.431	169.82	178.79	0.745	59.85	176.8	118.933	44233.594	2353	4630
260	13.471	169.59	178.7	0.745	59.69	176.6	118.777	44411.218	2353	4630
261	13.346	169.53	178.1	0.749	59.82	176.36	118.471	43896.367	2353	4630
262	13.47	169.19	178.16	0.743	59.82	176.17	118.159	43903.894	2353	4630
263	13.433	168.98	177.69	0.743	59.87	175.86	117.825	43950.998	2353	4630
264	13.381	168.62	177.59	0.751	59.77	175.64	117.577	44085.502	2353	4630
265	13.447	168.19	177.42	0.739	59.74	175.31	117.285	43601.918	2353	4630
266	13.497	168.45	177.03	0.742	59.8	175.19	117.044	43618.838	2353	4630
267	13.399	168	176.58	0.744	59.75	174.84	116.66	43446.666	2353	4630
268	13.37	167.9	176.47	0.748	59.84	174.56	116.447	43489.599	2353	4630
269	13.438	167.6	176.44	0.74	59.94	174.35	116.149	43239.338	2353	4630
270	13.365	167.17	175.88	0.747	59.84	174.07	115.865	43052.231	2353	4630
271	13.492	166.87	175.85	0.733	59.87	173.74	115.552	42522.77	2353	4630
272	13.552	166.81	175.52	0.743	59.95	173.5	115.268	42797.303	2353	4630
273	13.465	166.66	175.24	0.744	59.87	173.18	114.942	42746.405	2353	4630
274	13.44	166.45	174.89	0.745	59.98	173.11	114.736	42768.056	2353	4630
275	13.243	166.03	174.48	0.74	59.89	172.84	114.48	42545.584	2353	4630
276	13.371	165.72	174.43	0.748	59.84	172.55	114.203	42524.522	2353	4630
277	13.392	165.63	174.21	0.741	59.95	172.47	114.004	42400.724	2353	4630
278	13.345	165.5	174.34	0.739	59.89	172.29	113.954	42384.32	2353	4630
279	13.357	166.06	174.9	0.744	59.99	172.5	114.217	42578.224	2353	4630
280	13.37	166.4	175.37	0.741	59.93	172.88	114.707	42730.88	2353	4630
281	13.443	166.97	175.81	0.752	59.91	173.53	115.325	42940.675	2353	4630
282	13.451	167.71	176.82	0.747	59.86	174.2	116.092	43248.516	2353	4630
283	13.421	168.5	177.21	0.743	59.86	174.93	116.909	43676.517	2353	4630
284	13.569	169.22	178.2	0.743	59.91	175.71	117.811	43851.96	2353	4630
285	13.536	169.93	179.17	0.744	59.96	176.72	118.777	44234.113	2353	4630
286	13.389	170.65	180.29	0.746	59.96	177.51	119.778	44623.818	2353	4630
287	13.411	171.3	181.06	0.748	59.88	178.28	120.687	45407.294	2353	4630
288	13.547	172.35	181.85	0.75	59.74	179.12	121.746	45444.089	2353	4630
289	13.439	173.26	182.9	0.747	59.66	180.07	122.846	46075.093	2353	4630
290	13.436	174.09	183.73	0.747	59.63	181.01	123.961	46521.124	2353	4630
291	13.411	174.86	184.5	0.751	59.68	181.96	125.055	46817.867	2353	4630
292	13.491	175.6	185.11	0.748	59.56	182.63	125.765	47044.072	2353	4630
293	13.468	175.67	185.43	0.747	59.55	182.93	126.064	47191.882	2353	4630
294	13.447	175.72	185.22	0.724	59.47	182.98	126.255	46469.532	2353	4630
295	13.393	176.15	185.13	0.717	59.31	182.95	126.248	45791.645	2353	4630
296	13.422	176.13	185.1	0.732	59.42	183.05	126.27	46415.873	2353	4630
297	13.462	176.05	184.9	0.732	59.41	183.04	126.298	46029.157	2353	4630
298	13.462	175.86	184.97	0.728	59.42	182.93	126.135	46026.825	2353	4630
299	13.525	175.82	184.93	0.729	59.31	182.77	126.085	45840.606	2353	4630
300	13.466	175.42	184.53	0.725	59.37	182.65	125.872	45490.593	2353	4630
301	13.34	175.48	184.46	0.726	59.24	182.52	125.723	45549.639	2353	4630
302	13.383	175.46	184.43	0.725	59.41	182.14	125.474	45734.139	2353	4630
303	13.48	175.27	184.25	0.729	59.36	182.09	125.147	45481.967	2353	4630
304	13.465	174.82	184.07	0.728	59.44	181.98	124.977	45421.446	2353	4630
305	13.512	174.53	183.64	0.726	59.61	181.83	124.714	45505.99	2353	4630
306	13.472	174.7	183.54	0.73	59.51	181.45	124.423	45336.807	2353	4630
307	13.504	174.33	183.18	0.744	59.61	181.47	124.217	44709.483	2353	4630
308	13.484	174.24	183.35	0.724	59.59	181.15	123.983	45014.711	2353	4630
309	13.482	173.94	182.92	0.72	59.62	180.94	123.763	44989.807	2353	4630
310	13.478	173.82	182.66	0.728	59.76	180.89	123.443	44936.256	2353	4630

8.33178	117.32	1.001192	6.182181	1	174.65	739.5709	44374.25	
8.331926	117.21	1.001191	6.215617	1	174.38	741.8465	44510.79	
8.331728	116.95	1.001192	6.207138	1	174.305	739.1135	44346.81	
8.331895	116.91	1.001192	6.207262	1	174.145	738.1584	44289.5	
8.33176	116.54	1.001192	6.240488	1	173.815	740.1978	44411.87	
8.33176	116.35	1.001191	6.190497	1	173.675	732.3344	43940.06	
8.331708	115.99	1.001192	6.190459	1	173.335	730.26	43815.6	
8.331812	115.87	1.001192	6.257191	1	173.105	736.5785	44194.71	
8.331843	115.57	1.001192	6.157232	1	172.805	723.0115	43380.69	
8.33178	115.39	1.001192	6.182181	1	172.74	724.4496	43466.97	
8.331832	115.09	1.001191	6.198883	1	172.29	724.0234	43441.4	
8.331739	114.72	1.001191	6.232141	1	172.185	726.5785	43594.71	
8.331635	114.41	1.001191	6.16541	1	172.02	716.9594	43017.56	
8.331739	114.23	1.001191	6.223809	1	171.525	721.9807	43318.84	
8.331708	113.87	1.001191	6.107142	1	171.36	706.533	42391.98	
8.331624	113.55	1.001191	6.190397	1	171.165	714.4047	42864.28	
8.331708	113.31	1.001191	6.19879	1	170.95	713.3499	42801	
8.331593	113.13	1.001191	6.207037	1	170.67	713.019	42781.14	
8.331687	112.95	1.001191	6.165448	1	170.255	706.6615	42399.69	
8.331739	112.71	1.001191	6.232141	1	170.075	712.5769	42754.61	
8.331624	112.52	1.001191	6.173733	1	169.92	704.6688	42280.13	
8.331687	112.4	1.001191	6.157116	1	169.92	702.4636	42147.82	
8.331582	112.51	1.001191	6.198697	1	170.48	708.8399	42530.4	
8.331645	112.95	1.001191	6.173749	1	170.885	709.0158	42540.95	
8.331666	113.62	1.001191	6.265413	1	171.39	723.4196	43405.17	
8.331718	114.34	1.001191	6.223793	1	172.265	723.3934	43403.61	
8.331718	115.07	1.001191	6.190466	1	172.855	724.5833	43475	
8.331666	115.8	1.001191	6.190428	1	173.71	730.1691	43810.15	
8.331614	116.76	1.001191	6.198721	1	174.55	737.1424	44228.54	
8.331614	117.55	1.001191	6.215384	1	175.47	745.3531	44721.19	
8.331697	118.4	1.001192	6.232109	1	176.18	753.031	45181.86	
8.331843	119.38	1.001192	6.248882	1	177.1	761.6833	45701	
8.331926	120.41	1.001192	6.223949	1	178.08	765.4987	45929.92	
8.331957	121.38	1.001192	6.223972	1	178.91	772.4495	46346.97	
8.331905	122.28	1.001192	6.257261	1	179.68	783.4348	47006.09	
8.33203	123.07	1.001192	6.232358	1	180.355	784.7472	47084.83	
8.33204	123.38	1.001193	6.224034	1	180.55	785.5625	47133.75	
8.332123	123.51	1.001193	6.032457	1	180.47	762.5367	45752.2	
8.332289	123.64	1.001193	5.974251	1	180.64	755.137	45308.22	
8.332175	123.63	1.001193	6.099152	1	180.615	771.0587	46263.52	
8.332185	123.63	1.001193	6.09916	1	180.475	771.2306	46273.83	
8.332175	123.51	1.001193	6.065823	1	180.415	766.0256	45961.54	
8.332289	123.46	1.001193	6.074238	1	180.375	766.7841	46007.05	
8.332227	123.28	1.001194	6.040864	1	179.975	761.2832	45676.99	
8.332361	123.28	1.001193	6.049294	1	179.97	761.4427	45686.56	
8.332185	122.73	1.001193	6.040834	1	179.945	758.872	45532.32	
8.332237	122.73	1.001193	6.074201	1	179.76	761.0748	45664.49	
8.332154	122.54	1.001192	6.065808	1	179.445	758.9904	45539.42	
8.331978	122.22	1.001193	6.049016	1	179.085	755.2967	45317.8	
8.332082	121.94	1.001192	6.08242	1	179.12	757.6952	45461.71	
8.331978	121.86	1.001192	6.198992	1	178.755	770.9383	46256.3	
8.331999	121.56	1.001192	6.032367	1	178.795	748.8026	44928.16	
8.331968	121.32	1.001192	5.999017	1	178.43	743.3411	44600.47	
8.331822	121.13	1.001191	6.065566	1	178.24	749.6435	44978.61	

311	13.442	173.77	182.61	0.726	59.97	180.78	123.18	44657.785	2353	4630
312	13.488	173.73	182.57	0.717	59.93	180.5	122.925	44510.046	2353	4630
313	13.45	173.52	182.23	0.721	59.86	180.37	122.648	44541.838	2353	4630
314	13.46	172.95	182.19	0.72	59.95	179.97	122.406	44377.746	2353	4630
315	13.42	172.77	181.61	0.726	59.96	179.87	122.115	44312.226	2353	4630
316	13.478	172.55	181.39	0.723	60.01	179.6	121.845	44260.564	2353	4630
317	13.485	172.36	181.33	0.728	59.88	179.37	121.582	43981.538	2353	4630
318	13.46	172.51	181.35	0.725	59.9	179.14	121.298	43832.375	2353	4630
319	13.468	172.22	180.93	0.717	60.21	178.94	120.986	43687.052	2353	4630
320	13.449	171.79	180.64	0.722	60.11	178.79	120.773	43646.735	2353	4630
321	13.51	171.6	180.71	0.715	60.25	178.67	120.567	43255.735	2353	4630
322	13.528	171.54	180.25	0.722	60.12	178.31	120.24	43322.406	2353	4630
323	13.505	171.08	179.79	0.723	60.19	178.14	119.949	43479.572	2353	4630
324	13.479	171.05	179.77	0.716	59.96	177.63	119.707	43068.44	2353	4630
325	13.46	170.78	179.49	0.722	60.09	177.62	119.473	43126.585	2353	4630
326	13.513	170.55	179.4	0.721	60.26	177.54	119.288	42959.789	2353	4630
327	13.635	170.26	178.97	0.72	60.09	177.21	118.976	42821.183	2353	4630
328	13.503	170.34	178.92	0.719	60.04	176.98	118.727	42801.119	2353	4630
329	13.566	169.88	178.46	0.718	60.24	176.74	118.429	42757.371	2353	4630
330	13.467	169.71	178.55	0.71	60.14	176.4	118.216	42671.637	2353	4630
331	13.296	169.31	178.02	0.723	59.93	176.03	117.996	42837.7	2353	4630
332	13.664	169.35	177.66	0.721	59.98	175.83	117.676	42518.612	2353	4630
333	13.463	169	177.58	0.72	60.09	175.45	117.42	42361.25	2353	4630
334	13.488	168.7	177.14	0.718	59.91	175.23	117.065	42276.133	2353	4630
335	13.508	168.62	177.07	0.724	60.04	175.22	116.994	42356.816	2353	4630
336	13.45	168.15	176.73	0.727	59.9	174.97	116.767	42433.311	2353	4630
337	13.465	168.07	176.65	0.722	59.95	174.83	116.483	42077.53	2353	4630
338	13.388	167.63	176.47	0.722	60.04	174.67	116.263	41975.973	2353	4630
339	13.488	167.45	176.16	0.718	59.86	174.14	115.979	41670.975	2353	4630
340	13.644	167.73	176.04	0.729	59.93	173.97	115.758	41796.225	2353	4630
341	13.373	166.89	175.6	0.72	59.96	173.63	115.46	41608.529	2353	4630
342	13.523	167	175.45	0.722	59.94	173.37	115.141	41382.49	2353	4630
343	13.422	166.59	175.03	0.714	60.05	173.17	114.885	41406.809	2353	4630
344	13.399	166.59	174.77	0.721	59.91	172.92	114.594	41475.392	2353	4630
345	13.446	166.1	174.55	0.719	60.09	172.84	114.459	41236.555	2353	4630
346	13.385	165.83	174.54	0.714	59.88	172.41	114.224	41189.042	2353	4630
347	13.411	166.26	174.97	0.718	59.92	172.56	114.317	41345.745	2353	4630
348	13.48	166.06	174.9	0.721	59.79	172.62	114.373	41476.366	2353	4630
349	13.475	166.44	175.15	0.73	59.9	172.97	114.629	41494.83	2353	4630
350	13.61	166.96	175.4	0.721	60.02	173.32	115.141	41565.691	2353	4630
351	13.515	167.55	176.26	0.724	59.95	173.87	115.758	41726.555	2353	4630
352	13.458	168.01	176.86	0.726	59.83	174.48	116.433	41953.717	2353	4630
353	13.458	168.8	177.77	0.72	59.82	175.14	117.385	42496.329	2353	4630
354	13.501	169.59	178.57	0.724	59.82	175.99	118.18	42782.068	2353	4630
355	13.467	170.56	179.54	0.727	59.94	177.12	119.324	43013.156	2353	4630
356	13.465	171.58	180.82	0.716	59.96	177.99	120.403	43515.031	2353	4630
357	13.475	172.3	181.54	0.721	59.95	179.01	121.412	43796.958	2353	4630
358	13.509	173.36	182.47	0.723	60.09	180.16	122.434	44142.416	2353	4630
359	13.505	174.52	183.49	0.723	60.06	181.34	123.713	44697.965	2353	4630
360	13.468	175.2	184.84	0.721	60.08	182.08	124.807	45051.969	2353	4630
361	13.449	176.15	185.4	0.721	59.91	182.89	125.588	45402.84	2353	4630
362	13.491	176.5	185.34	0.713	59.99	183.26	125.943	45409.836	2353	4630
363	13.495	176.49	185.6	0.72	59.98	183.31	126.106	45513.601	2353	4630
364	13.485	176.3	185.41	0.72	59.99	183.45	126.142	45511.558	2353	4630

8.331603	120.81	1.001191	6.048744	1	178.19	745.9718	44758.31		
8.331645	120.57	1.001191	5.973789	1	178.15	735.2029	44112.18		
8.331718	120.51	1.001191	6.007169	1	177.875	737.6448	44258.69		
8.331624	120.02	1.001191	5.998769	1	177.57	735.1599	44109.6		
8.331614	119.91	1.001191	6.048752	1	177.19	739.5229	44371.38		
8.331561	119.59	1.001191	6.023719	1	176.97	734.8344	44090.06		
8.331697	119.49	1.001191	6.065476	1	176.845	738.3311	44299.87		
8.331676	119.24	1.00119	6.040465	1	176.93	733.5684	44014.1		
8.331352	118.73	1.001191	5.97358	1	176.575	723.5799	43414.79		
8.331457	118.68	1.00119	6.015312	1	176.215	727.3518	43641.11		
8.33131	118.42	1.00119	5.956887	1	176.155	719.059	43143.54		
8.331446	118.19	1.00119	6.015304	1	175.895	724.1411	43448.46		
8.331373	117.95	1.001191	6.023583	1	175.435	723.3833	43403		
8.331614	117.67	1.001191	5.965435	1	175.41	714.9546	42897.27		
8.331478	117.53	1.00119	6.015327	1	175.135	719.5244	43171.46		
8.3313	117.28	1.001191	6.006867	1	174.975	717.4003	43044.02		
8.331478	117.12	1.001191	5.998664	1	174.615	714.5469	42872.81		
8.33153	116.94	1.00119	5.99037	1	174.63	712.0651	42723.9		
8.331321	116.5	1.00119	5.981888	1	174.17	709.2724	42556.34		
8.331426	116.26	1.001191	5.915312	1	174.13	700.1175	42007.05		
8.331645	116.1	1.001191	6.023779	1	173.665	711.6284	42697.7		
8.331593	115.85	1.001191	6.007078	1	173.505	707.7306	42463.83		
8.331478	115.36	1.001191	5.998664	1	173.29	705.2022	42312.13		
8.331666	115.32	1.001191	5.982136	1	172.92	701.1326	42067.96		
8.33153	115.18	1.001191	6.032028	1	172.845	706.5517	42393.1		
8.331676	115.07	1.001191	6.057129	1	172.44	708.1152	42486.91		
8.331624	114.88	1.001191	6.015433	1	172.36	701.53	42091.8		
8.33153	114.63	1.001191	6.015365	1	172.05	700.1976	42011.85		
8.331718	114.28	1.001191	5.982174	1	171.805	694.6329	41677.98		
8.331645	114.04	1.001191	6.073769	1	171.885	703.9248	42235.49		
8.331614	113.67	1.001191	5.998762	1	171.245	693.442	41606.52		
8.331635	113.43	1.001191	6.01544	1	171.225	693.4485	41606.91		
8.33152	113.12	1.001191	5.948705	1	170.81	684.2311	41053.86		
8.331666	113.01	1.001191	6.007131	1	170.68	689.2008	41352.05		
8.331478	112.75	1.001191	5.990333	1	170.325	686.4643	41187.86		
8.331697	112.53	1.001191	5.948832	1	170.185	680.3088	40818.53		
8.331655	112.64	1.001192	5.982129	1	170.615	684.6739	41080.43		
8.331791	112.83	1.001191	6.007221	1	170.48	687.8824	41272.94		
8.331676	113.07	1.001191	6.082124	1	170.795	698.018	41881.08		
8.331551	113.3	1.001191	6.007048	1	171.18	692.4814	41548.88		
8.331624	113.92	1.001191	6.032096	1	171.905	699.0953	41945.72		
8.331749	114.65	1.001192	6.04885	1	172.435	705.1249	42307.5		
8.33176	115.32	1.001192	5.998867	1	173.285	705.016	42300.96		
8.33176	116.17	1.001191	6.032194	1	174.08	713.7338	42824.03		
8.331635	117.18	1.001191	6.057098	1	175.05	723.618	43417.08		
8.331614	118.03	1.001191	5.965435	1	176.2	719.1118	43146.71		
8.331624	119.06	1.001191	6.007101	1	176.92	730.2025	43812.15		
8.331478	120.07	1.001191	6.023658	1	177.915	738.3787	44302.72		
8.331509	121.28	1.001191	6.023681	1	179.005	746.0949	44765.7		
8.331488	122	1.001191	6.007003	1	180.02	750.6091	45036.55		
8.331666	122.98	1.001191	6.007131	1	180.775	755.322	45319.32		
8.331582	123.27	1.001191	5.940418	1	180.92	749.0451	44942.71		
8.331593	123.33	1.001191	5.998747	1	181.045	757.3789	45442.73		
8.331582	123.46	1.001191	5.998739	1	180.855	757.594	45455.64		

365	13.493	176.51	185.48	0.724	60.06	183.45	126.099	45552.97	2353	4630
366	13.5	175.99	185.49	0.725	60.07	183.4	125.907	45385.125	2353	4630
367	13.414	176.1	185.34	0.723	60.12	183.2	125.801	45355.939	2353	4630
368	13.439	176.13	184.98	0.724	60.02	182.93	125.602	45107.28	2353	4630
369	13.485	175.95	184.66	0.723	59.97	182.82	125.417	45162.632	2353	4630
370	13.514	175.54	184.78	0.72	60.03	182.63	125.24	45277.778	2353	4630
371	13.5	175.51	184.49	0.725	59.93	182.42	125.048	44986.878	2353	4630
372	13.33	175.38	184.36	0.726	59.99	182.3	124.835	45017.894	2353	4630
373	13.421	175.05	183.89	0.718	59.99	182	124.636	44851.036	2353	4630
374	13.48	174.93	183.9	0.721	59.94	181.77	124.388	44815.476	2353	4630
375	13.503	174.53	183.77	0.717	59.87	181.59	124.167	44691.95	2353	4630
376	13.474	174.52	183.37	0.719	59.86	181.64	124.061	44804.662	2353	4630
377	13.489	174.48	183.19	0.717	60.09	181.36	123.841	44604.964	2353	4630
378	13.601	174.16	183.14	0.718	60.03	181.26	123.599	44592.577	2353	4630
379	13.485	173.94	182.92	0.719	60.01	180.87	123.386	44465.476	2353	4630
380	13.578	173.59	182.83	0.72	60.05	180.79	123.138	44460.359	2353	4630
381	13.467	173.7	182.28	0.725	59.97	180.35	122.946	44335.831	2353	4630
382	13.5	173.32	182.42	0.728	59.98	180.3	122.69	44354.404	2353	4630
383	13.46	173.12	182.23	0.718	59.98	180.06	122.463	44137.991	2353	4630
384	13.398	172.96	181.93	0.722	59.95	179.85	122.229	44167.353	2353	4630
385	13.429	172.62	181.73	0.719	59.94	179.61	121.973	44281.09	2353	4630
386	13.491	172.55	181.39	0.724	59.94	179.54	121.802	43719.703	2353	4630
387	13.55	172.45	181.03	0.718	59.84	179.27	121.454	43690.847	2353	4630
388	13.342	172.17	180.62	0.725	59.76	178.89	121.263	43768.546	2353	4630
389	13.386	171.88	180.6	0.721	59.87	178.75	121.014	43782.485	2353	4630
390	13.497	171.59	180.83	0.722	59.9	178.54	120.836	43781.082	2353	4630
391	13.472	171.52	180.23	0.725	59.96	178.3	120.531	43508.371	2353	4630
392	13.459	171.3	180.28	0.714	59.88	178.1	120.254	43494.772	2353	4630
393	13.53	170.7	179.68	0.724	59.81	177.85	119.956	43378.655	2353	4630
394	13.52	170.77	179.74	0.724	59.87	177.49	119.707	43279.811	2353	4630
395	13.443	170.43	179.41	0.719	59.73	177.24	119.48	43163.171	2353	4630
396	13.473	170.64	179.22	0.718	59.88	177.14	119.231	42857.136	2353	4630
397	13.482	170.18	178.89	0.729	59.74	176.89	118.954	43276.332	2353	4630
398	13.505	169.88	178.59	0.72	59.84	176.55	118.635	42860.4	2353	4630
399	13.297	169.57	178.28	0.726	59.87	176.58	118.379	42807.72	2353	4630
400	13.537	169.22	178.06	0.722	59.98	176.25	118.166	42705.951	2353	4630
401	13.465	169.27	177.72	0.713	59.76	175.88	117.882	42350.915	2353	4630
402	13.547	169.27	177.71	0.727	59.69	175.51	117.64	42506.454	2353	4630
403	13.429	168.81	177.12	0.713	59.76	175.45	117.278	41930.572	2353	4630
404	13.359	168.51	176.96	0.715	59.79	175.12	117.044	42097.436	2353	4630
405	13.408	168.35	176.93	0.725	59.83	175.03	116.895	42386.477	2353	4630
406	13.499	168.15	176.47	0.722	59.76	174.61	116.561	42055.626	2353	4630
407	13.377	167.82	176.27	0.721	59.83	174.42	116.277	41888.173	2353	4630
408	13.516	167.5	176.21	0.717	59.7	174.13	115.971	41770.5	2353	4630
409	13.455	167.43	175.87	0.716	59.63	173.7	115.737	41573.585	2353	4630
410	13.464	167.23	175.68	0.721	59.84	173.64	115.467	41451.555	2353	4630
411	13.439	166.93	175.37	0.712	59.93	173.36	115.212	41375.399	2353	4630
412	13.485	166.72	175.17	0.718	59.85	173.11	114.942	41342.739	2353	4630
413	13.488	166.05	174.89	0.724	59.64	172.86	114.693	41272.221	2353	4630
414	13.479	166.25	174.69	0.717	59.77	172.73	114.487	41258.431	2353	4630
415	13.414	166.24	174.55	0.722	59.7	172.49	114.452	41272.837	2353	4630
416	13.461	166.36	174.81	0.723	59.69	172.66	114.523	41417.116	2353	4630
417	13.441	166.25	175.09	0.728	59.64	172.86	114.757	41574.588	2353	4630
418	13.422	166.71	175.55	0.718	59.84	173.22	115.24	41490.597	2353	4630

8.331509	123.39	1.001191	6.032013	1	180.995	761.5364	45692.19	
8.331499	123.33	1.00119	6.040337	1	180.74	761.426	45685.56	
8.331446	123.08	1.001191	6.023636	1	180.72	758.6818	45520.91	
8.331551	122.91	1.001191	6.032043	1	180.555	758.539	45512.34	
8.331603	122.85	1.001191	6.023749	1	180.305	756.3802	45382.81	
8.331541	122.6	1.001191	5.998709	1	180.16	752.1732	45130.39	
8.331645	122.49	1.001191	6.040443	1	180	756.2448	45374.69	
8.331582	122.31	1.001191	6.048729	1	179.87	755.9923	45359.54	
8.331582	122.01	1.001191	5.982076	1	179.47	746.4701	44788.21	
8.331635	121.83	1.001191	6.007109	1	179.415	748.1024	44886.14	
8.331708	121.72	1.001191	5.973834	1	179.15	742.6368	44558.21	
8.331718	121.78	1.001191	5.990505	1	178.945	744.0729	44644.37	
8.331478	121.27	1.001191	5.97367	1	178.835	740.6662	44439.97	
8.331541	121.23	1.001191	5.982046	1	178.65	740.2554	44415.32	
8.331561	120.86	1.001191	5.990393	1	178.43	740.0107	44400.64	
8.33152	120.74	1.001191	5.998694	1	178.21	739.547	44372.82	
8.331603	120.38	1.001191	6.040412	1	177.99	743.529	44611.74	
8.331593	120.32	1.001191	6.0654	1	177.87	745.0501	44703.01	
8.331593	120.08	1.001191	5.982084	1	177.675	733.4565	44007.39	
8.331624	119.9	1.001191	6.015433	1	177.445	736.1361	44168.17	
8.331635	119.67	1.001191	5.990445	1	177.175	731.5429	43892.57	
8.331635	119.6	1.001191	6.032103	1	176.97	735.5977	44135.86	
8.331739	119.43	1.001192	5.982188	1	176.74	727.4266	43645.6	
8.331822	119.13	1.001191	6.040571	1	176.395	733.3704	44002.23	
8.331708	118.88	1.001191	6.007161	1	176.24	727.8166	43668.99	
8.331676	118.64	1.001191	6.01547	1	176.21	727.7511	43665.07	
8.331614	118.34	1.001191	6.04042	1	175.875	728.9252	43735.51	
8.331697	118.22	1.001192	5.948832	1	175.79	716.2232	42973.39	
8.33177	118.04	1.001191	6.032202	1	175.19	724.4608	43467.65	
8.331708	117.62	1.001192	6.032156	1	175.255	722.9519	43377.12	
8.331853	117.51	1.001191	5.990603	1	174.92	716.6099	42996.59	
8.331697	117.26	1.001192	5.982159	1	174.93	714.1088	42846.53	
8.331843	117.15	1.001191	6.073913	1	174.535	723.3772	43402.63	
8.331739	116.71	1.001191	5.998852	1	174.235	712.5217	42751.3	
8.331708	116.71	1.001191	6.04882	1	173.925	716.906	43014.36	
8.331593	116.27	1.001192	6.01541	1	173.64	711.664	42699.84	
8.331822	116.12	1.001192	5.940589	1	173.495	701.1233	42067.4	
8.331895	115.82	1.001192	6.057288	1	173.49	713.4285	42805.71	
8.331822	115.69	1.001192	5.940589	1	172.965	697.5306	41851.84	
8.331791	115.33	1.001191	5.95723	1	172.735	698.0889	41885.33	
8.331749	115.2	1.001192	6.040518	1	172.64	706.9479	42416.87	
8.331822	114.85	1.001191	6.015576	1	172.31	702.017	42121.02	
8.331749	114.59	1.001192	6.007191	1	172.045	699.3307	41959.84	
8.331884	114.43	1.001192	5.973961	1	171.855	693.6322	41617.93	
8.331957	114.07	1.001191	5.965681	1	171.65	691.2727	41476.36	
8.331739	113.8	1.001191	6.007184	1	171.455	694.4577	41667.46	
8.331645	113.43	1.001191	5.932131	1	171.15	684.267	41056.02	
8.331728	113.26	1.001192	5.982181	1	170.945	688.4236	41305.41	
8.331947	113.22	1.001192	6.032329	1	170.47	692.6905	41561.43	
8.331812	112.96	1.001192	5.973909	1	170.47	684.7501	41085.01	
8.331884	112.79	1.001192	6.015621	1	170.395	689.3205	41359.23	
8.331895	112.97	1.001192	6.02396	1	170.585	690.7044	41442.26	
8.331947	113.22	1.001191	6.065657	1	170.67	696.906	41814.36	
8.331739	113.38	1.001192	5.982188	1	171.13	690.209	41412.54	

419	13.624	167.42	176.13	0.716	59.76	173.81	115.908	41739.743	2353	4630
420	13.401	168.26	176.97	0.726	59.81	174.53	116.653	42055.623	2353	4630
421	13.408	168.7	177.41	0.717	59.72	175.23	117.413	42296.358	2353	4630
422	13.476	169.36	178.33	0.714	59.51	175.89	118.216	42544.582	2353	4630
423	13.484	170.23	179.33	0.72	59.66	176.81	119.175	42880.727	2353	4630
424	13.664	171.25	180.23	0.721	59.76	177.75	120.219	43239.459	2353	4630
425	13.443	172.09	181.2	0.721	59.81	178.7	121.256	43714.349	2353	4630
426	13.439	172.86	181.97	0.72	59.79	179.65	122.221	43834.009	2353	4630
427	13.481	173.82	183.46	0.719	59.82	180.7	123.407	44550.74	2353	4630
428	13.655	174.91	184.15	0.713	59.72	181.51	124.444	44744.557	2353	4630
429	13.555	175.84	185.21	0.719	59.79	182.48	125.623	45299.094	2353	4630
430	13.579	176.5	185.74	0.718	59.72	183.26	126.277	45521.254	2353	4630
431	13.393	176.71	185.82	0.724	59.74	183.58	126.575	45560.289	2353	4630
432	13.605	176.54	186.05	0.719	59.64	183.67	126.696	45825.099	2353	4630
433	13.429	176.57	185.95	0.724	59.87	183.69	126.575	45594.464	2353	4630
434	13.312	176.28	185.25	0.723	59.7	183.48	126.433	45481.182	2353	4630
435	13.396	176.19	185.3	0.718	59.74	183.4	126.383	45575.79	2353	4630
436	13.517	176.22	185.19	0.723	59.71	183.19	126.206	45508.625	2353	4630
437	13.392	176.05	185.02	0.72	59.6	182.85	125.879	45387.144	2353	4630
438	13.552	176.02	184.86	0.721	59.77	182.77	125.616	45276.225	2353	4630
439	13.527	175.7	184.68	0.715	59.85	182.78	125.503	45087.27	2353	4630
440	13.482	175.38	184.36	0.717	59.73	182.49	125.318	45224.839	2353	4630
441	13.503	175.32	184.3	0.723	59.73	182.19	125.069	44894.015	2353	4630
442	13.581	174.95	183.92	0.716	59.69	182.09	124.771	44936.709	2353	4630
443	13.505	174.79	183.5	0.715	59.6	181.64	124.544	44896.352	2353	4630
444	13.524	174.71	183.81	0.717	59.72	181.57	124.373	44838.917	2353	4630
445	13.581	174.52	183.5	0.72	59.73	181.46	124.132	44626.507	2353	4630
446	13.549	174.35	183.32	0.714	59.75	181.24	123.826	44283.489	2353	4630
447	13.504	174.14	182.85	0.72	59.68	181	123.663	44420.884	2353	4630
448	13.413	173.93	182.51	0.716	59.6	180.74	123.365	44008.754	2353	4630
449	13.497	173.76	182.47	0.715	59.69	180.47	123.13	44187.103	2353	4630
450	13.507	173.32	182.16	0.713	59.58	180.36	122.996	44213.714	2353	4630
451	13.622	173.14	182.25	0.719	59.74	180.2	122.747	44238.531	2353	4630
452	13.469	173.08	181.79	0.719	59.74	180.09	122.47	44269.697	2353	4630
453	13.476	172.73	181.84	0.719	59.79	179.77	122.193	43938.827	2353	4630
454	13.498	172.41	181.38	0.714	59.72	179.41	121.93	43889.862	2353	4630
455	13.459	172.32	181.42	0.726	59.7	179.39	121.746	43963.425	2353	4630
456	13.49	172.01	180.99	0.726	59.6	178.87	121.426	43795.359	2353	4630
457	13.403	172.02	180.6	0.728	59.6	178.51	121.177	43916.375	2353	4630
458	13.502	171.94	180.26	0.722	59.86	178.51	120.844	43926.407	2353	4630
459	13.513	171.32	180.43	0.725	59.76	178.36	120.659	43793.695	2353	4630
460	13.594	171.24	180.08	0.719	59.75	177.98	120.396	43906.396	2353	4630
461	13.447	171.27	179.71	0.724	59.71	178	120.204	43505.005	2353	4630
462	13.318	170.96	179.67	0.724	59.66	177.72	119.856	43272.37	2353	4630
463	13.404	170.38	179.09	0.714	59.61	177.26	119.586	43101.067	2353	4630
464	13.484	170.48	179.06	0.718	59.58	176.92	119.345	42840.56	2353	4630
465	13.544	169.97	178.82	0.713	59.54	176.58	119.082	42380.495	2353	4630
466	13.332	169.99	178.44	0.713	59.69	176.6	118.805	42392.898	2353	4630
467	13.498	169.64	178.22	0.712	59.6	176.27	118.443	42561.452	2353	4630
468	13.565	169.09	177.93	0.729	59.71	176.13	118.209	43099.039	2353	4630
469	13.425	169.29	177.74	0.726	59.64	175.89	118.038	42941.763	2353	4630
470	13.546	168.77	177.35	0.725	59.65	175.54	117.719	42564.684	2353	4630
471	13.517	168.46	177.3	0.718	59.67	175.19	117.406	42368.158	2353	4630
472	13.508	168.52	176.97	0.72	59.6	175.01	117.158	42160.589	2353	4630

8.331822	114.05	1.001192	5.965585	1	171.775	692.2829	41536.97	
8.33177	114.72	1.001192	6.048865	1	172.615	706.4593	42387.56	
8.331864	115.51	1.001193	5.973946	1	173.055	702.2555	42135.33	
8.332082	116.38	1.001192	5.949106	1	173.845	704.1179	42247.08	
8.331926	117.15	1.001192	5.998987	1	174.78	715.7813	42946.88	
8.331822	117.99	1.001192	6.007244	1	175.74	723.0454	43382.72	
8.33177	118.89	1.001192	6.007206	1	176.645	729.2778	43756.67	
8.331791	119.86	1.001192	5.998889	1	177.415	734.0639	44043.83	
8.33176	120.88	1.001192	5.990535	1	178.64	740.1551	44409.31	
8.331864	121.79	1.001192	5.940619	1	179.53	740.1553	44409.32	
8.331791	122.69	1.001192	5.990558	1	180.525	753.4488	45206.93	
8.331864	123.54	1.001192	5.982278	1	181.12	756.3245	45379.47	
8.331843	123.84	1.001192	6.032254	1	181.265	764.4428	45866.57	
8.331947	124.03	1.001191	5.99067	1	181.295	759.8981	45593.89	
8.331708	123.82	1.001192	6.032156	1	181.26	764.4303	45865.82	
8.331884	123.78	1.001192	6.023952	1	180.765	762.5341	45752.05	
8.331843	123.66	1.001192	5.982263	1	180.745	756.9575	45417.45	
8.331874	123.48	1.001192	6.023945	1	180.705	761.1644	45669.87	
8.331988	123.25	1.001192	5.999032	1	180.535	756.052	45363.12	
8.331812	123	1.001191	6.007236	1	180.44	755.504	45330.24	
8.331728	122.93	1.001192	5.957186	1	180.19	748.5358	44912.15	
8.331853	122.76	1.001192	5.973939	1	179.87	749.5343	44972.06	
8.331853	122.46	1.001192	6.02393	1	179.81	754.3049	45258.3	
8.331895	122.4	1.001192	5.965637	1	179.435	745.2259	44713.56	
8.331988	122.04	1.001192	5.957372	1	179.145	742.8392	44570.35	
8.331864	121.85	1.001192	5.973946	1	179.26	743.8832	44632.99	
8.331853	121.73	1.001192	5.998934	1	179.01	745.5472	44732.83	
8.331832	121.49	1.001192	5.948928	1	178.835	737.5101	44250.61	
8.331905	121.32	1.001192	5.998972	1	178.495	742.7354	44564.12	
8.331988	121.14	1.001192	5.965704	1	178.22	736.8363	44210.18	
8.331895	120.78	1.001192	5.957305	1	178.115	734.3976	44063.85	
8.332009	120.78	1.001192	5.940722	1	177.74	731.5559	43893.36	
8.331843	120.46	1.001192	5.990595	1	177.695	736.2039	44172.24	
8.331843	120.35	1.001192	5.990595	1	177.435	734.5424	44072.55	
8.331791	119.98	1.001192	5.990558	1	177.285	732.8767	43972.6	
8.331864	119.69	1.001192	5.948951	1	176.895	726.2201	43573.21	
8.331884	119.69	1.001192	6.048948	1	176.87	737.3133	44238.8	
8.331988	119.27	1.001192	6.049024	1	176.5	735.3845	44123.07	
8.331988	118.91	1.001191	6.065688	1	176.31	735.8975	44153.85	
8.331718	118.65	1.001192	6.0155	1	176.1	727.8034	43668.21	
8.331822	118.6	1.001192	6.040571	1	175.875	729.7179	43783.07	
8.331832	118.23	1.001192	5.990588	1	175.66	722.1024	43326.15	
8.331874	118.29	1.001192	6.032277	1	175.49	725.9682	43558.09	
8.331926	118.06	1.001192	6.032314	1	175.315	723.8711	43432.27	
8.331978	117.65	1.001192	5.949032	1	174.735	712.2692	42736.15	
8.332009	117.34	1.001193	5.982383	1	174.77	714.8189	42889.13	
8.332051	117.04	1.001192	5.940752	1	174.395	708.2799	42496.79	
8.331895	116.91	1.001192	5.940641	1	174.215	706.6194	42397.16	
8.331988	116.67	1.001192	5.932376	1	173.93	703.4859	42209.15	
8.331874	116.42	1.001192	6.073936	1	173.51	718.8499	43130.99	
8.331947	116.25	1.001192	6.048993	1	173.515	714.8623	42891.74	
8.331936	115.89	1.001192	6.040654	1	173.06	711.9474	42716.84	
8.331916	115.52	1.001192	5.982315	1	172.88	703.1971	42191.83	
8.331988	115.41	1.001192	5.999032	1	172.745	703.6724	42220.34	

473	13.468	168.18	176.76	0.718	59.66	174.76	116.866	42034.28	2353	4630
474	13.496	167.85	176.43	0.721	59.59	174.57	116.561	41901.486	2353	4630
475	13.463	167.8	176.37	0.722	59.73	174.28	116.369	41911.38	2353	4630
476	13.459	167.24	176.21	0.718	59.7	174.13	116.014	41770.061	2353	4630
477	13.426	167.16	175.73	0.717	59.69	173.75	115.751	41789.715	2353	4630
478	13.49	166.7	175.28	0.714	59.56	173.46	115.517	41514.953	2353	4630
479	13.351	167.02	175.07	0.721	59.55	173.14	115.261	41441.872	2353	4630
480	13.569	166.57	175.15	0.717	59.63	172.91	115.062	41402.566	2353	4630
481	13.328	166.49	174.67	0.72	59.61	172.83	114.743	41231.28	2353	4630
482	13.433	165.9	174.47	0.715	59.68	172.77	114.579	41108.982	2353	4630
483	13.535	165.92	174.76	0.716	59.57	172.61	114.558	41191.565	2353	4630
484	13.594	166.19	174.9	0.716	59.65	172.74	114.558	41179.465	2353	4630
485	13.376	166.31	174.88	0.723	59.5	172.73	114.807	41167.628	2353	4630
486	13.475	166.72	175.56	0.713	59.65	173.11	115.226	41467.329	2353	4630
487	13.507	167.29	176	0.717	59.62	173.69	115.68	41594.335	2353	4630
488	13.364	167.39	176.23	0.721	59.52	173.9	115.993	41698.894	2353	4630
489	13.471	167.97	176.68	0.718	59.71	174.43	116.54	41986.142	2353	4630
490	13.423	168.3	177.01	0.719	59.57	174.86	117.108	42145.954	2353	4630
491	13.564	168.79	177.9	0.712	59.6	175.37	117.712	42281.187	2353	4630
492	13.454	169.39	178.23	0.718	59.41	175.86	118.365	42556.304	2353	4630
493	13.582	169.92	178.63	0.718	59.48	176.41	119.018	42820.074	2353	4630
494	13.481	170.41	179.38	0.721	59.64	177.16	119.679	43102.078	2353	4630
495	13.553	171.16	180.27	0.724	59.6	177.73	120.332	43633.289	2353	4630
496	13.493	171.53	180.9	0.722	59.51	178.37	121.021	43476.448	2353	4630
497	13.445	172.14	181.38	0.72	59.46	178.87	121.753	43692.601	2353	4630
498	13.528	172.87	182.11	0.716	59.67	179.48	122.3	43913.108	2353	4630
499	13.506	173.44	182.55	0.713	59.57	180.12	123.01	44163.984	2353	4630
500	13.358	174.07	183.31	0.72	59.47	180.75	123.791	44521.335	2353	4630
501	13.571	174.82	183.93	0.713	59.43	181.31	124.43	44603.775	2353	4630
502	13.454	175.16	184.4	0.718	59.64	182.17	125.247	44994.268	2353	4630
503	13.526	176	185.24	0.717	59.42	182.69	125.851	45143.9	2353	4630
504	13.552	176.36	185.6	0.715	59.38	183.31	126.582	45578.329	2353	4630
505	13.507	176.83	186.2	0.712	59.39	183.62	126.973	45484.229	2353	4630
506	13.464	176.51	185.75	0.722	59.41	183.76	126.994	45637.207	2353	4630
507	13.586	176.47	185.85	0.717	59.3	183.6	126.916	45488.84	2353	4630
508	13.479	176.46	185.84	0.714	59.36	183.53	126.795	45609.16	2353	4630
509	13.492	176.38	185.62	0.714	59.47	183.46	126.639	45399.105	2353	4630
510	13.357	176.12	185.36	0.726	59.41	183.16	126.355	45531.687	2353	4630
511	13.512	176.07	185.18	0.71	59.5	183.12	126.22	45074.125	2353	4630
512	13.514	175.72	184.83	0.725	59.47	182.8	125.886	45346.211	2353	4630
513	13.35	175.78	184.63	0.723	59.6	182.55	125.638	45183.727	2353	4630
514	13.489	175.16	184.27	0.721	59.51	182.11	125.368	45071.08	2353	4630
515	13.453	175.21	184.05	0.721	59.49	181.91	125.119	45049.011	2353	4630
516	13.48	174.85	184.09	0.717	59.59	182	124.92	44730.8	2353	4630
517	13.484	174.83	183.8	0.719	59.64	181.74	124.636	44750.836	2353	4630
518	13.412	174.79	183.5	0.717	59.46	181.46	124.338	44776.341	2353	4630
519	13.388	174.27	183.24	0.713	59.47	181.23	124.16	44379.116	2353	4630
520	13.507	174.07	182.91	0.717	59.54	180.99	123.961	44383.114	2353	4630
521	13.381	174	182.84	0.717	59.53	180.8	123.684	44298.451	2353	4630
522	13.429	173.83	182.67	0.718	59.43	180.53	123.478	44385.836	2353	4630
523	13.484	173.52	182.63	0.717	59.52	180.25	123.194	44240.827	2353	4630
524	13.484	173.06	182.17	0.719	59.39	180.19	122.939	44180.42	2353	4630
525	13.522	172.88	181.72	0.717	59.4	179.96	122.704	44039.068	2353	4630
526	13.486	172.83	181.41	0.718	59.42	179.73	122.477	44080.112	2353	4630

8.331926	115.1	1.001192	5.982323	1	172.47	699.9637	41997.82	
8.331999	114.98	1.001192	6.007371	1	172.14	701.0597	42063.58	
8.331853	114.55	1.001192	6.015598	1	172.085	700.8635	42051.81	
8.331884	114.43	1.001192	5.982293	1	171.725	694.857	41691.42	
8.331895	114.06	1.001192	5.973969	1	171.445	692.3174	41539.04	
8.33203	113.9	1.001192	5.949069	1	170.99	688.0381	41282.29	
8.33204	113.59	1.001192	6.007401	1	171.045	693.2445	41594.67	
8.331957	113.28	1.001192	5.974013	1	170.86	688.2015	41292.09	
8.331978	113.22	1.001192	5.999024	1	170.58	689.1665	41349.99	
8.331905	113.09	1.001192	5.957312	1	170.185	683.3968	41003.81	
8.332019	113.04	1.001192	5.965726	1	170.34	684.2364	41054.18	
8.331936	113.09	1.001193	5.965666	1	170.545	684.2299	41053.79	
8.332092	113.23	1.001192	6.024103	1	170.595	692.4336	41546.02	
8.331936	113.46	1.001192	5.940671	1	171.14	685.3358	41120.15	
8.331968	114.07	1.001193	5.974021	1	171.645	691.8989	41513.93	
8.332071	114.38	1.001192	6.007423	1	171.81	697.6496	41858.98	
8.331874	114.72	1.001192	5.982286	1	172.325	698.0069	41880.41	
8.332019	115.29	1.001192	5.990722	1	172.655	702.3979	42143.88	
8.331988	115.77	1.001193	5.932376	1	173.345	699.1449	41948.69	
8.332185	116.45	1.001193	5.982509	1	173.81	708.9643	42537.86	
8.332113	116.93	1.001192	5.982457	1	174.275	712.8689	42772.13	
8.331947	117.52	1.001192	6.007334	1	174.895	719.8089	43188.53	
8.331988	118.13	1.001193	6.03236	1	175.715	726.7516	43605.1	
8.332082	118.86	1.001193	6.015763	1	176.215	728.902	43734.12	
8.332133	119.41	1.001192	5.999136	1	176.76	731.2835	43877.01	
8.331916	119.81	1.001192	5.965652	1	177.49	730.4692	43828.15	
8.332019	120.55	1.001193	5.94073	1	177.995	731.6408	43898.45	
8.332123	121.28	1.001193	5.999129	1	178.69	743.524	44611.44	
8.332165	121.88	1.001192	5.940833	1	179.375	740.0991	44405.95	
8.331947	122.53	1.001193	5.982338	1	179.78	750.1637	45009.82	
8.332175	123.27	1.001193	5.974169	1	180.62	752.7522	45165.13	
8.332216	123.93	1.001193	5.957535	1	180.98	755.0163	45300.98	
8.332206	124.23	1.001193	5.932531	1	181.515	754.1698	45250.19	
8.332185	124.35	1.001193	6.015838	1	181.13	764.887	45893.22	
8.332299	124.3	1.001193	5.974258	1	181.16	759.1336	45548.02	
8.332237	124.17	1.001193	5.949217	1	181.15	755.2307	45313.84	
8.332123	123.99	1.001193	5.949136	1	181	754.2914	45257.48	
8.332185	123.75	1.001193	6.049166	1	180.74	765.254	45915.24	
8.332092	123.62	1.001193	5.915785	1	180.625	747.581	44854.86	
8.332123	123.33	1.001192	6.040789	1	180.275	761.3575	45681.45	
8.331988	122.95	1.001193	6.024028	1	180.205	757.7494	45464.96	
8.332082	122.6	1.001193	6.007431	1	179.715	754.0378	45242.27	
8.332102	122.42	1.001192	6.007446	1	179.63	752.5418	45152.51	
8.331999	122.41	1.001192	5.974043	1	179.47	747.1671	44830.03	
8.331947	122.1	1.001193	5.99067	1	179.315	747.5437	44852.62	
8.332133	122	1.001193	5.97414	1	179.145	743.6986	44621.91	
8.332123	121.76	1.001193	5.940804	1	178.755	738.4898	44309.39	
8.332051	121.45	1.001193	5.97408	1	178.49	741.4361	44486.17	
8.332061	121.27	1.001193	5.974088	1	178.42	739.7805	44386.83	
8.332165	121.1	1.001193	5.982494	1	178.25	739.5874	44375.24	
8.332071	120.73	1.001193	5.974095	1	178.075	736.8507	44211.04	
8.332206	120.8	1.001193	5.990856	1	177.615	737.3885	44243.31	
8.332196	120.56	1.001193	5.974184	1	177.3	733.9308	44035.85	
8.332175	120.31	1.001193	5.982502	1	177.12	733.5927	44015.56	

527	13.526	172.44	181.54	0.714	59.49	179.38	122.214	43806.347	2353	4630
528	13.406	172.16	181.27	0.712	59.41	179.25	121.944	43856.627	2353	4630
529	13.403	172.18	180.76	0.719	59.37	179.02	121.696	43750.001	2353	4630
530	13.523	172.12	180.7	0.723	59.44	178.79	121.461	43740.166	2353	4630
531	13.509	171.72	180.43	0.713	59.36	178.54	121.192	43531.17	2353	4630
532	13.443	171.54	180.25	0.721	59.39	178.32	120.908	43618.209	2353	4630
533	13.442	171.12	180.09	0.719	59.36	178.05	120.694	43489.967	2353	4630
534	13.467	170.92	179.5	0.717	59.36	177.75	120.361	43240.46	2353	4630
535	13.44	170.55	179.39	0.726	59.31	177.41	120.098	43203.052	2353	4630
536	13.251	170.46	179.17	0.717	59.43	177.27	119.849	43072.68	2353	4630
537	13.507	170.13	178.84	0.715	59.29	177.02	119.523	42854.357	2353	4630
538	13.461	169.93	178.77	0.714	59.42	176.72	119.217	42864.467	2353	4630
539	13.4	169.52	178.63	0.721	59.35	176.23	118.898	42709.948	2353	4630
540	13.528	169.52	178.1	0.718	59.35	176.23	118.685	42605.596	2353	4630
541	13.332	169.21	178.18	0.718	59.43	175.94	118.372	42536.383	2353	4630
542	13.432	169.03	177.48	0.727	59.39	175.6	118.06	42551.063	2353	4630
543	13.444	168.44	177.42	0.714	59.46	175.48	117.74	42179.142	2353	4630
544	13.533	168.58	177.16	0.717	59.6	175.3	117.456	42216.032	2353	4630
545	13.564	168.24	176.95	0.716	59.59	175.11	117.221	42110.125	2353	4630
546	13.444	168.25	176.57	0.726	59.47	174.82	116.916	41932.574	2353	4630
547	13.447	167.79	176.5	0.714	59.46	174.52	116.653	41733.835	2353	4630
548	13.495	167.36	176.2	0.712	59.43	174.3	116.348	41629.585	2353	4630
549	13.425	167.35	175.66	0.717	59.55	173.87	116.021	41651.061	2353	4630
550	13.468	166.91	175.62	0.717	59.44	173.65	115.78	41556.639	2353	4630
551	13.428	166.85	175.43	0.716	59.58	173.41	115.51	41631.077	2353	4630
552	13.443	166.67	175.11	0.715	59.46	173.24	115.283	41467.443	2353	4630
553	13.466	166.27	174.98	0.717	59.53	173	114.942	41311.445	2353	4630
554	13.476	165.89	174.47	0.714	59.41	172.59	114.714	41124.576	2353	4630
555	13.445	165.59	174.56	0.717	59.37	172.37	114.544	41262.838	2353	4630
556	13.553	165.8	174.38	0.711	59.52	172.27	114.43	41008.288	2353	4630
557	13.42	165.74	174.32	0.714	59.4	172.21	114.324	40851.493	2353	4630
558	13.419	166.09	174.66	0.719	59.48	172.41	114.409	41259.506	2353	4630
559	13.596	166.21	174.65	0.717	59.47	172.46	114.565	40896.71	2353	4630
560	13.432	166.02	174.6	0.711	59.55	172.53	114.629	40935.573	2353	4630

8.332102	119.89	1.001193	5.949121	1	176.99	727.9332	43675.99	
8.332185	119.84	1.001193	5.932516	1	176.715	724.2978	43457.87	
8.332227	119.65	1.001193	5.990871	1	176.47	729.9347	43796.08	
8.332154	119.35	1.001193	6.024147	1	176.41	732.572	43954.32	
8.332237	119.18	1.001193	5.940885	1	176.075	720.8467	43250.8	
8.332206	118.93	1.001193	6.00752	1	175.895	727.2239	43633.44	
8.332237	118.69	1.001193	5.990878	1	175.605	723.9258	43435.55	
8.332237	118.39	1.001193	5.974214	1	175.21	719.9204	43195.22	
8.332289	118.1	1.001193	6.049242	1	174.97	727.3684	43642.11	
8.332165	117.84	1.001193	5.974162	1	174.815	716.8518	43011.11	
8.332309	117.73	1.001193	5.957601	1	174.485	712.9198	42775.19	
8.332175	117.3	1.001193	5.949173	1	174.35	710.0888	42605.33	
8.332247	116.88	1.001193	6.00755	1	174.075	715.138	42908.28	
8.332247	116.88	1.001193	5.982554	1	173.81	710.8864	42653.18	
8.332165	116.51	1.001193	5.982494	1	173.695	709.0046	42540.28	
8.332206	116.21	1.001193	6.057514	1	173.255	716.0031	42960.19	
8.332133	116.02	1.001192	5.949143	1	172.93	701.2873	42077.24	
8.331988	115.7	1.001192	5.974036	1	172.87	702.523	42151.38	
8.331999	115.52	1.001193	5.965711	1	172.595	700.1407	42008.44	
8.332123	115.35	1.001193	6.049121	1	172.41	708.0827	42484.96	
8.332133	115.06	1.001193	5.949143	1	172.145	694.8133	41688.8	
8.332165	114.87	1.001192	5.932501	1	171.78	691.0577	41463.46	
8.33204	114.32	1.001193	5.974073	1	171.505	693.9447	41636.68	
8.332154	114.21	1.001192	5.974155	1	171.265	692.5124	41550.74	
8.332009	113.83	1.001193	5.965719	1	171.14	689.9221	41395.33	
8.332133	113.78	1.001193	5.957475	1	170.89	687.6147	41256.88	
8.332061	113.47	1.001193	5.974088	1	170.625	687.4928	41249.57	
8.332185	113.18	1.001193	5.94918	1	170.18	683.2685	40996.11	
8.332227	113	1.001193	5.974206	1	170.075	685.1256	41107.54	
8.332071	112.75	1.001193	5.924103	1	170.09	678.7038	40722.23	
8.332196	112.81	1.001193	5.949188	1	170.03	680.9461	40856.77	
8.332113	112.93	1.001193	5.990789	1	170.375	686.2177	41173.06	
8.332123	112.99	1.001192	5.974132	1	170.43	685.2426	41114.56	
8.33204	112.98	1.0014	5.924081	1	170.31	680.0221	40801.33	

Ambient Sample Results:

JOB NUMBER: 004_HHW_023_1
TECHNICIAN: Btn
DATE: 4_3_14
RUN NUMBER: EPA#6

METER Y FACTOR: **1.02**

	Sample Volume (L)	Meter Temp °F	ΔH	ΔP
Start	0		0	0
End			0	0

	SAMPLE INFORMATION	
Total Sample Volume - Vm	2772.873	Liters
Total Sample Volume - Vm	97.923	ft³
Average Sample Rate	0.17	Liters/min
Sample Time	560.00	Minutes
Average Meter Temperature	90	°F
Total Sample Volume (Standard Conditions) - Vmstd	96.111	dscf
Total Particulates	0.2	mg
Particulate Concentration (dry-standard)	0.000002081	grams/dscf
Particulate Emission Rate	0.000021429	grams/hour

Technician_____

JOB NUMBER 004_HHW_023_1

RUN # EPA#6

DATE: 4_3_14

BURN RATE 4.17 KG/HR DRY

FILTER A PARTICULATE 10.4 mg

FILTER B PARTICULATE 10.4 mg

	SAMPLE A INFORMATION		SAMPLE B INFORMATION	
Total Sample Volume - Vm	79.93		80.77	
Average Gas Velocity in Dilution Tunnel - vs	13.67	feet/second	13.67	feet/second
Average Gas Flow Rate in Dilution Tunnel - Qsd	36867.92	dscf/hour	36867.92	dscf/hour
Total Sample Volume (Standard Conditions) - Vmstd	75.22	dscf	74.69	dscf
Average Tunnel Temperature	83.1	F	83.1	F
Average Delta p	0.041		0.041	
Average Gas Meter Temperature	102	F	100	F
Average Delta H	2.00	in-h20	2.03	in-h20
Total Time of Test	560	min	560	min
Total Particulates	10.4	mg	10.4	mg
Particulate Concentration (dry-standard)	0.000138259	grams/dscf	0.000139245	grams/dscf
Ambient Train (dry-standard)	0.000002081	grams/dscf	0.000002081	grams/dscf
Net (dry-standard)	0.000136179	grams/dscf	0.000137164	grams/dscf
Particulate Emission Rate	5.02	grams/hour	5.06	grams/hour
Total PM Emissions	46.86	grams	47.20	grams
Average Total PM Emissions		47.03	grams	
AVERAGE PARTICLATE EMISSIONS RATE		5.04	grams/hour	
% OF AVERAGE	99.6		100.4	
Emissions Factor	1.205	g/Kg -Dry	1.213	g/Kg -Dry

Heat Output	44489	Btu/hr	46.907419	MJ/hr				
Emissions	0.2497	lb/MMBtu Out	0.1074	g/MJ	1.2091	g/dry kg	5.0388	g/hr
Qin	737446	BTU	778	MJ				
Qin LHV	684968	BTU	722	MJ				
Delivered Efficiency	56.31%	ndel	60.62%	ndel LHV				
HHV	8600							
LHV	7988							

Technician_____

VERSION: 2.4 4/15/2010

Manufacturer: Green Tech
Model: Crown Royal RS7300E
Date:
Run: Epa#6
Control #: 004-hhw-023-1
est Duration: 560
urn Category 4

Appliance Type: Non-Cat (Cat, Non-Cat, Pellet)

Temp. Units F (F or C)
Weight Units lb (kg or lb)

Wood Moisture (% DRY):	21.4
Wood Moisture (% wet):	17.63
Load Weight (lb wet):	104.10
Burn Rate (dry kg/h):	4.17
Total Particulate Emissions:	47.03 g

Fuel Data

	Oak	
HHV	19,887	kJ/kg
%C	50.00	
%H	6.60	
%O	42.90	
%Ash	0.50	

○ Douglas
◉ Oak

Averages		**224.7**	**71.8**	**7.76**	**14.49**	**3.51**
		Temp. (F)				
Elapsed Time (min)	**Fuel Weight Remaining (lb)**	**Flue Gas**	**Room Temp**	**Flue Gas Composition (%) O2**	**CO2**	**CO**
0	104.1	277.0	70.0	7.50	11.97	0.39
10	92.4	307.0	68.0	0.00	19.12	5.00
20	84.1	352.0	67.0	0.00	19.59	5.00
30	83.1	238.0	69.0	8.91	16.26	5.00
40	83.1	199.0	71.0	10.63	12.85	3.23
50	83.1	177.0	71.0	11.57	10.57	2.20
60	83.1	162.0	72.0	12.00	9.29	1.67
70	81.1	301.0	72.0	4.78	15.08	0.84
80	70.5	371.0	73.0	0.00	19.95	4.52
90	68.0	256.0	73.0	6.97	20.00	5.00
100	68.1	210.0	73.0	10.24	16.24	4.49
110	67.1	185.0	72.0	11.53	12.68	2.96
120	67.1	167.0	72.0	11.66	11.07	2.28
130	68.1	156.0	72.0	12.00	9.40	1.78
140	62.5	324.0	73.0	1.22	18.78	0.88
150	53.1	372.0	73.0	0.00	18.35	5.00
160	52.1	243.0	73.0	7.23	20.00	5.00
170	51.8	203.0	73.0	10.70	17.90	5.00
180	51.1	180.0	73.0	11.53	14.65	4.50

190	51.1	165.0	72.0	11.84	12.69	3.59
200	51.1	168.0	73.0	12.20	10.69	2.85
210	47.8	298.0	72.0	2.19	17.13	1.20
220	38.5	343.0	73.0	0.00	17.62	5.00
230	35.1	241.0	73.0	4.87	20.00	5.00
240	35.1	201.0	72.0	9.73	18.95	5.00
250	35.7	178.0	72.0	11.03	15.37	5.00
260	36.0	164.0	72.0	11.66	13.17	3.97
270	35.2	153.0	72.0	12.03	11.53	3.21
280	32.1	307.0	73.0	0.23	18.12	2.03
290	25.1	344.0	72.0	0.00	18.71	4.62
300	24.1	229.0	72.0	5.26	20.00	5.00
310	24.1	193.0	72.0	10.18	16.44	5.00
320	24.1	172.0	72.0	11.48	13.18	4.67
330	24.1	158.0	72.0	11.70	11.62	3.69
340	24.1	148.0	72.0	11.85	10.28	2.98
350	21.1	301.0	71.0	2.31	16.41	2.12
360	16.1	314.0	72.0	0.00	19.32	2.83
370	16.0	222.0	72.0	5.79	20.00	5.00
380	15.1	189.0	71.0	9.69	16.58	5.00
390	16.1	169.0	72.0	11.01	13.72	4.95
400	15.1	156.0	71.0	11.09	12.31	4.07
410	15.1	146.0	72.0	11.01	11.15	3.41
420	13.0	309.0	71.0	1.91	16.85	2.13
430	9.1	288.0	72.0	2.61	17.15	1.51
440	9.1	212.0	71.0	6.68	14.99	5.00
450	9.1	182.0	72.0	10.04	12.43	4.85
460	9.1	164.0	72.0	10.68	11.40	4.03
470	9.1	151.0	71.0	10.81	10.58	3.49
480	8.6	200.0	72.0	15.27	4.71	0.95
490	6.1	282.0	72.0	5.82	12.71	3.24
500	2.9	293.0	72.0	6.51	12.50	2.56
510	1.0	216.0	72.0	6.70	12.97	3.24
520	1.2	183.0	72.0	8.78	11.89	3.57
530	2.1	164.0	73.0	9.44	11.21	3.35
540	2.1	151.0	72.0	10.04	10.16	2.93
550	2.1	140.0	72.0	10.22	9.38	2.61
560	0.0	236.0	72.0	11.11	8.13	1.95

Manufacturer: Green Tech
Model: rown Royal RS7300E
Date:
Run: Epa#6
Control #: 004-hhw-023-1
Test Duration: 560 min

	HHV	LHV
Eff	71.8%	77.4%
Comb Eff	86.5%	86.5%
HT Eff	83.1%	89.5%
Output	59,561	kJ/h
Burn Rate	4.17	kg/h
Grams CO	7,148	g
Input	82,900	kJ/h
MC wet	17.63	

Ultimate CO2
CO2-ult 19.80
F_0
1.055

Overall Heating Efficiency: 71.8%
Combustion Efficiency: 86.5%
Heat Transfer Efficiency: 83.1%

Air Fuel Ratio (A/F)	
Dry Molecular Weight (Md)	30.46
Dry Moles Exhaust Gas (Nr):	219.95
Air Fuel Ratio (A/F)	6.19

Heat Output: 56,500 Btu/h 59,561 kJ/h
Heat Input: 78,639 Btu/h 82,900 kJ/h
Burn Duration: 9.333333333 h
Burn Rate: 9.2 lb/h 4.2 kg/h
Stack Temp: 223.8 Deg. F 106.6 Deg. C

Averages	3.51	14.49	19.4%	19.91	3.66	107.1	22.1	83.8%	84.4%	#DIV/0!	7.0	16.84	64.34	0.81

INPUT DATA				Oxygen Calculation			Input Data		Combust	Heat	Net	Air	Wet Wt	% Wet	Dry Wt.
Elapsed Time	Weight Remaining (kg)	% CO [e]	% CO2 [d]	Excess Air EA	Total O2	Calc. % O2 [g]	Flue Gas (ºC)	Room Temp (ºC)	Eff %	Transfer %	Eff %	Fuel Ratio	Now Wt	Consumed x	Now Wtdn
0	47.23	0.39	11.97	60.2%	20.23	8.06	136.1	21.1	97.5%	82.9%	80.8%	9.8	47.23	0.00	38.91
10	41.92	5.00	19.12	-17.9%	19.55	-2.07	152.8	20.0	82.5%	83.1%	68.6%	4.8	41.92	11.24	34.53
20	38.16	5.00	19.59	-19.5%	19.53	-2.56	177.8	19.4	82.9%	82.2%	68.1%	4.7	38.16	19.21	31.43
30	37.70	5.00	16.26	-6.9%	19.72	0.96	114.4	20.6	80.3%	84.0%	67.5%	5.4	37.70	20.17	31.06
40	37.70	3.23	12.85	23.1%	20.02	5.55	92.8	21.7	83.2%	84.7%	#DIV/0!	7.2	37.70	20.17	31.06
50	37.70	2.20	10.57	55.1%	20.21	8.54	80.6	21.7	85.6%	85.0%	#DIV/0!	9.2	37.70	20.17	31.06
60	37.70	1.67	9.29	80.7%	20.31	10.19	72.2	22.2	87.3%	85.4%	74.6%	10.8	37.70	20.17	31.06
70	36.80	0.84	15.08	24.4%	20.03	4.53	149.4	22.2	95.5%	83.3%	79.6%	7.6	36.80	22.09	30.31
80	31.99	4.52	19.95	-19.1%	19.53	-2.68	188.3	22.8	84.4%	82.1%	69.3%	4.8	31.99	32.28	26.35
90	30.85	5.00	20.00	-20.8%	19.50	-3.00	124.4	22.8	83.1%	84.6%	70.3%	4.6	30.85	34.68	25.41
100	30.90	4.49	16.24	-4.5%	19.75	1.26	98.9	22.8	81.8%	85.0%	69.6%	5.6	30.90	34.58	25.45
110	30.44	2.96	12.68	26.6%	20.04	5.88	85.0	22.2	84.1%	85.2%	71.7%	7.5	30.44	35.54	25.08
120	30.44	2.28	11.07	48.3%	20.17	7.96	75.0	22.2	85.7%	85.6%	73.4%	8.8	30.44	35.54	25.08
130	30.90	1.78	9.40	77.1%	20.30	10.01	68.9	22.2	86.8%	85.6%	74.3%	10.5	30.90	34.58	25.45
140	28.36	0.88	18.78	0.7%	19.81	0.59	162.2	22.8	96.2%	83.8%	80.6%	6.2	28.36	39.96	23.36
150	24.09	5.00	18.35	-15.2%	19.60	-1.25	188.9	22.8	82.0%	81.5%	66.8%	4.9	24.09	48.99	19.85
160	23.64	5.00	20.00	-20.8%	19.50	-3.00	117.2	22.8	83.1%	84.9%	70.6%	4.6	23.64	49.95	19.47
170	23.50	5.00	17.90	-13.5%	19.62	-0.78	95.0	22.8	81.7%	85.4%	69.7%	5.0	23.50	50.24	19.36
180	23.19	4.50	14.65	3.4%	19.84	2.94	82.2	22.8	80.4%	85.4%	68.6%	6.0	23.19	50.91	19.10
190	23.19	3.59	12.69	21.6%	20.00	5.52	73.9	22.2	81.6%	85.6%	#DIV/0!	7.1	23.19	50.91	19.10
200	23.19	2.85	10.69	46.3%	20.16	8.05	75.6	22.8	82.5%	85.2%	70.3%	8.6	23.19	50.91	19.10
210	21.69	1.20	17.13	8.0%	19.89	2.16	147.8	22.2	94.4%	83.9%	79.2%	6.6	21.69	54.08	17.86
220	17.47	5.00	17.62	-12.5%	19.64	-0.48	172.8	22.8	81.4%	81.9%	66.7%	5.1	17.47	63.02	14.39
230	15.93	5.00	20.00	-20.8%	19.50	-3.00	116.1	22.8	83.1%	84.9%	70.6%	4.6	15.93	66.28	13.12
240	15.93	5.00	18.95	-17.3%	19.56	-1.89	93.9	22.2	82.4%	85.6%	70.6%	4.8	15.93	66.28	13.12
250	16.20	5.00	15.37	-2.8%	19.77	1.90	81.1	22.2	79.5%	85.5%	67.9%	5.6	16.20	65.71	13.34
260	16.33	3.97	13.17	15.5%	19.96	4.80	73.3	22.2	80.7%	85.6%	69.1%	6.7	16.33	65.42	13.45
270	15.97	3.21	11.53	34.3%	20.09	6.96	67.2	22.2	81.8%	85.8%	70.2%	7.9	15.97	66.19	13.16
280	14.56	2.03	18.12	-1.7%	19.78	0.65	152.8	22.8	91.4%	83.8%	76.6%	5.9	14.56	69.16	12.00
290	11.39	4.62	18.71	-15.1%	19.60	-1.42	173.3	22.2	83.3%	82.3%	68.6%	5.0	11.39	75.89	9.38

300	10.93	5.00	20.00	-20.8%	19.50	-3.00	109.4	22.2	83.1%	85.2%	70.8%	4.6	10.93	76.85	9.01
310	10.93	5.00	16.44	-7.6%	19.71	0.77	89.4	22.2	80.5%	85.3%	#DIV/0!	5.4	10.93	76.85	9.01
320	10.93	4.67	13.18	10.9%	19.91	4.40	77.8	22.2	78.2%	85.2%	#DIV/0!	6.4	10.93	76.85	9.01
330	10.93	3.69	11.62	29.3%	20.06	6.60	70.0	22.2	79.9%	85.5%	#DIV/0!	7.5	10.93	76.85	9.01
340	10.93	2.98	10.28	49.3%	20.18	8.41	64.4	22.2	81.3%	85.7%	69.7%	8.8	10.93	76.85	9.01
350	9.57	2.12	16.41	6.9%	19.88	2.41	149.4	21.7	90.3%	83.3%	75.2%	6.4	9.57	79.73	7.89
360	7.30	2.83	19.32	-10.6%	19.67	-1.07	156.7	22.2	89.1%	83.7%	74.6%	5.3	7.30	84.53	6.02
370	7.26	5.00	20.00	-20.8%	19.50	-3.00	105.6	22.2	83.1%	85.3%	71.0%	4.6	7.26	84.63	5.98
380	6.85	5.00	16.58	-8.2%	19.70	0.62	87.2	21.7	80.6%	85.4%	68.8%	5.3	6.85	85.49	5.64
390	7.30	4.95	13.72	6.1%	19.87	3.67	76.1	22.2	77.9%	85.3%	#DIV/0!	6.1	7.30	84.53	6.02
400	6.85	4.07	12.31	20.9%	20.00	5.65	68.9	21.7	79.3%	85.6%	67.9%	7.0	6.85	85.49	5.64
410	6.85	3.41	11.15	36.0%	20.10	7.25	63.3	22.2	80.5%	85.8%	69.1%	7.9	6.85	85.49	5.64
420	5.90	2.13	16.85	4.3%	19.85	1.93	153.9	21.7	90.5%	83.3%	75.3%	6.3	5.90	87.51	4.86
430	4.13	1.51	17.15	6.1%	19.87	1.96	142.2	22.2	93.1%	84.1%	78.3%	6.4	4.13	91.26	3.40
440	4.13	5.00	14.99	-0.9%	19.79	2.30	100.0	21.7	79.1%	84.4%	#DIV/0!	5.7	4.13	91.26	3.40
450	4.13	4.85	12.43	14.6%	19.95	5.09	83.3	22.2	76.7%	84.5%	#DIV/0!	6.6	4.13	91.26	3.40
460	4.13	4.03	11.40	28.3%	20.05	6.64	73.3	22.2	78.3%	85.1%	#DIV/0!	7.4	4.13	91.26	3.40
470	4.13	3.49	10.58	40.7%	20.13	7.81	66.1	21.7	79.4%	85.4%	67.8%	8.2	4.13	91.26	3.40
480	3.90	0.95	4.71	249.9%	20.61	15.43	93.3	22.2	86.5%	79.5%	68.8%	20.9	3.90	91.74	3.21
490	2.77	3.24	12.71	24.2%	20.02	5.69	138.9	22.2	83.0%	82.1%	68.1%	7.3	2.77	94.14	2.28
500	1.32	2.56	12.50	31.5%	20.07	6.29	145.0	22.2	85.7%	81.8%	70.2%	7.8	1.32	97.21	1.08
510	0.45	3.24	12.97	22.2%	20.01	5.42	102.2	22.2	83.3%	84.2%	70.2%	7.2	0.45	99.04	0.37
520	0.54	3.57	11.89	28.1%	20.05	6.38	83.9	22.2	80.8%	84.8%	68.5%	7.5	0.54	98.85	0.45
530	0.95	3.35	11.21	36.0%	20.10	7.22	73.3	22.8	80.8%	85.3%	69.0%	8.0	0.95	97.98	0.78
540	0.95	2.93	10.16	51.3%	20.19	8.56	66.1	22.2	81.4%	85.5%	#DIV/0!	8.9	0.95	97.98	0.78
550	0.95	2.61	9.38	65.2%	20.25	9.57	60.0	22.2	81.9%	85.8%	70.3%	9.7	0.95	97.98	0.78
560	0.00	1.95	8.13	96.5%	20.36	11.26	113.3	22.2	84.0%	81.3%	68.3%	11.6	0.00	100.00	0.00

Moisture Cont

%HC						
1.32	Combustion Efficiency:	86.5%			Moisture of Wood (wet basis):	17.63
	Total Input (kJ):	773,731	733,846	(Btu)	Initial Dry Weight Wtdo (kg):	38.91
	Total Output (kJ):	555,901	527,245	(Btu)	Moisture Content Dry	21.40
	Efficiency:	71.8%				
	Total CO (g):	7148.02				

Load Weight (kg):	47.23					
Fuel Heating:	HHV	LHV		HHV	LHV	
Value in kJ/kg - CV:	19887.00	18463.91	Btu/lb	8555.61	7943.38	

64.34	781535	4.17	6.60	2.68	19887.00	17.63	78.34	20.78	4.44	13.65	0.50	0.44	32.87	12.34	7.89	1.12
% Dry	**Fuel Properties**					**Mw**	**Mass Balance**					**kg Wood per**				
Comsumed	**Total**	**Carbon**	**Hydrogen**	**Oxygen**	**Calorific**	**Moisture**	**(moles/100 mole dry flue gas)**					**100 mole dfp**	**Moles per kg of Dry Woo**			
y	**Input**	**/12= [a]**	**/1= [b]**	**/16= [c]**	**Value**	**Fuel Burnt**	**[h]**	**[u]**	**[w]**	**[j]**	**[k]**	**Nk**	**CO2**	**O2**	**CO**	**HC**
0.00	0	4.17	6.60	2.68	19887.00	17.63	79.58	21.11	2.98	9.74	0.04	0.30	40.41	27.23	1.32	0.15
11.24	117806	4.17	6.60	2.68	19887.00	17.63	77.95	20.68	5.96	18.23	0.72	0.59	32.23	-3.48	8.43	1.22
19.21	34561	4.17	6.60	2.68	19887.00	17.63	77.97	20.68	6.08	18.60	0.72	0.60	32.41	-4.24	8.27	1.20
20.17	3716	4.17	6.60	2.68	19887.00	17.63	77.78	20.63	5.27	15.97	0.72	0.52	30.98	1.83	9.53	1.37
20.17	0	4.17	6.60	2.68	19887.00	17.63	78.37	20.79	3.97	12.18	0.46	0.39	32.54	14.06	8.18	1.16
20.17	0	4.17	6.60	2.68	19887.00	17.63	78.69	20.87	3.14	9.75	0.30	0.31	33.86	27.34	7.05	0.97
20.17	7433	4.17	6.60	2.68	19887.00	17.63	78.85	20.92	2.68	8.41	0.22	0.27	34.78	38.14	6.25	0.84
22.09	46825	4.17	6.60	2.68	19887.00	17.63	79.55	21.10	3.85	12.47	0.11	0.38	39.38	11.82	2.19	0.30
32.28	48683	4.17	6.60	2.68	19887.00	17.63	78.21	20.74	6.03	18.59	0.66	0.60	33.25	-4.46	7.53	1.09
34.68	8919	4.17	6.60	2.68	19887.00	17.63	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
34.58	3345	4.17	6.60	2.68	19887.00	17.63	78.01	20.69	5.13	15.64	0.64	0.51	31.82	2.48	8.80	1.26
35.54	3716	4.17	6.60	2.68	19887.00	17.63	78.48	20.82	3.85	11.88	0.42	0.38	33.07	15.34	7.72	1.09
35.54	-3716	4.17	6.60	2.68	19887.00	17.63	78.69	20.87	3.28	10.19	0.32	0.33	33.92	24.40	6.99	0.97
34.58	17095	4.17	6.60	2.68	19887.00	17.63	78.81	20.91	2.74	8.56	0.24	0.27	34.47	36.70	6.53	0.88
39.96	55744	4.17	6.60	2.68	19887.00	17.63	79.75	21.15	4.75	15.42	0.13	0.47	39.75	1.25	1.86	0.27
48.99	38649	4.17	6.60	2.68	19887.00	17.63	77.90	20.66	5.78	17.62	0.72	0.57	31.92	-2.18	8.70	1.26
49.95	4831	4.17	6.60	2.68	19887.00	17.63	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
50.24	3716	4.17	6.60	2.68	19887.00	17.63	77.88	20.66	5.67	17.27	0.72	0.56	31.73	-1.38	8.86	1.28
50.91	2601	4.17	6.60	2.68	19887.00	17.63	77.91	20.67	4.75	14.39	0.64	0.47	30.99	6.22	9.52	1.36
50.91	0	4.17	6.60	2.68	19887.00	17.63	78.20	20.74	4.03	12.28	0.51	0.40	31.65	13.77	8.95	1.27
50.91	12264	4.17	6.60	2.68	19887.00	17.63	78.41	20.80	3.35	10.24	0.40	0.33	32.12	24.18	8.56	1.20
54.08	46825	4.17	6.60	2.68	19887.00	17.63	79.51	21.09	4.44	14.31	0.17	0.44	38.78	4.88	2.72	0.38
63.02	47197	4.17	6.60	2.68	19887.00	17.63	77.86	20.65	5.60	17.04	0.72	0.56	31.61	-0.86	8.97	1.29
66.28	12635	4.17	6.60	2.68	19887.00	17.63	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
66.28	-2230	4.17	6.60	2.68	19887.00	17.63	77.94	20.67	5.92	18.09	0.72	0.59	32.16	-3.20	8.49	1.23
65.71	-3345	4.17	6.60	2.68	19887.00	17.63	77.73	20.62	5.06	15.27	0.72	0.50	30.52	3.77	9.93	1.42
65.42	1858	4.17	6.60	2.68	19887.00	17.63	78.06	20.71	4.25	12.89	0.56	0.42	31.15	11.35	9.39	1.33
66.19	14494	4.17	6.60	2.68	19887.00	17.63	78.30	20.77	3.65	11.13	0.45	0.36	31.78	19.18	8.85	1.24
69.16	37534	4.17	6.60	2.68	19887.00	17.63	79.20	21.01	4.91	15.61	0.29	0.49	37.12	1.33	4.16	0.60
75.89	29730	4.17	6.60	2.68	19887.00	17.63	78.09	20.71	5.76	17.67	0.67	0.57	32.65	-2.48	8.06	1.17

76.85	3716	4.17	6.60	2.68	19887.00	17.63	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
76.85	0	4.17	6.60	2.68	19887.00	17.63	77.79	20.63	5.32	16.11	0.72	0.53	31.07	1.45	9.45	1.36
76.85	0	4.17	6.60	2.68	19887.00	17.63	77.75	20.62	4.44	13.33	0.67	0.44	29.81	9.95	10.56	1.51
76.85	0	4.17	6.60	2.68	19887.00	17.63	78.09	20.71	3.80	11.50	0.52	0.38	30.74	17.45	9.76	1.38
76.85	11149	4.17	6.60	2.68	19887.00	17.63	78.33	20.78	3.28	10.00	0.42	0.33	31.48	25.75	9.12	1.27
79.73	29730	4.17	6.60	2.68	19887.00	17.63	79.06	20.97	4.52	14.31	0.30	0.45	36.49	5.35	4.71	0.67
84.53	18953	4.17	6.60	2.68	19887.00	17.63	78.92	20.93	5.41	17.05	0.41	0.54	35.86	-1.98	5.25	0.76
84.63	3716	4.17	6.60	2.68	19887.00	17.63	78.00	20.69	6.17	18.92	0.73	0.61	32.56	-4.88	8.14	1.18
85.49	-372	4.17	6.60	2.68	19887.00	17.63	77.80	20.64	5.35	16.22	0.72	0.53	31.14	1.16	9.39	1.35
84.53	0	4.17	6.60	2.68	19887.00	17.63	77.66	20.60	4.65	13.93	0.71	0.46	29.65	7.94	10.70	1.53
85.49	3716	4.17	6.60	2.68	19887.00	17.63	77.97	20.68	4.07	12.28	0.58	0.40	30.40	13.96	10.05	1.43
85.49	7804	4.17	6.60	2.68	19887.00	17.63	78.19	20.74	3.61	10.95	0.48	0.36	31.05	20.18	9.49	1.34
87.51	22298	4.17	6.60	2.68	19887.00	17.63	79.09	20.98	4.63	14.67	0.30	0.46	36.59	4.20	4.63	0.66
91.26	14494	4.17	6.60	2.68	19887.00	17.63	79.38	21.05	4.53	14.52	0.21	0.45	38.05	4.36	3.35	0.48
91.26	0	4.17	6.60	2.68	19887.00	17.63	77.71	20.61	4.97	14.97	0.72	0.49	30.32	4.65	10.11	1.45
91.26	0	4.17	6.60	2.68	19887.00	17.63	77.63	20.59	4.31	12.85	0.69	0.43	28.97	11.87	11.30	1.61
91.26	0	4.17	6.60	2.68	19887.00	17.63	77.93	20.67	3.84	11.53	0.57	0.38	29.84	17.37	10.55	1.49
91.26	1858	4.17	6.60	2.68	19887.00	17.63	78.12	20.72	3.49	10.55	0.49	0.35	30.43	22.45	10.04	1.41
91.74	11149	4.17	6.60	2.68	19887.00	17.63	78.91	20.93	1.39	4.35	0.11	0.14	34.17	111.94	6.89	0.81
94.14	21183	4.17	6.60	2.68	19887.00	17.63	78.36	20.78	3.94	12.08	0.46	0.39	32.44	14.53	8.27	1.17
97.21	18953	4.17	6.60	2.68	19887.00	17.63	78.65	20.86	3.70	11.49	0.36	0.37	33.95	17.10	6.95	0.97
99.04	6318	4.17	6.60	2.68	19887.00	17.63	78.37	20.79	4.00	12.28	0.46	0.40	32.59	13.61	8.14	1.15
98.85	-4088	4.17	6.60	2.68	19887.00	17.63	78.16	20.73	3.83	11.64	0.50	0.38	31.19	16.73	9.36	1.32
97.98	-3345	4.17	6.60	2.68	19887.00	17.63	78.22	20.75	3.61	10.96	0.47	0.36	31.23	20.11	9.33	1.31
97.98	0	4.17	6.60	2.68	19887.00	17.63	78.35	20.78	3.24	9.87	0.41	0.32	31.52	26.56	9.09	1.27
97.98	15608	4.17	6.60	2.68	19887.00	17.63	78.44	20.81	2.96	9.06	0.36	0.29	31.80	32.43	8.85	1.22
100.00	7804	4.17	6.60	2.68	19887.00	17.63	78.66	20.87	2.48	7.67	0.26	0.25	32.92	45.57	7.90	1.06

ent MCwb: 17.63

Dry kg : 38.91
CA: 50.00
HY: 6.60
OX: 42.90

											SUMS					
192.81	30.93	11.89	380.23	3361.29	2539.35	2471.73	2443.83	3214.42	2958.58	295.28	6417.40	1297.53	128312.57	25311.77	56869.17	82762.79
ıd		Moisture	Stack Temp	Heat Content Change - Ambient to Stack Temperature Flue Gas Constituent						Room Temp	Energy Losses (kJ/kg of Dry Fuel) Flue Gas Constituent					
N2	H2O	Present	K	CO2	O2	CO	N2	CH4	H2O	K	CO2	O2	CO	N2	CH4	H2O Comb
268.66	32.87	11.89	409.26	4570.22	3444.00	3350.16	3312.80	4389.51	4009.36	294.26	184.70	93.78	376.98	890.02	130.95	1577.20
131.38	30.73	11.89	425.93	5306.68	3985.70	3873.85	3831.32	5125.91	4635.06	293.15	171.03	-13.88	2417.70	503.38	1091.93	1493.43
128.99	30.77	11.89	450.93	6384.17	4770.24	4630.28	4580.73	6220.86	5538.19	292.59	206.89	-20.22	2378.99	590.85	1074.11	1523.30
148.20	30.43	11.89	387.59	3700.99	2802.38	2729.32	2698.18	3525.28	3267.40	293.71	114.66	5.12	2721.93	399.86	1223.86	1437.26
198.46	30.85	11.89	365.93	2781.92	2115.94	2063.08	2039.06	2629.11	2470.55	294.82	90.53	29.74	2331.61	404.67	1032.03	1432.84
252.07	31.22	11.89	353.71	2293.34	1749.02	1706.47	1686.37	2157.08	2043.87	294.82	77.65	47.82	2006.26	425.08	867.06	1436.63
295.24	31.49	11.89	345.37	1941.54	1483.27	1447.80	1430.62	1820.59	1734.26	295.37	67.53	56.56	1778.53	422.38	749.37	1438.99
207.78	32.57	11.89	422.59	5082.59	3818.30	3711.37	3670.58	4907.48	4440.72	295.37	200.18	45.13	628.99	762.66	266.06	1576.77
130.34	30.98	11.89	461.48	6708.72	4998.18	4847.92	4796.80	6569.00	5797.36	295.93	223.07	-22.29	2168.42	625.24	979.53	1541.82
126.96	30.81	11.89	397.59	4025.60	3040.12	2958.89	2925.55	3852.11	3541.61	295.93	131.06	-14.83	2327.41	371.44	1055.17	1463.58
152.82	30.64	11.89	372.04	2985.50	2267.19	2209.68	2184.14	2829.36	2645.83	295.93	94.99	5.61	2508.78	333.79	1128.08	1428.25
204.67	30.99	11.89	358.15	2449.34	1865.93	1820.04	1798.70	2308.32	2179.74	295.37	81.00	28.62	2198.63	368.14	970.71	1430.17
241.12	31.23	11.89	348.15	2051.53	1566.33	1528.65	1510.55	1925.84	1831.02	295.37	69.59	38.22	1987.84	364.22	863.25	1430.36
288.98	31.40	11.89	342.04	1809.85	1383.68	1350.85	1334.76	1694.86	1618.20	295.37	62.38	50.77	1855.85	385.72	786.52	1431.53
168.79	32.63	11.89	435.37	5597.84	4193.49	4073.12	4028.97	5431.00	4872.64	295.93	222.50	5.24	534.66	680.04	238.51	1593.86
135.52	30.65	11.89	462.04	6732.57	5015.37	4864.45	4813.19	6593.63	5817.08	295.93	214.91	-10.92	2503.78	652.27	1126.75	1526.09
126.96	30.81	11.89	390.37	3729.74	2821.09	2746.79	2715.61	3559.37	3288.08	295.93	121.43	-13.76	2325.68	344.79	1054.82	1455.77
138.06	30.61	11.89	368.15	2828.88	2150.08	2095.99	2071.67	2676.93	2509.84	295.93	89.77	-2.96	2527.02	286.01	1142.03	1422.61
164.83	30.44	11.89	355.37	2317.37	1766.26	1723.04	1702.79	2182.05	2063.63	295.93	71.82	10.99	2710.60	280.67	1215.01	1401.35
195.06	30.63	11.89	347.04	2007.51	1533.10	1496.31	1478.57	1883.69	1792.31	295.37	63.54	21.11	2547.52	288.41	1131.20	1401.65
235.59	30.78	11.89	348.71	2052.38	1566.59	1528.81	1510.73	1927.48	1831.19	295.93	65.92	37.88	2436.31	355.92	1066.13	1409.53
179.99	32.40	11.89	420.93	5012.98	3767.34	3662.16	3621.84	4837.33	4381.95	295.37	194.38	18.39	778.66	651.89	343.28	1566.51
139.69	30.58	11.89	445.93	6044.54	4518.05	4385.88	4338.86	5886.44	5245.99	295.93	191.08	-3.89	2577.92	606.08	1159.16	1504.92
126.96	30.81	11.89	389.26	3684.36	2787.43	2714.18	2683.34	3514.59	3249.10	295.93	119.95	-13.60	2325.42	340.69	1054.77	1454.57
132.27	30.71	11.89	367.04	2805.39	2133.00	2079.53	2055.36	2652.99	2490.19	295.37	90.23	-6.83	2419.16	271.87	1096.00	1426.79
154.36	30.32	11.89	354.26	2294.29	1749.32	1706.66	1686.57	2158.91	2044.06	295.37	70.03	6.60	2826.85	260.34	1271.00	1394.98
184.64	30.50	11.89	346.48	1985.51	1516.48	1480.14	1462.58	1862.64	1772.96	295.37	61.85	17.22	2671.28	270.04	1190.57	1394.97
215.84	30.68	11.89	340.37	1744.12	1333.93	1302.39	1286.86	1632.23	1560.19	295.37	55.43	25.59	2515.61	277.76	1109.58	1396.72
162.25	31.97	11.89	425.93	5200.90	3903.95	3793.82	3752.29	5028.78	4539.12	295.93	193.06	5.18	1192.64	608.82	534.41	1550.90
136.27	30.84	11.89	446.48	6089.31	4551.52	4418.37	4371.00	5930.05	5284.85	295.37	198.81	-11.28	2317.07	595.62	1044.23	1518.75

126.96	30.81	11.89	382.59	3433.98	2602.09	2534.70	2505.69	3266.83	3034.57	295.37	111.80	-12.69	2323.95	318.14	1054.48	1447.96
147.01	30.45	11.89	362.59	2627.08	1999.38	1949.73	1926.97	2480.10	2334.91	295.37	81.62	2.90	2692.41	283.28	1213.00	1409.86
175.84	30.15	11.89	350.93	2161.74	1649.46	1609.54	1590.53	2031.52	1927.83	295.37	64.44	16.41	3005.94	279.69	1343.37	1383.99
206.57	30.41	11.89	343.15	1853.71	1416.87	1383.16	1366.70	1736.70	1656.88	295.37	56.98	24.72	2775.71	282.33	1229.36	1387.44
239.85	30.62	11.89	337.59	1634.76	1251.06	1221.67	1207.06	1528.19	1463.55	295.37	51.46	32.21	2593.41	289.52	1135.62	1391.08
175.82	31.82	11.89	422.59	5103.76	3834.66	3727.37	3686.39	4926.92	4459.91	294.82	186.24	20.51	1351.68	648.13	600.27	1541.23
146.49	31.65	11.89	429.82	5385.20	4039.43	3924.77	3881.96	5213.26	4695.58	295.37	193.13	-8.01	1507.24	568.67	680.41	1540.04
126.96	30.81	11.89	378.71	3276.18	2484.61	2420.78	2392.97	3112.10	2898.34	295.37	106.66	-12.12	2323.03	303.82	1054.30	1443.76
146.10	30.46	11.89	360.37	2559.30	1948.99	1900.88	1878.63	2413.51	2276.50	294.82	79.69	2.27	2675.02	274.47	1205.67	1408.83
167.83	30.11	11.89	349.26	2095.59	1599.58	1561.00	1542.54	1968.06	1869.74	295.37	62.13	12.69	3043.99	258.88	1363.55	1380.16
192.54	30.31	11.89	342.04	1831.01	1400.04	1366.86	1350.57	1714.31	1637.39	294.82	55.66	19.55	2858.06	260.03	1271.55	1382.53
217.71	30.49	11.89	336.48	1591.08	1217.93	1189.39	1175.15	1486.70	1424.90	295.37	49.40	24.58	2698.22	255.85	1190.97	1384.26
171.74	31.85	11.89	427.04	5289.80	3970.68	3858.67	3816.43	5114.75	4616.71	294.82	193.56	16.68	1326.82	655.43	590.57	1547.29
176.11	32.21	11.89	415.37	4781.50	3597.64	3498.25	3459.52	4604.62	4186.15	295.37	181.94	15.67	959.80	609.26	425.64	1551.29
157.15	30.27	11.89	373.15	3072.67	2333.38	2274.20	2247.91	2911.97	2723.08	294.82	93.15	10.86	2884.55	353.27	1294.31	1413.24
180.89	29.95	11.89	356.48	2382.84	1815.94	1771.44	1750.63	2244.18	2121.58	295.37	69.02	21.55	3218.33	316.68	1436.09	1380.29
203.97	30.18	11.89	346.48	1985.51	1516.48	1480.14	1462.58	1862.64	1772.96	295.37	59.24	26.35	3000.49	298.32	1330.74	1380.59
224.69	30.35	11.89	339.26	1721.52	1317.13	1286.11	1270.74	1610.01	1540.72	294.82	52.38	29.57	2853.41	285.52	1257.63	1381.01
572.46	31.54	11.89	366.48	2783.07	2116.29	2063.30	2039.31	2631.32	2470.78	295.37	95.10	236.89	1964.58	1167.43	727.49	1464.53
199.98	30.83	11.89	412.04	4643.04	3495.96	3399.99	3362.21	4465.83	4068.76	295.37	150.61	50.80	2368.24	672.38	1045.04	1480.98
213.59	31.22	11.89	418.15	4897.12	3682.46	3580.18	3540.66	4720.76	4284.03	295.37	166.25	62.96	1992.47	756.26	871.98	1506.31
196.90	30.86	11.89	375.37	3141.26	2384.03	2323.21	2296.42	2980.15	2781.65	295.37	102.36	32.46	2322.47	452.16	1027.99	1442.91
205.03	30.52	11.89	357.04	2405.00	1832.60	1787.64	1766.66	2265.54	2140.97	295.37	75.01	30.65	2666.85	362.22	1180.18	1407.32
217.92	30.54	11.89	346.48	1964.33	1500.13	1464.13	1446.77	1843.18	1753.77	295.93	61.35	30.17	2654.83	315.28	1170.76	1396.41
243.05	30.63	11.89	339.26	1700.35	1300.77	1270.10	1254.93	1590.57	1521.53	295.37	53.59	34.55	2583.86	305.02	1130.03	1393.44
265.97	30.72	11.89	333.15	1460.25	1118.61	1092.60	1079.48	1362.63	1309.01	295.37	46.44	36.28	2513.97	287.11	1090.55	1390.91
318.49	31.04	11.89	386.48	3592.23	2719.70	2648.71	2618.51	3422.40	3170.88	295.37	118.24	123.94	2255.15	833.97	951.56	1463.04

	AVERAGE	SUMS						
31801.51	5838.12	217830	104641	113188.40	563705	104642	7148.02	582.32
	Total							
	Loss	**Total**	**Chemical**	**Sensible and**	**Total**	**Chem**	**Grams Produced**	
H2O Fuel MC	**Rate**	**Loss**	**Loss 1**	**Latent Loss**	**Output**	**Loss 2**	**CO**	**HC**
570.41	3824.03	0	0	0.00	0	0	0.00	0.00
577.85	6241.44	36973	20560	16413.12	80833	20560	1397.91	115.60
588.59	6342.50	11023	5922	5100.99	23539	5922	402.48	33.32
561.59	6464.28	1208	732	476.39	2508	732	49.85	4.09
552.12	5873.53	0	0	0.00	0	0	0.00	0.00
547.05	5407.55	0	0	0.00	0	0	0.00	0.00
543.37	5056.74	1890	941	949.08	5543	941	65.43	5.02
575.54	4055.32	9549	2085	7463.67	37277	2085	144.64	11.20
591.67	6107.45	14951	7599	7351.84	33732	7599	516.37	42.78
564.85	5898.68	2645	1504	1141.29	6274	1504	102.21	8.47
554.20	6053.70	1018	608	410.34	2327	608	41.42	3.40
548.66	5625.93	1051	589	462.16	2665	589	40.39	3.25
544.52	5298.00	-990	-530	-459.60	-2726	-530	-36.56	-2.89
541.99	5114.77	4397	2263	2134.14	12698	2263	157.09	12.13
580.68	3855.48	10807	2142	8665.20	44937	2142	146.18	11.94
591.91	6604.78	12836	6957	5878.66	25813	6957	473.31	39.07
561.84	5850.57	1421	815	606.51	3410	815	55.36	4.59
552.59	6017.07	1124	682	442.89	2592	682	46.38	3.82
547.28	6237.72	816	511	304.98	1785	511	34.87	2.85
544.06	5997.48	0	0	0.00	0	0	0.00	0.00
544.52	5916.20	3648	2150	1497.99	8615	2150	147.85	11.79
574.84	4127.96	9720	2614	7105.66	37106	2614	179.08	14.45
585.12	6620.40	15712	8758	6954.29	31485	8758	596.10	49.12
561.38	5843.17	3713	2131	1581.55	8923	2131	144.80	12.00
552.35	5849.57	-656	-392	-264.08	-1574	-392	-26.64	-2.20
547.05	6376.85	-1072	-686	-386.66	-2272	-686	-46.76	-3.83
543.83	6149.76	575	359	215.30	1284	359	24.57	2.00
541.30	5921.98	4316	2632	1683.77	10178	2632	180.57	14.51
576.71	4661.71	8798	3224	5574.30	28736	3224	219.77	18.03
585.58	6248.78	9342	4961	4380.26	20389	4961	337.46	27.87

558.82	5802.46	1084	627	457.55	2632	627	42.59	3.53
550.51	6233.59	0	0	0.00	0	0	0.00	0.00
545.67	6639.50	0	0	0.00	0	0	0.00	0.00
542.45	6298.98	0	0	0.00	0	0	0.00	0.00
540.15	6033.46	3382	2083	1299.22	7766	2083	143.23	11.42
575.77	4923.83	7361	2887	4474.06	22369	2887	197.33	16.04
578.57	5060.06	4822	2061	2760.94	14131	2061	140.18	11.59
557.21	5776.66	1079	627	452.73	2637	627	42.59	3.53
549.81	6195.77	-116	-72	-43.66	-256	-72	-4.91	-0.40
544.98	6666.38	0	0	0.00	0	0	0.00	0.00
542.21	6389.59	1194	769	425.35	2522	769	52.59	4.26
539.69	6142.96	2411	1521	889.65	5394	1521	104.33	8.39
577.63	4907.98	5503	2126	3376.91	16795	2126	145.21	11.83
572.52	4316.11	3146	1000	2145.99	11348	1000	68.36	5.55
555.12	6604.49	0	0	0.00	0	0	0.00	0.00
547.97	6989.93	0	0	0.00	0	0	0.00	0.00
543.83	6639.56	0	0	0.00	0	0	0.00	0.00
541.06	6400.58	598	383	215.34	1260	383	26.26	2.11
552.12	6208.14	3480	1500	1980.32	7669	1500	108.18	7.31
571.12	6339.19	6752	3600	3152.06	14431	3600	246.62	19.91
573.68	5929.91	5651	2702	2949.61	13302	2702	185.53	14.86
555.82	5936.15	1886	1057	828.52	4432	1057	72.41	5.85
548.20	6270.44	-1289	-787	-502.21	-2799	-787	-53.90	-4.35
543.60	6172.39	-1038	-641	-397.40	-2307	-641	-43.95	-3.53
540.84	6041.33	0	0	0.00	0	0	0.00	0.00
538.31	5903.58	4633	2820	1813.32	10975	2820	194.47	15.36
560.45	6306.34	2475	1249	1226.02	5329	1249	86.75	6.69

Dirigo Laboratories, Inc.

Manufacturer:	**Green Tech**
Model:	**Crown Royal RS7300E**
Date:	
Run:	**Epa#6**
Control #:	**004-hhw-023-1**
Test Duration:	**560**
Output Category:	**4**

	HHV Basis	LHV Basis
Overall Efficiency	71.8%	77.4%
Combustion Efficiency	86.5%	86.5%
Heat Transfer Efficiency	83.1%	89.5%

HHV Output Rate (kJ/h)	59,561	56,500	**(Btu/h)**
Burn Rate (kg/h)	4.17	9.19	**(lb/h)**
Input (kJ/h)	82,900	78,639	**(Btu/h)**

Test Load Weight (dry kg)	38.9	85.7	**dry lb**
MC wet (%)	17.63		
MC dry (%)	21.40		
Particulate (g)	47.03		
CO (g)	7148		
Test Duration (h)	9.333333333		

Emissions	**Particulate**	**CO**
g/MJ Output	0.08	12.86
g/kg Dry Fuel	1.21	183.72
g/h	5.04	765.86
lb/MM Btu Output	0.20	29.88

Air/Fuel Ratio (A/F)	6.19

Test Results in Accordance with CSA B415.1-10

Technician: _____