TEST REPORT

SCOPE: EMISSIONS, EFFICIENCY AND OUTPUT

FUEL: EPA TEST FUEL (CRIBS)

TEST STANDARD: EPA

MODEL: DESTINATION 1.5-I WOOD INSERT

Notice to reader: Our Destination 1.5-I wood insert was tested as part of our CW2500 firebox. Therefore, the CW2500 is referenced throughout the attached test report.

TEST REPORT

REPORT NUMBER: 100968863MTL-003
REPORT DATE: August 27, 2013

EVALUATION CENTER

Intertek Testing Services NA Inc.
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Lachine, Québec
H8T 3J1

RENDERED TO

Stove Builder International Inc
250 Rue de Copenhague
St-Augustin-de-Desmaures, QC
G3A 2H3

PRODUCT EVALUATED:

MODEL CW2500 SOLID FUEL ROOM HEATER

Report of Testing Model CW2500 Wood Fuel Room Heater Insert for compliance as an "Affected Facility" with the applicable requirements of the following criteria: EPA Method 28 "Certification and Auditing of Wood Heaters" and EPA Method 5G "Determination of Particulate Matter Emissions from Wood Heaters".

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I. INTRODUCTION

Intertek Testing Services NA (Intertek) has conducted testing for (Stove Builder International Inc, on model CW2500 Solid Fuel Room Heater, to evaluate all applicable performance requirements included in EPA Method 28 “Certification and auditing of wood heaters” and Method 5G “Determination of particulate matter emissions from wood heaters.”

I.A PURPOSE OF TEST

The test was conducted to determine if the unit is in accordance with U.S EPA requirements under 40 CGR 60 SUBPART AAA, NSPS for Residential Wood Heaters. This evaluation was conducted from June 25 to June 28, 2013.

I.B LABORATORY

The test on the CW2500 Solid Fuel Room Heater was conducted at the SBI Laboratory located at 250 Rue de Copenhague, St-Augustin-de-Desmaures QC. G3A 2H3. The laboratory elevation is 213 feet above sea level. The test was conducted by Claude Pelland, P.Eng.

I.C DESCRIPTION OF UNIT

The model CW2500 Solid Fuel insert Room Heater is constructed of carbon HR and CR steel . The outer dimensions are 16 3/4-inches deep, 21 43/64-inches high, and 26 5/16-inches wide. The unit has a front loading door with a viewing glass.
(See product drawings.)

Proprietary drawings and manufacturing methods are on file at Intertek in Lachine, Quebec

I.D REPORT ORGANIZATION

This report includes summaries of all data necessary to determine compliance with the regulations. Raw data, calibration records, intermediate calculations, drawings, specifications and other supporting information are contained in appendices to this report.

II. SUMMARY

II.A PRETEST INFORMATION

A sample was submitted to Intertek directly from the client. The sample was not independently selected for testing. The test unit was handed to the Intertek representative at SBI laboratory located in St-Augustin-de-Desmaures, Quebec on June 25th, 2013. The unit was inspected upon Arrival on testing site and found to be in good condition. The unit was set up following the manufacturer's instructions without difficulty.

Following assembly, the unit was placed on the test stand and instrumented with thermocouples in the specified locations. Prior to beginning the emissions tests the unit was operated for a minimum of 10 hours at high-to-medium burn rates to break in the stove. The unit was found to be operating satisfactory during this break-in. The 10 plus hours of pre-burning were conducted during 95 consecutive R & D runs performed by the manufacturer immediately preceeding the dates of the testing reflected in this report. The fuel used for the break-in process was dimensional Douglas Fir lumber.

Following the pre-burn break-in process the unit was allowed to cool. The unit's chimney system and laboratory dilution tunnels were cleaned using standard wire brush chimney cleaning equipment. On June 21st, 2013 the unit was set-up for testing.

II.B INFORMATION LOG

TEST STANDARD

From June 25th, 2013 through to June 28th, the unit was tested for EPA emissions.

Deviation from Standard Method

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

II.C SUMMARY OF TEST RESULTS

RUN #1 (June 25, 2013) Air control was fully opened and was set at full closed position at 5 minutes. Burn time was 190 minutes for a burn-rate of 1,05 kg/h. The fuel was loaded by 40 seconds and the door was left partially opened and closed by 125 seconds. The blower was off for the full duration of the test. This run was invalidated as the proportionality was not maintained within acceptable limits.

RUN #2 (June 26, 2003) Air control was fully opened and closed at 5 minutes. Burn time was 200 minutes for a burn-rate of 0,977 kg/h. The fuel was loaded by 40 seconds and the door was left partially opened and closed by 125 seconds. The blower was off for the first 30 minutes of the test and at minimum speed for the reminder of the test.

RUN #3 (June 26 , 2013) Air control was fully opened. Burn time was 100 minutes for a burn-rate of 2,20 kg/h. The fuel was loaded by 45 seconds and the door was closed by 55 seconds. The blower was off for the first 30 minutes of the test and at minimum speed for the reminder of the test.

RUN #4 (June 27, 2013) Air control was fully opened and closed at 5 minutes. Burn time was 200 minutes for a burn-rate of 0,997 kg/h. The fuel was loaded by 80 seconds and the door was left partially opened and closed by 125 seconds. The blower was off for the first 30 minutes of the test and at minimum speed for the reminder of the test.

RUN #5 (June 27, 2013) Air control was fully opened and set to 1/3 (flat bar 1/2") at 4 minutes. Burn time was 150 minutes for a burn-rate of 1,348 kg/h. The fuel was loaded by 45 seconds and the door was closed by 50 seconds. The blower was off for the first 30 minutes of the test and at minimum speed for the reminder of the test.

RUN #6 (June 28, 2013) Air control was fully opened and closed at 5 minutes. Burn time was 190 minutes for a burn-rate of 1,029 kg/h. The fuel was loaded by 60 seconds and the door was left partially opened and closed by 145 seconds. The blower was off for the full duration of the test.

II.D SUMMARY OF OTHER DATA

EMISSIONS

Run Number	Test Date (mm/dd/yyyy)	Burn Rate (kg/hr)	Emission Rate (g/hr)	Adjusted Emission Rate (g/hr)	Heating Efficiency (% HHV)	Heating Efficiency (% LHV)
1*1	**06/25/2013**	**1.050**	**3.09**	**4.64**	**65.2**	**70.4**
2	**06/26/2013**	**0.977**	**1.49**	**2.54**	**65.0**	**70.2**
3	**06/26/2013**	**2.200**	**1.79**	**2.94**	**61.9**	**66.9**
4	**06/27/2013**	**0.997**	**1.51**	**2.56**	**63.4**	**68.5**
5	**06/27/2013**	**1.348**	**1.34**	**2.32**	**64.6**	**69.9**
6*2	**06/28/2013**	**1.029**	**1.86**	**3.06**	**61.6**	**66.6**

*1: Run 1 not retained for Emission calculation purposes based on the proportionality not maintained within acceptable limits.
*2: Run 6 was conducted as a fan confirmation test and is therefore not included in the weighted average.

WEIGHTED AVERAGE CALCULATION

Test No.	Burn Rate	(E) Average Emission Rate g/hr	Heat Output (Btu/hr)	Probability	(K) Weighting Factor	(KxE)
2	**0.977**	**2.540**	**11780.86**	**0.3561**	**0.3769**	**0.9592**
4	**0.997**	**2.560**	**12022.03**	**0.3769**	**0.2966**	**0.7607**
5	**1.348**	**2.320**	**16254.45**	**0.6526**	**0.5591**	**1.2966**
3	**2.200**	**2.940**	**26528.07**	**0.9360**	**0.3474**	**1.0237**
				Totals:	**1.57992**	**4.0401**
					Weighted average emission rate:	**2.5572**

TEST FACILITY CONDITIONS

Run	Room Temp. °F before	Room Temp °F after	Baro. Pres. In. Hg before	Baro. Pres. In. Hg after	R.H. % before	R.H. % after	Air Vel. Ft/min before	Air Vel. Ft/min after
1	**Data not retained for Emission calculation**							
2	**83.34**	**80.43**	**29.91**	**29.85**	**78**	**81**	**<50**	**<50**
3	**81.4**	**83.62**	**29.91**	**29.91**	**81**	**91**	**<50**	**<50**
4	**78.39**	**79.37**	**29.85**	**29.88**	**93**	**82**	**<50**	**<50**
5	**78.66**	**89.3**	**29.91**	**29.9.1**	**84**	**86**	**<50**	**<50**
6	**73.50**	**81.17**	**29.76**	**29.68**	**93**	**93**	**<50**	**<50**

DILUTION TUNNEL FLOW RATE MEASUREMENTS AND SAMPLING DATA (5G-3)

Run No.	Burn Time (min)	Velocity (ft/sec)	Volumetric Flow Rate (dscf/min)	Total Temp. (^{o}R)	Volume Sample		Particulate Catch (mg)	
					1	2	1	2
1	**190**	**7.54**	**141.188**	**562.9**	**28.825**	**27.923**	**10.7**	**10.0**
2	**200**	**7.45**	**141.451**	**558.5**	**30.685**	**31.087**	**5.5**	**5.4**
3	**100**	**7.89**	**133.545**	**625.3**	**15.117**	**14.930**	**3.2**	**3.5**
4	**200**	**7.35**	**139.098**	**559.4**	**30.635**	**30.031**	**5.7**	**5.3**
5	**150**	**7.58**	**139.145**	**577.4**	**22.776**	**23.376**	**3.9**	**3.5**
6	**190**	**7.34**	**139.152**	**556.4**	**29.066**	**29.125**	**6.4**	**6.6**

DILUTION TUNNEL DUAL TRAIN PRECISION

Run No.	Sample Ratios		Total Emissions (g)		% Deviation	% Deviation or 7.5% of 7.5 grams*
	Train 1	Train 2	Train 1	Train 2		
1	**930.650**	**960.710**	**9.958**	**9.607**	**1.49**	**1.87**
2	**921.957**	**910.040**	**5.071**	**4.914**	**1.30**	**0.88**
3	**883.409**	**894.488**	**2.827**	**3.131**	**4.23**	**3.33**
4	**908.095**	**926.379**	**5.176**	**4.910**	**2.19**	**1.50**
5	**916.406**	**892.890**	**3.574**	**3.125**	**5.56**	**3.44**
6	**909.614**	**907.788**	**5.822**	**5.991**	**1.19**	**0.97**

*= As described in Method 5G-3 section 16.2.5

GENERAL SUMMARY OF RESULTS

Run No.	Burn Rate (kg/hr)	Change In Surface Temp (^oF)	Initial Draft (in/H_2O)	Run Time (min)	Average Draft (in/H_2O)
1	**1.050**	**-29.00**	**0.035**	**190**	**0.047**
2	**0.977**	**22.44**	**0.035**	**200**	**0.045**
3	**2.200**	**85.96**	**0.060**	**100**	**0.072**
4	**0.997**	**63.54**	**0.040**	**200**	**0.047**
5	**1.348**	**98.06**	**0.050**	**150**	**0.059**
6	**1.029**	**-2.32**	**0.035**	**190**	**0.049**

III. PROCESS DESCRIPTION

III.A TEST SET-UP DESCRIPTON

A standard 6” diameter single wall pipe and insulated chimney system was installed to 15’ above floor level. The unit controls were set to the lowest setting during the test.

III.B AIR SUPPLY SYSTEM

Combustion air enters at front of the firebox through an opening at the top of the firebox. This air is controlled by a sliding damper, which covers the inlet hole. The lever is located just above the door. All gases exit through the 68” flue

IV. SAMPLING SYSTEMS

IV.A. SAMPLING LOCATIONS

Particulate samples are collected from the dilution tunnel at a point 23 feet from the tunnel entrance. The tunnel has two elbows and two mixing baffles in the system ahead of the sampling section. The first 10 feet of the sampling

section is a 10 inches diameter pipe and the remaining is made of an 8 inches diameter pipe. Tunnel velocity pressure is determined by a standard Pitot tube located 48 inches from the beginning of the sampling section. The dry bulb thermocouple is located six inches downstream from the Pitot tube. Tunnel samplers are located 48 inches downstream of the Pitot tube and 36 inches upstream from the end of this section.

Stack gas samples are collected from the steel chimney section 8 feet ± 6 inches above the scale platform. (See Figure 1)

IV.A.(1) DILUTION TUNNEL

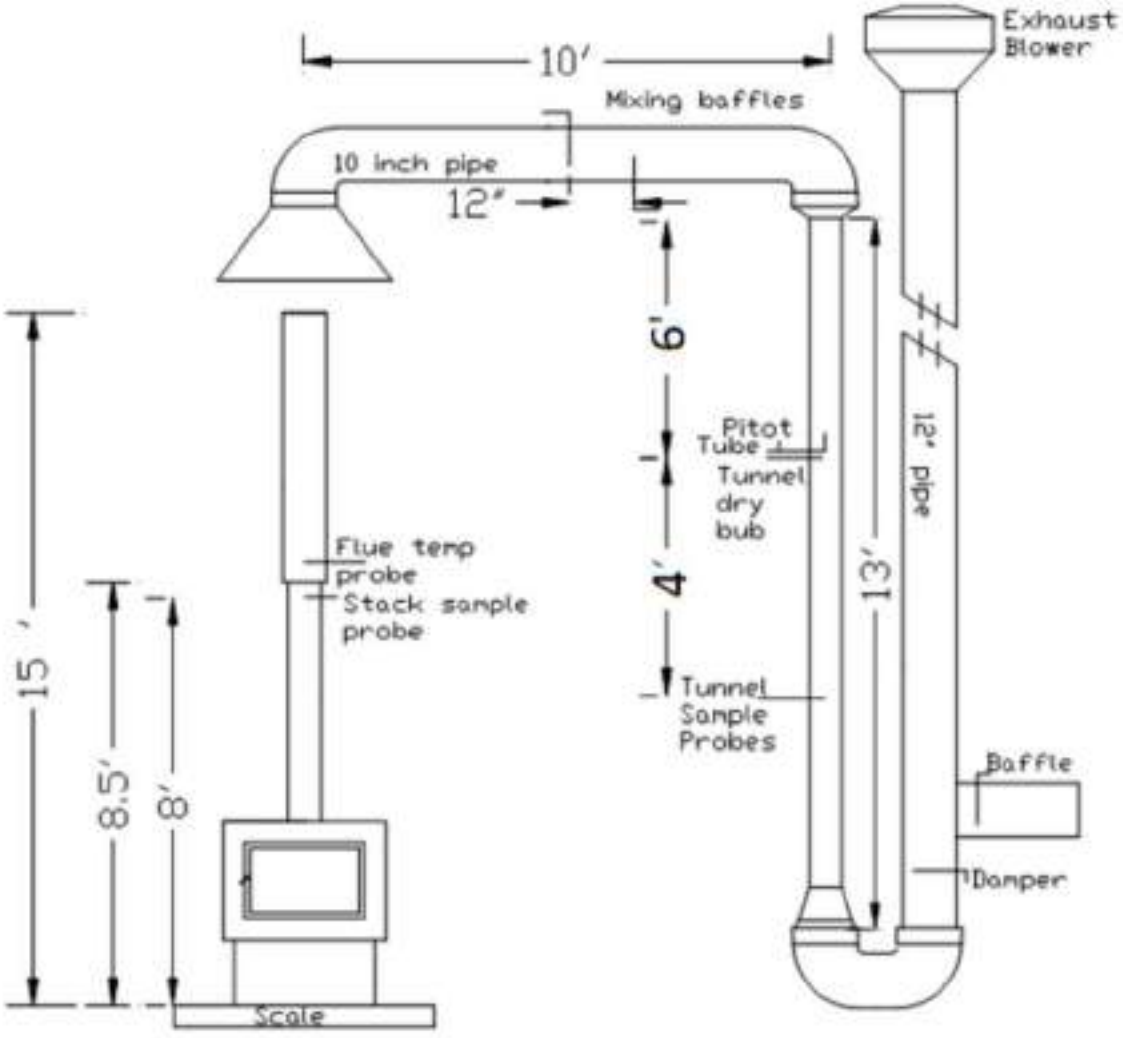

FIGURE 1

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

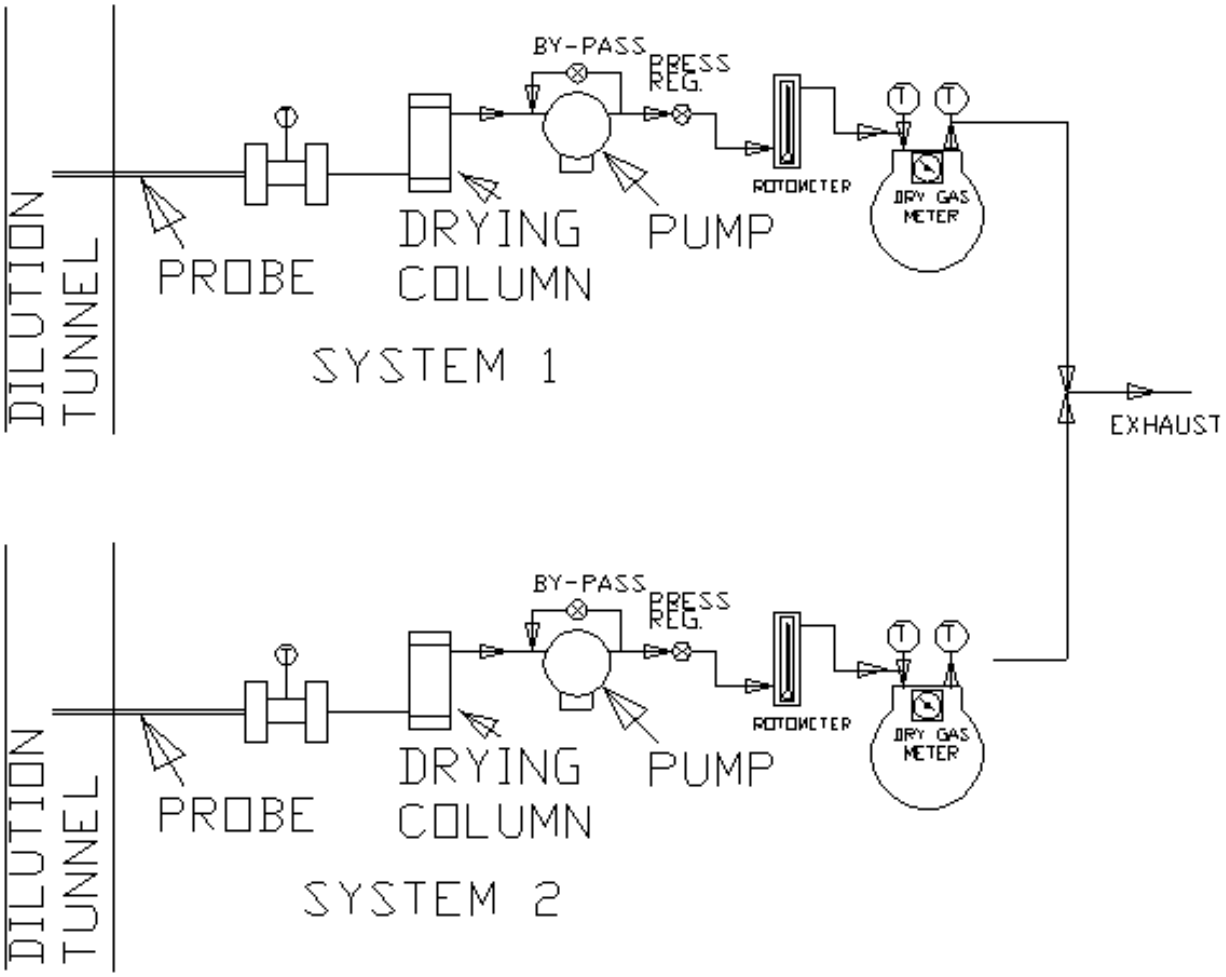

Figure 2

V. SAMPLING METHODS

V.A. PARTICULATE SAMPLING

Particulates were sampled in strict accordance with EPA Method 5G-3. This method uses two identical sampling systems with Gelman A/E 61631 binder free, 47-mm diameter filters. The dryers used in the sample systems are filled with “Drierite” before each test run.

VI. QUALITY ASSURANCE

VI.A. INSTRUMENT CALIBRATION

VI.A. (1). DRY GAS METERS

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

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

The standard dry gas meter is calibrated annually by an external recognized calibration agency

VI.A.(2). STACK SAMPLE ROTAMETER

The stack sample rotometer is checked by running three tests at each flow rate used during the test program. The flow rate is checked by running the rotometer in series with one of the dry gas meters for 10 minutes with the rotometer at a constant setting. The dry gas meter volume measured is then corrected to standard temperature and pressure conditions. The flow rate determined is then used to calculate actual sampled volumes.

VI.A.(3). GAS ANALYZERS

The continuous analyzers are zeroed and spanned before each test with appropriate gases. A mid-scale multi-component calibration gas is then analyzed (values are recorded). At the conclusion of a test, the instruments are checked again with zero, span and calibration gases (values are recorded only). The drift in each meter is then calculated and must not exceed 5% of the scale used for the test.

At the conclusion of each unit test program, a five-point calibration check is made. This calibration check must meet accuracy requirements of the applicable standards. Consistent deviations between analyzer readings and calibration gas concentrations are used to correct data before computer processing. Data is also corrected for interferences as prescribed by the instrument manufacturer's instructions.

VI.B. TEST METHOD PROCEDURES

VI.B.(1). LEAK CHECK PROCEDURES

Before and after each test, each sample train is tested for leaks. Leakage rates are measured and must not exceed 0.02 CFM or 4% of the sampling rate. Leak checks are performed checking the entire sampling train, not just the dry gas meters. Pre-test and post-test leak checks are conducted with a vacuum of 5 inches of mercury. Vacuum is monitored during each test and the highest vacuum reached is then used for the post test vacuum value. If leakage limits are not met, the test run is rejected. During these tests, there was typically no vacuum

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

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

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

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

Proportionality was calculated in accordance with EPA Method 5G-3. The data and results are included in Appendix C.

VII. CONCLUSION

These tests demonstrate that this unit is an affected facility under the definition given in the regulation. The weighted average emission rate of 2.55 g/hr has been achieved.

VII.A RESULTS AND OBSERVATIONS

The Model CW2500 Solid Fuel insert has been found to be in compliance with the applicable performance and construction requirements of the following criteria: EPA Method 28 “Certification and auditing of wood heaters” and Method 5G Determination of particulate matter emissions from wood heaters.”

INTERTEK TESTING SERVICES NA

Reported by: _____

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Reviewed by:

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_____

John Voorhees,
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Appendix C: Pre-Burn Documentation

Date: June 4th, 2013
Primary control setting: Categorie 2

Temps	FLUE :	FIREBOX B	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX B	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)
13:01	250,9	261,1	340,7	79,73	102,1	282	275,9	250,8	76,07	75,98	75,86	75,81	75,92	75,83	0,033	9,04
13:11	283	290,9	315,5	83,31	100,2	314	263,9	323,6	76,42	76,13	82,93	75,94	83,01	75,96	0,043	8,19
13:21	318,3	288,9	292,4	84,51	98,95	314	251,2	340,5	76,73	76,33	83,47	76,17	82,86	76,15	0,051	7,52
13:31	421,6	288,7	292,7	86,53	105,8	348,6	243,9	339,7	76,96	76,46	84,57	76,34	83,97	76,32	0,062	6,51
13:41	484,1	259,9	325,2	84,4	113,7	434,7	260,5	244	77,08	76,59	85,21	76,49	86,31	76,45	0,067	5,1
13:51	502,1	262,2	361,5	83,42	115,9	505,4	281,5	222,5	77,17	76,67	87,5	76,59	87,76	76,55	0,067	3,64
14:01	454,9	276,4	396,1	86,11	112,2	525,3	303,4	216,2	77,25	76,79	87,63	76,67	87,77	76,62	0,063	2,59
14:11	376,2	290,1	418,7	82,78	104,5	488,7	319	214,5	77,34	76,82	86,55	76,69	86,24	76,66	0,056	2
14:21	323,9	301,6	424,1	83,19	99,46	436,2	324,1	216,7	77,41	76,91	85,38	76,76	84,7	76,75	0,049	1,69
14:31	300,6	310,2	421	86,8	98,47	391,1	322,9	223,8	77,47	76,96	84,58	76,84	83,88	76,79	0,045	1,5
14:41	285,1	311,2	413,2	82,78	95,07	360,6	315,4	224,9	77,49	77,03	83,74	76,92	83,14	76,87	0,043	1,39
14:51	276,9	310	405,5	86,6	95,86	343	310,9	228	77,32	77,03	83,06	76,85	82,6	76,82	0,042	1,13
15:01	271,9	305	397,4	82,8	93,49	331,2	305,1	227,9	77,41	77,08	82,8	76,92	82,35	76,91	0,041	1,01
15:11	266,3	300,1	389,1	85,62	94,45	322,9	301,2	229,1	77,47	77,12	82,61	76,97	82,32	76,99	0,041	0,81
15:21	263,8	294,5	382	82,49	92,67	316,6	297,3	227,9	77,5	77,16	82,53	77,04	82,2	77,01	0,04	0,68
15:31	256,5	287,6	372,9	84,24	92,91	310,1	293,5	226,5	77,54	77,19	82,46	77,09	82,11	77,06	0,039	0,49
15:41	245,3	279,1	362,6	83,67	91,9	301,3	289,2	225,4	77,58	77,22	82,38	77,14	82,05	77,11	0,039	0,39
15:51	235,9	264,8	346,7	83,52	91,48	289,3	281,2	219,5	77,65	77,28	82,2	77,19	81,82	77,15	0,035	0,25
16:01	231,8	254,1	333,3	83,19	90,88	279,6	275,1	215,9	77,68	77,33	82,18	77,26	81,68	77,22	0,035	0,13
16:11	223,6	243,7	319,8	82,83	90,18	269,6	268,2	210,4	77,71	77,37	81,95	77,29	81,39	77,26	0,034	0,02
16:21	217,2	237,5	307,6	84,81	90,35	261,8	263,8	207,6	77,66	77,39	81,91	77,31	81,46	77,27	0,033	-0,09
16:21	217,2	237,4	307,6	84,91	90,36	261,7	263,8	207,6	77,67	77,41	81,9	77,3	81,45	77,27	0,033	-0,1

Date: June 5th, 2013
Primary control setting: Categorie 2

Time	FLUE :	FIREBOX B	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX B	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)
15:57	248,2	272,9	363,8	78,39	94,46	271,6	254,6	255,3	77,81	77,72	78,81	77,57	4172,5	77,57	0,038	8,58
16:07	254,3	297,5	337,7	78,3	95,19	291,6	245,1	311,9	77,86	77,81	83,21	77,66	4173	77,64	0,04	7,78
16:17	273,5	292,2	306,9	81,98	95,35	288,4	232,9	324,3	78,05	78	83,79	77,88	4175	77,86	0,046	7,19
16:27	311	292,7	305,6	82,25	98,03	322,9	232,3	324	78,17	78,13	84,51	78,03	4177,6	78,01	0,049	6,31
16:37	446,3	249,6	320,8	82,81	108,5	358,7	242,4	226,1	78,26	78,2	85,71	78,13	4180	78,1	0,055	5,14
16:47	495,6	252,8	350	83,09	115,3	461,3	265	206,8	78,3	78,25	87,58	78,19	4182,1	78,19	0,059	3,76
16:57	453,5	266,2	381	82,16	111,8	507,8	288,8	202,9	78,35	78,3	88,52	78,27	4183,7	78,21	0,064	2,64
17:07	382,1	285,1	405,6	81,82	105,3	484,9	309	206,7	78,36	78,32	87,83	78,27	4184,8	78,25	0,057	1,99
17:17	339,6	308,6	410,1	80,4	100,3	433,1	315,1	212,7	78,26	78,26	86,72	78,24	4185,7	78,2	0,051	1,69
17:27	307,6	322,4	407,1	82,41	98,04	392,4	312,7	219,3	78,26	78,27	85,6	78,25	4186,3	78,21	0,046	1,46
17:37	289,5	325	403,5	80,6	95,91	362,6	310,2	224,5	78,31	78,28	84,93	78,25	4186,6	78,24	0,044	1,29
17:47	275	320,3	395,8	81,58	94,89	340	306,5	227,2	78,25	78,28	84,4	78,23	4186,7	78,22	0,043	1,13
17:57	265,2	311,7	384,5	82,35	93,61	322,9	300,6	226,3	78,29	78,27	83,95	78,26	4187	78,21	0,04	0,98
18:07	260,1	305,6	374	79,77	92,2	311,5	295,1	225	78,28	78,26	83,52	78,26	4187,1	78,25	0,04	0,84

18:17	256,2		298,8	365,3	80,02		92	304,1	291,3		225	78,28	78,26	83,4	78,24	4187,3	78,22	0,04	0,67
18:27	252,6		290,4	358,3	79,65	91,6		298,9	287,6	224,2		78,24	78,25	83,28	78,25	4187,5	78,23	0,039	0,51
18:37	245,4		281,5	351,4	79,07	90,82		293,7	284,6	222,1		78,23	78,23	83,11	78,21	4187,5	78,2	0,039	0,37
18:47	235,8		270,8	342,7	80,47	90,37		284,8	279,1	218,6		78,27	78,18	82,91	78,21	4187,6	78,18	0,035	0,25
18:57		226	259,8	330,7	80,83	89,65		274,1	270,7	213,5		78,18	78,18	82,73	78,19	4187,7	78,14	0,035	0,14
19:07	219,1		249,1	316,9	81,6	89,5		263,5	262,2	207,6		78,22	78,19	82,57	78,15	4187,7	78,16	0,034	0,04
19:17	212,2		238,6	302,7	81,69	89,01		253,2	253,5	201,8		78,18	78,13	82,4	78,16	4187,8	78,12	0,033	-0,08
19:18	212,2		238,5	302,7	81,71	89,06		253,1	253,5	201,8		78,17	78,16	82,4	78,14	4187,8	78,1	0,033	-0,07

Date: June 10th, 2013
Primary control setting: Categorie 3

Temps	FLUE :		FIREBOX B/	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	DRAFT :	Poids(Lbl)	
14:39	380,9		383,5	447,9	76,34	122,7	417,9		371	305,5	76,82	76,7	77,54	76,55	0,054	9,21	
14:49	592,6		421,4	432,7	75,59	135,1	456,8	359,2		400,3	76,93	76,84	92,46	76,67	0,076	7,5	
14:59	643,4			416 435,9	77,79	142,4	556,6	354,1		414,9	77,31	77,22	96,85	77,08	0,082	5,59	
15:09	669,6			422 462,4	79,58	145,4	613,8	365,6		411,7	77,45	77,39	99,25	77,27	0,083	3,7	
15:19	580,3		369,5	497,5	83,41		136 602,8	384,8		296	77,6	77,57	98,41	77,44	0,075	2,36	
15:29	464,7		361,1	522,3	83,91	120,9		536 397,7	269,9		77,75	77,71	94,73	77,6	0,063	1,82	
15:39	406,2		353,2	514,1	82,25	112,6	459,9	392,3	257,6		77,83	77,8	91,56	77,69	0,058	1,59	
15:49	377,1			355 491,7	80,4	107,7	408,3	376,9	251,7		78,06	78,01	89,39	77,9	0,055	1,39	
15:59	356,6		355,3	468,8	78,82	104,3	376,5	361,7		248	78,33	78,27	88,19	78,16	0,053	1,19	
16:09	342,2		350,2	446,5	77,51	102,5	354,5	348,5	244,1		78,47	78,4	87,67	78,31	0,052	0,96	
16:19	328,7		342,4	426,1	76,58	100,7	338,7		338	239,8	78,54	78,49	86,88	78,38	0,05	0,78	
16:29	315,7		328,4	406,5	75,87	99,2		324	327	235,4	78,62	78,56	86,31	78,49	0,049	0,57	
16:39	307,7		317,6	389,3	75,31	98,13	311,5		316	230,4	78,65	78,63	85,98	78,55	0,047	0,35	
16:49	295,6		306,4	371,9	74,86	97,15	299,5	305,9		225,3	78,75	78,72	85,75	78,65	0,046	0,19	
16:59	288,6		297,2	355,4	74,41	96,24	288,4	296,6		219,8	78,76	78,75	85,49	78,69	0,045		0
17:09	275,9		287,8	339,6	73,98	95,05	277,3		288	215,5	78,81	78,8	85,17	78,75	0,042	-0,18	
17:09	275,8		287,7	339,6	73,97	95,06	277,2		288	215,5	78,82	78,77	85,13	78,75	0,043	-0,17	

Date: June 11th, 2013
Primary control setting: Categorie 3

Temps	FLUE :		FIREBOX B/	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)	
10:56	365,7		390,7	471,9	75,46	118,9	387,7	340,7		316	76,49	76,41	77,47	76,31	77,01	76,24	0,052	9,61
11:06		509	419,4	440,8	72,48	123,4	389,2	324,3	420,4		76,87	76,4	86,79	76,44	88,4	76,35	0,071	8,32
11:16		563	401,7	426,7	73,95	129,3	486,2	320,9	421,6		77,19	76,63	89,34	76,63	91,42	76,58	0,075	6,67
11:26	605,2		396,8	445,9	76,1	133,8	556,8	332,3	407,8		77,42	76,8	91,29	76,84	92,75	76,74	0,077	5,07
11:36	572,6			341 471,8	79,11	131,2		567 350,9		289	77,58	76,94	91,77	76,94	93,52	76,86	0,076	3,72
11:46	534,6		331,1	488,7	78,34	126,6	552,2	367,8	263,3		77,7	77,04	91,54	77,03	92,7	76,95	0,071	2,67
11:56	463,7		337,3	497,6	78,53		118	511 379,2	253,7		77,74	77,13	90,12	77,09	90,97	77,02	0,064	2
12:06		415		342 494,5	78,13	111,6	461,2	381,5	249,2		77,79	77,21	88,48	77,13	89,04	77,08	0,059	1,62
12:16		371	340,9		478 76,62	105,9	409,6	372,4	245,2		77,81	77,26	86,8	77,17	87,25	77,13	0,055	1,41

Break-in period in R8/30/2013

12:26	346,6	333,3	455,1	74,97	102,3		371	357	239,6	77,79	77,28	85,57	77,18	85,66	77,16	0,052	1,22	
12:36	331,5	324,8	431,7	74,67	100,1	345,7	341,4		235,6	77,73	77,29	84,65	77,22	84,49	77,17	0,05	1,02	
12:46	321,8	318,4	411,9	74,25	98,48	329,6	328,2		232,7	77,66	77,31	83,93	77,17		84 77,16	0,049	0,83	
12:55	304,8		307 394,3	73,61	96,79	316,3	317,6		230,1	77,62	77,26	83,27	77,12	83,66	77,12	0,047	0,64	
13:05	293,3		294 376,2	74,86	95,36	301,2	306,7		225,7	77,61	77,28	82,91	77,15	83,02	77,13	0,045	0,5	
13:15	282,7	283,5	358,7	74,86	94,49	287,5		295	219,7	77,62	77,27	82,6	77,18	82,78	77,12	0,043	0,35	
13:25	275,1	275,2	342,8	74,47	93,47	275,6	284,5		213,7	77,64	77,26	82,22	77,16	82,64	77,14	0,044	0,2	
13:35	268,1	266,9	327,8	74,18	92,79	265,4	276,2		207,7	77,69	77,31	82,09	77,21	82,51	77,15	0,042	0,05	
13:45		265 259,1	313,8	73,95	92,33	257,3	270,7		201,9	77,76	77,34	82,19	77,22	82,19	77,23	0,042	-0,08	
13:46	264,9		259 313,6	73,99	92,38	257,2	270,6		201,9	77,78	77,36	82,24	77,26	82,2	77,22	0,042	-0,08	

Date: June 12th, 2013
Primary control setting: Categorie 2

Temps	FLUE :	FIREBOX B/	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	PILOT :	Poids(Lbl)
15:37	263,9	263,3	342,9	75,1	103,8	274,3	273,8	254	78,9	78,82	79,77	78,65	78,94	78,64	0,001	0,034	8,73
15:47	269,2	300	318,3	78,25	98,31	307,2	262,2	318	79,18	78,83	83,61	78,76	85,18	78,74	0,001	0,042	7,76
15:57	298,7	304,5	290,5	77,97	97,09	300,3	246,6	327,5	79,47	79,04	85,06	79	84,64	78,98	0	0,052	7,04
16:07	431,2	309,1	295,9	82,3	107,8	365,1	252,2	323,8	79,71	79,18	86,34	79,16	86,34	79,14	0	0,064	5,76
16:17	497,5	274,7	328,4	81,65	116,3	460,4	273,1	226,2	79,8	79,29	88,16	79,23	88,44	79,23	0,001	0,069	4,33
16:27	486,1	277,3	360,1	84,36	115,5	518,3	296,3	208,9	79,95	79,39	89,53	79,35	89,87	79,3	0,002	0,066	3,03
16:37	407,9	288,1	391,6	84,78	109,6	511,1	317,2	203,7	80,07	79,51	89,39	79,45	89,24	79,44	0,002	0,06	2,16
16:47		346 298,5	408,1	82,32	102,9	452,9	327,4	202,4	80,09	79,57	88,09	79,49	87,69	79,48	0,001	0,052	1,71
16:57	309,4	301,2	410,1	80,45	98,64	401,9	324,5	203,1	80,15	79,61	87,03	79,52	86,18	79,51	0,003	0,047	1,47
17:07	290,5	306,6		406 82,39	96,74	365,8	317,3	206,5	80,14	79,65	86,07	79,56	85,29	79,55	0,001	0,045	1,3
17:17	282,5	311,7	401,3	79,43	94,75	345,2	311,4	211	80,18	79,68	85,43	79,59	84,65	79,57	0,003	0,043	1,11
17:27	277,2	312,5	396,3	78,12	93,63	333,4	306,7	214,9	80,14	79,68	85,06	79,62	84,06	79,57	0,003	0,041	0,9
17:37	273,2	311,4	391,6	80,18	93,33	326,6	303,1	217,8	80,07	79,65	84,86	79,59	83,76	79,56	0,002	0,041	0,75
17:47	269,2	308,4	386,4	79,84	92,79	320,8	299,9	218,9	80,01	79,63	84,59	79,59	83,62	79,57	0,002	0,042	0,57
17:57	258,8	301,7	380,2	76,34	91,18	313,5	295,2	217,6	80,05	79,68	84,29	79,61	83,36	79,61	0,001	0,04	0,4
18:07	250,2		288 372,4	76,71	90,66	309,3	288,7	214,6	80,03	79,67	84,11	79,64	83,11	79,62	0,001	0,04	0,24
18:17	242,4	275,1		363 75,87	90,1		294 281,7	210,8	79,98	79,63	83,88	79,59	82,81	79,6	0,004	0,039	0,12
18:27	236,7	261,8	351,2	75,68	89,45	283,9	274,3	205	79,97	79,63	83,72	79,59	82,55	79,59	0,001	0,037	-0,01
18:27	236,8	261,8	351,2	75,85	89,49	283,8	274,3	205	79,97	79,63	83,71	79,6	82,57	79,6	0	0,037	-0,01

Date: June 17th, 2013
Primary control setting: Categorie 2

Temps	FLUE :	FIREBOX B/	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)
15:32	248,1	246,3	344,8	70,53	99,1	268,9	277	239,8	76,2	76,07	77,16	75,9	76,43	75,87	0,031	8,99
15:42	232,1	271,2	318,9	75,34	92,13	269,5	257,7	299,2	76,52	76,16	81,6	76,05	81,39	76,01	0,036	8,48
15:52	213,9	265,5	287,3	77,85	88,76	263,2	237,3	310,4	76,83	76,36	81,61	76,29	80,99	76,26	0,035	8,14
16:02	294,5	255,2	263,6	80,58	93,45	258,8	221,9	308,4	77,11	76,55	81,97	76,51	81,52	76,47	0,049	7,59

16:12	378,2	215,3	264,9	79,07	100,7	296,4	220,3		215	77,29	76,7	83,06	76,67	83,11	76,6	0,058	6,54
16:22	431,3	219	297	81,41	107,1	378,9	240,7	195,5		77,45	76,82	84,53	76,78	85,25	76,75	0,062	5,26
16:32	476,8	236,9	334,5	81,24	112	457,9	268,6	187,3		77,61	76,96	85,93	76,93	86,9	76,86	0,066	3,98
16:42	438,9	257,3	369,1	80,74	109,1	494,5	295,5	186,9		77,72	77,07	86,57	77,02	87,54	76,95	0,061	2,9
16:52	376,4	277,5	393,9	80,31	103,7	473,6	315,9	188,8		77,84	77,2	85,88	77,15	86,65	77,09	0,055	2,29
17:02	336,1	288,3	401,9	79,56	99,83	426,2	321,8	188,8		77,88	77,28	84,85	77,22	85,51	77,16	0,05	1,94
17:12	302,5	288,3	400,6	80,32	96,8	386,3	320,3	190,3		77,97	77,39	84,12	77,31	84,32	77,24	0,045	1,73
17:22	286,4	286,1	393,3	78,71	94,62	354,8	317,6	191,9		77,99	77,45	83,52	77,32	83,35	77,3	0,043	1,54
17:32	275,5	286,1	384,5	75,69	92,49	334,4	312,7	193,2		77,95	77,49	82,88	77,38	82,8	77,34	0,042	1,37
17:42	268,7	284,8	376,4	75,62	91,45	320,9	307,4		195		78 77,55	82,51	77,44	82,11	77,41	0,04	1,16
17:52	263,5	280,8	370,3	75,26	90,71	312,5	302,1	196,1			78 77,59	82,3	77,49	81,77	77,45	0,04	0,99
18:02	260,9	276,9	364,5	74,58	90,25	305,8	296,4	196,6		78,03	77,64	82,18	77,56	81,55	77,52	0,039	0,8
18:12	253,1	272,2	357,2	74,29	89,46	299	290,8	196,3		77,98	77,63	82,05	77,55	81,37	77,5	0,039	0,63
18:22	246,4	265,5	348,4	73,95	88,61	290,7	285,2	195,4		78,02	77,67	81,96	77,58	81,22	77,56	0,037	0,48
18:32	240,8	259,8	339,9	73,38	88,04	283,2	280,5	193,5		78,05	77,69	81,71	77,62	81	77,6	0,037	0,31
18:42	230,7	253,1	330,4	75,04	88,08	274,6	274,8	192,8		78,1	77,71	81,74	77,62	81,02	77,6	0,035	0,18
18:52	222,1	242,7	317,6	74,08	87,04	263,5	265,7		189	78,14	77,78	81,41	77,71	80,9	77,7	0,034	0,04
19:02	220	236	306,3	73,93	86,72	255,2	258,7	185,7		78,14	77,82	81,27	77,71	80,81	77,7	0,034	-0,07
19:02	219,8	235,9	306,2	73,98	86,74	255,2	258,6	185,7		78,12	77,79	81,25	77,69	80,83	77,69	0,034	-0,08

Date: June 18th, 2013

Primary control setting: Categorie 2

Temps	FLUE :	FIREBOX BA	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)
15,23	250	296,7	362,9	75,55	96,39	295,2	300,3	275,4	78,49	78,44	79,95	78,27	78,5	78,29	0,036	9,73
15,33	257,4	320	336	78,62	96,13	302,6	284,3	347,4	78,8	78,54	83,94	78,42	83,43	78,41	0,042	9,16
15,43	316,2	309,7	310,9	78,98	98,03	321	265,3	353,4	79,08	78,71	84,94	78,61	84,25	78,6	0,051	8,37
15,53	442,5	307,5	312,8	79,66	108,7	390,7	262,4	341,6	79,31	78,88	86,58	78,82	86,09	78,78	0,065	6,92
16,03	489,1	269,4	339,2	81,3	114,5	460,3	281,7	235	79,51	79,01	88,39	78,95	87,97	78,92	0,066	5,49
16,13	494,4	266,9	365,3	86,41	116,1	512,6	302	214,6	79,59	79,07	89,57	79,02	89,07	78,95	0,068	4,17
16,23	454,7	276,2	392,7	87,37	112,8	522,2	322,3	206,3	79,67	79,12	89,54	79,03	89,01	78,99	0,064	3,15
16,33	389,4	289,6	414,8	85,19	106,7	494,2	334,8	202,7	79,74	79,19	88,98	79,11	87,85	79,08	0,056	2,45
16,43	349	303,8	421,5	82,72	102,1	443,6	337,6	202,6	79,84	79,26	87,84	79,18	86,78	79,14	0,052	2
16,53	314,2	316,4	419,4	81,87	98,09	399,1	332,6	204	79,88	79,32	86,75	79,24	85,77	79,2	0,046	1,75
17,03	294,6	319,4	412,3	78,6	95,45	362,4	323,7	205,5	79,86	79,39	85,91	79,29	84,85	79,24	0,044	1,55
17,13	282	314,4	403,3	77,75	93,78	338,2	314,7	207,2	79,82	79,39	85,03	79,31	84,11	79,25	0,042	1,38
17,23	271,5	306,7	393,8	77,67	92,42	322,2	306,9	208,8	79,7	79,39	84,51	79,28	83,56	79,26	0,042	1,22
17,33	265,9	298,6	384,7	76,55	91,16	310,9	298	209	79,5	79,3	84,01	79,15	82,98	79,17	0,041	1,04
17,43	260	291,6	376,1	75,65	90,34	301,9	291,3	208,5	79,51	79,29	83,67	79,15	82,72	79,16	0,039	0,85
17,53	253,9	284,1	368,6	75,83	89,74	294,8	285,2	208	79,54	79,31	83,42	79,18	82,58	79,19	0,039	0,68
18,03	245,8	272,3	359,5	75,83	88,78	286,3	278,2	204,3	79,48	79,27	83,14	79,14	82,23	79,14	0,037	0,54
18,13	239,5	260,7	350	73,46	87,99	277,3	271	200,7	79,47	79,25	83,05	79,14	81,95	79,14	0,036	0,4
18,23	229,7	250,3	340,6	73,37	87,24	268,5	264	196,7	79,41	79,19	82,74	79,08	81,74	79,08	0,035	0,28
18,33	216,5	238,7	329,6	72,52	85,46	257,5	255,2	191,9	79,35	79,15	82,51	79,03	81,44	79,07	0,034	0,19
18,43	206	225,5	316,6	71,76	84,3	245,2	243,7	184,9	79,37	79,14	82,15	79,02	81,07	79,02	0,032	0,1

18,53	193,2	212,8		301	70,16	83,21	232,5	231,6	177,2	79,34	79,12	81,85		79	80,77	79,01	0,03		0
19,03	182,1	199,3	281,2		69,61	82,46	218,1	218,9	168,1	79,34	79,09	81,5	78,98		80,46	78,98	0,027	-0,05	
19,03	182,2	199,2	281,1		69,57	82,43		218 218,8	168,1	79,34	79,11	81,51	78,96		80,51	78,99	0,028	-0,05	

Date: June 19th, 2013
Primary control setting: Categorie 2

Temps	FLUE :		FIREBOX BA	FIREBOX RI	AMBIANT :	DILUTION T	FIREBOX TC	FIREBOX LE	FIREBOX BI	DMG INLET	DMG OUTL	PROBE TEN	DGM OUTL	PROBE TEN	DGM INLET	DRAFT :	Poids(Lbl)
15:32	257,6		252	328,3	70,59	101,6	268,2	278,7	245,7	80,22	80,13	81,57	80,03	80,16	79,98	0,032	9,27
15:42	215,8	268,1		296	75,4	93,75	253,9	257,8	309,1	80,57	80,26	85,04	80,2	84,21	80,15	0,033	8,95
15:52	252,3		257	264,6	76,35	94,01		256 237,2	314,7	80,94	80,55	85,44	80,48	84,27	80,45	0,042	8,46
16:02	312,2	252,2		248,7	77,29	98,65	282,8	226,7	306,3	81,18	80,74	86,09	80,69	85,08	80,67	0,05	7,77
16:12	444,6	219,8		264,4	80,13	110,2	330,9	233,4	209,9	81,45	80,97	87,93	80,94	87,46	80,9	0,064	6,5
16:22		486 224,2		301,6	79,67	115,8	433,2	256,9	188,8	81,59	81,07	90,1	81,04	89,56	80,99	0,066	5,06
16:32	487,8	240,2		340,2	82,54	116,4	487,6		284 184,5	81,72	81,21	91,32	81,16	90,41	81,12	0,066	3,77
16:42	442,4		259	376,9	84,34	112,4	496,5	305,9	184,1	81,78	81,31	91,46	81,24	90,12	81,19	0,063	2,82
16:52	379,5	276,8		401,9	84,16	106,2	468,5	320,7	185,3	81,79	81,4	90,48	81,29	88,97	81,27	0,056	2,19
17:02	342,2	287,9		409,9	81,86	102,1	418,8	325,1	187,9	81,8	81,44	89,32	81,35	87,76	81,31	0,05	1,81
17:12	316,3	298,2		407,8	80,84	99,02	384,6	323,2	192,4	81,74	81,49	88,4	81,36	86,72	81,33	0,048	1,57
17:22	298,4	301,3		399,3	79,4	96,61	355,9	317,1	196,1	81,49	81,4	86,84	81,13	85,66	81,17	0,045	1,36
17:32	287,3	300,1		391,2	77,85	94,84	335,9	311,1	199,1	81,34	81,28	85,91	81,02	85,04	81,08	0,043	1,19
17:42	278,1	295,5		384,6	76,89	93,53	322,1	305,7	201,3	81,29	81,27	85,35	80,96	84,61	81,04	0,042	1,01
17:52		292 289,8		378,6	75,53	92,55	312,7	300,5	202,6	81,16	81,18	84,93	80,91	84,19	80,94	0,041	0,82
18:02	266,8	283,2		370,8	74,58	91,65	304,5	295,4	202,5	81,1	81,12	84,52	80,8	84,03	80,89	0,041	0,64
18:12	260,6		276	362,9	74,59	90,93	297,2	290,6		202 80,96	81,03	84,4	80,74	83,76	80,82	0,04	0,49
18:22	255,6		269	355,3	75,38	90,61	290,8	286,7	200,9	81,02		81 84,41	80,81	83,69	80,84	0,04	0,36
18:32	251,4	262,1		347,3	74,51	89,88	284,1	281,7	199,4	81,01	80,94	84,24	80,71	83,55	80,78	0,039	0,2
18:42		246 255,2		339,3	73,59		89 277,6	276,2	197,5	80,9	80,89	84,12	80,68	83,47	80,71	0,037	0,07
18:52	244,8	249,6		330	73,47	89,19	272,7	271,8	194,7	80,91	80,87	84,19	80,67	83,42	80,69	0,037	-0,09
18:52	245,2	249,5		329,9	73,49	89,16	272,6	271,8	194,7	80,93	80,89	84,2	80,68	83,39	80,71	0,038	-0,09

Appendix D: Calibrations

DIGITAL MEASUREMENT METROLOGY LABORATORY

A division of
DIGITAL MEASUREMENT METROLOGY INC.
26 Automatic Road, Unit 4
Brampton, ON, Canada L6S 5N7
TEL: (905) 790-9400 FAX: (905) 790-9266
Internet: www.dmm.ca E-mail: service@dmm.ca
L-A-B Accredited Cert# L1048-1 Calibration, Testing & Dim Insp

CALIBRATION CERTIFICATE

Description:	WEIGHT SET	**Calibration Date:**	9/9/2011 **Certificate:** 51454
Asset Number:	SBI-190/191	**Property of:**	SBI ST-AUGUSTIN
Serial/Model Number:	N / A	**Address:**	250, De Copenhague, Doors 10-12
Manufacturer:	TROEMNER	**City/Prov/PC:**	St-Augustin-de-Desmaures QC G3A 2H3
Instrument Capacity:	5 kg to 10 kg	**Country:**	Canada
Procedure:	CP34G	**Method Used:**	COMPARISON
Room Humidity:	39 % **Room Temp:** 19.6 °C	**Conformance Stds:**	ISO/IEC 17025 : 2005

CALIBRATION DATA

Units: kg

Asset #	Std/Nominal	As Found	As Left	Min	Max	Tolerance In	Tolerance Out	Tolerance
SBI-190	5	5.0004	5.0004	4.9995	5.0005	✔		± 0.13 g
SBI-191	10	10.0006	10.0006	9.999	10.001	✔		± 0.14 g

Remarks:

Inspected, cleaned and tested using the mfg's specs and procedures, customer's, national & international standards, or new procedure design. Measurement uncertainty is not considered when deciding compliance to the tolerance or specs. It is up to the user to make a judgment of conformity to the limits shown.

CALIBRATION STANDARD(S) USED

Traceable No.	Asset Number	Calibration Date	Date Due
41454	DMML-2356075	05-Oct-10	05-Oct-11
1430567	DMML-21669	11-Jul-08	11-Jul-13
1430567	DMML-21701	11-Jul-08	11-Jul-13

Received Condition:
In tolerance

Weights are accurate to class F tolerance.

Estimated measurement uncertainty is, at minimum, an accuracy ratio of 4:1, unless otherwise stated.

Reported uncertainties represent a 95 % confidence level assuming a normal distribution, with a coverage factor of k=2.

This calibration was performed in the lab and is traceable to the International System of Units (SI Units) through NIST or NRC. This report is covered by our accreditation.

Calibration of the instrument expires on September 09, 2012

The results shown above relate to the above calibrated instrument/equipment only. Copyright of this Certificate is owned by the issuing laboratory and may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TECHNICIAN Christopher Riddle

QUALITY APPROVAL Nana Manley

END OF REPORT

Certificate No: MT0031229

METTLER TOLEDO

METTLER-TOLEDO, LLC
1900 Polaris Pkwy
Columbus, OH 43240
1-800-METTLER

ACCREDITED
Cert # 1788.01

Mass Calibration Certificate

Customer Information

Customer Name:	Sbi	*City:*	Saint-Augustin-De-Dema
Address:	250 Rue Copenhague	*State / Province:*	QC
Purchase Order:	34985	*Zip / Postal Code:*	G3A 2H3

Measurement and Test Equipment Identification

Serial Number:	B316239338	*Date Received:*	4/17/2013
Manufacturer:	Mettler-Toledo	*Condition:*	*Excellent*
Asset number:		*Tolerance Class:*	OIML E2

Environmental Conditions

Temperature:	20.430 °C	*Relative Humidity:*	47.680 *%RH*
Barometric Pressure:	988.9080 *hPa*	*Air Density:*	1.1688 *kg/m³*

The standards used to perform this calibration are traceable to NIST through METTLER TOLEDO traceability number: MT5061

This certificate is issued in accordance with the conditions granted by A2LA under Certificate number 1788.01, which is based on ISO/IEC17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards. All uncertainties in this certificate are reported at a 95% (k=2) confidence factor.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory and A2LA.

Calibration Date:	04/17/2013	*Next Calibration Due:*	04/16/2014
Calibration Technician:	Kathy Weatherbie	*Signature:*	04/18/2013

Metrology Specialist — Date

Certificate No: MT0031229

As Found Data

Nominal Value&Suffix	Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Tolerance (mg)	Density (g/cm³)
100 mg	(B316239338)	0.1000032436	0.1000031492	0.0017	0.016	7.95

As Left Data

Nominal Value&Suffix	Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Tolerance (mg)	Density (g/cm³)
100 mg	(B316239338)	0.1000032436	0.1000031492	0.0017	0.016	7.95

Certificate No: **MT0031229**

Comparators Used

#	Equipment Used	Serial Number	Equipment Type	Calibration Due
#6 :	a5XL	B010016731	Automated Mass Comparator	08/31/2013

Comments

No Remarks

Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights. The number within the parentheses after the nominal value is the serial number of the set to which the weight belongs.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at 95% confidence level (k=2) . The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - The METTLER TOLEDO procedure used to obtain the measurement results. All procedures are based on SOPs as defined in NIST Handbook 145. The same process is used to obtain the As Found and As Left results.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.

Certificate No: MT0031137

METTLER TOLEDO

METTLER-TOLEDO, LLC
1900 Polaris Pkwy
Columbus, OH 43240
1-800-METTLER

ACCREDITED
Cert # 1788.01

Mass Calibration Certificate

Customer Information

Customer Name:	Sbi	*City:*	Saint-Augustin-De-Dema
Address:	250 Rue Copenhague	*State / Province:*	QC
Purchase Order:	34985	*Zip / Postal Code:*	G3A 2H3

Measurement and Test Equipment Identification

Serial Number:	B316238717	*Date Received:*	4/16/2013
Manufacturer:	Mettler-Toledo	*Condition:*	*Excellent*
Asset number:		*Tolerance Class:*	OIML F1, F2

Environmental Conditions

Temperature:	20.365 °C	*Relative Humidity:*	47.865 *%RH*
Barometric Pressure:	981.2060 *hPa*	*Air Density:*	1.1599 kg/m^3

The standards used to perform this calibration are traceable to NIST through METTLER TOLEDO traceability number: MT5061

This certificate is issued in accordance with the conditions granted by A2LA under Certificate number 1788.01, which is based on ISO/IEC17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards. All uncertainties in this certificate are reported at a 95% (k=2) confidence factor.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory and A2LA.

Calibration Date:	04/09/2013	*Next Calibration Due:*	04/15/2014
Calibration Technician:	Kathy Weatherbie	*Signature:*	04/16/2013

Metrology Specialist — Date

16290550A

Certificate No: **MT0031137**

As Found Data

Nominal Value&Suffix	Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Tolerance (mg)	Density (g/cm³)
200 g	(B316238717)	200.001163	200.000974	0.035	3.0	7.95
10 g	(B316238717)	10.0000725	10.0000630	0.0078	0.20	7.95

62805004

As Left Data

Nominal Value&Suffix	Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Tolerance (mg)	Density (g/cm³)
200 g	(B316238717)	200.001163	200.000974	0.035	3.0	7.95
10 g	(B316238717)	10.0000725	10.0000630	0.0078	0.20	7.95

Comparators Used

#	Equipment Used	Serial Number	Equipment Type	Calibration Due
#11 :	a200XL	B010016733	Automated Mass Comparator	08/31/2013

Comments

No Remarks

152805004

Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights. The number within the parentheses after the nominal value is the serial number of the set to which the weight belongs.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at 95% confidence level (k=2) . The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - The METTLER TOLEDO procedure used to obtain the measurement results. All procedures are based on SOPs as defined in NIST Handbook 145. The same process is used to obtain the As Found and As Left results.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.

1628050A

AIR LIQUIDE

CERTIFICAT D'ANALYSE

MONTREAL SPECIALTY GAS PLANT
11201 RAY LAWSON
MONTREAL QC
H1J 1M6

Client: QUEBEC
2230 BOUL. CHAREST O. STE-FOY
QUEBEC QUEBEC
G1N 2G3 CANADA

Date d'analyse:	25/11/2010
Code de produit:	SPG-2MX0000729
Qualité:	CERTIFIE
Taille:	7
Raccord de sortie du robinet:	CGA 350

No de série:	C0010195A
No d'ordre de fabrication:	10-SGM-3862
Pression:	10125 kPa (15°C)
	1500 psi (21°C)
Volume:	0,739 m3
Date d'expiration:	25/11/2013

COMPOSANTS	CONCENTRATION NOMINALE	RÉSULTAT D'ANALYSE
MONOXYDE DE CARBONE	1 % molaire	0,996 % molaire
AZOTE	BALANCE	BALANCE

Analyse réalisée par:

SAMIA AMRANI B.Sc.

MÉTHODE D'ANALYSE:

La méthode d'analyse est basée sur le principe de la chromatographie en phase gazeuse comme décrit dans les Instructions d'Opérations de Air Liquide Canada. Selon les besoins,on choisi préférentiellement un détecteur FID ou TCD avec une colonne capillaire ou une colonne remplie.

PRÉCISION ANALYTIQUE:

Les spécifications pour les concentrations rapportées sont: +/- 2% pour les constituants en concentration supérieure à 0.5% et +/- 5% pour les constituants en concentration inférieure 0.5%. Sauf indication contraire, la précision d'analyse est indiquée en pourcentage du constituant. Dans certains cas, les valeurs peuvent changer en fonction de la nature, du nombre et de la concentration des constituants du mélange.

www.airliquide.ca

AIR LIQUIDE

CERTIFICAT D'ANALYSE

MONTREAL SPECIALTY GAS PLANT
11201 RAY LAWSON
MONTREAL QC
H1J 1M6

Client: QUEBEC
2230 BOUL. CHAREST O. STE-FOY
QUEBEC QUEBEC
G1N 2G3 CANADA

Date d'analyse:	03/07/2009
Code de produit:	SPG-2MX0008101
Qualité:	CERTIFIE
Taille:	7AL
Raccord de sortie du robinet:	CGA 580

No de série:	S-990055-E
No d'ordre de fabrication:	09-SGM-2059
Pression:	13500 kPa (15°C) 2000 psi (21°C)
Volume:	1,0 m3
Date d'expiration:	03/07/2012

COMPOSANTS	CONCENTRATION NOMINALE	RÉSULTAT D'ANALYSE
DIOXYDE DE CARBONE	20 % molaire	19,8 % molaire
AZOTE	BALANCE	BALANCE

Analyse réalisée par:
FREDERIC GAGNON B.Sc.

MÉTHODE D'ANALYSE:

La méthode d'analyse est basée sur le principe de la chromatographie en phase gazeuse comme décrit dans les Instructions d'Opérations de Air Liquide Canada. Selon les besoins,on choisi préférentiellement un détecteur FID ou TCD avec une colonne capillaire ou une colonne remplie.

PRÉCISION ANALYTIQUE:

Les spécifications pour les concentrations rapportées sont: +/- 2% pour les constituants en concentration supérieure à 0.5% et +/- 5% pour les constituants en concentration inférieure 0.5%. Sauf indication contraire, la précision d'analyse est indiquée en pourcentage du constituant. Dans certains cas, les valeurs peuvent changer en fonction de la nature, du nombre et de la concentration des constituants du mélange.

www.airliquide.ca

Claude Paré

De: Douglas, Rob [Robert.Douglas@nrc-cnrc.gc.ca]
Envoyé: 26 avril 2011 17:45
À: 'john.voorhees@interlek.com'
Cc: Claude Paré
Objet: NMI standards and ISO 17025 MRA recognition

Dear John Voorhees,

M. Claude Paré, a Lab Technician with Stove Builder International Inc. (250, rue de Copenhague Saint-Augustin-de-Desmaures Québec, Canada, G3A 2H3) has asked me to contact you with documentation for their use, by telephone, of our National Research Council (NRC) talking clock as a reference standard in the calibration of stopwatches for the measurement of (SI) time intervals.

Our NRC talking clock announces the official time for Canada, either as NRC Eastern Daylight Time ≡ UTC(NRC) - 4h, or as NRC Eastern Standard Time ≡ UTC(NRC) - 5h, depending on the season. These are defined identities, and this style of a verbal announcement from a National Institute of Metrology (NMI) has, in my long experience, never before required further documentation in the context of stopwatch calibration for time intervals. The start of the "beep" following each announcement is triggered by the UTC(NRC) signal. The UTC(NRC) signal is internationally compared in the highest level comparison amongst NMIs, primarily by continuous GPS measurements, sampled and verified every 5 days and published each month in the CIPM Key comparison CCTF-K001.UTC:
http://kcdb.bipm.org/AppendixB/KCDB_ApB_result.asp?cmp_idy=617&cmp_cod=CCTF-K001.UTC&search=1&cmp_cod_search=&page=1&met_idy=8&bra_idy=0&epo_idy=0&cmt_idy=0&ett_idy_org=0&cou_cod=0 .

UTC(NRC), and time intervals derived from this time scale, are recognized internationally by the signatories of the CIPM MRA: http://kcdb.bipm.org/AppendixC/TF/CA/TF_CA.pdf http://www.bipm.org/en/cipm-mra/participation/signatories.html - in my opinion, this is the very highest and widest level of ISO 17025 recognition, and I must confess to being surprised by M. Paré's request.

I recommend this national standard widely for stopwatch calibration in Canada, for use within the uncertainties revealed by variations in repeated measurements that can quantify the overall variation from all the important sources of uncertainty (delay variations on the telephone network, reaction time variation, and the variation of the chronometer's rate). Thus I would be grateful if you would clarify for me what documentation about this standard you or your assessor believe is appropriate to meet the requirements of an ISO 17025 assessment.

Dr. Rob Douglas

Principal Research Officer : Agent de recherches principal
Frequency and Time : Fréquence et temps
Institute for National Measurement Standards : Institut des étalons nationaux de mesure
National Research Council Canada : Conseil national de recherches Canada
M-36, 1108 : M-36, 1108
1200 Montreal Road : 1200 chemin Montréal
Ottawa, Canada K1A 0R6 : Ottawa, Canada K1A 0R6

Tel: (613) 993-5186 : Tél: (613) 993-5186
Fax: (613) 952-1394 : Télécopieur: (613) 952-1394
rob.douglas@nrc-cnrc.gc.ca : rob.douglas@nrc-cnrc.gc.ca
Government of Canada : Gouvernment du Canada

Date: 2/8/2013

Equipment: SBI-232 Temperature: 72 F
Accuracy: 0.01 R.H.: 19%
Reference: Horloge parlante

S.D.	0.00	%	
R.M.U.	0.00	%	
O.M.U	**0.00**	%	
	Ave A.D.	0.00	%
Standard	Reading	A.D.	
84360.0	84360.0	0.00	

Technician: Claude Paré

Date: 2/8/2013

Equipment: SBI-235 Temperature: 72 F
Accuracy: 0.01 R.H.: 19%
Reference: Horloge parlante

S.D.	0.00	%	
R.M.U.	0.00	%	
O.M.U	**0.00**	**%**	
	Ave A.D.	0.00	%
Standard	Reading	A.D.	
84360.0	84360.0	0.00	

Technician: Claude Paré

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T1 (Flue) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.14	%	
O.M.U	1.74	%	
	Ave A.D.	0.86	%
Standard	Reading	A.D.	
70.0	69.40	0.86	
70.0	69.40	0.86	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.81	%	
	Ave A.D.	0.40	%
Standard	Reading	A.D.	
150.0	149.40	0.40	
150.0	149.40	0.40	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.47	%	
	Ave A.D.	0.23	%
Standard	Reading	A.D.	
300.0	299.30	0.23	
300.0	299.30	0.23	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.24	%	
	Ave A.D.	0.12	%
Standard	Reading	A.D.	
500.0	499.40	0.12	
500.0	499.40	0.12	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
750.0	749.40	0.08	
750.0	749.40	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.09	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.40	0.05	
1250.0	1249.50	0.04	

Vincent Pelletier

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T2 (ambiant) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	**0.71**	**%**	
	Ave A.D.	0.33	%
Standard	Reading	A.D.	
75.0	74.72	0.37	
75.0	74.79	0.28	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	**0.49**	**%**	
	Ave A.D.	0.23	%
Standard	Reading	A.D.	
150.0	149.60	0.27	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	**0.24**	**%**	
	Ave A.D.	0.12	%
Standard	Reading	A.D.	
300.0	299.70	0.10	
300.0	299.60	0.13	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	**0.06**	**%**	
	Ave A.D.	0.02	%
Standard	Reading	A.D.	
500.0	499.90	0.02	
500.0	499.90	0.02	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.14**	**%**	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
750.0	749.50	0.07	
750.0	749.50	0.07	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.07**	**%**	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.40	0.05	
1250.0	1249.70	0.02	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T3 (Dilution tunnel) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	**0.72**	**%**	
	Ave A.D.	0.33	%
Standard	Reading	A.D.	
75.0	74.74	0.35	
75.0	74.76	0.32	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	**0.49**	**%**	
	Ave A.D.	0.23	%
Standard	Reading	A.D.	
150.0	149.60	0.27	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	**0.21**	**%**	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
300.0	299.70	0.10	
300.0	299.70	0.10	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	**0.09**	**%**	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
500.0	499.80	0.04	
500.0	499.80	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.08**	**%**	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
750.0	749.70	0.04	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.02**	**%**	
	Ave A.D.	0.01	%
Standard	Reading	A.D.	
1250.0	1249.90	0.01	
1250.0	1249.90	0.01	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T4 (Firebox top) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.13	%	
O.M.U	1.35	%	
	Ave A.D.	0.66	%
Standard	Reading	A.D.	
75.0	74.50	0.67	
75.0	74.51	0.65	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.68	%	
	Ave A.D.	0.33	%
Standard	Reading	A.D.	
150.0	149.50	0.33	
150.0	149.50	0.33	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.34	%	
	Ave A.D.	0.17	%
Standard	Reading	A.D.	
300.0	299.50	0.17	
300.0	299.50	0.17	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
500.0	499.60	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.14	%	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
750.0	749.50	0.07	
750.0	749.50	0.07	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.07	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.50	0.04	
1250.0	1249.60	0.03	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T5 (Firebox back) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	**0.28**	**%**	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
75.0	74.97	0.04	
75.0	74.97	0.04	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	**0.30**	**%**	
	Ave A.D.	0.13	%
Standard	Reading	A.D.	
150.0	149.80	0.13	
150.0	149.80	0.13	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	**0.15**	**%**	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
300.0	299.80	0.07	
300.0	299.80	0.07	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.09**	**%**	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
500.0	499.80	0.04	
500.0	499.80	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.10**	**%**	
	Ave A.D.	0.05	%
Standard	Reading	A.D.	
750.0	749.60	0.05	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	**0.06**	**%**	
	Ave A.D.	0.03	%
Standard	Reading	A.D.	
1250.0	1249.70	0.02	
1250.0	1249.60	0.03	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T6(Firebox right) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.13	%	
O.M.U	1.53	%	
	Ave A.D.	0.75	%
Standard	Reading	A.D.	
75.0	74.44	0.75	
75.0	74.43	0.76	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.81	%	
	Ave A.D.	0.40	%
Standard	Reading	A.D.	
150.0	149.40	0.40	
150.0	149.40	0.40	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.41	%	
	Ave A.D.	0.20	%
Standard	Reading	A.D.	
300.0	299.40	0.20	
300.0	299.40	0.20	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.20	%	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
500.0	499.50	0.10	
500.0	499.50	0.10	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
750.0	749.40	0.08	
750.0	749.40	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.50	0.04	
1250.0	1249.50	0.04	

Vincent Pelletier

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T7 (Firebox left) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.13	%	
O.M.U	1.46	%	
	Ave A.D.	0.72	%
Standard	Reading	A.D.	
75.0	74.46	0.72	
75.0	74.46	0.72	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.81	%	
	Ave A.D.	0.40	%
Standard	Reading	A.D.	
150.0	149.40	0.40	
150.0	149.40	0.40	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.37	%	
	Ave A.D.	0.18	%
Standard	Reading	A.D.	
300.0	299.50	0.17	
300.0	299.40	0.20	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.20	%	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
500.0	499.50	0.10	
500.0	499.50	0.10	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
750.0	749.40	0.08	
750.0	749.40	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.50	0.04	
1250.0	1249.50	0.04	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T3 (Dilution tunnel) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.13	%	
O.M.U	1.50	%	
	Ave A.D.	0.74	%
Standard	Reading	A.D.	
75.0	74.45	0.73	
75.0	74.44	0.75	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.81	%	
	Ave A.D.	0.40	%
Standard	Reading	A.D.	
150.0	149.40	0.40	
150.0	149.40	0.40	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.37	%	
	Ave A.D.	0.18	%
Standard	Reading	A.D.	
300.0	299.40	0.20	
300.0	299.50	0.17	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.20	%	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
500.0	499.50	0.10	
500.0	499.50	0.10	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
750.0	749.40	0.08	
750.0	749.40	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.07	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.50	0.04	
1250.0	1249.60	0.03	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T9 (DGM inlet 1)
Accuracy: 0.1
Reference: SBI-096

Temperature: 72 F
R.H.: 54%

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	0.66	%	
	Ave A.D.	0.30	%
Standard	Reading	A.D.	
75.0	74.76	0.32	
75.0	74.79	0.28	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.42	%	
	Ave A.D.	0.20	%
Standard	Reading	A.D.	
150.0	149.70	0.20	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.15	%	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
300.0	299.80	0.07	
300.0	299.80	0.07	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.09	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
500.0	499.80	0.04	
500.0	499.80	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
750.0	749.70	0.04	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.04	%	
	Ave A.D.	0.02	%
Standard	Reading	A.D.	
1250.0	1249.80	0.02	
1250.0	1249.80	0.02	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T1D (DGM outlet 1) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	0.77	%	
	Ave A.D.	0.36	%
Standard	Reading	A.D.	
75.0	74.73	0.36	
75.0	74.73	0.36	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.42	%	
	Ave A.D.	0.20	%
Standard	Reading	A.D.	
150.0	149.70	0.20	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.24	%	
	Ave A.D.	0.12	%
Standard	Reading	A.D.	
300.0	299.70	0.10	
300.0	299.60	0.13	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.15	%	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
500.0	499.60	0.08	
500.0	499.70	0.06	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.12	%	
	Ave A.D.	0.06	%
Standard	Reading	A.D.	
750.0	749.50	0.07	
750.0	749.60	0.05	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.07	%	
	Ave A.D.	0.03	%
Standard	Reading	A.D.	
1250.0	1249.60	0.03	
1250.0	1249.60	0.03	

Vincent Pelletier

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T11 (Probe temperature 1) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	0.53	%	
	Ave A.D.	0.23	%
Standard	Reading	A.D.	
75.0	74.89	0.15	
75.0	74.77	0.31	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.24	%	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
150.0	149.90	0.07	
150.0	149.80	0.13	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.12	%	
	Ave A.D.	0.05	%
Standard	Reading	A.D.	
300.0	299.90	0.03	
300.0	299.80	0.07	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.06	%	
	Ave A.D.	0.02	%
Standard	Reading	A.D.	
500.0	499.90	0.02	
500.0	499.90	0.02	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.07	%	
	Ave A.D.	0.03	%
Standard	Reading	A.D.	
750.0	749.80	0.03	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.02	%	
	Ave A.D.	0.01	%
Standard	Reading	A.D.	
1250.0	1250.00	0.00	
1250.0	1249.80	0.02	

Vincent Pelletier

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T12 (DGM inlet 2)
Temperature: 72 F
Accuracy: 0.1
R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	0.74	%	
	Ave A.D.	0.35	%
Standard	Reading	A.D.	
75.0	74.74	0.35	
75.0	74.74	0.35	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.42	%	
	Ave A.D.	0.20	%
Standard	Reading	A.D.	
150.0	149.70	0.20	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.21	%	
	Ave A.D.	0.10	%
Standard	Reading	A.D.	
300.0	299.70	0.10	
300.0	299.70	0.10	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.09	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
500.0	499.80	0.04	
500.0	499.80	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
750.0	749.70	0.04	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.04	%	
	Ave A.D.	0.02	%
Standard	Reading	A.D.	
1250.0	1249.80	0.02	
1250.0	1249.80	0.02	

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T13 (DGM outlet 2) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.01	%	
R.M.U.	0.13	%	
O.M.U	1.14	%	
	Ave A.D.	0.55	%
Standard	Reading	A.D.	
75.0	74.60	0.53	
75.0	74.57	0.57	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.68	%	
	Ave A.D.	0.33	%
Standard	Reading	A.D.	
150.0	149.50	0.33	
150.0	149.50	0.33	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.31	%	
	Ave A.D.	0.15	%
Standard	Reading	A.D.	
300.0	299.50	0.17	
300.0	299.60	0.13	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
500.0	499.60	0.08	
500.0	499.60	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.16	%	
	Ave A.D.	0.08	%
Standard	Reading	A.D.	
750.0	749.40	0.08	
750.0	749.40	0.08	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
1250.0	1249.50	0.04	
1250.0	1249.50	0.04	

Vincent Pelletier

Vincent Pelletier

Date: 6/20/2013

Equipment: SBI-199 & SBI-200
T14 (Probe temperature 2) Temperature: 72 F
Accuracy: 0.1 R.H.: 54%
Reference: SBI-096

S.D.	0.00	%	
R.M.U.	0.13	%	
O.M.U	0.72	%	
	Ave A.D.	0.33	%
Standard	Reading	A.D.	
75.0	74.75	0.33	
75.0	74.75	0.33	

S.D.	0.00	%	
R.M.U.	0.07	%	
O.M.U	0.36	%	
	Ave A.D.	0.17	%
Standard	Reading	A.D.	
150.0	149.80	0.13	
150.0	149.70	0.20	

S.D.	0.00	%	
R.M.U.	0.03	%	
O.M.U	0.15	%	
	Ave A.D.	0.07	%
Standard	Reading	A.D.	
300.0	299.80	0.07	
300.0	299.80	0.07	

S.D.	0.00	%	
R.M.U.	0.02	%	
O.M.U	0.09	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
500.0	499.80	0.04	
500.0	499.80	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.08	%	
	Ave A.D.	0.04	%
Standard	Reading	A.D.	
750.0	749.70	0.04	
750.0	749.70	0.04	

S.D.	0.00	%	
R.M.U.	0.01	%	
O.M.U	0.05	%	
	Ave A.D.	0.02	%
Standard	Reading	A.D.	
1250.0	1249.70	0.02	
1250.0	1249.70	0.02	

Vincent Pelletier

Thermal Metering System Calibration
Y factor for Method 5G sampling

Manufacturer:	American Meter Company
Model:	DTM-200A
Serial Number:	9GR054300

Previous Calibration Comparision

Date	25-juin-13	Acceptable Deviation (5%)	Deviation
y Factor	0,977	0,04885	0,006
Acceptance	Acceptable		

Average Gas Meter y Factor
0,983

Current Calibration

Acceptable y Deviation	0,04885
Maximum y Deviation	0,002
Acceptance	Acceptable

Calibration Date:	07-02-13
Calibrated by:	Vincent Pelletier
Calibration Frequency:	6-month
Next Calibration Due:	12-31-13
Instrument Range:	1,000 cfm
Standard Temp.:	75 oF
Standard Press.:	29,92 "Hg
Barometric Press.:	32,24 "Hg
Signature/Date:	2010-07-21

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	02C056244	
	Calib. Date	31-mai-13	
	Calib. Value	1,0000	y factor (ref)

Calibration Parameters	Run 1	Run 2	Run 3
Vacuum ("Hg)	0,00	0,00	0,00
dH ("H2O)	0,00	0,00	0,00
Initial Reference Meter	118,834	124,049	129,112
Final Reference Meter	124,049	129,112	134,177
Initial DGM	844,651	849,958	855,107
Final DGM	849,958	855,107	860,274
Temp. Ref. Meter (°F), Tr	76,4	77,6	77,6
Temperature DGM (°F), Td	78,0	77,6	78,2
Time (Minutes)	32,0	32,0	32,0
Net Volume Ref. Meter, Vr	5,215	5,063	5,065
Net Volume DGM, Vd	5,307	5,149	5,167
Gas Meter y Factor =	**0,986**	**0,983**	**0,981**
Gas Meter y Factor Deviation (from avg.)	0,002	0,000	0,002
Orifice dH@	**0,00**	**0,00**	**0,00**
Orifice dH@ Deviation (from avg.)	0,000	0,000	0,000

where: 0,16584375

1. Deviation = |Average value for all runs - current run value|
2. y = [Vr x (y factor (ref)) x (Pb) x (Td + 460) / [Vd x (Pb + (dH / 13.6)) x (Tr + 460]
3. dH@ = 0.0317 x dH / (Pb (Td + 460)) x [(Tr + 460) x time) / Vr]^2

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Thermal Metering System Calibration
Y factor for Method 5G sampling

Manufacturer:	American Meter Company
Model:	DTM-200A
Serial Number:	98Z332226

Previous Calibration Comparision

Date	25-juin-13	Acceptable Deviation (5%)	Deviation
y Factor	0,986	0,0493	0,001
Acceptance	Acceptable		

Average Gas Meter y Factor
0,987

Current Calibration

Acceptable y Deviation	0,0493
Maximum y Deviation	0,003
Acceptance	Acceptable

Calibration Date:	07-02-13
Calibrated by:	Vincent Pelletier
Calibration Frequency:	6-month
Next Calibration Due:	12-31-13
Instrument Range:	1,000 cfm
Standard Temp.:	75 oF
Standard Press.:	29,92 "Hg
Barometric Press.:	32,24 "Hg
Signature/Date:	2010-07-21

Reference Standard *			
Standard Calibrator	Model	Standard Test Meter	
	S/N	02C056244	
	Calib. Date	31-mai-13	
	Calib. Value	1,0000	y factor (ref)

Calibration Parameters	Run 1	Run 2	Run 3
Vacuum ("Hg)	0,00	0,00	0,00
dH ("H2O)	0,00	0,00	0,00
Initial Reference Meter	134,195	139,389	144,994
Final Reference Meter	139,389	144,394	150,064
Initial DGM	672,905	678,164	683,842
Final DGM	678,164	683,842	688,987
Temp. Ref. Meter (°F), Tr	77,4	78,2	78,0
Temperature DGM (°F), Td	78,4	77,4	77,8
Time (Minutes)	32,0	35,0	32,0
Net Volume Ref. Meter, Vr	5,194	5,605	5,070
Net Volume DGM, Vd	5,259	5,678	5,145
Gas Meter y Factor =	**0,989**	**0,986**	**0,985**
Gas Meter y Factor Deviation (from avg.)	0,003	0,001	0,002
Orifice dH@	**0,00**	**0,00**	**0,00**
Orifice dH@ Deviation (from avg.)	0,000	0,000	0,000

where: 0,16434375

1. Deviation = |Average value for all runs - current run value|
2. y = [Vr x (y factor (ref)) x (Pb) x (Td + 460) /[Vd x (Pb + (dH / 13.6)) x (Tr + 460]
3. dH@ = 0.0317 x dH / (Pb (Td + 460)) x [(Tr + 460) x time) / Vr]^2

* Reference calibration is traceable to NIST through NIST Test # 40674, Kimble ASTM E1272

Date: 2013-06-20

Nitrogen

	Calibration gas	Results
CO	0,00%	0,00%
CO2	0,00%	0,00%
O2	0,00%	0,00%

Ambiant air

	Results
CO	0,00%
CO2	0,00%
O2	21,10%

Carbon Dioxide

	Calibration gas	Results
CO	0,00%	0,28%
CO2	19,80%	19,98%
O2	0,00%	0,00%

Carbon monoxide

	Calibration gas	Results
CO	0,996%	0,98%
CO2	0,00%	0,00%
O2	0,00%	0,00%

Vincent Pelletier

CERTIFICATE OF NIST TRACEABLE CALIBRATION

Calibration Certificate No: 24761

LABORATORY ACCREDITATION BUREAU ACCREDITED
Certificate # L2115-1 Calibration

ISO 17025-2005 ACCREDITED

Customer Information

Customer: SBI St-Augustin

Address : 250, De Copenhague
Doors 11-12
St-Augustin-de-Desmaures

Customer PO #: 24026

Calibration Procedure Information

Procedure ID: GTP RH/Temp Cal Revision #: 3 Revision Date: 9/14/2010

Calibration Standards Information

Graftel ID	Manufacturer	Model #	Description	CAL Due
10198	Thunder Scientific	1200	Humidity Generator-Pressure	6/22/2011
10199	Thunder Scientific	1200	lumidity Generator-Temperatur	6/22/2011
60030	Paroscientific	760-100A	Pressure, 100 psia	8/24/2011
10160	HOBO	U12-011	Envrorment Monitor System	6/22/2011

Sensor Information

Manufacturer: AMPROBE
Description: RH Meter
Method Used: RH Chamber
Model #: TH-3
Rated Accuracy: ± 3 Difference
Accuracy Specified By: Amprobe
Instrument ID#: SBI-212
Range: 0 to 100 %RH
Condition: Acceptable
Serial #: 100906351

Comments: Calibration Date: 03-24-2011

The instruments(s) listed on this certificate have been calibrated against standards traceable to the National Institue of Standards and Technology (NIST) or compared to nationally or internationally recognized consensus standards. The reported calibration uncertainty has a confidence level of 95% (K=2). A calibration uncertainty ratio of 4:1 was maintained unless required uncertainty support by analysis. Graftel, Inc. Quality Assurance System complies with applicable requirements of ISO/IEC-17025-2005, ANSI/NCSL Z540-1-1994 and ISO 9002, 1994(E). All results contained within this certification relate only to item(s) calibrated. This certificate shall not be reproduced except in full and with the written consent of Graftel, Inc.

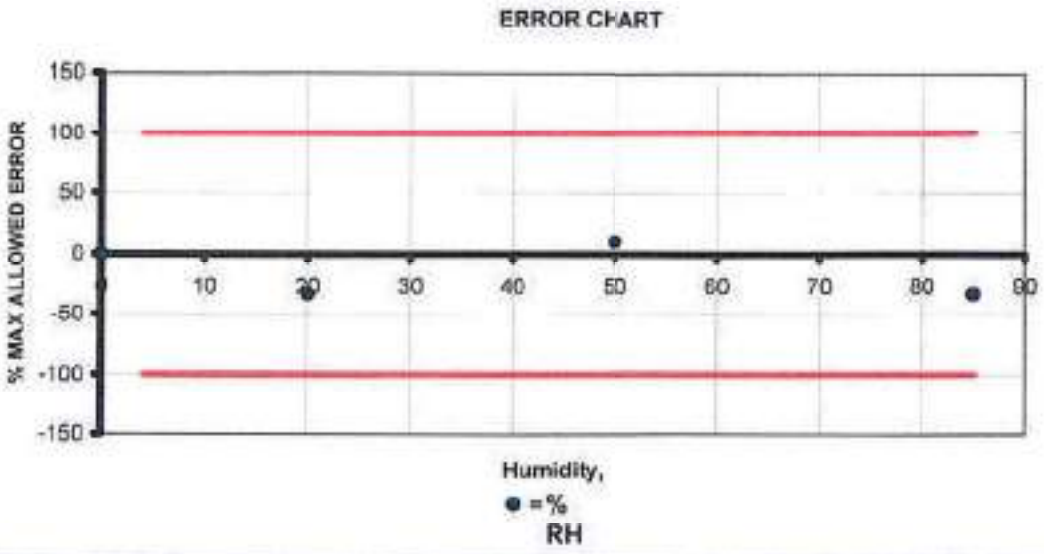
Performed By: _____ Date: 3-24-11

Scott Pickett
Calibration Technician

GRAFTEL, Inc. 870 Cambridge Drive, Elk Grove Village, IL 60007 847.364.2600
www.graftel.com

ATTACHMENT TO CALIBRATION CERTIFICATE 24761
AS FOUND CALIBRATION DATA

Reading From Standard, % RH	Lower Limit of Meter Reading, % RH	Measured Reading From Meter, % RH	Upper Limit of Meter Reading, % RH	Error, % RH	Uncertainty, % RH	Status
20.00	17.00	19.0	23.00	-1.00	0.50	Pass
50.00	47.00	50.3	53.00	0.30	0.50	Pass
85.00	82.00	84.0	88.00	-1.00	1.00	Pass



Instrument Specifications		
Upper Measurement Limit	100	% RH
Lower Measurement Limit	0	% RH
Rated Accuracy	3	% RH
Laboratory Conditions		
Pressure	14.16	psia
Relative Humidity	37.54	% RH
Temperature	71.53	F

Flow - Humidity - Temperature - Pressure - Design - Consulting - Engineering

NIST Traceable Calibration Data Sheet

GraftelLLC. 870 Cambridge Drive, Elk Grove Village, IL 60007
P. 847-364-2600 F. 847-364-2899

www.graftel.com

CERTIFICATE OF NIST TRACEABLE CALIBRATION

Calibration Certificate No: 24762

LABORATORY ACCREDITATION BUREAU ACCREDITED
Certificate # L2115-1 Calibration

ISO 17025-2005 ACCREDITED

Customer Information

Customer: SBI St-Augustin

Address : 250, De Copenhague
Doors 11-12
St-Augustin-de-Desmaures

Customer PO #: 24026

Calibration Procedure Information

Procedure ID: GTP RH/Temp Cal Revision #: 3 Revision Date: 9/14/2010

Calibration Standards Information

Graftel ID	Manufacturer	Model #	Description	CAL Due
10198	Thunder Scientific	1200	Humidity Generator-Pressure	6/22/2011
10199	Thunder Scientific	1200	lumidity Generator-Temperatur	6/22/2011
60030	Paroscientific	760-100A	Pressure, 100 psia	8/24/2011
10160	HOBO	U12-011	Environment Monitor System	6/22/2011

Sensor Information

Manufacturer: AMPROBE
Description: RH Meter
Method Used: RH Chamber

Model #: TH-3
Rated Accuracy: ± 3 Difference
Accuracy Specified By: Amprobe

Instrument ID#: SBI-213
Range: 0 to 100 %RH
Condition: Acceptable

Serial #: 101004044

Comments: Calibration Date: 03-24-2011

The instruments(s) listed on this certificate have been calibrated against standards traceable to the National Institue of Standards and Technology (NIST) or compared to nationally or internationally recognized consensus standards. The reported calibration uncertainty has a confidence level of 95% (K=2). A calibration uncertainty ratio of 4:1 was maintained unless required uncertainty support by analysis. Graftel, Inc. Quality Assurance System complies with applicable requirements of ISO/IEC-17025-2005, ANSI/NCSL Z540-I-1994 and ISO 9002, 1994(E). All results contained within this certification relate only to item(s) calibrated. This certificate shall not be reproduced except in full and with the written consent of Graftel, Inc.

Performed By: _____ Date: 3-24-11

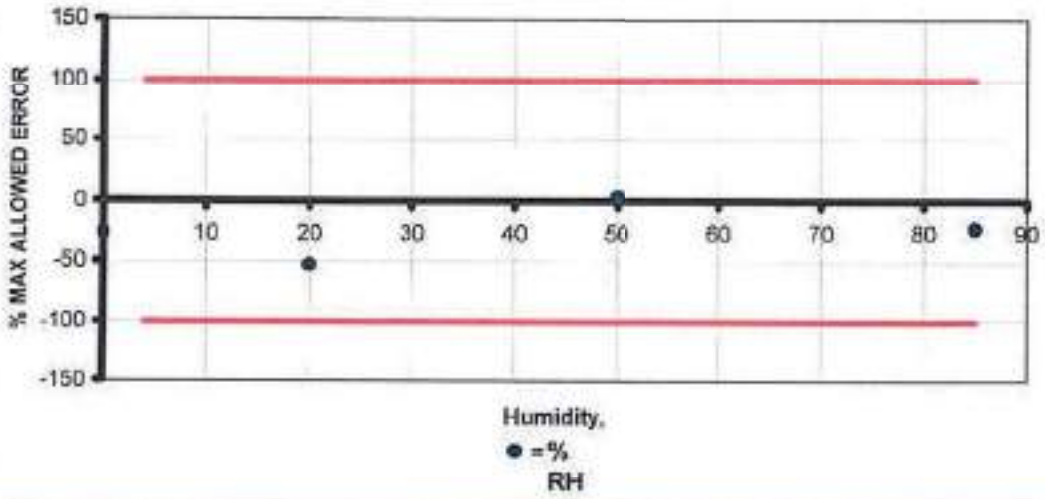
Scott Pickett
Calibration Technician

GRAFTEL, Inc. 870 Cambridge Drive, Elk Grove Village, IL 60007 847.364.2600
www.graftel.com

ATTACHMENT TO CALIBRATION CERTIFICATE 24762
AS FOUND CALIBRATION DATA

Reading From Standard, % RH	Lower Limit of Meter Reading, % RH	Measured Reading From Meter, % RH	Upper Limit of Meter Reading, % RH	Error, % RH	Uncertainty, % RH	Status
20.00	17.00	18.4	23.00	-1.60	0.50	Pass
50.00	47.00	50.1	53.00	0.10	0.50	Pass
85.00	82.00	84.3	88.00	-0.70	1.00	Pass

ERROR CHART



Instrument Specifications		
Upper Measurement Limit	100	% RH
Lower Measurement Limit	0	% RH
Rated Accuracy	3	% RH
Laboratory Conditions		
Pressure	14.16	psia
Relative Humidity	37.54	% RH
Temperature	71.53	F

Flow - Humidity - Temperature - Pressure - Design - Consulting - Engineering
NIST Traceable Calibration Data Sheet
Graftel, LLC. 870 Cambridge Drive, Elk Grove Village, IL 60007
P. 847-364-2600 F. 847-364-2899
www.graftel.com

Report of Calibration

As Found / As Left

ACCREDITED
CALIBRATION
CERT #2260.01

Procedure (RUN): Low Pressure: CAL VER /Ruska 7250LP: Revision: 1.1.A

UUT

Made by:	Dwyer
Model:	2000-00
Serial No.:	W80111CF89
ID No.:	SBI-024
Description:	Pressure Gauge

Calibration

Report No.:	AC13011280-W80111CF89
Adjusted:	No
Condition:	In Tolerance
Calibration Date:	30-Jan-2013
Calibration Due:	30-Jan-2014

Customer

STOVE BUILDER INTERNATIONAL INC.
250 RUE DE COPENHAGUE
ST-AUSTIN-DE-DESMAURES, QC
G3A 2H3

Environment

Temperature:	23.3°C
Humidity:	38%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor K = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2005 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

STANDARDS

Instrument	Model	ID No./Serial No.	Traceability No.	Recall Date
Low Pressure Calibrator	Ruska 7250LP	PRE-CAL-06	1500138932/1500138934	20-Aug-2013

REMARKS:

Calibrated in vertical position.

Performed by: Anthony Morra
Anthony Morra

Reviewed by:
Slava Peciurov

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Report of Calibration
As Found / As Left

ACCREDITED
CALIBRATION
CERT #2260.01

UUT

Made by:	Dwyer
Model:	2000-00
Serial No.:	W80111CF89
ID No.:	SBI-024
Description:	Pressure Gauge

Calibration

Report No.:	AC13011280-W80111CF89
Adjusted:	No
Condition:	In Tolerance
Calibration Date:	30-Jan-2013
Calibration Due:	30-Jan-2014

Test Description	STD	UUT	Error	Tolerance	Units	P/F	Uncertainty
LOW PRESSURE TEST							
0.0000 inH2O	0.0000	0.000	0.00000	±0.0100	inH2O	Pass	5.97e-004
0.0490 inH2O	0.0490	0.050	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.0990 inH2O	0.0980	0.100	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.1490 inH2O	0.1490	0.150	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.1990 inH2O	0.1990	0.200	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.2510 inH2O	0.2510	0.250	-0.00100	±0.0100	inH2O	Pass	5.97e-004
0.1990 inH2O	0.1990	0.200	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.1490 inH2O	0.1490	0.150	0.00100	±0.0100	inH2O	Pass	5.97e-004
0.0970 inH2O	0.0970	0.100	0.00300	±0.0100	inH2O	Pass	5.97e-004
0.0470 inH2O	0.0470	0.050	0.00300	±0.0100	inH2O	Pass	5.97e-004
0.0000 inH2O	0.0000	0.000	0.00000	±0.0100	inH2O	Pass	5.97e-004

END OF REPORT

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Report of Calibration

As Found / As Left

ACCREDITED
CALIBRATION
CERT #2260.01

Procedure (RUN): Low Pressure: CAL VER /Ruska 7250LP: Revision: 1.1.A

UUT

Made by:	Dwyer
Model:	2000-0DC
Serial No.:	W46QJM
ID No.:	SBI-117
Description:	Pressure Gauge

Calibration

Report No.:	AC13011280-W46QJM
Adjusted:	No
Condition:	In Tolerance
Calibration Date:	30-Jan-2013
Calibration Due:	30-Jan-2014

Customer

STOVE BUILDER INTERNATIONAL INC.
250 RUE DE COPENHAGUE
ST-AUSTIN-DE-DESMAURES, QC
G3A 2H3

Environment

Temperature:	23.4°C
Humidity:	38%RH

STATEMENT OF UNCERTAINTY: The reported expanded uncertainty of measurement is stated as the standard measurement uncertainty multiplied by the coverage factor K = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 percent. Alpha Controls certifies this instrument was calibrated on the date shown using standards traceable to NIST/NRC or accepted intrinsic standards and in compliance with ISO/IEC-17025:2005 and ANSI/NCSL Z540-1.

Any statement of compliance is made without taking measurement uncertainty into account and is based on UUT performance against required tolerance only. The customer must ensure equipment calibrated meets the intended use.

Tolerance is based on manufacturer specification if not stated otherwise. Calibration results relate to items calibrated only.

STANDARDS

Instrument	Model	ID No./Serial No.	Traceability No.	Recall Date
Low Pressure Calibrator	Ruska 7250LP	PRE-CAL-06	1500138932/1500138934	20-Aug-2013

REMARKS:

Calibrated in vertical position.

Performed by: Anthony Morra
Anthony Morra

Reviewed by:
Slava Peciurov

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Report of Calibration
As Found / As Left

ACCREDITED
CALIBRATION
CERT #2260.01

Procedure (RUN): Low Pressure: CAL VER /Ruska 7250LP: Revision: 1.1.A

UUT

Made by:	Dwyer
Model:	2000-0DC
Serial No.:	W46QJM
ID No.:	SBI-117
Description:	Pressure Gauge

Calibration

Report No.:	AC13011280-W46QJM
Adjusted:	No
Condition:	In Tolerance
Calibration Date:	30-Jan-2013
Calibration Due:	30-Jan-2014

Test Description	STD	UUT	Error	Tolerance	Units	P/F	Uncertainty
LOW PRESSURE TEST							
0.0000 inH2O	0.0000	0.000	0.00000	±0.0150	inH2O	Pass	5.97e-004
0.1020 inH2O	0.1020	0.100	-0.00200	±0.0150	inH2O	Pass	5.97e-004
0.2040 inH2O	0.2040	0.200	-0.00400	±0.0150	inH2O	Pass	5.97e-004
0.3050 inH2O	0.3050	0.300	-0.00500	±0.0150	inH2O	Pass	5.97e-004
0.3980 inH2O	0.3980	0.400	0.00200	±0.0150	inH2O	Pass	5.97e-004
0.5000 inH2O	0.5000	0.500	0.00000	±0.0150	inH2O	Pass	5.97e-004
0.3960 inH2O	0.3960	0.400	0.00400	±0.0150	inH2O	Pass	5.97e-004
0.2950 inH2O	0.2950	0.300	0.00500	±0.0150	inH2O	Pass	5.97e-004
0.1950 inH2O	0.1950	0.200	0.00500	±0.0150	inH2O	Pass	5.97e-004
0.0950 inH2O	0.0950	0.100	0.00500	±0.0150	inH2O	Pass	5.97e-004
0.0000 inH2O	0.0000	0.000	0.00000	±0.0150	inH2O	Pass	5.97e-004

END OF REPORT

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Rapport d'étalonnage No. CA0003-441-031413

Mettler Toledo
Service Business Unit Industrial
1900 Polaris Parkway
Columbus, Ohio 43240
1-800-METTLER

Accrédité par l'American Association for Laboratory Accreditation (A2LA)
CERT.CALIBRATION #1902.02

METTLER TOLEDO

ISO 9001 Registered
ANSI/NCSL Z540 Accrédité

Certificat d'étalonnage

Client

Société :	SBI Fabricant de poêles International inc.		
Adresse :	250, rue Copenhague		
Ville :	St-Augustin	*État/Province :*	Québec
Code postal :	G3A 2V1	Astea Customer ID:	C037589001001

Instrument

Constructeur :	Weightronix	*Modèle de terminal :*	IND560
Modèle :	DSL-6060	*# série du terminal:*	00927386KL
No de série :	B00927386KL	*# série de l'imprimant*	N/A
Capacité :	500 kg		LAB
Résolution :	0,02 kg	*Nbre de Divisions:*	25000
Classe :	III	*Procédure utilisée :*	Canadien
No./ID d'inventaire:	SBI-014		
Procédure:	Le présent certificat est émis conformément aux conditions de certification accordées par l'A2LA, en vertu de la norme ISO/IEC 17025. A2LA a évalué la capacité de mesure du laboratoire et la traçabilité des normes nationales reconnues.		

Date de calibrage :	14-mars-2013	*Date, prochaine Cal.*	31-mars-2014
Signataire autorisé (A2LA) :	Dany Careau	*Signature:*	ELECTRONIC SIGNATURE

Étalons de travail

Retracabilité: Les poids de test utilisés se réfèrent au National Institute of Standards and Technology.

Jeu de poids no :	*Traçabilité NIST No.:*	*Classe ASTM/OIML*	*Date d'étalonnage :*	*Date proch. étalonnage*
Kit Q	1367024	M1	23-avr-2012	23-avr-2013
55588	M11-0616	M1	27-mars-2012	27-mars-2013
MTP4	MT00346	F1	30-mars-2011	30-mars-2013

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Résultats de mesure

La température : 22 °C

Les conditions ambiantes ont été vérifiées afin d'assurer l'exactitude de l'étalonnage.

Test de variation

Poids Appliqués	Position	Avant Réglage Valeur lue	Après Réglage Valeur lue
1: 100 kg	Position 1	99,98 kg	99,98 kg
2: 100 kg	Position 2	100,02 kg	100,02 kg
3: 100 kg	Position 3	100,02 kg	100,02 kg
4: 100 kg	Position 4	99,96 kg	100,00 kg
Erreur maximum :		0,06 kg	0,04 kg
Max Erreur Admissible :		0,10 kg	0,1 kg

Linéarité

	Avant réglage					
	Poids Appliqués	Valeur lue	Erreur		Erreur admissible	Dans la Tolérance
Zero 1,00	0,00 kg	0,00 kg	0,00 kg	0 d	1 d	OUI
2,00	20,00 kg	20,00 kg	0,00 kg	0 d	2 d	OUI
3,00	40,00 kg	40,00 kg	0,00 kg	0 d	2 d	OUI
4,00	100,00 kg	100,02 kg	0,02 kg	1 d	5 d	OUI
Max 5,00	200,00 kg	200,04 kg	0,04 kg	2 d	5 d	OUI

☐ Méthode de substitution utilisée

	Après réglage					
	Poids Appliqués	Valeur lue	Erreur		Erreur admissible	Dans la Tolérance
Zero 1,00	0,00 kg	0,00 kg	0,00 kg	0 d	1 d	OUI
2,00	20,00 kg	20,00 kg	0,00 kg	0 d	2 d	OUI
3,00	40,00 kg	40,00 kg	0,00 kg	0 d	2 d	OUI
4,00	100,00 kg	99,98 kg	-0,02 kg	1 d	5 d	OUI
Max 5,00	200,00 kg	200,00 kg	0,00 kg	0 d	5 d	OUI

☐ Méthode de substitution utilisée

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Un réglage de la balance a été requis

Si non, les résultats "avant réglage" correspondent aux résultats tel que laissé.

☑ OUI ☐ NON

Répétabilité

Poids appliqués : 100,00 kg

	Chargé	*Vide*	*Différence*
1	99,98 kg	0,00 kg	99,98 kg
2	99,98 kg	0,00 kg	99,98 kg
3	99,98 kg	0,00 kg	99,98 kg
	Erreur maximale :	0,02 kg	1,0 d
	Tolérance :	0,10 kg	5 d

Incertitude

Mesure de l'incertitude = 0,012 kg

Les meilleures incertitudes représentent les incertitudes étendues selon un facteur de sécurité K=2 générant un niveau de confiance approximatif de 95 %. Des dispositions doivent être prises en matière d'environnement au lieu d'étalonnage, d'incertitude induite par l'article en étalonnage et d'effets indésirables causés par le transport du matériel d'étalonnage. Ces facteurs pourraient entraîner une incertitude plus grande que le BMC.

Remarques

Aucune.

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Rapport d'étalonnage No. CA0003-448-031413

Mettler Toledo
Service Business Unit Industrial
1900 Polaris Parkway
Columbus, Ohio 43240
1-800-METTLER

METTLER TOLEDO

ISO 9001 Registered

ANSI/NCSL Z540 Accrédité

Accrédité par l'American Association for Laboratory Accreditation (A2LA)

CERT.CALIBRATION #1902.02

Certificat d'étalonnage

Client

Société :	SBI Fabricant de poêles International inc.		
Adresse :	250, rue Copenhague		
Ville :	St-Augustin	*État/Province :*	Quebec
Code postal :	G3A 2V1	Astea Customer ID:	C037589001001

Instrument

Constructeur :	SARTORIUS	*Modèle de terminal :*	N/A
Modèle :	TE214S	*# série du terminal:*	N/A
No de série :	25851066	*# série de l'imprimant*	N/A
Capacité :	210 g		LAB
Résolution :	0,0001 g	*Nbre de Divisions:*	2100000
Classe :	I	*Procédure utilisée :*	Canadien
No./ID d'inventaire:	SBI-206		
Procédure:	Le présent certificat est émis conformément aux conditions de certification accordées par l'A2LA, en vertu de la norme ISO/IEC 17025. A2LA a évalué la capacité de mesure du laboratoire et la traçabilité des normes nationales reconnues.		

Date de calibrage :	14-mars-2013	*Date, prochaine Cal.*	31-mars-2014
Signataire autorisé (A2LA) :	Dany Careau	*Signature:*	ELECTRONIC SIGNATURE

Étalons de travail

Retracabilité: Les poids de test utilisés se réfèrent au National Institute of Standards and Technology.

Jeu de poids no :	*Traçabilité NIST No.:*	*Classe ASTM/OIML*	*Date d'étalonnage :*	*Date proch. étalonnage*
Kit Q	1367024	M1	23-avr-2012	23-avr-2013
55588	M11-0616	M1	27-mars-2012	27-mars-2013
MTP4	MT00346	F1	30-mars-2011	30-mars-2013

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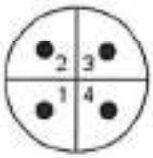
Résultats de mesure

La température : 22 °C

Les conditions ambiantes ont été vérifiées afin d'assurer l'exactitude de l'étalonnage.

Test de variation



		Avant Réglage	Après Réglage
Poids Appliqués	*Position*	*Valeur lue*	*Valeur lue*
1: 50 g	*Position 1*	49,9998 g	50,0000 g
2: 50 g	*Position 2*	49,9998 g	50,0000 g
3: 50 g	*Position 3*	49,9999 g	50,0001 g
4: 50 g	*Position 4*	49,9998 g	50,0000 g
Erreur maximum :		0,0002 g	0,0001 g
Max Erreur Admissible :		0,0003 g	0,0003 g

Linéarité

	Avant réglage					
	Poids Appliqués	*Valeur lue*	*Erreur*		*Erreur admissible*	*Dans la Tolérance*
Zero 1,00	0,0000 g	0,0000 g	0,0000 g	0 d	1 d	OUI
2,00	0,1000 g	0,1000 g	0,0000 g	0 d	1 d	OUI
3,00	1,0000 g	1,0000 g	0,0000 g	0 d	1 d	OUI
4,00	10,0000 g	9,9999 g	-0,0001 g	1 d	2 d	OUI
5,00	50,0000 g	49,9998 g	-0,0002 g	2 d	3 d	OUI
6,00	100,0000 g	99,9991 g	-0,0009 g	9 d	3 d	NON
Max 7,00	200,0000 g	199,9983 g	-0,0017 g	17 d	3 d	NON

☐ Méthode de substitution utilisée

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	Après réglage					
	Poids Appliqués	Valeur lue	Erreur		Erreur admissible	Dans la Tolérance
Zero 1,00	0,0000 g	0,0000 g	0,0000 g	0 d	1 d	OUI
2,00	0,1000 g	0,1000 g	0,0000 g	0 d	1 d	OUI
3,00	1,0000 g	1,0000 g	0,0000 g	0 d	1 d	OUI
4,00	10,0000 g	10,0000 g	0,0000 g	0 d	2 d	OUI
5,00	50,0000 g	50,0001 g	0,0001 g	1 d	3 d	OUI
6,00	100,0000 g	100,0000 g	0,0000 g	0 d	3 d	OUI
Max 7,00	200,0000 g	200,0000 g	0,0000 g	0 d	3 d	OUI

☐ Méthode de substitution utilisée

Un réglage de la balance a été requis
Si non, les résultats "avant réglage" correspondent aux résultats tel que laissé.

☑ OUI ☐ NON

Répétabilité

Poids appliqués : 50,0000 g

	Chargé	Vide	Différence
1	50,0000 g	0,0000 g	50 g
2	50,0001 g	0,0000 g	50,0001 g
3	50,0001 g	0,0000 g	50,0001 g
	Erreur maximale :	0,0001 g	1,0 d
	Tolérance :	0,0003 g	3 d

Incertitude

Mesure de l'incertitude = 0,00023 g

Les meilleures incertitudes représentent les incertitudes étendues selon un facteur de sécurité K=2 générant un niveau de confiance approximatif de 95 %. Des dispositions doivent être prises en matière d'environnement au lieu d'étalonnage, d'incertitude induite par l'article en étalonnage et effets indésirables causés par le transport du matériel d'étalonnage. Ces facteurs pourraient entraîner une incertitude plus grande que le BMC.

Remarques

Aucune.

© METTLER TOLEDO

Toute reproduction partielle du certificat est interdite, sous réserve du consentement écrit préalable du laboratoire émetteur.

Rapport d'étalonnage No. CA0003-447-031413

Mettler Toledo
Service Business Unit Industrial
1900 Polaris Parkway
Columbus, Ohio 43240
1-800-METTLER

METTLER TOLEDO

ISO 9001 Registered

ANSI/NCSL Z540 Accrédité

Accrédité par l'American Association for Laboratory Accreditation (A2LA)

CERT.CALIBRATION #1902.02

Certificat d'étalonnage

Client

Société :	SBI Fabricant de poêles International inc.		
Adresse :	250, rue Copenhague		
Ville :	St-Augustin	*État/Province :*	Quebec
Code postal :	G3A 2V1	Astea Customer ID:	C037589001001

Instrument

Constructeur :	Ohaus	*Modèle de terminal :*	N/A
Modèle :	FD15H	*# série du terminal:*	N/A
No de série :	B144397174	*# série de l'imprimant*	N/A
Capacité :	15000 g		LAB
Résolution :	1 g	*Nbre de Divisions:*	15000
Classe :	III	*Procédure utilisée :*	Canadien
No./ID d'inventaire:	SBI-222		
Procédure:	Le présent certificat est émis conformément aux conditions de certification accordées par l'A2LA, en vertu de la norme ISO/IEC 17025. A2LA a évalué la capacité de mesure du laboratoire et la traçabilité des normes nationales reconnues.		

Date de calibrage :	14-mars-2013	*Date, prochaine Cal*	31-mars-2014
Signataire autorisé (A2LA) :	Dany Careau	*Signature:*	ELECTRONIC SIGNATURE

Étalons de travail

Retracabilité: Les poids de test utilisés se réfèrent au National Institute of Standards and Technology.

Jeu de poids no :	*Traçabilité NIST No.:*	*Classe ASTM/OIML*	*Date d'étalonnage :*	*Date proch. étalonnage*
Kit Q	1367024	M1	23-avr-2012	23-avr-2013
55588	M11-0616	M1	27-mars-2012	27-mars-2013
MTP4	MT00346	F1	30-mars-2011	30-mars-2013

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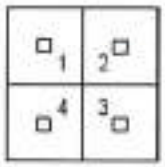
Toute reproduction partielle du certificat est interdite, sous réserve du consentement écrit préalable du laboratoire émetteur.

Résultats de mesure

La température : 22 °C

Les conditions ambiantes ont été vérifiées afin d'assurer l'exactitude de l'étalonnage.

Test de variation



		Avant Réglage	*Après Réglage*
Poids Appliqués	*Position*	*Valeur lue*	*Valeur lue*
1: 5000 g	*Position 1*	4999 g	5000 g
2: 5000 g	*Position 2*	4999 g	5000 g
3: 5000 g	*Position 3*	4999 g	5000 g
4: 5000 g	*Position 4*	4999 g	5000 g
Erreur maximum :		1 g	0 g
Max Erreur Admissible :		5 g	5 g

Linéarité

	Avant réglage					
	Poids Appliqués	*Valeur lue*	*Erreur*		*Erreur admissible*	*Dans la Tolérance*
Zero 1,00	0 g	0 g	0 g	0 d	1 d	OUI
2,00	100 g	100 g	0 g	0 d	1 d	OUI
3,00	1000 g	1000 g	0 g	0 d	2 d	OUI
4,00	2000 g	2000 g	0 g	0 d	2 d	OUI
5,00	5000 g	4999 g	-1 g	1 d	5 d	OUI
6,00	10000 g	9998 g	-2 g	2 d	5 d	OUI
Max 7,00	15000 g	14997 g	-3 g	3 d	5 d	OUI

☐ Méthode de substitution utilisée

© METTLER TOLEDO

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	Après réglage					
	Poids Appliqués	Valeur lue	Erreur		Erreur admissible	Dans la Tolérance
Zero 1,00	0 g	0 g	0 g	0 d	1 d	OUI
2,00	100 g	100 g	0 g	0 d	1 d	OUI
3,00	1000 g	1000 g	0 g	0 d	2 d	OUI
4,00	2000 g	2000 g	0 g	0 d	2 d	OUI
5,00	5000 g	5000 g	0 g	0 d	5 d	OUI
6,00	10000 g	10000 g	0 g	0 d	5 d	OUI
Max 7,00	15000 g	15000 g	0 g	0 d	5 d	OUI

☐ Méthode de substitution utilisée

Un réglage de la balance a été requis
Si non, les résultats "avant réglage" correspondent aux résultats tel que laissé.

☑ OUI ☐ NON

Répétabilité

Poids appliqués : 5000 g

	Chargé	Vide	Différence
1	5000 g	0 g	5000 g
2	5000 g	0 g	5000 g
3	5000 g	0 g	5000 g
	Erreur maximale :	0 g	0,0 d
	Tolérance :	5 g	5 d

Incertitude

Mesure de l'incertitude = 0,6 g

Les meilleures incertitudes représentent les incertitudes étendues selon un facteur de sécurité K=2 générant un niveau de confiance approximatif de 95 %. Des dispositions doivent être prises en matière d'environnement au lieu d'étalonnage, d'incertitude induite par l'article en étalonnage et effets indésirables causés par le transport du matériel d'étalonnage. Ces facteurs pourraient entraîner une incertitude plus grande que le BMC.

Remarques

Aucune.

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Certificate No: MT00346

METTLER TOLEDO
1900 Polaris Pkwy
Columbus, OH 43240
1-800-METTLER

METTLER TOLEDO

ACCREDITED
Cert # 1788.01

Mass Calibration Certificate

Customer Information

Customer Name:	Mettler-Toledo QC	*City:*	Anjou
Address:	9280 Du Parcours	*State / Province:*	QC
		Zip / Postal Code:	H1J2Z1

Measurement and Test Equipment Identification

Serial Number:	MTP4	*Date Received:*	03/13/11
Manufacturer:	Troemner	*Condition:*	Good
Asset number:		*Tolerance Class:*	*ASTM , OIML* 6, F1

Environmental Conditions

Temperature:	20.436 °C	*Relative Humidity:*	49.887 *%RH*
Barometric Pressure:	988.8998 *hPa*	*Air Density:*	1.1685 kg/m^3

The standards used to perform this calibration are traceable to NIST through METTLER TOLEDO traceability number: MT5051

This certificate is issued in accordance with the conditions granted by A2LA under Certificate number 1788.01, which is based on ISO/IEC17025. A2LA has assessed the measurement capability of the laboratory and its traceability to recognized national standards. All uncertainties in this certificate are reported at a 95% (k=2) confidence factor.

This certificate may not be partially reproduced, except with prior written permission of the issuing laboratory and A2LA.

Calibration Date:	03/30/2011	*Next Calibration Due:*	03/30/2013
Calibration Technician:	Kathy Weatherbie	*Signature*	Ann J Anderson

04/07/2011
Metrology Specialist Date

Certificate No: MT00346

As Found Data

Nominal Value&Suffix		Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Density (g/cm³)
5 kg	*	(MTP4)	5000.0060	4999.9916	2.0	7.85
5 kg		(MTP4)	5000.0232	5000.0089	2.0	7.85
2 kg		(MTP4)	2000.00054	1999.99481	0.34	7.85
1 kg		(MTP4)	999.998639	999.995772	0.065	7.85
500 g		(MTP4)	499.999773	499.998340	0.044	7.85
200 g	*	(MTP4)	199.999566	199.998992	0.020	7.85
200 g		(MTP4)	200.000444	199.999871	0.020	7.85
100 g	*	(MTP4)	100.000202	99.999915	0.018	7.85
100 g		(MTP4)	100.000381	100.000094	0.018	7.85
50 g		(MTP4)	49.9999113	49.9997680	0.0086	7.85
20 g	*	(MTP4)	20.0000049	19.9999475	0.0054	7.85
20 g		(MTP4)	20.0000019	19.9999446	0.0054	7.85
10 g		(MTP4)	10.0000847	10.0000561	0.0045	7.85
5 g		(MTP4)	5.0000688	5.0000545	0.0020	7.85
2 g	*	(MTP4)	2.0000762	2.0000725	0.0015	7.85
2 g		(MTP4)	2.0000555	2.0000498	0.0015	7.85
1 g		(MTP4)	1.0000425	1.0000397	0.0015	7.85
500 mg		(MTP4)	0.4999626	0.4999621	0.0011	7.95
200 mg	*	(MTP4)	0.19997458	0.19997439	0.00085	7.95
200 mg		(MTP4)	0.19998519	0.19998500	0.00085	7.95
100 mg		(MTP4)	0.09999607	0.09999598	0.00084	7.95
50 mg		(MTP4)	0.04999361	0.04999357	0.00069	7.95
20 mg		(MTP4)	0.01998330	0.01997741	0.00061	2.70
10 mg		(MTP4)	0.00994911	0.00994618	0.00062	2.70

Certificate No: MT00346

As Left Data

Nominal Value&Suffix		Serial Number	True Mass (g)	Conv. Mass (g)	Uncertainty (mg, k = 2)	Density (g/cm³)
5 kg	*	(MTP4)	5000.0060	4999.9916	2.0	7.85
5 kg		(MTP4)	5000.0232	5000.0089	2.0	7.85
2 kg		(MTP4)	2000.00054	1999.99481	0.34	7.85
1 kg		(MTP4)	999.998639	999.995772	0.065	7.85
500 g		(MTP4)	499.999773	499.998340	0.044	7.85
200 g	*	(MTP4)	199.999566	199.999992	0.020	7.85
200 g		(MTP4)	200.000444	199.999871	0.020	7.85
100 g	*	(MTP4)	100.000202	99.999815	0.018	7.85
100 g		(MTP4)	100.000381	100.000094	0.018	7.85
50 g		(MTP4)	49.9999113	49.9997680	0.0086	7.85
20 g	*	(MTP4)	20.0000049	19.9999475	0.0054	7.85
20 g		(MTP4)	20.0000019	19.9999446	0.0054	7.85
10 g		(MTP4)	10.0000847	10.0000561	0.0045	7.85
5 g		(MTP4)	5.0000688	5.0000545	0.0020	7.85
2 g	*	(MTP4)	2.0000782	2.0000725	0.0015	7.85
2 g		(MTP4)	2.0000555	2.0000498	0.0015	7.85
1 g		(MTP4)	1.0000425	1.0000397	0.0015	7.85
500 mg		(MTP4)	0.4999626	0.4999621	0.0011	7.95
200 mg	*	(MTP4)	0.19997458	0.19997439	0.00085	7.95
200 mg		(MTP4)	0.19998519	0.19998500	0.00085	7.95
100 mg		(MTP4)	0.09999607	0.09999598	0.00084	7.95
50 mg		(MTP4)	0.04999361	0.04999357	0.00069	7.95
20 mg		(MTP4)	0.01998330	0.01997741	0.00061	2.70
10 mg		(MTP4)	0.00994911	0.00994618	0.00052	2.70

Certificate No: MT00346

Comparators Used

#	Equipment Used	Serial Number	Equipment Type	Calibration Due
#6 :	a5XL	B010016731	Automated Mass Comparator	06/30/2011
11# :	a200XL	B010016733	Automated Mass Comparator	06/30/2011
15# :	a1000	B010016732	Automated Mass Comparator	06/01/2011
16# :	XP2004S	1129043681	Comparator	08/02/2011
1# :	PR10003	1115413821	Comparator	08/16/2011

Comments

No Remarks

Definitions

Nominal Value - The value as labeled on the weight or defined by shape in accordance with OIML R111 for milligram weights. The number within the parentheses after the nominal value is the serial number of the set to which the weight belongs.

True Mass - The mass value of the weight if measured in a vacuum.

Conventional Mass - For a mass at 20 °C, "Conventional Mass" is the mass of a reference standard of density 8000 kg/m³ which it balances in air with a density of 1.2 kg/m³. This value should be referenced when testing the accuracy of a weighing device using any of the nominal values contained in this certificate. The As Found results will equal the As Left in cases where no adjustment or replacement was required.

Uncertainty - All Uncertainty values are reported at 95% confidence level (k=2) . The uncertainty value does not include a component for the affects due to magnetism.

Tolerance - The acceptable range of deviation (positive and negative) from the nominal value, including the uncertainty, as defined by ASTM and OIML for the respective classes.

Density - The assumed density of the material used by the manufacturer.

Calibration Process - The METTLER TOLEDO procedure used to obtain the measurement results. All procedures are based on SOPs as defined in NIST Handbook 145. The same process is used to obtain the As Found and As Left results.

OOT - The As Found measurement result combined with the uncertainty exceeded the tolerance for the specified weight class.

A - Weight was adjusted after As Found testing to within the appropriate tolerance class.

R - The received weight was replaced due to an out of tolerance condition and the weight was not adjustable or the weight for this nominal value was missing.

Measurement Canada / Mesures Canada

An Agency of Industry Canada / Un organisme d'Industrie Canada

District de Québec
1550, avenue d'Estimauville
Québec, Québec, G1J 0C4

N° du jeu de poids	Émis le	Date d'expiration
	2012-04-23	2013-04-23
Propriétaire		
Mettler-Toledo L.L.C.		
Adresse		
2435 Watt, porte 15 Québec, Qc G1P 3X2		
Personne ressource		No de téléphone
Sylvain Doyon		418-654-0001

CERTIFICAT DE DÉSIGNATION

Étalons gravimétriques

Je soussigné(e), étant autorisé(e) par le ministre d'Industrie à exercer les pouvoirs du ministre d'Industrie conformément à l'article 13 (1) de la *Loi sur les poids et mesures*

1) certifie par la présente que l'étalon ou jeu d'étalons a été étalonné conformément à la partie III du Règlement sur les poids et mesures et par rapport à un étalon de référence traçable aux étalons nationaux de mesure du Canada par une chaîne ininterrompue de comparaisons (les étalons nationaux de mesures du Canada sont maintenus par l'Institut des étalons nationaux de mesures (IENM) du Conseil national de recherches du Canada), et

3) désigne ledit étalon ou jeu d'étalons décris ci-dessous à titre d'étalon(s) local(aux):

Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale
Q118	20 kg	Q128	20 kg	Q138	20 kg	Q148	20 kg
Q119	20 kg	Q129	20 kg	Q139	20 kg	Q149	20 kg
Q120	20 kg	Q130	20 kg	Q140	20 kg	Q150	20 kg
Q121	20 kg	Q131	20 kg	Q141	20 kg	Q151	20 kg
Q122	20 kg	Q132	20 kg	Q142	20 kg		
Q123	20 kg	Q133	20 kg	Q143	20 kg		
Q124	20 kg	Q134	20 kg	Q144	20 kg		
Q125	20 kg	Q135	20 kg	Q145	20 kg		
Q126	20 kg	Q136	20 kg	Q146	20 kg		
Q127	20 kg	Q137	20 kg	Q147	20 kg		

District	Certifié par	Désigné par (Lettres moulées)	Titre du poste
28	Pascal Turgeon	Guy Tessier	Gestionnaire de district
	No du certificat d'étalonnage: 1367024	(Signature)	

Le droit d'auteur de ce certificat appartient à Mesures Canada et ne doit pas être reproduit autrement qu'en totalité sans avoir préalablement obtenu l'autorisation écrite de Mesures Canada.

Canada

Measurement Canada / Mesures Canada

An Agency of Industry Canada / Un organisme d'Industrie Canada

District de Québec
1550, avenue d'Estimauville
Québec, Québec, G1J 0C4

No du jeu de poids	Émis le	Date d'expiration
	2012-04-23	2013-04-23
Propriétaire	Mettler-Toledo L.L.C.	
Adresse	2435 Watt, porte 15 Québec, Qc G1P 3X2	
Personne ressource	Sylvain Doyon	No de téléphone 418-654-0001

CERTIFICAT DE DÉSIGNATION

Étalons gravimétriques

Je soussigné(e), étant autorisé(e) par le ministre d'Industrie à exercer les pouvoirs du ministre d'Industrie conformément à l'article 13 (1) de la *Loi sur les poids et mesures*,

1) certifie par la présente que l'étalon ou jeu d'étalons a été étalonné conformément à la partie III du Règlement sur les poids et mesures et par rapport à un étalon de référence traçable aux étalons nationaux de mesure du Canada par une chaîne ininterrompue de comparaisons (les étalons nationaux de mesures du Canada sont maintenus par l'Institut des étalons nationaux de mesures (IENM) du Conseil national de recherches du Canada), et

2) désigne ledit étalon ou jeu d'étalons décrits ci-dessous à titre d'étalon(s) local(aux):

Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale	Numéro d'identification	Valeur Nominale
Q101	20 kg	Q111	20 kg				
Q102	20 kg	Q112	20 kg				
Q103	20 kg	Q113	20 kg				
Q104	20 kg	Q114	20 kg				
Q105	20 kg	Q115	20 kg				
Q106	20 kg	Q116	20 kg				
Q107	20 kg						
Q108	20 kg						
Q109	20 kg						
Q110	20 kg						

District	Certifié par	Désigné par (Lettres moulées)	Titre du poste
28	Pascal Turgeon	Guy Tessier	Gestionnaire de district
	No du certificat d'étalonnage: 1367024	(Signature)	

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Canada

Measurement Canada
An Agency of Industry Canada

Mesures Canada
Un organisme d'Industrie Canada

Document	Calibrated (YMD) - Etalonné (AMJ)
M11-0616	2012/03/27
Project/Applicant - Projet/Requérant	Recalibration - Date - de réétalonnage
CP-ML-11-0194 Mettler-Toledo Inc.	2013/03/27
Owner - Propriétaire	
Mettler-Toledo Inc. 110-780 rue King Ouest, suite 220 Sherbrooke QC J1H 1R7	

Approval and Calibration Services Laboratory
Standards Building
151 Tunney's Pasture Driveway
Ottawa, Ontario
K1A 0C9

Laboratoire des services d'approbation et d'étalonnage
Immeuble des normes
151, allée Tunney's Pasture
Ottawa, Ontario
K1A 0C9

Certificate of Calibration and Designation

I, the undersigned, being authorized by the Minister of Industry to exercise the power of the Minister of Industry pursuant to Section 13, sub-section 1 of the Weights and Measures Act,

1) hereby certify that the standard or set of standards has been calibrated in accordance with Part III of the Weights and Measures Regulations in relation to a reference standard traceable to the National Measurement Standards of Canada through an unbroken chain of comparisons (the National Measurement Standards are maintained by the Institute of National Measurement Standards (INMS) of the National Research Council of Canada), and

2) designate the said standard or set of standards described below as local standard(s):

Project #: CP-ML-11-0194
Serial No.: 55588
Standard Group: Accredited Weight Kits
Manufacturer: Mettler-Toledo Inc.
Characteristics: Mettler Toledo Inc. 5kg to 100mg (2 X 5g)
(Version:2008/12/10)

Certificat d'Étalonnage et de Désignation

Je, soussigné(e), étant autorisé(e) par le ministre d'Industrie à exercer les pouvoirs du ministre d'Industrie conformément à l'article 13, paragraphe 1 de la Loi sur les poids et mesures,

1) certifie par la présente que l'étalon ou jeu d'étalons a été étalonné conformément à la partie III du Règlement sur les poids et mesures et par rapport à un étalon de référence traçable aux étalons nationaux de mesure du Canada par une chaîne ininterrompue de comparaisons (les étalons nationaux de mesures du Canada sont maintenus par l'Institut des étalons nationaux de mesures (IÉNM) du Conseil national de recherches du Canada), et

2) désigne ledit étalon ou jeu d'étalons décrits ci-dessous à titre d'étalon(s) local(aux):

No. Projet: CP-ML-11-0194
No. de série: 55588
Groupe d'étalons: Jeux de poids accrédités
Fabricant: Mettler-Toledo Inc.
Caractéristiques: Mettler Toledo Inc. 5kg a 100mg (2 X 5g)
(Version:2008/12/10)

PROCEDURE(S) USED	SOFTWARE USED
MC-MA-CP-001ver.7.0	DTCS ver. 2.3.4

PROCÉDURE(S) UTILISÉ(S)	LOGICIEL(S) UTILISÉ(S)
MC-MA-CP-001ver.7.0	SECI ver. 2.3.4

STANDARD(S) USED

Device	Certificate	Standard Group
874017	M10-0001	BM Metric Mass Standards
ML88025	M11-0082	BM Metric Mass Standards
MS58	M11-0108	BM Metric Mass Standards

ÉTALON(S) UTILISÉ(S)

Instrument	Certificat	Groupe d'étalons
874017	M10-0001	BM Étalons de masse - syst. mé
ML88025	M11-0082	BM Étalons de masse - syst. mé
MS58	M11-0108	BM Étalons de masse - syst. mé

Calibrated by: **Denis D'Aoust**
Étalonné par: Legal Metrologist
Métrologiste légal

Designated by: **Ronald Peasley**
Désigné par: Senior Engineer - Gravimetry
Ingénieur principal intérimaire - Gravimétrie

Date
MAR 29 2012

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The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and certified specific calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council. Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

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Le Service d'évaluation des laboratoires d'étalonnage (CLAS) du Conseil national de recherches du Canada (CNRC) a évalué et certifié la capacité d'étalonnage du laboratoire et la traçabilité au Système international d'unités (SI) ou à des étalons acceptables selon le CLAS. Le présent certificat d'étalonnage est délivré conformément aux conditions de certification du CLAS et aux conditions d'accréditation du Conseil canadien des normes (CCN). Le CLAS et le CCN ne garantissent pas l'exactitude des étalonnages individuels effectués par les laboratoires accrédités.

CLAS ABO SINRC
CLAS 2009-03
SCC 009

2012/03/27 - 11:49

Canada

Document	Calibrated (YMD) - Étalonné (AAM)
MII-0616	2012/03/27
Project/Applicant - Projet/Requérant	Recalibration - Date - de réétalonnage
CP-ML-11-0194 Mettler-Toledo Inc.	2013/03/27

VERIFICATION VALUES - VALEURS D'ESSAI

Identification Number Numéro d'identification	Nominal Value Valeur nominale
TM1	5 kg
TM2	5 kg
TM1	2 kg
TM2	2 kg
TM	1 kg
TM1	500 g
TM2	500 g
TM3	500 g
TM4	500 g
TM1	200 g
TM2	200 g
TM	100 g
A6	50 g
A5	20 g
A4	10 g
A3*	10 g
A1	5 g
A2*	5 g
TM*	2 g
TM**	2 g
489A	1 g
	500 mg
*	500 mg
	200 mg
*	200 mg
	100 mg

NOTES:

All weights listed above were verified.

All values are expressed in conventional mass, as defined by the Organisation internationale de métrologie légale (OIML): "The conventional value of the result of weighing a body in air is equal to the mass of a standard, of conventionally chosen density (8000 kg/m^3), at a conventionally chosen temperature (20°C), which balances this body at this reference in air of conventionally chosen density (1.2 kg/m^3)."

The applied standard tolerances are those established in Section 54 and set out in Schedule IV, Part III and IV of the Weights and Measures Regulations.

NOTES:

Tous les poids ci-haut mentionnés ont été étalonnés.

Toutes les valeurs sont exprimées en masse conventionnelle qui est définie par l'Organisation internationale de métrologie légale (OIML) comme suit: "La valeur conventionnelle du résultat de l'action de peser un corps dans l'air est égale à la masse d'un étalon, de densité conventionnellement choisie (8000 kg/m^3), à une température choisie conventionnellement (20°C), qui permet d'équilibrer ce corps à cette température de référence dans l'air de densité choisie conventionnellement (1.2 kg/m^3)."

Les marges de tolérance appliquées sont établies à l'article 54 et décrites à l'annex IV, partie III et IV du Règlement sur les poids et mesures.

ULRICH

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CLAS IRC·CNRC CLAS 1559-01

ACCREDITATION ISO 17025 SCC Scope Number 220

CALIBRATION CERTIFICATE

Certificate no.:	349496	**Calibration date:**	January 21, 2013
Identification:	SBI-096	**Certificate issued:**	January 31, 2013
Description:	CALIBRATOR, OMEGA CL23A	**Interval:**	12 months
Size:	TC K/J/T	**Due date:**	January 21, 2014
Manufacturer:	OMEGA	**Procedure no.:**	MET/CAL
Model no.:	CL23A	**Environment:**	CLAS Type 2 Laboratory
Serial no.:	T-256137	**Temperature:**	23 ± 2°C
		Humidity:	35 - 55% RH
		Metrologist:	BEN

Property of: SBI
250 RUE DE COPENHAGUE
ST-AUGUSTIN-DE-DESMAURES, QC G3A 2H3

Approved by: David Llorens, Quality Manager

This calibration certificate is issued in accordance with the applicable requirements of ISO/IEC 17025 and Ulrich Metrology's quality manual QM-08. Measurement results provided are traceable to either the National Research Council Canada (NRC), the National Institute of Standards and Technology (NIST), a national laboratory of another country signatory to the CIPM Mutual Recognition Arrangement (MRA), or a calibration laboratory accredited by an accrediting body with which Canada has an equivalence agreement.

CALIBRATION STANDARDS

See notes below.

MEASUREMENT UNCERTAINTY

The above listed instrument meets or exceeds all specifications as stated in the reference procedure, unless noted otherwise. For measurement results associated with the conformance to a tolerance, the uncertainty in the measurement system did not exceed 25% (4:1 test uncertainty ratio) of the acceptable tolerance for each characteristic calibrated, unless otherwise noted in the report.

CALIBRATION DATA

See next page for measurement results.

Notes:

This certificate replaces certificate 347729. The DATA from 347729 is still valid and unchanged.

EQUIPMENT RECEIVED OUT OF SPECIFICATIONS.

Failed multiple calibrator outputs.

ADJUSTED.

The Calibration Laboratory Assessment Service (CLAS) of the National Research Council of Canada (NRC) has assessed and granted upgrade calibration capabilities of this laboratory and traceability to the International System of Units (SI) or to standards acceptable to the CLAS program. This certificate of calibration is issued in accordance with the conditions of certification granted by CLAS and the conditions of accreditation granted by the Standards Council Canada (SCC). Neither CLAS nor SCC guarantee the accuracy of individual calibrations by accredited laboratories.

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CALIBRATION DATA

Certificate no.: 347729
Identification: SBI-096
Description: CALIBRATOR THERMOMETER
Serial no.: T-256137
Procedure: Omega CL23A: 5520A-M

Result: FAIL
Condition: AS-FOUND

CALIBRATION STANDARDS

Identification	Description	Manufacturer	Model no.	Cal. Date	Due Date
7870009	CALIBRATOR	FLUKE	5520A	2012/03/02	2013/03/02

MEASUREMENT RESULTS (Per MET/CAL)

PARAMETER	TRUE VALUE	TEST RESULT	ACCEPTANCE LIMITS LOW	HIGH	PASS/ FAIL	TUR
Temperature measurements are performed by electrical simulation.						
DISPLAY CALIBRATION						
Did all segments of the display illuminate?						
Result of Operator Evaluation					PASS	
THERMOMETER CALIBRATION						
K Type Thermocouple						
-200.0degF		-200.7	-201.0	-199.0	PASS	1.7
-60.0degF		-60.4	-61.0	-59.0	PASS	3.1
-40.0degF		-40.4	-40.5	-39.5	PASS	1.5
32.0degF		31.5	31.5	32.5	PASS	1.7
1240.0degF		1239.5	1239.5	1240.5	PASS	1.1
1260.0degF		1259.5	1259.5	1260.5	PASS	1.1
2500.0degF		2499.3	2499.0	2501.0	PASS	1.4
J Type Thermocouple						
-200.0degF		-200.5	-201.0	-199.0	PASS	2.1
-60.0degF		-60.2	-61.0	-59.0	PASS	3.5
-40.0degF		-40.3	-40.5	-39.5	PASS	1.7
32.0degF		31.6	31.5	32.5	PASS	2.0
1240.0degF		1239.5	1239.5	1240.5	PASS	1.6
1260.0degF		1259.5	1259.5	1260.5	PASS	1.6
1400.0degF		1399.5	1399.4	1400.6	PASS	1.8
T Type Thermocouple						
-200.0degF		-199.9	-201.0	-199.0	PASS	2.3
-60.0degF		-59.8	-61.0	-59.0	PASS	2.3
-40.0degF		-40.0	-40.5	-39.5	PASS	1.2
32.0degF		32.0	31.5	32.5	PASS	1.7
750.0degF		749.9	749.5	750.5	PASS	2.0
CALIBRATOR CALIBRATION						
K Type Thermocouple						
-200.0degF		-199.2	-201.0	-199.0	PASS	1.7

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PARAMETER	TRUE VALUE	TEST RESULT	ACCEPTANCE LIMITS LOW	HIGH	PASS/ FAIL	TUR
-60.0degF		-59.6	-61.0	-59.0	PASS	3.1
-40.0degF		-39.5	-40.5	-39.5	PASS	1.5
32.0degF		32.3	31.5	32.5	PASS	1.7
1240.0degF		1239.6	1239.5	1240.5	PASS	1.1
1260.0degF		1259.6	1259.5	1260.5	PASS	1.1
2500.0degF		2498.7	2499.0	2501.0	FAIL	1.4
J Type Thermocouple						
-200.0degF		-199.6	-201.0	-199.0	PASS	2.1
-60.0degF		-59.9	-61.0	-59.0	PASS	3.5
-40.0degF		-39.8	-40.5	-39.5	PASS	1.7
32.0degF		32.0	31.5	32.5	PASS	2.0
1240.0degF		1239.6	1239.5	1240.5	PASS	1.6
1260.0degF		1259.6	1259.5	1260.5	PASS	1.6
1400.0degF		1399.3	1399.4	1400.6	FAIL	1.8
T Type Thermocouple						
-200.0degF		-197.5	-201.0	-199.0	FAIL	2.3
-60.0degF		-59.9	-61.0	-59.0	PASS	2.3
-40.0degF		-39.8	-40.5	-39.5	PASS	1.2
32.0degF		31.9	31.5	32.5	PASS	1.7
750.0degF		749.6	749.5	750.5	PASS	2.0

End of Test Data

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CALIBRATION DATA

Certificate no.: 347729
Identification: SBI-096
Description: CALIBRATOR THERMOMETER
Serial no.: T-256137
Procedure: Omega CL23A: 5520A-M

Result: PASS
Condition: AS-LEFT

CALIBRATION STANDARDS

Identification	Description	Manufacturer	Model no.	Cal. Date	Due Date
7870009	CALIBRATOR	FLUKE	5520A	2012/03/02	2013/03/02

MEASUREMENT RESULTS (Per MET/CAL)

PARAMETER	TRUE VALUE	TEST RESULT	ACCEPTANCE LIMITS LOW	HIGH	PASS/ FAIL	TUR
Temperature measurements are performed by electrical simulation.						
DISPLAY CALIBRATION						
Did all segments of the display illuminate?						
Result of Operator Evaluation					PASS	
THERMOMETER CALIBRATION						
K Type Thermocouple						
-200.0degF		-200.3	-201.0	-199.0	PASS	1.7
-60.0degF		-60.1	-61.0	-59.0	PASS	3.1
-40.0degF		-40.1	-40.5	-39.5	PASS	1.5
32.0degF		31.8	31.5	32.5	PASS	1.7
1240.0degF		1239.9	1239.5	1240.5	PASS	1.1
1260.0degF		1259.9	1259.5	1260.5	PASS	1.1
2500.0degF		2500.0	2499.0	2501.0	PASS	1.4
J Type Thermocouple						
-200.0degF		-200.3	-201.0	-199.0	PASS	2.1
-60.0degF		-60.1	-61.0	-59.0	PASS	3.5
-40.0degF		-40.1	-40.5	-39.5	PASS	1.7
32.0degF		31.9	31.5	32.5	PASS	2.0
1240.0degF		1239.9	1239.5	1240.5	PASS	1.6
1260.0degF		1259.9	1259.5	1260.5	PASS	1.6
1400.0degF		1399.8	1399.4	1400.6	PASS	1.8
T Type Thermocouple						
-200.0degF		-199.7	-201.0	-199.0	PASS	2.3
-60.0degF		-59.6	-61.0	-59.0	PASS	2.3
-40.0degF		-39.7	-40.5	-39.5	PASS	1.2
32.0degF		32.2	31.5	32.5	PASS	1.7
750.0degF		750.0	749.5	750.5	PASS	2.0
CALIBRATOR CALIBRATION						
K Type Thermocouple						
-200.0degF		-199.6	-201.0	-199.0	PASS	1.7

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PARAMETER	TRUE VALUE	TEST RESULT	ACCEPTANCE LIMITS LOW	HIGH	PASS/ FAIL	TUR
-60.0degF		-59.8	-61.0	-59.0	PASS	3.1
-40.0degF		-39.8	-40.5	-39.5	PASS	1.5
32.0degF		32.0	31.5	32.5	PASS	1.7
1240.0degF		1240.2	1239.5	1240.5	PASS	1.1
1260.0degF		1260.3	1259.5	1260.5	PASS	1.1
2500.0degF		2500.6	2499.0	2501.0	PASS	1.4
J Type Thermocouple						
-200.0degF		-200.0	-201.0	-199.0	PASS	2.1
-60.0degF		-60.1	-61.0	-59.0	PASS	3.5
-40.0degF		-40.0	-40.5	-39.5	PASS	1.7
32.0degF		31.9	31.5	32.5	PASS	2.0
1240.0degF		1240.3	1239.5	1240.5	PASS	1.6
1260.0degF		1260.2	1259.5	1260.5	PASS	1.6
1400.0degF		1400.1	1399.4	1400.6	PASS	1.8
T Type Thermocouple						
-200.0degF		-200.5	-201.0	-199.0	PASS	2.3
-60.0degF		-60.3	-61.0	-59.0	PASS	2.3
-40.0degF		-40.0	-40.5	-39.5	PASS	1.2
32.0degF		31.9	31.5	32.5	PASS	1.7
750.0degF		750.0	749.5	750.5	PASS	2.0

End of Test Data

Appendix E: Pictures


CW2500
2013-06-25
RUN #1


CW2500
2013-06-27
RUN#5


CW2500
2013-06-28
RUN#6

Appendix F: Test data
Run 1

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 25, 2013
Test Run Number:	1

EPA Method 28
Pre Burn Data

Coal Bed Range	1.8	to	2.2

Average Firebox Temp, °F	321.46

Final Coal Bed Wt, lb	1.93

Interval	10

Time		Temperature Data											
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	0	88.49	198.7	612.9	675	607.7	577.3	471.1	577.1			2.82	0.89
1	10	85.9	121.6	365.8	517.5	512.3	502.7	469.9	558.5			2.63	0.19
2	20	84	109.8	309.8	456.2	493.5	512.7	437.8	536.8			2.61	0.02
3	30	82.62	104	282.7	409.7	470.8	486.5	402.9	482			2.53	0.08
4	40	82.21	97.87	265.3	376.4	447	430.2	372.9	445.8			2.46	0.07
5	50	76.19	93.37	251.6	348.1	424.1	399.9	348.2	418.3			2.35	0.11
6	60	73.59	94.98	235.1	326.9	404.8	374.7	326.7	396.2			2.23	0.12
7	70	73.1	93.73	225.7	309.4	388.8	354.7	308.8	377.2			2.07	0.16
8	80	76.8	92.41	216.9	294.8	375	338.6	293.6	360			1.97	0.10
9	90	72.32	101.8	230.7	285.3	364.3	328.2	285.8	343.7			1.93	0.04
10													
11													
12													
13													
14													
15													
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26													
27													
28													
29													
30													

Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 25, 2013
Test Run Number:	1

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	29.70		Meter Box (A)	0.977
End	29.70		Meter Box (B)	0.986
Duration of Test, Min		190		

Leak Check, cfm @ in Hg	
Train A	Train B
0.0025@5	0.003@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0.013	0.00	0.00	0.035	8.86	8.86	679.862	510.362	100.07	100.15	0.00	0.00
10	0.013	0.00	0.00	0.030	8.51	0.35	681.481	511.877	101.92	99.40	0.00	0.00
20	0.013	0.00	0.00	0.035	8.20	0.31	683.090	513.380	100.99	98.33	0.00	0.00
30	0.013	0.00	0.00	0.040	7.69	0.51	684.655	514.845	98.58	96.18	0.00	0.00
40	0.013	0.00	0.00	0.040	7.28	0.41	686.292	516.435	102.95	104.24	0.00	0.00
50	0.013	0.00	0.00	0.060	6.22	1.06	687.942	518.040	104.78	106.25	0.00	0.00
60	0.013	0.00	0.00	0.070	4.80	1.42	689.586	519.645	105.42	107.29	0.00	0.00
70	0.013	0.00	0.00	0.070	3.46	1.34	691.230	521.244	105.63	107.11	0.00	0.00
80	0.013	0.00	0.00	0.065	2.52	0.94	692.842	522.845	103.07	106.73	0.00	0.00
90	0.013	0.00	0.00	0.055	1.97	0.55	694.441	524.431	101.61	105.07	0.00	0.00
100	0.013	0.00	0.00	0.055	1.58	0.39	696.075	525.952	103.45	100.39	0.00	0.00
110	0.015	0.00	0.00	0.050	1.31	0.27	697.662	527.206	91.39	75.29	0.00	0.00
120	0.015	0.00	0.00	0.045	1.13	0.18	699.277	528.579	92.77	82.23	0.00	0.00
130	0.015	0.00	0.00	0.045	0.93	0.20	700.885	530.187	92.24	96.16	0.00	0.00
140	0.013	0.00	0.00	0.040	0.74	0.19	702.505	531.949	101.74	115.34	0.00	0.00
150	0.015	0.00	0.00	0.040	0.55	0.19	704.110	533.604	91.94	98.81	0.00	0.00
160	0.013	0.00	0.00	0.040	0.36	0.19	705.716	535.131	100.70	99.80	0.00	0.00
170	0.013	0.00	0.00	0.040	0.20	0.16	707.336	536.785	101.62	108.04	0.00	0.00

Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 25, 2013
Test Run Number:	1

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	29.70		Meter Box (A)	0.977
End	29.70		Meter Box (B)	0.986
Duration of Test, Min			190	

Leak Check, cfm @ in Hg	
Train A	Train B
0.0026@5	0.003@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
180	0.013	0.00	0.00	0.040	0.05	0.15	708.912	538.200	98.72	92.39	0.00	0.00
190	0.013	0.00	0.00	0.040	0.00	0.05	710.540	539.792	101.92	103.89	0.00	0.00

Test Engineer:_____ Date:_____

			VS (1)	0.02791511					
			VS (2)	0.02881654	STD Tunnel Flow:		141.19		
190				562.6765	28.809	27.907	7.54	100.07	100.15
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft³ (1)	STD Sample Ft³ (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	318.8		0.013	558.98			7.378		
10	300.3		0.013	557.12	1.524	1.440	7.366	101.92	99.40
20	281.0		0.013	554.31	1.514	1.428	7.347	100.99	98.33
30	266.4		0.013	558.71	1.472	1.392	7.376	98.58	96.18
40	257.7		0.013	557.54	1.539	1.510	7.368	102.95	104.24
50	268.8		0.013	568.9	1.551	1.523	7.443	104.78	106.25
60	310.9		0.013	580.5	1.545	1.523	7.519	105.42	107.29
70	353.2		0.013	583.4	1.544	1.516	7.537	105.63	107.11
80	380.0		0.013	578.1	1.513	1.518	7.503	103.07	106.73
90	389.2		0.013	571.2	1.501	1.503	7.458	101.61	105.07
100	390.7		0.013	567.1	1.533	1.442	7.431	103.45	100.39
110	389.5		0.015	563.3	1.489	1.188	8.113	91.39	75.29
120	385.0		0.015	560.6	1.515	1.301	8.094	92.77	82.23
130	380.9		0.015	559.16	1.508	1.523	8.083	92.24	96.16
140	378.0		0.013	558.28	1.520	1.669	7.373	101.74	115.34
150	374.1		0.015	557.4	1.506	1.568	8.071	91.94	98.81
160	368.3		0.013	556.57	1.507	1.447	7.362	100.70	99.80
170	362.1		0.013	555.97	1.520	1.567	7.358	101.52	108.04
180	354.9		0.013	555.55	1.479	1.340	7.355	98.72	92.39
190	347.8	347.82	0.013	554.84	1.527	1.509	7.351	101.92	103.89

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 25, 2013
Test Run Number:	1

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	22.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI214	Time:	9:50	Temp., °F:	75
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	1.03	20.4	20.1	20.9
2	9.00	1.02	20.7	20.2	20.9
3	9.00	1.00	20.6	20.1	20.5
4	9.00	0.99	20.3	20.2	20.3
5	17.00	1.54	20.4	19.8	20.2
6	17.00	1.62	19.6	19.9	19.4
7	17.00	1.77	20.9	20.1	20.9
8	17.00	1.78	21.1	19.8	20.9
9	17.00	1.77	21.0	20.3	20.9
10					
11					
12					
Total Weight		12.5	Average, %db		20.4

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	11:00	Temp., °F:	75
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.46		20.6	19.9	20.4
2	17.00	2.34		20.6	20.3	20.9
3	17.00	1.96		20.2	18.9	20.2
4	17.00	2.10		21.3	20.8	21.2
5						
6						
7						
8						
Totals		8.9	0.0			
% of Weight		100	0			
Total weight, wet, lb.		8.86		Average Moisture, dry		20.44
Total weight, dry, kg		3.34		Average Moisture, wet		16.97

Test Engineer:_____ Date:_____

Intertek

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 25, 2013
Test Run Number: 1

Dry Burn-Rate, kg/hr:	**1.05**	
Emission-Rate, g/hr:	**3.09**	
Adjusted Emission-Rate, g/hr :	**4.64**	
Duration of Test, Minutes	190	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	679.862	510.362
Dry Gas Meter Ending Reading, ft^3	710.54	539.792
Barometric Pressure Correction Factor	0.993	0.993
Dry Gas Meter Calibration Factors (γ factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.969	0.969
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**28.825**	**27.923**
Dilution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**141.188**	
Total Tunnel Volume, scf	**26825.625**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	930.650	960.710
Sample Particulate Mass, mg	10.7	10.0
Total Emissions, grams	9.958	9.607
Emission-Rate, g/hr	3.14	3.03
Adjusted Emission Rates, g/hr	**4.71**	**4.57**
Deviation, %	1.49%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	88.34	89.85
Post-Test Leak Check, cfm @ in. Hg vac.	0.0025@5	0.003@5
Average Firebox Surface Temperture delta-T, °F	29	
Maximum Ambient Temperture, °F	84	
Mimimum Ambient Temperature, °F	67	
Fuel Properties		
Wet Fuel Load Weight, lb.	8.86	
Dry-Basis Fuel Load Moisture Content, %	20.44	
Wet-Basis Fuel Load Moisture Content, %	16.97	
Coal Bed Range, lb.	1.80	2.20
Actual Coal Bed, Lb.	1.93	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 25, 2013
Test Run Number: 1

Intertek Equipment No.'s SBI-206

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	1		117.7	
B - Rear Filter Catch	Filter	2		117.5	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			245	235.2	9.8
Probe & Filter Holder	Probe	26	139809.1	139808.2	0.9
			Total Particulate, mg		**10.7**

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	3		116.3	
B - Rear Filter Catch	Filter	4		118.4	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			244.6	234.7	9.9
Probe & Filter Holder	Probe	27	139892.0	139891.9	0.1
			Total Particulate, mg		**10**

Test Engineer:_____ Date:_____

Intertek

Dilution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 25, 2013
Test Run Number: 1

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0100	101	0.1000
A2	0.0125	101	0.1118
A3	0.0125	101	0.1118
A4	0.0125	99	0.1118
A Center	0.0125	102	0.1118
B1	0.0100	99	0.1000
B2	0.0125	99	0.1118
B3	0.0125	99	0.1118
B4	0.0100	99	0.1000
B Center	0.0125	99	0.1118
Averages	0.01175	99.899	0.1074

Tunnel Diameter	8.000	inches	
Tunnel Static	-0.063	in. H2O	
Tunnel Area	0.34907	Ft2	
Pitot Correction	0.9604	factor	
Baro. Pressure	29.70		
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)	
Initial Velocity	7.384	Ft/ Sec	
Initial Flow	138.92	Ft3/min	

Test Engineer:_____ Date:_____

SBI CW2500 25-Jun-13 Run #1

Date	Time	CO		CO_2		O_2	
25.06.2013	14:52:51	C1: CO	0.98 %	C2: CO2	1.63 %	C4: O2	19.89 %
25.06.2013	14:53:51	C1: CO	1.10 %	C2: CO2	1.51 %	C4: O2	17.85 %
25.06.2013	14:54:51	C1: CO	1.07 %	C2: CO2	1.49 %	C4: O2	16.60 %
25.06.2013	14:55:51	C1: CO	1.04 %	C2: CO2	1.57 %	C4: O2	17.90 %
25.06.2013	14:56:51	C1: CO	0.98 %	C2: CO2	1.69 %	C4: O2	17.85 %
25.06.2013	14:57:51	C1: CO	0.99 %	C2: CO2	1.70 %	C4: O2	17.76 %
25.06.2013	14:58:51	C1: CO	0.53 %	C2: CO2	0.52 %	C4: O2	19.11 %
25.06.2013	14:59:51	C1: CO	0.87 %	C2: CO2	1.16 %	C4: O2	19.24 %
25.06.2013	15:00:51	C1: CO	0.29 %	C2: CO2	0.10 %	C4: O2	19.15 %
25.06.2013	15:01:51	C1: CO	0.33 %	C2: CO2	0.30 %	C4: O2	20.19 %
25.06.2013	15:02:51	C1: CO	0.48 %	C2: CO2	2.56 %	C4: O2	19.66 %
25.06.2013	15:03:51	C1: CO	0.45 %	C2: CO2	3.28 %	C4: O2	17.61 %
25.06.2013	15:04:51	C1: CO	0.47 %	C2: CO2	4.49 %	C4: O2	15.30 %
25.06.2013	15:05:51	C1: CO	0.51 %	C2: CO2	2.29 %	C4: O2	16.18 %
25.06.2013	15:06:51	C1: CO	0.49 %	C2: CO2	1.36 %	C4: O2	18.45 %
25.06.2013	15:07:51	C1: CO	0.49 %	C2: CO2	1.32 %	C4: O2	18.78 %
25.06.2013	15:08:51	C1: CO	0.51 %	C2: CO2	1.38 %	C4: O2	18.75 %
25.06.2013	15:09:51	C1: CO	0.50 %	C2: CO2	1.36 %	C4: O2	18.73 %
25.06.2013	15:10:51	C1: CO	0.47 %	C2: CO2	1.48 %	C4: O2	18.48 %
25.06.2013	15:11:51	C1: CO	0.47 %	C2: CO2	1.59 %	C4: O2	18.21 %
25.06.2013	15:12:51	C1: CO	0.46 %	C2: CO2	1.52 %	C4: O2	17.71 %
25.06.2013	15:13:51	C1: CO	0.49 %	C2: CO2	1.75 %	C4: O2	18.42 %
25.06.2013	15:14:51	C1: CO	0.51 %	C2: CO2	1.79 %	C4: O2	17.52 %
25.06.2013	15:15:51	C1: CO	0.50 %	C2: CO2	1.74 %	C4: O2	18.24 %
25.06.2013	15:16:51	C1: CO	0.51 %	C2: CO2	1.84 %	C4: O2	18.32 %
25.06.2013	15:17:51	C1: CO	0.52 %	C2: CO2	1.93 %	C4: O2	18.19 %
25.06.2013	15:18:51	C1: CO	0.52 %	C2: CO2	2.00 %	C4: O2	18.15 %
25.06.2013	15:19:51	C1: CO	0.53 %	C2: CO2	1.92 %	C4: O2	18.17 %
25.06.2013	15:20:51	C1: CO	0.56 %	C2: CO2	1.85 %	C4: O2	18.28 %
25.06.2013	15:21:51	C1: CO	0.57 %	C2: CO2	1.81 %	C4: O2	18.32 %
25.06.2013	15:22:51	C1: CO	0.58 %	C2: CO2	1.74 %	C4: O2	18.35 %
25.06.2013	15:23:51	C1: CO	0.59 %	C2: CO2	1.70 %	C4: O2	18.36 %
25.06.2013	15:24:51	C1: CO	0.64 %	C2: CO2	1.78 %	C4: O2	18.40 %
25.06.2013	15:25:51	C1: CO	0.66 %	C2: CO2	2.55 %	C4: O2	18.10 %
25.06.2013	15:26:51	C1: CO	0.58 %	C2: CO2	4.09 %	C4: O2	16.58 %
25.06.2013	15:27:51	C1: CO	0.64 %	C2: CO2	4.62 %	C4: O2	15.47 %
25.06.2013	15:28:51	C1: CO	0.69 %	C2: CO2	3.93 %	C4: O2	15.54 %
25.06.2013	15:29:51	C1: CO	0.66 %	C2: CO2	3.58 %	C4: O2	16.35 %
25.06.2013	15:30:51	C1: CO	0.65 %	C2: CO2	2.05 %	C4: O2	16.27 %
25.06.2013	15:31:51	C1: CO	0.65 %	C2: CO2	1.35 %	C4: O2	18.31 %
25.06.2013	15:32:51	C1: CO	0.66 %	C2: CO2	1.27 %	C4: O2	18.65 %
25.06.2013	15:33:51	C1: CO	0.68 %	C2: CO2	1.27 %	C4: O2	18.66 %
25.06.2013	15:34:51	C1: CO	0.72 %	C2: CO2	1.34 %	C4: O2	18.61 %
25.06.2013	15:35:51	C1: CO	0.71 %	C2: CO2	1.38 %	C4: O2	18.47 %
25.06.2013	15:36:51	C1: CO	0.69 %	C2: CO2	1.48 %	C4: O2	17.83 %

SBI CW2500 25-Jun-13 Run #1

Date	Time	CO		CO_2		O_2	
25.06.2013	15:37:51	C1: CO	0.66 %	C2: CO2	2.00 %	C4: O2	18.22 %
25.06.2013	15:38:51	C1: CO	0.65 %	C2: CO2	2.71 %	C4: O2	17.44 %
25.06.2013	15:39:51	C1: CO	0.63 %	C2: CO2	4.12 %	C4: O2	17.06 %
25.06.2013	15:40:51	C1: CO	0.64 %	C2: CO2	5.37 %	C4: O2	15.53 %
25.06.2013	15:41:51	C1: CO	0.67 %	C2: CO2	5.97 %	C4: O2	14.38 %
25.06.2013	15:42:51	C1: CO	0.68 %	C2: CO2	6.68 %	C4: O2	13.35 %
25.06.2013	15:43:51	C1: CO	0.79 %	C2: CO2	7.75 %	C4: O2	13.02 %
25.06.2013	15:44:51	C1: CO	0.86 %	C2: CO2	7.79 %	C4: O2	12.60 %
25.06.2013	15:45:51	C1: CO	0.86 %	C2: CO2	8.09 %	C4: O2	12.41 %
25.06.2013	15:46:51	C1: CO	0.98 %	C2: CO2	8.12 %	C4: O2	12.19 %
25.06.2013	15:47:51	C1: CO	1.07 %	C2: CO2	8.56 %	C4: O2	11.99 %
25.06.2013	15:48:51	C1: CO	1.04 %	C2: CO2	8.44 %	C4: O2	11.62 %
25.06.2013	15:49:51	C1: CO	1.10 %	C2: CO2	8.74 %	C4: O2	11.62 %
25.06.2013	15:50:51	C1: CO	1.04 %	C2: CO2	9.69 %	C4: O2	11.02 %
25.06.2013	15:51:51	C1: CO	1.01 %	C2: CO2	10.07 %	C4: O2	10.25 %
25.06.2013	15:52:51	C1: CO	0.94 %	C2: CO2	10.14 %	C4: O2	9.95 %
25.06.2013	15:53:51	C1: CO	0.85 %	C2: CO2	10.10 %	C4: O2	9.58 %
25.06.2013	15:54:51	C1: CO	0.80 %	C2: CO2	10.44 %	C4: O2	9.80 %
25.06.2013	15:55:51	C1: CO	0.80 %	C2: CO2	10.69 %	C4: O2	9.78 %
25.06.2013	15:56:51	C1: CO	0.81 %	C2: CO2	10.84 %	C4: O2	9.63 %
25.06.2013	15:57:51	C1: CO	0.85 %	C2: CO2	10.91 %	C4: O2	9.38 %
25.06.2013	15:58:51	C1: CO	0.81 %	C2: CO2	10.90 %	C4: O2	9.30 %
25.06.2013	15:59:51	C1: CO	0.77 %	C2: CO2	10.97 %	C4: O2	9.41 %
25.06.2013	16:00:51	C1: CO	0.71 %	C2: CO2	10.92 %	C4: O2	9.45 %
25.06.2013	16:01:51	C1: CO	0.71 %	C2: CO2	10.96 %	C4: O2	9.50 %
25.06.2013	16:02:51	C1: CO	0.73 %	C2: CO2	10.99 %	C4: O2	9.43 %
25.06.2013	16:03:51	C1: CO	0.78 %	C2: CO2	11.05 %	C4: O2	9.46 %
25.06.2013	16:04:51	C1: CO	0.76 %	C2: CO2	11.08 %	C4: O2	9.48 %
25.06.2013	16:05:51	C1: CO	0.74 %	C2: CO2	10.51 %	C4: O2	8.59 %
25.06.2013	16:06:51	C1: CO	0.77 %	C2: CO2	10.70 %	C4: O2	9.04 %
25.06.2013	16:07:51	C1: CO	0.71 %	C2: CO2	10.76 %	C4: O2	9.25 %
25.06.2013	16:08:51	C1: CO	0.63 %	C2: CO2	10.45 %	C4: O2	9.12 %
25.06.2013	16:09:51	C1: CO	0.62 %	C2: CO2	10.58 %	C4: O2	9.87 %
25.06.2013	16:10:51	C1: CO	0.61 %	C2: CO2	10.53 %	C4: O2	10.03 %
25.06.2013	16:11:51	C1: CO	0.59 %	C2: CO2	10.55 %	C4: O2	9.93 %
25.06.2013	16:12:51	C1: CO	0.58 %	C2: CO2	10.39 %	C4: O2	9.99 %
25.06.2013	16:13:51	C1: CO	0.56 %	C2: CO2	10.19 %	C4: O2	10.24 %
25.06.2013	16:14:51	C1: CO	0.53 %	C2: CO2	9.75 %	C4: O2	10.18 %
25.06.2013	16:15:51	C1: CO	0.51 %	C2: CO2	9.58 %	C4: O2	10.62 %
25.06.2013	16:16:51	C1: CO	0.49 %	C2: CO2	9.31 %	C4: O2	10.60 %
25.06.2013	16:17:51	C1: CO	0.47 %	C2: CO2	9.04 %	C4: O2	11.32 %
25.06.2013	16:18:51	C1: CO	0.43 %	C2: CO2	8.64 %	C4: O2	11.88 %
25.06.2013	16:19:51	C1: CO	0.45 %	C2: CO2	8.29 %	C4: O2	11.71 %
25.06.2013	16:20:51	C1: CO	0.47 %	C2: CO2	8.07 %	C4: O2	12.25 %
25.06.2013	16:21:51	C1: CO	0.45 %	C2: CO2	7.67 %	C4: O2	12.47 %

SBI CW2500 25-Jun-13 Run #1

Date	Time	CO		CO_2		O_2	
25.06.2013	16:22:51	C1: CO	0.43 %	C2: CO2	7.52 %	C4: O2	12.95 %
25.06.2013	16:23:51	C1: CO	0.45 %	C2: CO2	7.44 %	C4: O2	13.13 %
25.06.2013	16:24:51	C1: CO	0.44 %	C2: CO2	7.04 %	C4: O2	13.06 %
25.06.2013	16:25:51	C1: CO	0.41 %	C2: CO2	6.76 %	C4: O2	13.42 %
25.06.2013	16:26:51	C1: CO	0.42 %	C2: CO2	6.56 %	C4: O2	13.83 %
25.06.2013	16:27:51	C1: CO	0.41 %	C2: CO2	6.46 %	C4: O2	13.95 %
25.06.2013	16:28:51	C1: CO	0.40 %	C2: CO2	6.45 %	C4: O2	14.04 %
25.06.2013	16:29:51	C1: CO	0.42 %	C2: CO2	6.38 %	C4: O2	13.23 %
25.06.2013	16:30:51	C1: CO	0.44 %	C2: CO2	6.36 %	C4: O2	14.13 %
25.06.2013	16:31:51	C1: CO	0.44 %	C2: CO2	6.38 %	C4: O2	14.19 %
25.06.2013	16:32:51	C1: CO	0.44 %	C2: CO2	6.27 %	C4: O2	13.87 %
25.06.2013	16:33:51	C1: CO	0.45 %	C2: CO2	6.30 %	C4: O2	14.15 %
25.06.2013	16:34:51	C1: CO	0.44 %	C2: CO2	6.23 %	C4: O2	13.84 %
25.06.2013	16:35:51	C1: CO	0.42 %	C2: CO2	6.20 %	C4: O2	14.01 %
25.06.2013	16:36:51	C1: CO	0.42 %	C2: CO2	6.22 %	C4: O2	14.24 %
25.06.2013	16:37:51	C1: CO	0.40 %	C2: CO2	6.18 %	C4: O2	14.31 %
25.06.2013	16:38:51	C1: CO	0.40 %	C2: CO2	6.15 %	C4: O2	14.31 %
25.06.2013	16:39:51	C1: CO	0.40 %	C2: CO2	6.09 %	C4: O2	14.45 %
25.06.2013	16:40:51	C1: CO	0.42 %	C2: CO2	6.00 %	C4: O2	14.36 %
25.06.2013	16:41:51	C1: CO	0.40 %	C2: CO2	5.72 %	C4: O2	13.47 %
25.06.2013	16:42:51	C1: CO	0.46 %	C2: CO2	5.87 %	C4: O2	14.50 %
25.06.2013	16:43:51	C1: CO	0.50 %	C2: CO2	5.56 %	C4: O2	14.37 %
25.06.2013	16:44:51	C1: CO	0.52 %	C2: CO2	5.27 %	C4: O2	14.78 %
25.06.2013	16:45:51	C1: CO	0.49 %	C2: CO2	5.09 %	C4: O2	15.01 %
25.06.2013	16:46:51	C1: CO	0.49 %	C2: CO2	5.01 %	C4: O2	15.12 %
25.06.2013	16:47:51	C1: CO	0.50 %	C2: CO2	4.99 %	C4: O2	15.20 %
25.06.2013	16:48:51	C1: CO	0.50 %	C2: CO2	4.90 %	C4: O2	15.19 %
25.06.2013	16:49:51	C1: CO	0.55 %	C2: CO2	4.93 %	C4: O2	15.24 %
25.06.2013	16:50:51	C1: CO	0.54 %	C2: CO2	4.81 %	C4: O2	15.20 %
25.06.2013	16:51:51	C1: CO	0.54 %	C2: CO2	4.75 %	C4: O2	15.29 %
25.06.2013	16:52:51	C1: CO	0.56 %	C2: CO2	4.75 %	C4: O2	15.34 %
25.06.2013	16:53:51	C1: CO	0.56 %	C2: CO2	4.69 %	C4: O2	15.37 %
25.06.2013	16:54:51	C1: CO	0.57 %	C2: CO2	4.55 %	C4: O2	14.91 %
25.06.2013	16:55:51	C1: CO	0.61 %	C2: CO2	4.51 %	C4: O2	14.75 %
25.06.2013	16:56:51	C1: CO	0.63 %	C2: CO2	4.62 %	C4: O2	15.39 %
25.06.2013	16:57:51	C1: CO	0.64 %	C2: CO2	4.62 %	C4: O2	15.40 %
25.06.2013	16:58:51	C1: CO	0.61 %	C2: CO2	4.57 %	C4: O2	15.41 %
25.06.2013	16:59:51	C1: CO	0.59 %	C2: CO2	4.53 %	C4: O2	15.46 %
25.06.2013	17:00:51	C1: CO	0.63 %	C2: CO2	4.50 %	C4: O2	15.40 %
25.06.2013	17:01:51	C1: CO	0.65 %	C2: CO2	4.50 %	C4: O2	15.39 %
25.06.2013	17:02:51	C1: CO	0.66 %	C2: CO2	4.45 %	C4: O2	15.19 %
25.06.2013	17:03:51	C1: CO	0.64 %	C2: CO2	4.32 %	C4: O2	13.68 %
25.06.2013	17:04:51	C1: CO	0.65 %	C2: CO2	4.46 %	C4: O2	15.49 %
25.06.2013	17:05:51	C1: CO	0.64 %	C2: CO2	4.47 %	C4: O2	15.46 %
25.06.2013	17:06:51	C1: CO	0.65 %	C2: CO2	4.28 %	C4: O2	14.82 %

SBI CW2500 25-Jun-13 Run #1

Date	Time	CO		CO_2		O_2	
25.06.2013	17:07:51	C1: CO	0.67 %	C2: CO2	4.45 %	C4: O2	15.38 %
25.06.2013	17:08:51	C1: CO	0.69 %	C2: CO2	4.43 %	C4: O2	15.48 %
25.06.2013	17:09:51	C1: CO	0.70 %	C2: CO2	4.49 %	C4: O2	15.53 %
25.06.2013	17:10:51	C1: CO	0.69 %	C2: CO2	4.42 %	C4: O2	15.47 %
25.06.2013	17:11:51	C1: CO	0.70 %	C2: CO2	4.46 %	C4: O2	15.33 %
25.06.2013	17:12:51	C1: CO	0.70 %	C2: CO2	4.46 %	C4: O2	15.47 %
25.06.2013	17:13:51	C1: CO	0.73 %	C2: CO2	4.52 %	C4: O2	15.45 %
25.06.2013	17:14:51	C1: CO	0.72 %	C2: CO2	4.41 %	C4: O2	15.19 %
25.06.2013	17:15:51	C1: CO	0.73 %	C2: CO2	4.53 %	C4: O2	15.47 %
25.06.2013	17:16:51	C1: CO	0.70 %	C2: CO2	4.45 %	C4: O2	15.42 %
25.06.2013	17:17:51	C1: CO	0.73 %	C2: CO2	4.45 %	C4: O2	15.45 %
25.06.2013	17:18:51	C1: CO	0.76 %	C2: CO2	4.48 %	C4: O2	15.51 %
25.06.2013	17:19:51	C1: CO	0.70 %	C2: CO2	4.25 %	C4: O2	14.35 %
25.06.2013	17:20:51	C1: CO	0.69 %	C2: CO2	4.40 %	C4: O2	15.27 %
25.06.2013	17:21:51	C1: CO	0.78 %	C2: CO2	4.02 %	C4: O2	15.72 %
25.06.2013	17:22:51	C1: CO	0.81 %	C2: CO2	3.86 %	C4: O2	15.90 %
25.06.2013	17:23:51	C1: CO	0.83 %	C2: CO2	3.78 %	C4: O2	15.56 %
25.06.2013	17:24:51	C1: CO	0.85 %	C2: CO2	3.83 %	C4: O2	15.88 %
25.06.2013	17:25:51	C1: CO	0.88 %	C2: CO2	3.81 %	C4: O2	15.77 %
25.06.2013	17:26:51	C1: CO	0.90 %	C2: CO2	3.81 %	C4: O2	15.85 %
25.06.2013	17:27:51	C1: CO	0.90 %	C2: CO2	3.72 %	C4: O2	15.91 %
25.06.2013	17:28:51	C1: CO	0.93 %	C2: CO2	3.76 %	C4: O2	15.88 %
25.06.2013	17:29:51	C1: CO	0.92 %	C2: CO2	3.67 %	C4: O2	15.92 %
25.06.2013	17:30:51	C1: CO	0.93 %	C2: CO2	3.62 %	C4: O2	16.01 %
25.06.2013	17:31:51	C1: CO	0.92 %	C2: CO2	3.36 %	C4: O2	15.19 %
25.06.2013	17:32:51	C1: CO	0.98 %	C2: CO2	3.52 %	C4: O2	16.03 %
25.06.2013	17:33:51	C1: CO	0.98 %	C2: CO2	3.54 %	C4: O2	16.10 %
25.06.2013	17:34:51	C1: CO	0.97 %	C2: CO2	3.48 %	C4: O2	16.03 %
25.06.2013	17:35:51	C1: CO	0.98 %	C2: CO2	3.44 %	C4: O2	16.04 %
25.06.2013	17:36:51	C1: CO	1.00 %	C2: CO2	3.44 %	C4: O2	16.03 %
25.06.2013	17:37:51	C1: CO	1.00 %	C2: CO2	3.44 %	C4: O2	16.09 %
25.06.2013	17:38:51	C1: CO	1.00 %	C2: CO2	3.43 %	C4: O2	16.11 %
25.06.2013	17:39:51	C1: CO	1.00 %	C2: CO2	3.43 %	C4: O2	16.14 %
25.06.2013	17:40:51	C1: CO	1.01 %	C2: CO2	3.39 %	C4: O2	15.96 %
25.06.2013	17:41:51	C1: CO	1.03 %	C2: CO2	3.36 %	C4: O2	16.05 %
25.06.2013	17:42:51	C1: CO	1.05 %	C2: CO2	3.37 %	C4: O2	16.15 %
25.06.2013	17:43:51	C1: CO	1.09 %	C2: CO2	3.21 %	C4: O2	16.07 %
25.06.2013	17:44:51	C1: CO	1.11 %	C2: CO2	3.17 %	C4: O2	16.30 %
25.06.2013	17:45:51	C1: CO	1.10 %	C2: CO2	3.11 %	C4: O2	16.38 %
25.06.2013	17:46:51	C1: CO	1.08 %	C2: CO2	3.05 %	C4: O2	16.03 %
25.06.2013	17:47:51	C1: CO	1.04 %	C2: CO2	2.99 %	C4: O2	15.92 %
25.06.2013	17:48:51	C1: CO	1.11 %	C2: CO2	3.09 %	C4: O2	16.32 %
25.06.2013	17:49:51	C1: CO	1.12 %	C2: CO2	3.07 %	C4: O2	15.25 %
25.06.2013	17:50:51	C1: CO	1.11 %	C2: CO2	2.97 %	C4: O2	16.33 %
25.06.2013	17:51:51	C1: CO	1.12 %	C2: CO2	3.00 %	C4: O2	16.43 %

SBI CW2500 25-Jun-13 Run #1

Date	Time	CO		CO_2		O_2	
25.06.2013	17:52:51	C1: CO	1.13 %	C2: CO2	3.00 %	C4: O2	16.42 %
25.06.2013	17:53:51	C1: CO	1.14 %	C2: CO2	2.92 %	C4: O2	16.44 %
25.06.2013	17:54:51	C1: CO	1.11 %	C2: CO2	2.72 %	C4: O2	15.66 %
25.06.2013	17:55:51	C1: CO	1.13 %	C2: CO2	2.95 %	C4: O2	16.38 %
25.06.2013	17:56:51	C1: CO	1.21 %	C2: CO2	2.96 %	C4: O2	16.44 %
25.06.2013	17:57:51	C1: CO	1.20 %	C2: CO2	2.98 %	C4: O2	16.41 %
25.06.2013	17:58:51	C1: CO	1.25 %	C2: CO2	2.89 %	C4: O2	16.40 %
25.06.2013	17:59:51	C1: CO	1.27 %	C2: CO2	2.85 %	C4: O2	16.49 %
25.06.2013	18:00:51	C1: CO	1.22 %	C2: CO2	2.86 %	C4: O2	16.48 %
25.06.2013	18:01:51	C1: CO	1.24 %	C2: CO2	2.87 %	C4: O2	16.47 %
25.06.2013	18:02:51	C1: CO	1.29 %	C2: CO2	2.79 %	C4: O2	16.43 %
25.06.2013	18:03:51	C1: CO	1.26 %	C2: CO2	2.54 %	C4: O2	15.89 %
25.06.2013	18:04:51	C1: CO	1.36 %	C2: CO2	2.36 %	C4: O2	16.67 %
25.06.2013	18:05:51	C1: CO	1.41 %	C2: CO2	2.03 %	C4: O2	15.36 %
25.06.2013	18:06:51	C1: CO	1.34 %	C2: CO2	2.06 %	C4: O2	16.94 %
25.06.2013	18:07:51	C1: CO	1.35 %	C2: CO2	2.06 %	C4: O2	17.00 %
25.06.2013	18:08:51	C1: CO	1.32 %	C2: CO2	2.03 %	C4: O2	16.98 %
25.06.2013	18:09:51	C1: CO	1.29 %	C2: CO2	1.91 %	C4: O2	16.26 %
25.06.2013	18:10:51	C1: CO	1.37 %	C2: CO2	2.02 %	C4: O2	17.08 %
25.06.2013	18:11:51	C1: CO	1.37 %	C2: CO2	1.93 %	C4: O2	17.16 %
25.06.2013	18:12:51	C1: CO	1.36 %	C2: CO2	1.92 %	C4: O2	17.15 %
25.06.2013	18:13:51	C1: CO	1.32 %	C2: CO2	1.94 %	C4: O2	17.21 %
25.06.2013	18:14:51	C1: CO	1.20 %	C2: CO2	2.21 %	C4: O2	17.17 %
25.06.2013	18:15:51	C1: CO	1.17 %	C2: CO2	2.28 %	C4: O2	17.04 %

Appendix F: Test data
Run 2

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	2

EPA Method 28
Pre Burn Data

Coal Bed Range	1.8	to	2.1

Average Firebox Temp, °F	278.52

Final Coal Bed Wt, lb	2.14

Interval	10

Time		Temperature Data											
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	0	84.71	173.8	562.7	582	515	585.5	467.9	592.4			2.78	0.64
1	10	81.06	115.5	349.3	476	379.1	477.1	457	570.6			2.77	0.01
2	20	79.22	109.2	302.8	409.9	328.1	401.1	417.3	513.7			2.73	0.04
3	30	76.42	99.35	274.4	362.8	292.5	349.3	378.1	461.3			2.65	0.08
4	40	75.68	95.84	253.9	329.1	270.8	314.3	348.7	418.5			2.51	0.14
5	50	79.35	94.15	241	303.5	254.7	287.5	325.7	382.8			2.41	0.10
6	60	84.08	93.1	232.7	286.7	247.8	269	309.2	354.9			2.33	0.08
7	70	86.8	91.17	230.2	277.4	245	258.6	297.7	334.3			2.21	0.12
8	80	83.51	103.6	271.1	272.8	262.7	253.6	290.5	323			2.14	0.07
9													
10													
11													
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Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	2

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	29.91	78	Meter Box (A)	0.977
End	29.87	81	Meter Box (B)	0.986
Duration of Test, Min		200		

Leak Check, cfm @ in Hg	
Train A	Train B
0.0035@5	0.003@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0.013	0.00	0.00	0.035	8.67	**8.67**	710.565	539.819	**99.99**	**99.99**	0.00	0.00
10	0.013	0.00	0.00	0.035	8.38	**0.29**	712.195	541.456	**101.59**	**101.67**	0.00	0.00
20	0.013	0.00	0.00	0.050	7.91	**0.47**	713.800	543.049	**100.05**	**98.96**	0.00	0.00
30	0.013	0.00	0.00	0.045	7.15	**0.76**	715.394	544.641	**99.58**	**99.12**	0.00	0.00
40	0.013	0.00	0.00	0.060	6.20	**0.95**	716.992	546.228	**100.31**	**99.29**	0.00	0.00
50	0.013	0.00	0.00	0.070	4.84	**1.36**	718.600	547.830	**101.60**	**100.90**	0.00	0.00
60	0.013	0.00	0.00	0.065	3.54	**1.30**	720.198	549.442	**101.10**	**101.66**	0.00	0.00
70	0.013	0.00	0.00	0.060	2.58	**0.96**	721.795	551.062	**100.62**	**101.75**	0.00	0.00
80	0.013	0.00	0.00	0.050	2.03	**0.55**	723.399	552.680	**100.47**	**101.02**	0.00	0.00
90	0.013	0.00	0.00	0.050	1.65	**0.38**	725.000	554.295	**99.92**	**100.47**	0.00	0.00
100	0.013	0.00	0.00	0.045	1.37	**0.28**	726.607	555.913	**100.02**	**100.38**	0.00	0.00
110	0.013	0.00	0.00	0.040	1.14	**0.23**	728.213	557.546	**99.73**	**101.09**	0.00	0.00
120	0.013	0.00	0.00	0.040	0.97	**0.17**	729.823	559.140	**99.80**	**98.49**	0.00	0.00
130	0.013	0.00	0.00	0.040	0.77	**0.20**	731.429	560.747	**99.40**	**99.14**	0.00	0.00
140	0.013	0.00	0.00	0.040	0.59	**0.18**	733.036	562.349	**99.35**	**98.73**	0.00	0.00
150	0.013	0.00	0.00	0.035	0.47	**0.12**	734.646	563.936	**99.59**	**97.85**	0.00	0.00
160	0.013	0.00	0.00	0.035	0.33	**0.14**	736.249	565.546	**99.37**	**99.49**	0.00	0.00
170	0.013	0.00	0.00	0.035	0.28	**0.05**	737.860	567.165	**99.90**	**100.08**	0.00	0.00
180	0.013	0.00	0.00	0.035	0.14	**0.14**	739.458	568.792	**99.11**	**100.60**	0.00	0.00
190	0.013	0.00	0.00	0.035	0.07	**0.07**	741.055	570.399	**98.99**	**99.30**	0.00	0.00
200	0.013	0.00	0.00	0.035	0.00	**0.07**	742.657	572.014	**99.23**	**99.73**	0.00	0.00

Test Engineer:_____

Date:_____

			VS (1)	0.02610212					
			VS (2)	0.02576422	STD Tunnel Flow:		141.45		
200				558.532857	30.671	31.073	7.45	99.99	99.99
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft^3 (1)	STD Sample Ft^3 (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	281.6		0.013	560.6			7.466		
10	283.8		0.013	557.59	1.559	1.581	7.446	101.59	101.67
20	271.6		0.013	557.91	1.535	1.538	7.448	100.05	98.96
30	274.7		0.013	560.6	1.524	1.537	7.466	99.58	99.12
40	253.5		0.013	566.3	1.528	1.532	7.504	100.31	99.29
50	276.7		0.013	574	1.537	1.546	7.555	101.60	100.90
60	305.0		0.013	575.5	1.527	1.556	7.565	101.10	101.66
70	322.5		0.013	570.9	1.526	1.564	7.535	100.62	101.75
80	327.1		0.013	564.2	1.533	1.562	7.490	100.47	101.02
90	324.2		0.013	560.2	1.530	1.559	7.464	99.92	100.47
100	319.6		0.013	557.05	1.536	1.562	7.443	100.02	100.38
110	312.0		0.013	554.52	1.535	1.576	7.426	99.73	101.09
120	303.7		0.013	552.63	1.539	1.538	7.413	99.80	98.49
130	296.2		0.013	551.05	1.535	1.551	7.403	99.40	99.14
140	290.0		0.013	549.96	1.535	1.546	7.395	99.35	98.73
150	286.3		0.013	550.54	1.538	1.531	7.399	99.59	97.85
160	283.4		0.013	552.98	1.532	1.554	7.415	99.37	99.49
170	280.6		0.013	553.55	1.539	1.562	7.419	99.90	100.08
180	273.4		0.013	553.55	1.527	1.570	7.419	99.11	100.60
190	267.3		0.013	553.1	1.526	1.550	7.416	98.99	99.30
200	259.1	259.14	0.013	552.46	1.530	1.558	7.412	99.23	99.73

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	2

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	22.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI-214	Time:	9:50	Temp.,°F:	75
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	1.12	20.9	20.2	20.8
2	9.00	1.02	20.6	20.0	20.9
3	9.00	1.06	20.7	19.7	20.9
4	9.00	0.91	20.0	19.6	20.2
5	17.00	1.81	20.7	19.9	20.8
6	17.00	1.77	20.4	20.0	20.7
7	17.00	1.78	20.6	20.2	20.6
8	17.00	1.63	19.8	20.1	19.7
9	17.00	1.57	19.9	19.3	20.2
10					
11					
12					
Total Weight		**12.6**	Average, %db		**20.3**

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	11:00	Temp.,°F:	75
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.49		21.2	20.9	22.0
2	17.00	2.02		21.1	19.3	20.6
3	17.00	2.11		22.0	20.2	21.4
4	17.00	2.06		20.1	19.7	20.8
5						
6						
7						
8						
Totals		8.7	0.0			
% of Weight		100	0			
Total weight, wet, lb.		8.67		Average Moisture, dry		**20.78**
Total weight, dry, kg		3.26		Average Moisture, wet		17.20

Test Engineer:_____ Date:_____

Intertek

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 26, 2013
Test Run Number: 2

Dry Burn-Rate, kg/hr:	**0.98**	
Emission-Rate, g/hr:	**1.50**	
Adjusted Emission-Rate, g/hr :	**2.54**	
Duration of Test, Minutes	200	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	710.565	539.819
Dry Gas Meter Ending Reading, ft^3	742.657	572.014
Barometric Pressure Correction Factor	0.999	0.999
Dry Gas Meter Calibration Factors (y factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.980	0.980
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**30.685**	**31.087**
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**141.451**	
Total Tunnel Volume, scf	**28290.116**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	921.957	910.040
Sample Particulate Mass, mg	5.5	5.4
Total Emissions, grams	5.071	4.914
Emission-Rate, g/hr	1.52	1.47
Adjusted Emission Rates, g/hr	**2.58**	**2.51**
Deviation, %	1.30%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	88.15	84.32
Post-Test Leak Check, cfm @ in. Hg vac.	0.0035@5	0.003@5
Average Firebox Surface Temperture delta-T, °F	22.44	
Maximum Ambient Temperture, °F	84	
Mimimum Ambient Temperature, °F	69	
Fuel Properties		
Wet Fuel Load Weight, lb.	8.67	
Dry-Basis Fuel Load Moisture Content, %	20.78	
Wet-Basis Fuel Load Moisture Content, %	17.20	
Coal Bed Range, lb.	1.80	2.10
Actual Coal Bed, Lb.	2.14	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 26, 2013
Test Run Number: 2

Intertek Equipment No.'s SBI-206

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	5		117.6	
B - Rear Filter Catch	Filter	6		118	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			241.1	235.6	5.5
Probe & Filter Holder	Probe	17	139749.1	139749.2	0.0
			Total Particulate, mg		5.5

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	7		115.2	
B - Rear Filter Catch	Filter	8		118.2	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			238.8	233.4	5.2
Probe & Filter Holder	Probe	18	147882.0	147881.8	0.2
			Total Particulate, mg		5.4

Test Engineer:_____ Date:_____

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 26, 2013
Test Run Number: 2

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0100	96	0.1000
A2	0.0125	96	0.1118
A3	0.0125	96	0.1118
A4	0.0125	95	0.1118
A Center	0.0125	96	0.1118
B1	0.0100	96	0.1000
B2	0.0125	97	0.1118
B3	0.0125	97	0.1118
B4	0.0125	97	0.1118
B Center	0.0125	96	0.1118
Averages	0.012	96.037	0.1089

Tunnel Diameter	8.000	inches
Tunnel Static	-0.070	in. H2O
Tunnel Area	0.34907	Ft2
Pitot Correction	0.9736	factor
Baro. Pressure	29.91	
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	7.433	Ft/ Sec
Initial Flow	**141.82**	Ft3/min

Test Engineer:_____

Date:_____

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
10:48:11	C1: CO	0.64 %	C2: CO2	0.80 %	C4: O2	19.22 %
10:49:11	C1: CO	0.51 %	C2: CO2	0.56 %	C4: O2	19.40 %
10:50:11	C1: CO	0.62 %	C2: CO2	0.69 %	C4: O2	18.43 %
10:51:11	C1: CO	0.25 %	C2: CO2	0.19 %	C4: O2	19.05 %
10:52:11	C1: CO	0.31 %	C2: CO2	0.54 %	C4: O2	20.21 %
10:53:11	C1: CO	0.43 %	C2: CO2	2.41 %	C4: O2	19.02 %
10:54:11	C1: CO	0.45 %	C2: CO2	3.65 %	C4: O2	17.37 %
10:55:11	C1: CO	0.46 %	C2: CO2	4.57 %	C4: O2	16.04 %
10:56:11	C1: CO	0.47 %	C2: CO2	2.04 %	C4: O2	16.49 %
10:57:11	C1: CO	0.41 %	C2: CO2	1.51 %	C4: O2	18.54 %
10:58:11	C1: CO	0.43 %	C2: CO2	1.48 %	C4: O2	18.53 %
10:59:11	C1: CO	0.44 %	C2: CO2	1.53 %	C4: O2	18.74 %
11:00:11	C1: CO	0.44 %	C2: CO2	1.50 %	C4: O2	18.26 %
11:01:11	C1: CO	0.46 %	C2: CO2	1.52 %	C4: O2	18.05 %
11:02:11	C1: CO	0.51 %	C2: CO2	1.69 %	C4: O2	18.60 %
11:03:11	C1: CO	0.50 %	C2: CO2	1.72 %	C4: O2	18.49 %
11:04:11	C1: CO	0.51 %	C2: CO2	1.87 %	C4: O2	18.37 %
11:05:11	C1: CO	0.48 %	C2: CO2	2.87 %	C4: O2	18.14 %
11:06:11	C1: CO	0.51 %	C2: CO2	3.63 %	C4: O2	17.21 %
11:07:11	C1: CO	0.48 %	C2: CO2	4.41 %	C4: O2	16.41 %
11:08:11	C1: CO	0.50 %	C2: CO2	5.06 %	C4: O2	15.80 %
11:09:11	C1: CO	0.52 %	C2: CO2	5.47 %	C4: O2	15.27 %
11:10:11	C1: CO	0.64 %	C2: CO2	5.53 %	C4: O2	14.95 %
11:11:11	C1: CO	0.61 %	C2: CO2	4.26 %	C4: O2	14.49 %
11:12:11	C1: CO	0.53 %	C2: CO2	2.95 %	C4: O2	16.26 %
11:13:11	C1: CO	0.57 %	C2: CO2	3.52 %	C4: O2	17.38 %
11:14:11	C1: CO	0.65 %	C2: CO2	4.71 %	C4: O2	16.19 %
11:15:11	C1: CO	0.65 %	C2: CO2	4.72 %	C4: O2	15.35 %
11:16:11	C1: CO	0.56 %	C2: CO2	4.35 %	C4: O2	14.94 %
11:17:11	C1: CO	0.57 %	C2: CO2	4.36 %	C4: O2	15.74 %
11:18:11	C1: CO	0.59 %	C2: CO2	4.30 %	C4: O2	16.00 %
11:19:11	C1: CO	0.62 %	C2: CO2	4.21 %	C4: O2	15.93 %
11:20:11	C1: CO	0.60 %	C2: CO2	3.97 %	C4: O2	14.95 %
11:21:11	C1: CO	0.64 %	C2: CO2	3.86 %	C4: O2	16.28 %
11:22:11	C1: CO	0.67 %	C2: CO2	4.14 %	C4: O2	16.08 %
11:23:11	C1: CO	0.65 %	C2: CO2	4.79 %	C4: O2	15.82 %
11:24:11	C1: CO	0.58 %	C2: CO2	5.38 %	C4: O2	15.27 %
11:25:11	C1: CO	0.57 %	C2: CO2	6.18 %	C4: O2	14.79 %
11:26:11	C1: CO	0.64 %	C2: CO2	6.77 %	C4: O2	14.04 %
11:27:11	C1: CO	0.69 %	C2: CO2	7.00 %	C4: O2	13.58 %
11:28:11	C1: CO	0.70 %	C2: CO2	7.26 %	C4: O2	13.19 %
11:29:11	C1: CO	0.76 %	C2: CO2	7.87 %	C4: O2	12.99 %
11:30:11	C1: CO	0.87 %	C2: CO2	8.55 %	C4: O2	12.17 %

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
11:31:11	C1: CO	0.89 %	C2: CO2	8.87 %	C4: O2	11.67 %
11:32:11	C1: CO	0.88 %	C2: CO2	9.45 %	C4: O2	11.34 %
11:33:11	C1: CO	0.81 %	C2: CO2	9.61 %	C4: O2	10.79 %
11:34:11	C1: CO	0.73 %	C2: CO2	9.39 %	C4: O2	9.82 %
11:35:11	C1: CO	0.70 %	C2: CO2	9.66 %	C4: O2	10.52 %
11:36:11	C1: CO	0.67 %	C2: CO2	9.82 %	C4: O2	9.60 %
11:37:11	C1: CO	0.67 %	C2: CO2	9.96 %	C4: O2	10.34 %
11:38:11	C1: CO	0.66 %	C2: CO2	10.07 %	C4: O2	10.43 %
11:39:11	C1: CO	0.64 %	C2: CO2	10.16 %	C4: O2	10.33 %
11:40:11	C1: CO	0.66 %	C2: CO2	10.31 %	C4: O2	10.27 %
11:41:11	C1: CO	0.68 %	C2: CO2	10.38 %	C4: O2	9.99 %
11:42:11	C1: CO	0.70 %	C2: CO2	10.44 %	C4: O2	9.86 %
11:43:11	C1: CO	0.64 %	C2: CO2	10.44 %	C4: O2	9.89 %
11:44:11	C1: CO	0.63 %	C2: CO2	9.94 %	C4: O2	9.67 %
11:45:11	C1: CO	0.67 %	C2: CO2	10.17 %	C4: O2	10.24 %
11:46:11	C1: CO	0.70 %	C2: CO2	10.22 %	C4: O2	10.26 %
11:47:11	C1: CO	0.70 %	C2: CO2	10.14 %	C4: O2	10.26 %
11:48:11	C1: CO	0.64 %	C2: CO2	9.88 %	C4: O2	10.20 %
11:49:11	C1: CO	0.61 %	C2: CO2	9.88 %	C4: O2	9.35 %
11:50:11	C1: CO	0.58 %	C2: CO2	9.79 %	C4: O2	10.66 %
11:51:11	C1: CO	0.54 %	C2: CO2	9.70 %	C4: O2	10.74 %
11:52:11	C1: CO	0.51 %	C2: CO2	9.30 %	C4: O2	10.14 %
11:53:11	C1: CO	0.49 %	C2: CO2	9.59 %	C4: O2	11.10 %
11:54:11	C1: CO	0.47 %	C2: CO2	9.11 %	C4: O2	11.05 %
11:55:11	C1: CO	0.49 %	C2: CO2	9.09 %	C4: O2	11.51 %
11:56:11	C1: CO	0.46 %	C2: CO2	8.76 %	C4: O2	11.35 %
11:57:11	C1: CO	0.45 %	C2: CO2	8.69 %	C4: O2	11.89 %
11:58:11	C1: CO	0.44 %	C2: CO2	8.21 %	C4: O2	11.59 %
11:59:11	C1: CO	0.43 %	C2: CO2	8.30 %	C4: O2	11.99 %
12:00:11	C1: CO	0.43 %	C2: CO2	7.93 %	C4: O2	11.76 %
12:01:11	C1: CO	0.42 %	C2: CO2	7.79 %	C4: O2	11.79 %
12:02:11	C1: CO	0.42 %	C2: CO2	7.52 %	C4: O2	12.42 %
12:03:11	C1: CO	0.42 %	C2: CO2	7.31 %	C4: O2	12.75 %
12:04:11	C1: CO	0.41 %	C2: CO2	7.17 %	C4: O2	13.07 %
12:05:11	C1: CO	0.41 %	C2: CO2	6.94 %	C4: O2	13.26 %
12:06:11	C1: CO	0.38 %	C2: CO2	6.68 %	C4: O2	13.58 %
12:07:11	C1: CO	0.36 %	C2: CO2	6.31 %	C4: O2	13.98 %
12:08:11	C1: CO	0.37 %	C2: CO2	6.07 %	C4: O2	14.23 %
12:09:11	C1: CO	0.38 %	C2: CO2	5.86 %	C4: O2	14.28 %
12:10:11	C1: CO	0.36 %	C2: CO2	5.81 %	C4: O2	14.55 %
12:11:11	C1: CO	0.37 %	C2: CO2	5.80 %	C4: O2	14.61 %
12:12:11	C1: CO	0.37 %	C2: CO2	5.86 %	C4: O2	14.65 %
12:13:11	C1: CO	0.39 %	C2: CO2	5.85 %	C4: O2	14.58 %

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
12:14:11	C1: CO	0.38 %	C2: CO2	5.80 %	C4: O2	14.63 %
12:15:11	C1: CO	0.38 %	C2: CO2	5.75 %	C4: O2	14.69 %
12:16:11	C1: CO	0.39 %	C2: CO2	5.70 %	C4: O2	14.74 %
12:17:11	C1: CO	0.39 %	C2: CO2	5.62 %	C4: O2	14.77 %
12:18:11	C1: CO	0.38 %	C2: CO2	5.54 %	C4: O2	14.87 %
12:19:11	C1: CO	0.38 %	C2: CO2	5.48 %	C4: O2	14.76 %
12:20:11	C1: CO	0.41 %	C2: CO2	5.49 %	C4: O2	14.88 %
12:21:11	C1: CO	0.39 %	C2: CO2	5.44 %	C4: O2	14.88 %
12:22:11	C1: CO	0.39 %	C2: CO2	5.42 %	C4: O2	14.99 %
12:23:11	C1: CO	0.41 %	C2: CO2	5.17 %	C4: O2	14.42 %
12:24:11	C1: CO	0.44 %	C2: CO2	5.16 %	C4: O2	14.89 %
12:25:11	C1: CO	0.42 %	C2: CO2	5.12 %	C4: O2	15.16 %
12:26:11	C1: CO	0.44 %	C2: CO2	5.01 %	C4: O2	14.15 %
12:27:11	C1: CO	0.41 %	C2: CO2	5.00 %	C4: O2	15.32 %
12:28:11	C1: CO	0.39 %	C2: CO2	4.65 %	C4: O2	14.23 %
12:29:11	C1: CO	0.44 %	C2: CO2	4.87 %	C4: O2	15.37 %
12:30:11	C1: CO	0.48 %	C2: CO2	4.83 %	C4: O2	15.42 %
12:31:11	C1: CO	0.52 %	C2: CO2	4.67 %	C4: O2	15.22 %
12:32:11	C1: CO	0.57 %	C2: CO2	4.55 %	C4: O2	15.54 %
12:33:11	C1: CO	0.62 %	C2: CO2	4.36 %	C4: O2	15.59 %
12:34:11	C1: CO	0.67 %	C2: CO2	4.15 %	C4: O2	15.47 %
12:35:11	C1: CO	0.73 %	C2: CO2	3.93 %	C4: O2	14.65 %
12:36:11	C1: CO	0.68 %	C2: CO2	3.87 %	C4: O2	15.14 %
12:37:11	C1: CO	0.72 %	C2: CO2	3.95 %	C4: O2	15.38 %
12:38:11	C1: CO	0.75 %	C2: CO2	3.80 %	C4: O2	15.17 %
12:39:11	C1: CO	0.77 %	C2: CO2	3.75 %	C4: O2	15.21 %
12:40:11	C1: CO	0.78 %	C2: CO2	3.84 %	C4: O2	15.85 %
12:41:11	C1: CO	0.79 %	C2: CO2	3.81 %	C4: O2	15.79 %
12:42:11	C1: CO	0.82 %	C2: CO2	3.77 %	C4: O2	15.86 %
12:43:11	C1: CO	0.84 %	C2: CO2	3.78 %	C4: O2	15.88 %
12:44:11	C1: CO	0.84 %	C2: CO2	3.65 %	C4: O2	15.49 %
12:45:11	C1: CO	0.90 %	C2: CO2	3.73 %	C4: O2	15.86 %
12:46:11	C1: CO	0.93 %	C2: CO2	3.70 %	C4: O2	15.88 %
12:47:11	C1: CO	0.92 %	C2: CO2	3.69 %	C4: O2	15.92 %
12:48:11	C1: CO	0.92 %	C2: CO2	3.63 %	C4: O2	15.69 %
12:49:11	C1: CO	0.91 %	C2: CO2	3.58 %	C4: O2	15.82 %
12:50:11	C1: CO	0.90 %	C2: CO2	3.57 %	C4: O2	15.98 %
12:51:11	C1: CO	0.91 %	C2: CO2	3.58 %	C4: O2	15.95 %
12:52:11	C1: CO	0.95 %	C2: CO2	3.59 %	C4: O2	15.97 %
12:53:11	C1: CO	0.93 %	C2: CO2	3.42 %	C4: O2	15.56 %
12:54:11	C1: CO	0.98 %	C2: CO2	3.60 %	C4: O2	15.97 %
12:55:11	C1: CO	1.00 %	C2: CO2	3.57 %	C4: O2	15.97 %
12:56:11	C1: CO	1.00 %	C2: CO2	3.54 %	C4: O2	16.02 %

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
12:57:11	C1: CO	0.96 %	C2: CO2	3.52 %	C4: O2	14.90 %
12:58:11	C1: CO	0.99 %	C2: CO2	3.52 %	C4: O2	16.00 %
12:59:11	C1: CO	1.00 %	C2: CO2	3.49 %	C4: O2	15.99 %
13:00:11	C1: CO	1.00 %	C2: CO2	3.45 %	C4: O2	15.94 %
13:01:11	C1: CO	1.01 %	C2: CO2	3.43 %	C4: O2	16.00 %
13:02:11	C1: CO	1.04 %	C2: CO2	3.41 %	C4: O2	16.08 %
13:03:11	C1: CO	1.03 %	C2: CO2	3.35 %	C4: O2	15.87 %
13:04:11	C1: CO	1.03 %	C2: CO2	3.34 %	C4: O2	16.14 %
13:05:11	C1: CO	1.04 %	C2: CO2	3.32 %	C4: O2	16.13 %
13:06:11	C1: CO	1.04 %	C2: CO2	3.34 %	C4: O2	16.18 %
13:07:11	C1: CO	1.05 %	C2: CO2	3.32 %	C4: O2	16.12 %
13:08:11	C1: CO	1.01 %	C2: CO2	3.11 %	C4: O2	15.59 %
13:09:11	C1: CO	0.96 %	C2: CO2	3.38 %	C4: O2	15.98 %
13:10:11	C1: CO	0.98 %	C2: CO2	3.31 %	C4: O2	15.97 %
13:11:11	C1: CO	1.01 %	C2: CO2	3.30 %	C4: O2	16.24 %
13:12:11	C1: CO	1.01 %	C2: CO2	3.28 %	C4: O2	16.24 %
13:13:11	C1: CO	1.04 %	C2: CO2	3.31 %	C4: O2	16.15 %
13:14:11	C1: CO	1.04 %	C2: CO2	3.19 %	C4: O2	15.80 %
13:15:11	C1: CO	1.09 %	C2: CO2	3.24 %	C4: O2	16.19 %
13:16:11	C1: CO	1.10 %	C2: CO2	3.21 %	C4: O2	16.18 %
13:17:11	C1: CO	1.11 %	C2: CO2	3.20 %	C4: O2	16.24 %
13:18:11	C1: CO	1.11 %	C2: CO2	3.19 %	C4: O2	16.25 %
13:19:11	C1: CO	1.12 %	C2: CO2	3.10 %	C4: O2	15.58 %
13:20:11	C1: CO	1.15 %	C2: CO2	3.20 %	C4: O2	16.20 %
13:21:11	C1: CO	1.18 %	C2: CO2	3.21 %	C4: O2	16.22 %
13:22:11	C1: CO	1.18 %	C2: CO2	3.17 %	C4: O2	16.19 %
13:23:11	C1: CO	1.15 %	C2: CO2	3.04 %	C4: O2	15.81 %
13:24:11	C1: CO	1.18 %	C2: CO2	3.02 %	C4: O2	15.81 %
13:25:11	C1: CO	1.21 %	C2: CO2	3.14 %	C4: O2	16.28 %
13:26:11	C1: CO	1.19 %	C2: CO2	3.07 %	C4: O2	16.23 %
13:27:11	C1: CO	1.18 %	C2: CO2	3.02 %	C4: O2	16.06 %
13:28:11	C1: CO	1.20 %	C2: CO2	3.03 %	C4: O2	15.22 %
13:29:11	C1: CO	1.20 %	C2: CO2	2.99 %	C4: O2	16.17 %
13:30:11	C1: CO	1.17 %	C2: CO2	2.87 %	C4: O2	14.54 %
13:31:11	C1: CO	1.22 %	C2: CO2	2.94 %	C4: O2	16.36 %
13:32:11	C1: CO	1.23 %	C2: CO2	2.88 %	C4: O2	16.27 %
13:33:11	C1: CO	1.19 %	C2: CO2	2.87 %	C4: O2	15.49 %
13:34:11	C1: CO	1.20 %	C2: CO2	2.72 %	C4: O2	15.37 %
13:35:11	C1: CO	1.20 %	C2: CO2	2.84 %	C4: O2	16.06 %
13:36:11	C1: CO	1.21 %	C2: CO2	2.87 %	C4: O2	16.46 %
13:37:11	C1: CO	1.22 %	C2: CO2	2.88 %	C4: O2	16.46 %
13:38:11	C1: CO	1.20 %	C2: CO2	2.84 %	C4: O2	15.34 %
13:39:11	C1: CO	1.21 %	C2: CO2	2.84 %	C4: O2	16.47 %

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
13:40:11	C1: CO	1.20 %	C2: CO2	2.84 %	C4: O2	16.45 %
13:41:11	C1: CO	1.22 %	C2: CO2	2.87 %	C4: O2	16.44 %
13:42:11	C1: CO	1.16 %	C2: CO2	2.79 %	C4: O2	16.23 %
13:43:11	C1: CO	1.20 %	C2: CO2	2.68 %	C4: O2	16.65 %
13:44:11	C1: CO	1.13 %	C2: CO2	2.65 %	C4: O2	16.75 %
13:45:11	C1: CO	1.11 %	C2: CO2	2.59 %	C4: O2	16.63 %
13:46:11	C1: CO	1.14 %	C2: CO2	2.59 %	C4: O2	16.81 %
13:47:11	C1: CO	1.09 %	C2: CO2	2.45 %	C4: O2	15.52 %
13:48:11	C1: CO	1.17 %	C2: CO2	2.58 %	C4: O2	16.80 %
13:49:11	C1: CO	1.20 %	C2: CO2	2.54 %	C4: O2	16.79 %
13:50:11	C1: CO	1.23 %	C2: CO2	2.43 %	C4: O2	16.85 %
13:51:11	C1: CO	1.22 %	C2: CO2	2.36 %	C4: O2	16.89 %
13:52:11	C1: CO	1.28 %	C2: CO2	2.29 %	C4: O2	16.93 %
13:53:11	C1: CO	1.32 %	C2: CO2	2.16 %	C4: O2	16.97 %
13:54:11	C1: CO	1.33 %	C2: CO2	2.10 %	C4: O2	17.00 %
13:55:11	C1: CO	1.31 %	C2: CO2	2.09 %	C4: O2	15.98 %
13:56:11	C1: CO	1.35 %	C2: CO2	2.06 %	C4: O2	17.09 %
13:57:11	C1: CO	1.38 %	C2: CO2	2.00 %	C4: O2	16.91 %
13:58:11	C1: CO	1.36 %	C2: CO2	2.03 %	C4: O2	17.18 %
13:59:11	C1: CO	1.38 %	C2: CO2	1.92 %	C4: O2	17.12 %
14:00:11	C1: CO	1.40 %	C2: CO2	1.85 %	C4: O2	17.15 %
14:01:11	C1: CO	1.40 %	C2: CO2	1.87 %	C4: O2	17.26 %
14:02:11	C1: CO	1.30 %	C2: CO2	1.84 %	C4: O2	17.25 %
14:03:11	C1: CO	1.23 %	C2: CO2	1.65 %	C4: O2	16.76 %
14:04:11	C1: CO	1.36 %	C2: CO2	1.52 %	C4: O2	16.16 %
14:05:11	C1: CO	1.40 %	C2: CO2	1.51 %	C4: O2	17.51 %
14:06:11	C1: CO	1.40 %	C2: CO2	1.49 %	C4: O2	17.33 %
14:07:11	C1: CO	1.43 %	C2: CO2	1.52 %	C4: O2	17.50 %
14:08:11	C1: CO	1.39 %	C2: CO2	1.48 %	C4: O2	17.54 %
14:09:11	C1: CO	1.40 %	C2: CO2	1.46 %	C4: O2	17.54 %
14:10:11	C1: CO	1.37 %	C2: CO2	1.41 %	C4: O2	17.24 %
14:11:11	C1: CO	0.76 %	C2: CO2	0.40 %	C4: O2	17.35 %
14:12:11	C1: CO	0.17 %	C2: CO2	0.06 %	C4: O2	19.71 %
14:13:11	C1: CO	0.09 %	C2: CO2	0.11 %	C4: O2	20.05 %
14:14:11	C1: CO	0.09 %	C2: CO2	0.09 %	C4: O2	20.17 %
14:15:11	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	19.37 %
14:16:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.64 %
14:17:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.62 %
14:18:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.62 %
14:19:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.62 %
14:20:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.64 %
14:21:11	C1: CO	0.08 %	C2: CO2	0.08 %	C4: O2	20.64 %
14:22:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.18 %

SBI CW2500 26-Jun-13 Run #2

Time	CO		CO_2		O_2	
14:23:11	C1: CO	0.05 %	C2: CO2	0.05 %	C4: O2	20.01 %
14:24:11	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.64 %
14:25:11	C1: CO	0.04 %	C2: CO2	0.04 %	C4: O2	20.61 %
14:26:11	C1: CO	0.07 %	C2: CO2	0.06 %	C4: O2	20.61 %
14:27:11	C1: CO	0.07 %	C2: CO2	0.06 %	C4: O2	20.64 %
14:28:11	C1: CO	0.07 %	C2: CO2	0.06 %	C4: O2	20.61 %
14:29:11	C1: CO	0.07 %	C2: CO2	0.06 %	C4: O2	20.63 %
14:30:11	C1: CO	0.05 %	C2: CO2	0.04 %	C4: O2	20.61 %
14:31:11	C1: CO	0.05 %	C2: CO2	0.04 %	C4: O2	20.63 %
14:32:11	C1: CO	0.04 %	C2: CO2	0.04 %	C4: O2	20.64 %
14:33:11	C1: CO	0.04 %	C2: CO2	0.04 %	C4: O2	20.60 %
14:34:11	C1: CO	0.03 %	C2: CO2	0.03 %	C4: O2	20.60 %
14:35:11	C1: CO	0.05 %	C2: CO2	0.04 %	C4: O2	20.59 %
14:36:11	C1: CO	0.07 %	C2: CO2	0.06 %	C4: O2	20.63 %
14:37:11	C1: CO	0.06 %	C2: CO2	0.05 %	C4: O2	20.60 %
14:38:11	C1: CO	0.05 %	C2: CO2	0.05 %	C4: O2	20.63 %
14:39:11	C1: CO	0.06 %	C2: CO2	0.05 %	C4: O2	20.63 %
14:40:11	C1: CO	0.06 %	C2: CO2	0.05 %	C4: O2	20.26 %
14:41:11	C1: CO	0.06 %	C2: CO2	0.05 %	C4: O2	20.63 %

26.06.2013

Appendix F: Test data
Run 3

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	3

EPA Method 28
Pre Burn Data

Coal Bed Range	2.0	to	2.4

Average Firebox Temp, °F	441.2

Final Coal Bed Wt, lb	2.09

Interval	10

Time		Temperature Data											
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	0	72.13	240.6	410.7	151	85.87	114.4	115.1	127			14.17	12.08
1	10	73.14	178.2	689.4	335	126	185.7	179.1	194.8			11.53	2.64
2	20	74.65	179.2	716.7	440.2	172.2	258.1	246.5	238.1			9.45	2.08
3	30	77.14	182.9	714.9	490.8	217.1	313.3	307.5	286.9			7.32	2.13
4	40	79.15	154.8	726.6	518.5	253.1	352.3	357.6	378.2			5.41	1.91
5	50	80.61	171	679.8	531.8	283.5	380.3	392.2	447.4			3.91	1.50
6	60	82.69	165.6	637.6	516.1	310.2	420	412.2	502.1			2.72	1.19
7	70	82.68	153	571.6	488.8	327.5	435.3	419.8	530.1			2.13	0.59
8	80	81.6	189.5	526.1	480.9	331.7	438.6	421.8	532.7			2.09	0.04
9													
10													
11													
12													
13													
14													
15													
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26													
27													
28													
29													
30													

Test Engineer:_____

Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	3

Barometer, In. Hg		RH, %	Sample Box Correction (y) Factors	
Start	29.85	81	Meter Box (A)	0.977
End	29.85	91	Meter Box (B)	0.986
Duration of Test, Min		100		

Leak Check, cfm @ in Hg	
Train A	Train B
0.003@5	0.003@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0.013	0.00	0.00	0.060	9.76	9.76	742.675	572.039	99.87	99.87	0.00	0.00
10	0.013	0.00	0.00	0.095	7.15	2.61	744.275	573.559	105.35	102.32	0.00	0.00
20	0.013	0.00	0.00	0.090	4.56	2.59	745.812	575.130	101.28	105.84	0.00	0.00
30	0.013	0.00	0.00	0.090	2.42	2.14	747.365	576.615	101.69	99.42	0.00	0.00
40	0.013	0.00	0.00	0.075	1.58	0.84	748.999	578.240	103.90	105.66	0.00	0.00
50	0.013	0.00	0.00	0.070	1.23	0.35	750.596	579.759	99.97	97.24	0.00	0.00
60	0.013	0.00	0.00	0.065	0.94	0.29	752.185	581.325	98.58	99.36	0.00	0.00
70	0.013	0.00	0.00	0.065	0.67	0.27	753.772	582.909	97.82	99.84	0.00	0.00
80	0.013	0.00	0.00	0.060	0.41	0.26	755.348	584.441	96.63	96.05	0.00	0.00
90	0.013	0.00	0.00	0.060	0.18	0.23	756.936	585.991	97.16	96.98	0.00	0.00
100	0.013	0.00	0.00	0.060	0.00	0.18	758.514	587.529	96.31	95.99	0.00	0.00

Test Engineer:_____

Date:_____

			VS (1)	0.05009113					
			VS (2)	0.05071716	STD Tunnel Flow:		133.54		
100				625.309091	15.109	14.923	7.89	99.87	99.87
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft^3 (1)	STD Sample Ft^3 (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	448.7		0.013	629.5			7.917		
10	480.3		0.013	679.6	1.526	1.465	8.226	105.35	102.32
20	513.7		0.013	681	1.467	1.514	8.235	101.28	105.84
30	537.8		0.013	673	1.482	1.431	8.186	101.69	99.42
40	506.9		0.013	635	1.558	1.565	7.952	103.90	105.66
50	475.4		0.013	615.6	1.523	1.463	7.829	99.97	97.24
60	448.2		0.013	604.7	1.515	1.508	7.760	98.58	99.36
70	425.5		0.013	596.7	1.514	1.526	7.708	97.82	99.84
80	402.7		0.013	590.4	1.503	1.476	7.667	96.63	96.05
90	381.4		0.013	587.9	1.515	1.493	7.651	97.16	96.98
100	362.7	362.72	0.013	585	1.505	1.482	7.632	96.31	95.99

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 26, 2013
Test Run Number:	3

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	22.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI-214	Time:	15:20	Temp., °F:	80
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	0.83	19.2	19.3	20.0
2	9.00	0.90	20.5	19.8	20.5
3	9.00	0.89	20.4	18.9	21.4
4	9.00	1.11	21.7	19.2	21.7
5	17.00	2.01	21.4	19.5	21.5
6	17.00	1.95	21.5	18.3	21.0
7	17.00	1.75	22.3	20.6	22.3
8	17.00	1.90	22.3	21.7	22.3
9	17.00	1.86	21.4	20.6	21.3
10					
11					
12					
Total Weight		13.2	Average, %db		20.8

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	15:30	Temp., °F:	80
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.53		21.4	19.4	21.5
2	17.00	2.55		22.3	20.4	22.3
3	17.00	2.34		19.9	20.1	20.4
4	17.00	2.34		20.3	19.4	20.6
5						
6						
7						
8						
Totals		9.8	0.0			
% of Weight		100	0			
Total weight, wet, lb.		9.76		Average Moisture, dry		20.67
Total weight, dry, kg		3.67		Average Moisture, wet		17.13

Test Engineer:_____ Date:_____

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 26, 2013
Test Run Number: 3

Dry Burn-Rate, kg/hr:	**2.20**	
Emission-Rate, g/hr:	**1.79**	
Adjusted Emission-Rate, g/hr :	**2.95**	
Duration of Test, Minutes	100	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	742.675	572.039
Dry Gas Meter Ending Reading, ft^3	758.514	587.529
Barometric Pressure Correction Factor	0.998	0.998
Dry Gas Meter Calibration Factors (γ factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.979	0.980
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**15.117**	**14.930**
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**133.545**	
Total Tunnel Volume, scf	**13354.490**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	883.409	894.488
Sample Particulate Mass, mg	3.2	3.5
Total Emissions, grams	2.827	3.131
Emission-Rate, g/hr	1.70	1.88
Adjusted Emission Rates, g/hr	**2.82**	**3.07**
Deviation, %	4.23%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	86.98	88.21
Post-Test Leak Check, cfm @ in. Hg vac.	0.003@5	0.003@5
Average Firebox Surface Temperture delta-T, °F	85.96	
Maximum Ambient Temperture, °F	90	
Mimimum Ambient Temperature, °F	81	
Fuel Properties		
Wet Fuel Load Weight, lb.	9.76	
Dry-Basis Fuel Load Moisture Content, %	20.67	
Wet-Basis Fuel Load Moisture Content, %	17.13	
Coal Bed Range, lb.	2.00	2.40
Actual Coal Bed, Lb.	2.09	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	9		115.2	
B - Rear Filter Catch	Filter	10		117.6	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			235.9	232.8	3.1
Probe & Filter Holder	Probe	19	140113.6	140113.5	0.1
			Total Particulate, mg		**3.2**

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	11		118.1	
B - Rear Filter Catch	Filter	12		115.7	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			237.3	233.8	3.5
Probe & Filter Holder	Probe	20	139063.0	139063.2	0.0
			Total Particulate, mg		**3.5**

Test Engineer:_____ Date:_____

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 26, 2013
Test Run Number: 3

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0100	169	0.1000
A2	0.0125	170	0.1118
A3	0.0125	172	0.1118
A4	0.0125	172	0.1118
A Center	0.0125	169	0.1118
B1	0.0100	169	0.1000
B2	0.0125	170	0.1118
B3	0.0125	172	0.1118
B4	0.0125	172	0.1118
B Center	0.0125	172	0.1118
Averages	0.012	170.56	0.1089

Tunnel Diameter	8.000	inches
Tunnel Static	-0.073	in. H2O
Tunnel Area	0.34907	Ft2
Pitot Correction	0.9736	factor
Baro. Pressure	29.85	
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	7.924	Ft/ Sec
Initial Flow	**133.04**	Ft3/min

Test Engineer:_____

Date:_____

SBI CW2500 26-Jun-13 Run #3

Time	CO		CO^2		O^2	
16:46:25	C1: CO	0.31 %	C2: CO2	9.65 %	C4: O2	11.1 %
16:47:25	C1: CO	0.32 %	C2: CO2	9.57 %	C4: O2	11.2 %
16:48:25	C1: CO	0.33 %	C2: CO2	9.28 %	C4: O2	10.2 %
16:49:25	C1: CO	0.33 %	C2: CO2	9.12 %	C4: O2	11.6 %
16:50:25	C1: CO	0.31 %	C2: CO2	8.79 %	C4: O2	11.8 %
16:51:25	C1: CO	0.29 %	C2: CO2	8.21 %	C4: O2	12 %
16:52:25	C1: CO	0.28 %	C2: CO2	7.83 %	C4: O2	12.6 %
16:53:25	C1: CO	0.30 %	C2: CO2	7.69 %	C4: O2	12.8 %
16:54:25	C1: CO	0.29 %	C2: CO2	7.41 %	C4: O2	13 %
16:55:25	C1: CO	0.27 %	C2: CO2	7.17 %	C4: O2	13.2 %
16:56:25	C1: CO	0.30 %	C2: CO2	7.16 %	C4: O2	13.4 %
16:57:25	C1: CO	0.28 %	C2: CO2	7.07 %	C4: O2	13.4 %
16:58:25	C1: CO	0.31 %	C2: CO2	6.98 %	C4: O2	13.5 %
16:59:25	C1: CO	0.31 %	C2: CO2	6.84 %	C4: O2	13.6 %
17:00:25	C1: CO	0.32 %	C2: CO2	6.7 %	C4: O2	13.7 %
17:01:25	C1: CO	0.33 %	C2: CO2	2.71 %	C4: O2	14.3 %
17:02:25	C1: CO	0.34 %	C2: CO2	5.02 %	C4: O2	17.6 %
17:03:25	C1: CO	0.39 %	C2: CO2	1.49 %	C4: O2	15.7 %
17:04:25	C1: CO	0.81 %	C2: CO2	7.04 %	C4: O2	18 %
17:05:25	C1: CO	0.65 %	C2: CO2	12.2 %	C4: O2	12.1 %
17:06:25	C1: CO	0.68 %	C2: CO2	14.2 %	C4: O2	7.25 %
17:07:25	C1: CO	0.55 %	C2: CO2	15.3 %	C4: O2	5.76 %
17:08:25	C1: CO	0.45 %	C2: CO2	15.9 %	C4: O2	5.17 %
17:09:25	C1: CO	0.44 %	C2: CO2	16.4 %	C4: O2	4.3 %
17:10:25	C1: CO	0.42 %	C2: CO2	16.8 %	C4: O2	4.29 %
17:11:25	C1: CO	0.40 %	C2: CO2	16.9 %	C4: O2	4 %
17:12:25	C1: CO	0.41 %	C2: CO2	16.9 %	C4: O2	4.22 %
17:13:25	C1: CO	0.39 %	C2: CO2	16 %	C4: O2	4.11 %
17:14:25	C1: CO	0.40 %	C2: CO2	16.1 %	C4: O2	4.32 %
17:15:25	C1: CO	0.41 %	C2: CO2	16.1 %	C4: O2	4.77 %
17:16:25	C1: CO	0.38 %	C2: CO2	16 %	C4: O2	4.1 %
17:17:25	C1: CO	0.40 %	C2: CO2	16 %	C4: O2	5.21 %
17:18:25	C1: CO	0.39 %	C2: CO2	15.8 %	C4: O2	5.3 %
17:19:25	C1: CO	0.42 %	C2: CO2	15.5 %	C4: O2	5.52 %
17:20:25	C1: CO	0.41 %	C2: CO2	15.5 %	C4: O2	5.77 %
17:21:25	C1: CO	0.40 %	C2: CO2	15.3 %	C4: O2	5.8 %
17:22:25	C1: CO	0.43 %	C2: CO2	15.3 %	C4: O2	5.82 %
17:23:25	C1: CO	0.41 %	C2: CO2	15.1 %	C4: O2	4.72 %

SBI CW2500 26-Jun-13 Run #3

Time	CO		CO^2		O^2	
17:24:25	C1: CO	0.39 %	C2: CO2	14.4 %	C4: O2	5.39 %
17:25:25	C1: CO	0.39 %	C2: CO2	15 %	C4: O2	6.22 %
17:26:25	C1: CO	0.40 %	C2: CO2	14.2 %	C4: O2	5.26 %
17:27:25	C1: CO	0.41 %	C2: CO2	15 %	C4: O2	6 %
17:28:25	C1: CO	0.41 %	C2: CO2	15.3 %	C4: O2	6.02 %
17:29:25	C1: CO	0.42 %	C2: CO2	15.5 %	C4: O2	5.54 %
17:30:25	C1: CO	0.43 %	C2: CO2	15.4 %	C4: O2	4.44 %
17:31:25	C1: CO	0.44 %	C2: CO2	14.9 %	C4: O2	5.44 %
17:32:25	C1: CO	0.44 %	C2: CO2	13.9 %	C4: O2	5.57 %
17:33:25	C1: CO	0.44 %	C2: CO2	12.9 %	C4: O2	6.58 %
17:34:25	C1: CO	0.43 %	C2: CO2	11.8 %	C4: O2	7.81 %
17:35:25	C1: CO	0.40 %	C2: CO2	10.8 %	C4: O2	8.9 %
17:36:25	C1: CO	0.37 %	C2: CO2	9.96 %	C4: O2	9.74 %
17:37:25	C1: CO	0.37 %	C2: CO2	9.15 %	C4: O2	10.5 %
17:38:25	C1: CO	0.36 %	C2: CO2	8.68 %	C4: O2	11.4 %
17:39:25	C1: CO	0.38 %	C2: CO2	8.09 %	C4: O2	11.9 %
17:40:25	C1: CO	0.38 %	C2: CO2	7.77 %	C4: O2	12.4 %
17:41:25	C1: CO	0.39 %	C2: CO2	7.51 %	C4: O2	12.6 %
17:42:25	C1: CO	0.39 %	C2: CO2	7.36 %	C4: O2	12.7 %
17:43:25	C1: CO	0.41 %	C2: CO2	7.32 %	C4: O2	13 %
17:44:25	C1: CO	0.40 %	C2: CO2	7.1 %	C4: O2	13.2 %
17:45:25	C1: CO	0.41 %	C2: CO2	6.93 %	C4: O2	13.4 %
17:46:25	C1: CO	0.44 %	C2: CO2	6.85 %	C4: O2	13.6 %
17:47:25	C1: CO	0.45 %	C2: CO2	6.63 %	C4: O2	13.6 %
17:48:25	C1: CO	0.42 %	C2: CO2	6.89 %	C4: O2	13.5 %
17:49:25	C1: CO	0.43 %	C2: CO2	6.7 %	C4: O2	13.5 %
17:50:25	C1: CO	0.45 %	C2: CO2	6.61 %	C4: O2	13.8 %
17:51:25	C1: CO	0.47 %	C2: CO2	6.6 %	C4: O2	13.8 %
17:52:25	C1: CO	0.48 %	C2: CO2	6.44 %	C4: O2	13.8 %
17:53:25	C1: CO	0.48 %	C2: CO2	6.35 %	C4: O2	14 %
17:54:25	C1: CO	0.48 %	C2: CO2	6.41 %	C4: O2	14.1 %
17:55:25	C1: CO	0.49 %	C2: CO2	6.28 %	C4: O2	13.8 %
17:56:25	C1: CO	0.48 %	C2: CO2	6.19 %	C4: O2	14.1 %
17:57:25	C1: CO	0.49 %	C2: CO2	6.18 %	C4: O2	14.2 %
17:58:25	C1: CO	0.49 %	C2: CO2	5.98 %	C4: O2	13.6 %
17:59:25	C1: CO	0.53 %	C2: CO2	6.15 %	C4: O2	14.2 %
18:00:25	C1: CO	0.54 %	C2: CO2	6.02 %	C4: O2	14.2 %
18:01:25	C1: CO	0.53 %	C2: CO2	6.03 %	C4: O2	14.4 %

SBI CW2500 26-Jun-13 Run #3

Time	CO		CO^2		O^2	
18:02:25	C1: CO	0.55 %	C2: CO2	5.91 %	C4: O2	14.4 %
18:03:25	C1: CO	0.59 %	C2: CO2	5.81 %	C4: O2	14.4 %
18:04:25	C1: CO	0.61 %	C2: CO2	5.69 %	C4: O2	14.5 %
18:05:25	C1: CO	0.64 %	C2: CO2	5.62 %	C4: O2	14.6 %
18:06:25	C1: CO	0.63 %	C2: CO2	5.31 %	C4: O2	14.3 %
18:07:25	C1: CO	0.67 %	C2: CO2	5.51 %	C4: O2	14.8 %
18:08:25	C1: CO	0.70 %	C2: CO2	5.22 %	C4: O2	14.8 %
18:09:25	C1: CO	0.72 %	C2: CO2	4.67 %	C4: O2	14.3 %
18:10:25	C1: CO	0.77 %	C2: CO2	4.75 %	C4: O2	15 %
18:11:25	C1: CO	0.79 %	C2: CO2	4.6 %	C4: O2	14.8 %
18:12:25	C1: CO	0.82 %	C2: CO2	4.71 %	C4: O2	15.3 %
18:13:25	C1: CO	0.83 %	C2: CO2	4.61 %	C4: O2	15.3 %
18:14:25	C1: CO	0.88 %	C2: CO2	4.7 %	C4: O2	15.3 %
18:15:25	C1: CO	0.86 %	C2: CO2	4.49 %	C4: O2	15.3 %
18:16:25	C1: CO	0.91 %	C2: CO2	4.33 %	C4: O2	15.5 %
18:17:25	C1: CO	0.94 %	C2: CO2	4.3 %	C4: O2	15.6 %
18:18:25	C1: CO	0.96 %	C2: CO2	4.16 %	C4: O2	15.6 %
18:19:25	C1: CO	1.00 %	C2: CO2	4.04 %	C4: O2	15.7 %
18:20:25	C1: CO	1.02 %	C2: CO2	3.96 %	C4: O2	15.8 %
18:21:25	C1: CO	0.99 %	C2: CO2	3.89 %	C4: O2	15.8 %
18:22:25	C1: CO	1.01 %	C2: CO2	3.85 %	C4: O2	15.9 %
18:23:25	C1: CO	1.06 %	C2: CO2	3.93 %	C4: O2	15.8 %
18:24:25	C1: CO	1.06 %	C2: CO2	3.92 %	C4: O2	14.9 %
18:25:25	C1: CO	1.07 %	C2: CO2	3.85 %	C4: O2	15.8 %
18:26:25	C1: CO	1.06 %	C2: CO2	3.69 %	C4: O2	15.1 %
18:27:25	C1: CO	1.14 %	C2: CO2	3.61 %	C4: O2	16 %
18:28:25	C1: CO	1.16 %	C2: CO2	3.58 %	C4: O2	16 %
18:29:25	C1: CO	1.16 %	C2: CO2	3.55 %	C4: O2	16.1 %
18:30:25	C1: CO	1.17 %	C2: CO2	3.47 %	C4: O2	16 %
18:31:25	C1: CO	1.19 %	C2: CO2	3.46 %	C4: O2	16.1 %
18:32:25	C1: CO	1.17 %	C2: CO2	3.4 %	C4: O2	16.1 %
18:33:25	C1: CO	1.16 %	C2: CO2	3.35 %	C4: O2	16.2 %
18:34:25	C1: CO	1.17 %	C2: CO2	3.25 %	C4: O2	16.2 %
18:35:25	C1: CO	1.14 %	C2: CO2	3.18 %	C4: O2	15.9 %
18:36:25	C1: CO	1.18 %	C2: CO2	3.18 %	C4: O2	16.3 %
18:37:25	C1: CO	1.14 %	C2: CO2	3.07 %	C4: O2	16.3 %
18:38:25	C1: CO	1.18 %	C2: CO2	3.06 %	C4: O2	16.4 %
18:39:25	C1: CO	1.15 %	C2: CO2	3 %	C4: O2	16.5 %

SBI CW2500 26-Jun-13 Run #3

Time	CO		CO^2		O^2	
18:40:25	C1: CO	1.14 %	C2: CO2	2.91 %	C4: O2	16.4 %
18:41:25	C1: CO	1.18 %	C2: CO2	2.89 %	C4: O2	16.6 %
18:42:25	C1: CO	1.15 %	C2: CO2	2.77 %	C4: O2	15.5 %
18:43:25	C1: CO	1.13 %	C2: CO2	2.71 %	C4: O2	15.6 %
18:44:25	C1: CO	1.14 %	C2: CO2	2.67 %	C4: O2	16.7 %
18:45:25	C1: CO	1.15 %	C2: CO2	2.58 %	C4: O2	16.5 %
18:46:25	C1: CO	1.15 %	C2: CO2	2.48 %	C4: O2	16.7 %
18:47:25	C1: CO	1.15 %	C2: CO2	2.33 %	C4: O2	17 %
18:48:25	C1: CO	1.11 %	C2: CO2	2.15 %	C4: O2	17.2 %
18:49:25	C1: CO	1.11 %	C2: CO2	2.09 %	C4: O2	17.3 %
18:50:25	C1: CO	1.09 %	C2: CO2	2.02 %	C4: O2	17.3 %
18:51:25	C1: CO	1.10 %	C2: CO2	2.02 %	C4: O2	17.4 %
18:52:25	C1: CO	1.04 %	C2: CO2	1.86 %	C4: O2	16.5 %
18:53:25	C1: CO	1.11 %	C2: CO2	2.01 %	C4: O2	17.4 %
18:54:25	C1: CO	1.07 %	C2: CO2	1.89 %	C4: O2	17.1 %
18:55:25	C1: CO	1.11 %	C2: CO2	1.84 %	C4: O2	17.5 %
18:56:25	C1: CO	1.11 %	C2: CO2	1.65 %	C4: O2	16.5 %
18:57:25	C1: CO	1.08 %	C2: CO2	1.68 %	C4: O2	16.5 %
18:58:25	C1: CO	1.12 %	C2: CO2	1.67 %	C4: O2	17.7 %
18:59:25	C1: CO	1.05 %	C2: CO2	1.47 %	C4: O2	16.8 %
19:00:25	C1: CO	1.11 %	C2: CO2	1.52 %	C4: O2	17.7 %
19:01:25	C1: CO	1.11 %	C2: CO2	1.5 %	C4: O2	17.7 %
19:02:25	C1: CO	1.10 %	C2: CO2	1.49 %	C4: O2	17.9 %
19:03:25	C1: CO	1.06 %	C2: CO2	1.39 %	C4: O2	17.9 %
19:04:25	C1: CO	1.04 %	C2: CO2	1.34 %	C4: O2	18 %
19:05:25	C1: CO	1.08 %	C2: CO2	1.36 %	C4: O2	18.1 %

Appendix F: Test data
Run 4

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	4

EPA Method 28
Pre Burn Data

Coal Bed Range	1.8	to	2.2

Average Firebox Temp, °F	305.54

Final Coal Bed Wt, lb	1.87

Interval	10

Time		Temperature Data											
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	0	86.67	178.1	313.9	388.8	324.8	388.3	475.8	368.8			2.81	0.94
1	10	86.4	117.2	375.5	499.7	391.1	485.4	497.8	363			2.57	0.24
2	20	86.69	107.9	315.8	431.3	341.8	416.9	432.8	524.6			2.49	0.08
3	30	82.67	101.6	287.1	380.4	310.1	388.8	393.5	482.9			2.43	0.06
4	40	77.36	93.94	287.2	344.5	288	336.2	359.8	448.2			2.25	0.18
5	50	72.68	83.29	252.8	317.6	267.3	311	331.5	416.8			2.08	0.17
6	60	71.47	81.26	244	299.9	256.2	296.6	310.8	392			1.93	0.15
7	70	78.34	105.1	287.5	292.4	264.8	290.9	299.9	378.7			1.87	0.06
8													
9													
10													
11													
12													
13													
14													
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28													
29													
30													

Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	
Manufacturer:	SBI
Model:	CW2500
Sample ID No:	
Test Date:	June 27, 2013
Test Run No:	4

Temperature Data

Firebox Temp Start	311.32
Firebox Temp End	247.78
Firebox Delta-T	63.5

Max Filter Temps	
Train A	Train B
88.56	84.96

Interval	10	Duration of Test, Min	200

Time		Temperature Data													
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Train A Filter	Train B Filter	Train A DGM	Train B DGM
0	0	78.39	99.51	252.2	295.5	285.7	300.2	298	377.2		77.13	77.61	76.88	76.7
1	10	80.09	101.9	269.8	304.8	346.5	324.9	281.9	348.5		82.32	80.81	77.06	76.8
2	20	80.63	101.9	331.4	305.5	351.1	317.9	264.2	317.4		83.49	81.16	77.16	76.87
3	30	82.23	110.2	419.8	350.2	341.2	316.1	262.1	316.2		84.92	82.18	77.255	76.965
4	40	86.13	122.9	500.1	440	232.4	273	282.2	345.3		87.05	83.98	77.385	77.035
5	50	81.58	123.1	515.2	505.8	212.5	274.8	307.4	378.3		88.46	84.96	77.44	77.055
6	60	78.92	115.8	449.6	512.2	204.8	285.4	332.1	407.7		88.56	84.74	77.515	77.115
7	70	77.48	107.5	374.4	466.8	202.6	293.8	346.5	420.7		87.36	83.73	77.575	77.155
8	80	74.69	101.8	333.4	413.2	202.7	295.9	348.7	422		86.01	82.7	77.635	77.185
9	90	72.64	97.6	301.6	371.6	203.7	295.3	343.6	414.6		84.72	81.78	77.65	77.195
10	100	72.07	95	285.9	343.6	205.3	293.4	334.5	404.4		83.71	81.03	77.61	77.18
11	110	72.29	93.31	276.4	327.3	207.2	290	326.1	394.8		82.98	80.45	77.575	77.14
12	120	71.87	91.75	265.1	316.3	209	285	318.2	386.1		82.42	80.06	77.55	77.11
13	130	70.97	90.31	257.7	305.4	208	274.6	308.7	375.9		82.07	79.87	77.615	77.175
14	140	70.32	89.15	249.5	295.3	206.6	265.1	298.1	363.3		81.68	79.59	77.595	77.175
15	150	77.32	90.56	245.2	287.8	206.7	258.1	291.2	353.7		81.61	79.65	77.59	77.15
16	160	79.32	91.52	239.5	281.3	205.1	253.5	285.6	346.3		81.84	79.87	77.66	77.22
17	170	79.82	91.65	232.8	273.2	201.8	247.7	278.9	338.8		81.99	80.05	77.715	77.255
18	180	80.27	91.36	225.5	264	197.6	238.1	271.9	335.2		82.03	80.21	77.77	77.33
19	190	79.41	91.08	219	255.5	193.2	228.6	264.7	331.6		82.02	80.28	77.91	77.5
20	200	79.37	90.67	213.9	247.5	188.4	220.4	258	324.6		81.93	80.13	77.935	77.515
21														
22														
23														

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	4

Barometer, In. Hg		RH, %		Sample Box Correction (γ) Factors	
Start	29.85	93		Meter Box (A)	0.977
End	29.88	82		Meter Box (B)	0.986
Duration of Test, Min		200			

Leak Check, cfm @ in Hg	
Train A	Train B
0.0035@5	0.0035@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

Time	Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0.013	0.00	0.00	0.040	8.80	**8.80**	758.535	587.563	**99.99**	**99.99**	0.00	0.00
10	0.013	0.00	0.00	0.040	8.13	**0.67**	760.145	589.123	**100.99**	**100.79**	0.00	0.00
20	0.013	0.00	0.00	0.055	7.38	**0.75**	761.715	590.650	**98.47**	**98.65**	0.00	0.00
30	0.013	0.00	0.00	0.065	6.30	**1.08**	763.297	592.197	**99.93**	**100.66**	0.00	0.00
40	0.013	0.00	0.00	0.070	4.81	**1.49**	764.866	593.727	**100.18**	**100.64**	0.00	0.00
50	0.013	0.00	0.00	0.070	3.44	**1.37**	766.462	595.299	**101.92**	**103.41**	0.00	0.00
60	0.013	0.00	0.00	0.065	2.46	**0.98**	768.064	596.866	**101.64**	**102.43**	0.00	0.00
70	0.013	0.00	0.00	0.055	1.95	**0.51**	769.656	598.442	**100.27**	**102.27**	0.00	0.00
80	0.013	0.00	0.00	0.050	1.61	**0.34**	771.263	600.015	**100.69**	**101.55**	0.00	0.00
90	0.013	0.00	0.00	0.050	1.39	**0.22**	772.860	601.589	**99.69**	**101.23**	0.00	0.00
100	0.013	0.00	0.00	0.045	1.19	**0.20**	774.468	603.160	**100.14**	**100.81**	0.00	0.00
110	0.013	0.00	0.00	0.045	1.01	**0.18**	776.079	604.721	**100.19**	**100.02**	0.00	0.00
120	0.013	0.00	0.00	0.040	0.82	**0.19**	777.682	606.272	**99.55**	**99.25**	0.00	0.00
130	0.013	0.00	0.00	0.040	0.64	**0.18**	779.293	607.820	**99.91**	**98.91**	0.00	0.00
140	0.013	0.00	0.00	0.040	0.49	**0.15**	780.896	609.352	**99.31**	**97.79**	0.00	0.00
150	0.013	0.00	0.00	0.040	0.38	**0.11**	782.509	610.898	**100.05**	**98.81**	0.00	0.00
160	0.013	0.00	0.00	0.040	0.27	**0.11**	784.103	612.430	**98.95**	**97.99**	0.00	0.00
170	0.013	0.00	0.00	0.040	0.16	**0.09**	785.709	613.968	**99.70**	**98.38**	0.00	0.00
180	0.013	0.00	0.00	0.035	0.08	**0.10**	787.315	615.507	**99.66**	**98.40**	0.00	0.00
190	0.013	0.00	0.00	0.035	0.01	**0.07**	788.914	617.059	**99.18**	**99.18**	0.00	0.00
200	0.013	0.00	0.00	0.035	0.00	**0.01**	790.516	618.604	**99.32**	**98.69**	0.00	0.00

Test Engineer:_____

Date:_____

			VS (1)	0.02573132					
			VS (2)	0.02624885	STD Tunnel Flow:		139.10		
200				559.455714	30.621	30.017	7.35	99.99	99.99
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft^3 (1)	STD Sample Ft^3 (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	311.3		0.013	559.51			7.347		
10	321.3		0.013	561.9	1.543	1.510	7.363	100.99	100.79
20	311.2		0.013	561.9	1.504	1.477	7.363	98.47	98.65
30	317.6		0.013	570.2	1.516	1.497	7.417	99.83	100.66
40	314.6		0.013	582.9	1.503	1.480	7.499	100.16	100.64
50	335.8		0.013	583.1	1.528	1.520	7.501	101.92	103.41
60	348.4		0.013	575.8	1.534	1.515	7.454	101.64	102.43
70	346.1		0.013	567.5	1.524	1.524	7.400	100.27	102.27
80	336.5		0.013	561.8	1.538	1.521	7.362	100.69	101.55
90	325.8		0.013	557.6	1.529	1.522	7.335	99.69	101.23
100	316.2		0.013	555	1.539	1.519	7.318	100.14	100.81
110	309.1		0.013	553.31	1.542	1.510	7.307	100.19	100.02
120	302.9		0.013	551.75	1.535	1.500	7.296	99.55	99.25
130	294.5		0.013	550.31	1.542	1.497	7.287	99.91	98.91
140	285.7		0.013	549.15	1.535	1.481	7.279	99.31	97.79
150	279.5		0.013	550.56	1.544	1.495	7.288	100.06	98.81
160	274.4		0.013	551.52	1.526	1.481	7.295	98.95	97.99
170	268.1		0.013	551.65	1.537	1.487	7.296	99.70	98.38
180	261.4		0.013	551.36	1.537	1.488	7.294	99.66	98.40
190	254.7		0.013	551.08	1.530	1.500	7.292	99.18	99.18
200	247.8	247.78	0.013	550.67	1.533	1.493	7.289	99.32	98.69

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	4

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	22.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI-214	Time:	7:20	Temp.,°F:	80
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	0.88	20.9	20.3	21.0
2	9.00	0.87	21.1	20.4	20.5
3	9.00	0.87	21.2	20.3	21.1
4	9.00	0.81	21.0	21.3	20.9
5	17.00	1.94	20.8	19.2	20.6
6	17.00	1.53	20.8	20.2	19.7
7	17.00	1.57	19.3	19.7	19.2
8	17.00	1.56	18.3	19.2	19.2
9	17.00	1.97	20.4	20.6	19.8
10					
11					
12					
Total Weight		**12.0**	Average, %db		**20.3**

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	9:20	Temp.,°F:	80
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.05		19.1	19.0	18.9
2	17.00	2.55		20.9	20.4	20.9
3	17.00	1.97		20.1	19.5	20.0
4	17.00	2.24		21.6	20.4	21.5
5						
6						
7						
8						
Totals		8.8	0.0			
% of Weight		100	0			
Total weight, wet, lb.		**8.80**		Average Moisture, dry		**20.19**
Total weight, dry, kg		3.32		Average Moisture, wet		16.80

Test Engineer:_____ Date:_____

Intertek

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 4

Dry Burn-Rate, kg/hr:	**1.00**	
Emission-Rate, g/hr:	**1.51**	
Adjusted Emission-Rate, g/hr :	**2.57**	
Duration of Test, Minutes	200	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	758.535	587.563
Dry Gas Meter Ending Reading, ft^3	790.516	618.604
Barometric Pressure Correction Factor	0.998	0.998
Dry Gas Meter Calibration Factors (γ factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.982	0.983
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**30.635**	**30.031**
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**139.098**	
Total Tunnel Volume, scf	**27819.669**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	908.095	926.379
Sample Particulate Mass, mg	5.7	5.3
Total Emissions, grams	5.176	4.910
Emission-Rate, g/hr	1.55	1.47
Adjusted Emission Rates, g/hr	**2.62**	**2.51**
Deviation, %	2.19%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	88.56	84.96
Post-Test Leak Check, cfm @ in. Hg vac.	0.0035@5	0.0035@5
Average Firebox Surface Temperture delta-T. °F	63.54	
Maximum Ambient Temperture, °F	86	
Mimimum Ambient Temperature, °F	70	
Fuel Properties		
Wet Fuel Load Weight, lb.	8.80	
Dry-Basis Fuel Load Moisture Content, %	20.19	
Wet-Basis Fuel Load Moisture Content, %	16.80	
Coal Bed Range, lb.	1.80	2.20
Actual Coal Bed, Lb.	1.87	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 4

Intertek Equipment No.'s SBI-206

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	13		117.3	
B - Rear Filter Catch	Filter	14		117.7	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			240.7	235	5.7
Probe & Filter Holder	Probe	22	139574.3	139574.3	0.0
			Total Particulate, mg		5.7

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	15		115.5	
B - Rear Filter Catch	Filter	16		117.5	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			238	233	5
Probe & Filter Holder	Probe	25	136815.2	136815.9	0.3
			Total Particulate, mg		5.3

Test Engineer:_____ Date:_____

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 4

	Dilution Tunnel		
	Delta P In. H2O	Temp, °F	Square Root
A1	0.0100	98	0.1000
A2	0.0125	98	0.1118
A3	0.0125	98	0.1118
A4	0.0125	98	0.1118
A Center	0.0125	98	0.1118
B1	0.0075	97	0.0866
B2	0.0125	96	0.1118
B3	0.0125	96	0.1118
B4	0.0125	96	0.1118
B Center	0.0125	96	0.1118
Averages	0.01175	96.907	0.1072

Tunnel Diameter	8.000	inches
Tunnel Static	-0.070	in. H2O
Tunnel Area	0.34907	Ft2
Pitot Correction	0.9586	factor
Baro. Pressure	29.85	
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	7.332	Ft/ Sec
Initial Flow	**139.39**	Ft3/min

Test Engineer:_____ Date:_____

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
10:47:26	C1: CO	0.98 %	C2: CO2	2.85 %	C4: O2	16.7 %
10:48:26	C1: CO	0.98 %	C2: CO2	2.62 %	C4: O2	16.7 %
10:49:26	C1: CO	0.53 %	C2: CO2	1 %	C4: O2	17.6 %
10:50:26	C1: CO	0.78 %	C2: CO2	1.72 %	C4: O2	18.1 %
10:51:26	C1: CO	0.40 %	C2: CO2	0.37 %	C4: O2	17.9 %
10:52:26	C1: CO	0.36 %	C2: CO2	0.4 %	C4: O2	19.9 %
10:53:26	C1: CO	0.48 %	C2: CO2	3.27 %	C4: O2	19.1 %
10:54:26	C1: CO	0.45 %	C2: CO2	5.17 %	C4: O2	16 %
10:55:26	C1: CO	0.48 %	C2: CO2	7.34 %	C4: O2	14.5 %
10:56:26	C1: CO	0.64 %	C2: CO2	5.25 %	C4: O2	12 %
10:57:26	C1: CO	0.56 %	C2: CO2	1.95 %	C4: O2	15.9 %
10:58:26	C1: CO	0.54 %	C2: CO2	1.69 %	C4: O2	18.3 %
10:59:26	C1: CO	0.54 %	C2: CO2	1.66 %	C4: O2	18.5 %
11:00:26	C1: CO	0.52 %	C2: CO2	1.81 %	C4: O2	18.4 %
11:01:26	C1: CO	0.49 %	C2: CO2	1.97 %	C4: O2	18.3 %
11:02:26	C1: CO	0.50 %	C2: CO2	2.21 %	C4: O2	18.1 %
11:03:26	C1: CO	0.51 %	C2: CO2	2.6 %	C4: O2	17.9 %
11:04:26	C1: CO	0.62 %	C2: CO2	3.33 %	C4: O2	17.4 %
11:05:26	C1: CO	0.76 %	C2: CO2	3.88 %	C4: O2	16.5 %
11:06:26	C1: CO	0.78 %	C2: CO2	4.36 %	C4: O2	16 %
11:07:26	C1: CO	0.78 %	C2: CO2	4.38 %	C4: O2	15.7 %
11:08:26	C1: CO	0.79 %	C2: CO2	4.7 %	C4: O2	15.6 %
11:09:26	C1: CO	0.75 %	C2: CO2	5.8 %	C4: O2	15.2 %
11:10:26	C1: CO	0.74 %	C2: CO2	5.93 %	C4: O2	14.3 %
11:11:26	C1: CO	0.71 %	C2: CO2	5.61 %	C4: O2	14.3 %
11:12:26	C1: CO	0.65 %	C2: CO2	5.05 %	C4: O2	14.8 %
11:13:26	C1: CO	0.67 %	C2: CO2	4.57 %	C4: O2	15.2 %
11:14:26	C1: CO	0.67 %	C2: CO2	4.38 %	C4: O2	15.6 %
11:15:26	C1: CO	0.68 %	C2: CO2	4.68 %	C4: O2	15.4 %
11:16:26	C1: CO	0.81 %	C2: CO2	6.66 %	C4: O2	15 %
11:17:26	C1: CO	0.89 %	C2: CO2	7.65 %	C4: O2	13.1 %
11:18:26	C1: CO	0.91 %	C2: CO2	8.09 %	C4: O2	12.5 %
11:19:26	C1: CO	1.06 %	C2: CO2	8.85 %	C4: O2	11.8 %
11:20:26	C1: CO	1.17 %	C2: CO2	9.1 %	C4: O2	10.8 %
11:21:26	C1: CO	1.24 %	C2: CO2	9.65 %	C4: O2	10.9 %
11:22:26	C1: CO	1.20 %	C2: CO2	9.84 %	C4: O2	10.4 %
11:23:26	C1: CO	1.20 %	C2: CO2	10 %	C4: O2	9.16 %
11:24:26	C1: CO	1.14 %	C2: CO2	10.2 %	C4: O2	9.88 %
11:25:26	C1: CO	1.13 %	C2: CO2	10.4 %	C4: O2	9.79 %
11:26:26	C1: CO	1.15 %	C2: CO2	10.4 %	C4: O2	9.67 %
11:27:26	C1: CO	1.14 %	C2: CO2	10.2 %	C4: O2	9.28 %
11:28:26	C1: CO	1.17 %	C2: CO2	10.3 %	C4: O2	9.63 %
11:29:26	C1: CO	1.05 %	C2: CO2	9.95 %	C4: O2	7.97 %

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
11:30:26	C1: CO	0.97 %	C2: CO2	10.4 %	C4: O2	9.47 %
11:31:26	C1: CO	1.05 %	C2: CO2	10.5 %	C4: O2	9.53 %
11:32:26	C1: CO	1.19 %	C2: CO2	10.7 %	C4: O2	8.39 %
11:33:26	C1: CO	1.26 %	C2: CO2	10.4 %	C4: O2	8.89 %
11:34:26	C1: CO	1.38 %	C2: CO2	10.7 %	C4: O2	9.29 %
11:35:26	C1: CO	1.48 %	C2: CO2	10.7 %	C4: O2	9.26 %
11:36:26	C1: CO	1.53 %	C2: CO2	10.6 %	C4: O2	9.12 %
11:37:26	C1: CO	1.48 %	C2: CO2	10.5 %	C4: O2	9.25 %
11:38:26	C1: CO	1.28 %	C2: CO2	10.3 %	C4: O2	8.93 %
11:39:26	C1: CO	1.13 %	C2: CO2	10.6 %	C4: O2	9.47 %
11:40:26	C1: CO	1.09 %	C2: CO2	10.5 %	C4: O2	9.49 %
11:41:26	C1: CO	0.99 %	C2: CO2	10.3 %	C4: O2	9.63 %
11:42:26	C1: CO	0.80 %	C2: CO2	9.84 %	C4: O2	9.26 %
11:43:26	C1: CO	0.73 %	C2: CO2	10.1 %	C4: O2	10.2 %
11:44:26	C1: CO	0.65 %	C2: CO2	9.89 %	C4: O2	10.4 %
11:45:26	C1: CO	0.66 %	C2: CO2	9.58 %	C4: O2	10.6 %
11:46:26	C1: CO	0.63 %	C2: CO2	9.32 %	C4: O2	10.6 %
11:47:26	C1: CO	0.59 %	C2: CO2	9.57 %	C4: O2	10.9 %
11:48:26	C1: CO	0.53 %	C2: CO2	9.12 %	C4: O2	11.2 %
11:49:26	C1: CO	0.50 %	C2: CO2	8.84 %	C4: O2	11.6 %
11:50:26	C1: CO	0.48 %	C2: CO2	8.44 %	C4: O2	12.1 %
11:51:26	C1: CO	0.48 %	C2: CO2	8.25 %	C4: O2	12.4 %
11:52:26	C1: CO	0.49 %	C2: CO2	7.96 %	C4: O2	12.5 %
11:53:26	C1: CO	0.49 %	C2: CO2	7.69 %	C4: O2	12.8 %
11:54:26	C1: CO	0.49 %	C2: CO2	7.44 %	C4: O2	13 %
11:55:26	C1: CO	0.48 %	C2: CO2	7.11 %	C4: O2	13.3 %
11:56:26	C1: CO	0.46 %	C2: CO2	6.76 %	C4: O2	13.6 %
11:57:26	C1: CO	0.41 %	C2: CO2	6.31 %	C4: O2	13.4 %
11:58:26	C1: CO	0.40 %	C2: CO2	6.37 %	C4: O2	14.1 %
11:59:26	C1: CO	0.39 %	C2: CO2	6.22 %	C4: O2	14.2 %
12:00:26	C1: CO	0.39 %	C2: CO2	6.01 %	C4: O2	14.3 %
12:01:26	C1: CO	0.41 %	C2: CO2	5.92 %	C4: O2	14.5 %
12:02:26	C1: CO	0.42 %	C2: CO2	5.75 %	C4: O2	14.2 %
12:03:26	C1: CO	0.46 %	C2: CO2	5.59 %	C4: O2	14.3 %
12:04:26	C1: CO	0.49 %	C2: CO2	5.67 %	C4: O2	14.7 %
12:05:26	C1: CO	0.51 %	C2: CO2	5.57 %	C4: O2	14.8 %
12:06:26	C1: CO	0.50 %	C2: CO2	5.61 %	C4: O2	14.8 %
12:07:26	C1: CO	0.50 %	C2: CO2	5.58 %	C4: O2	14.8 %
12:08:26	C1: CO	0.49 %	C2: CO2	5.46 %	C4: O2	14.9 %
12:09:26	C1: CO	0.54 %	C2: CO2	5.31 %	C4: O2	14.9 %
12:10:26	C1: CO	0.56 %	C2: CO2	5.11 %	C4: O2	14.8 %
12:11:26	C1: CO	0.62 %	C2: CO2	4.85 %	C4: O2	15.1 %
12:12:26	C1: CO	0.65 %	C2: CO2	4.55 %	C4: O2	15.3 %

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
12:13:26	C1: CO	0.69 %	C2: CO2	4.54 %	C4: O2	15.5 %
12:14:26	C1: CO	0.69 %	C2: CO2	4.13 %	C4: O2	14.8 %
12:15:26	C1: CO	0.74 %	C2: CO2	4.33 %	C4: O2	15.6 %
12:16:26	C1: CO	0.75 %	C2: CO2	4.27 %	C4: O2	15.6 %
12:17:26	C1: CO	0.76 %	C2: CO2	4.24 %	C4: O2	15.6 %
12:18:26	C1: CO	0.73 %	C2: CO2	3.87 %	C4: O2	13.9 %
12:19:26	C1: CO	0.81 %	C2: CO2	4.2 %	C4: O2	15.6 %
12:20:26	C1: CO	0.80 %	C2: CO2	4.16 %	C4: O2	15.6 %
12:21:26	C1: CO	0.79 %	C2: CO2	4.13 %	C4: O2	15.6 %
12:22:26	C1: CO	0.80 %	C2: CO2	4.02 %	C4: O2	15.2 %
12:23:26	C1: CO	0.79 %	C2: CO2	3.81 %	C4: O2	14.3 %
12:24:26	C1: CO	0.83 %	C2: CO2	4.16 %	C4: O2	15.6 %
12:25:26	C1: CO	0.84 %	C2: CO2	4.14 %	C4: O2	14.4 %
12:26:26	C1: CO	0.83 %	C2: CO2	4.11 %	C4: O2	15.6 %
12:27:26	C1: CO	0.85 %	C2: CO2	4.08 %	C4: O2	15.6 %
12:28:26	C1: CO	0.88 %	C2: CO2	4.1 %	C4: O2	15.7 %
12:29:26	C1: CO	0.87 %	C2: CO2	4.07 %	C4: O2	15.6 %
12:30:26	C1: CO	0.89 %	C2: CO2	4.05 %	C4: O2	15.5 %
12:31:26	C1: CO	0.85 %	C2: CO2	3.94 %	C4: O2	14.9 %
12:32:26	C1: CO	0.90 %	C2: CO2	4.07 %	C4: O2	15.6 %
12:33:26	C1: CO	0.89 %	C2: CO2	4.05 %	C4: O2	14.5 %
12:34:26	C1: CO	0.84 %	C2: CO2	4.04 %	C4: O2	15.6 %
12:35:26	C1: CO	0.84 %	C2: CO2	4.09 %	C4: O2	15.6 %
12:36:26	C1: CO	0.83 %	C2: CO2	4.04 %	C4: O2	15.2 %
12:37:26	C1: CO	0.85 %	C2: CO2	4.11 %	C4: O2	15.6 %
12:38:26	C1: CO	0.83 %	C2: CO2	3.95 %	C4: O2	15 %
12:39:26	C1: CO	0.88 %	C2: CO2	4.06 %	C4: O2	15.6 %
12:40:26	C1: CO	0.90 %	C2: CO2	4.03 %	C4: O2	15.7 %
12:41:26	C1: CO	0.87 %	C2: CO2	3.93 %	C4: O2	15.3 %
12:42:26	C1: CO	0.87 %	C2: CO2	3.99 %	C4: O2	15.7 %
12:43:26	C1: CO	0.87 %	C2: CO2	4.01 %	C4: O2	15.7 %
12:44:26	C1: CO	0.81 %	C2: CO2	3.95 %	C4: O2	15.8 %
12:45:26	C1: CO	0.83 %	C2: CO2	3.8 %	C4: O2	15.8 %
12:46:26	C1: CO	0.89 %	C2: CO2	3.76 %	C4: O2	15.9 %
12:47:26	C1: CO	0.89 %	C2: CO2	3.64 %	C4: O2	15.4 %
12:48:26	C1: CO	0.96 %	C2: CO2	3.72 %	C4: O2	15.9 %
12:49:26	C1: CO	0.94 %	C2: CO2	3.35 %	C4: O2	15.7 %
12:50:26	C1: CO	0.97 %	C2: CO2	3.23 %	C4: O2	16.3 %
12:51:26	C1: CO	1.00 %	C2: CO2	3.17 %	C4: O2	16.2 %
12:52:26	C1: CO	1.03 %	C2: CO2	3.14 %	C4: O2	16.2 %
12:53:26	C1: CO	1.01 %	C2: CO2	2.92 %	C4: O2	15.4 %
12:54:26	C1: CO	1.09 %	C2: CO2	3.06 %	C4: O2	16.3 %
12:55:26	C1: CO	1.16 %	C2: CO2	2.99 %	C4: O2	16.3 %

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
12:56:26	C1: CO	1.18 %	C2: CO2	3.05 %	C4: O2	16.3 %
12:57:26	C1: CO	1.15 %	C2: CO2	2.95 %	C4: O2	15.8 %
12:58:26	C1: CO	1.17 %	C2: CO2	3.1 %	C4: O2	16.2 %
12:59:26	C1: CO	1.20 %	C2: CO2	3 %	C4: O2	16 %
13:00:26	C1: CO	1.18 %	C2: CO2	2.97 %	C4: O2	16.3 %
13:01:26	C1: CO	1.17 %	C2: CO2	2.77 %	C4: O2	15.9 %
13:02:26	C1: CO	1.23 %	C2: CO2	2.85 %	C4: O2	16.4 %
13:03:26	C1: CO	1.24 %	C2: CO2	2.9 %	C4: O2	16.4 %
13:04:26	C1: CO	1.19 %	C2: CO2	2.83 %	C4: O2	16.3 %
13:05:26	C1: CO	1.20 %	C2: CO2	2.78 %	C4: O2	16.5 %
13:06:26	C1: CO	1.21 %	C2: CO2	2.76 %	C4: O2	16.5 %
13:07:26	C1: CO	1.23 %	C2: CO2	2.75 %	C4: O2	16.6 %
13:08:26	C1: CO	1.22 %	C2: CO2	2.75 %	C4: O2	16.5 %
13:09:26	C1: CO	1.25 %	C2: CO2	2.72 %	C4: O2	16.5 %
13:10:26	C1: CO	1.27 %	C2: CO2	2.75 %	C4: O2	15.4 %
13:11:26	C1: CO	1.28 %	C2: CO2	2.73 %	C4: O2	16.5 %
13:12:26	C1: CO	1.30 %	C2: CO2	2.75 %	C4: O2	16.5 %
13:13:26	C1: CO	1.30 %	C2: CO2	2.83 %	C4: O2	16.5 %
13:14:26	C1: CO	1.32 %	C2: CO2	2.77 %	C4: O2	16.3 %
13:15:26	C1: CO	1.36 %	C2: CO2	2.71 %	C4: O2	16.4 %
13:16:26	C1: CO	1.37 %	C2: CO2	2.69 %	C4: O2	16.4 %
13:17:26	C1: CO	1.35 %	C2: CO2	2.64 %	C4: O2	16.4 %
13:18:26	C1: CO	1.39 %	C2: CO2	2.58 %	C4: O2	16.3 %
13:19:26	C1: CO	1.42 %	C2: CO2	2.68 %	C4: O2	16.5 %
13:20:26	C1: CO	1.29 %	C2: CO2	2.48 %	C4: O2	15.7 %
13:21:26	C1: CO	1.33 %	C2: CO2	2.49 %	C4: O2	16.1 %
13:22:26	C1: CO	1.39 %	C2: CO2	2.6 %	C4: O2	16.4 %
13:23:26	C1: CO	1.41 %	C2: CO2	2.52 %	C4: O2	16.5 %
13:24:26	C1: CO	1.43 %	C2: CO2	2.5 %	C4: O2	16.6 %
13:25:26	C1: CO	1.39 %	C2: CO2	2.42 %	C4: O2	16.2 %
13:26:26	C1: CO	1.41 %	C2: CO2	2.46 %	C4: O2	16.6 %
13:27:26	C1: CO	1.40 %	C2: CO2	2.45 %	C4: O2	16.7 %
13:28:26	C1: CO	1.42 %	C2: CO2	2.47 %	C4: O2	16.7 %
13:29:26	C1: CO	1.51 %	C2: CO2	2.29 %	C4: O2	16.7 %
13:30:26	C1: CO	1.45 %	C2: CO2	2.37 %	C4: O2	16.8 %
13:31:26	C1: CO	1.43 %	C2: CO2	2.35 %	C4: O2	16.7 %
13:32:26	C1: CO	1.43 %	C2: CO2	2.34 %	C4: O2	16.7 %
13:33:26	C1: CO	1.30 %	C2: CO2	2.33 %	C4: O2	16.7 %
13:34:26	C1: CO	1.34 %	C2: CO2	2.39 %	C4: O2	16.8 %
13:35:26	C1: CO	1.28 %	C2: CO2	2.31 %	C4: O2	16.4 %
13:36:26	C1: CO	1.28 %	C2: CO2	2.41 %	C4: O2	16.9 %
13:37:26	C1: CO	1.25 %	C2: CO2	2.38 %	C4: O2	16.9 %
13:38:26	C1: CO	1.18 %	C2: CO2	2.29 %	C4: O2	16.2 %

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
13:39:26	C1: CO	1.27 %	C2: CO2	2.31 %	C4: O2	17 %
13:40:26	C1: CO	1.25 %	C2: CO2	2.18 %	C4: O2	16.3 %
13:41:26	C1: CO	1.28 %	C2: CO2	2.16 %	C4: O2	17 %
13:42:26	C1: CO	1.30 %	C2: CO2	2.17 %	C4: O2	17.1 %
13:43:26	C1: CO	1.30 %	C2: CO2	2.06 %	C4: O2	17 %
13:44:26	C1: CO	1.30 %	C2: CO2	2.04 %	C4: O2	17.1 %
13:45:26	C1: CO	1.29 %	C2: CO2	2.07 %	C4: O2	17.1 %
13:46:26	C1: CO	1.31 %	C2: CO2	2.07 %	C4: O2	17.1 %
13:47:26	C1: CO	1.34 %	C2: CO2	2.08 %	C4: O2	17.1 %
13:48:26	C1: CO	1.30 %	C2: CO2	1.98 %	C4: O2	16.8 %
13:49:26	C1: CO	1.26 %	C2: CO2	2.06 %	C4: O2	17.2 %
13:50:26	C1: CO	1.21 %	C2: CO2	1.9 %	C4: O2	17 %
13:51:26	C1: CO	1.28 %	C2: CO2	1.92 %	C4: O2	17.3 %
13:52:26	C1: CO	1.25 %	C2: CO2	1.89 %	C4: O2	17.3 %
13:53:26	C1: CO	1.22 %	C2: CO2	1.86 %	C4: O2	15.9 %
13:54:26	C1: CO	1.26 %	C2: CO2	1.85 %	C4: O2	17.2 %
13:55:26	C1: CO	1.25 %	C2: CO2	1.87 %	C4: O2	17.3 %
13:56:26	C1: CO	1.28 %	C2: CO2	1.9 %	C4: O2	17.3 %
13:57:26	C1: CO	1.30 %	C2: CO2	1.86 %	C4: O2	17.3 %
13:58:26	C1: CO	1.25 %	C2: CO2	1.71 %	C4: O2	16.7 %
13:59:26	C1: CO	1.28 %	C2: CO2	1.81 %	C4: O2	17.3 %
14:00:26	C1: CO	1.23 %	C2: CO2	1.65 %	C4: O2	16.5 %
14:01:26	C1: CO	1.28 %	C2: CO2	1.79 %	C4: O2	17.4 %
14:02:26	C1: CO	1.27 %	C2: CO2	1.78 %	C4: O2	17.4 %
14:03:26	C1: CO	1.27 %	C2: CO2	1.79 %	C4: O2	17.4 %
14:04:26	C1: CO	1.23 %	C2: CO2	1.73 %	C4: O2	16.9 %
14:05:26	C1: CO	1.27 %	C2: CO2	1.77 %	C4: O2	17.3 %
14:06:26	C1: CO	1.31 %	C2: CO2	1.78 %	C4: O2	17.4 %
14:07:26	C1: CO	1.30 %	C2: CO2	1.76 %	C4: O2	17.4 %
14:08:26	C1: CO	1.30 %	C2: CO2	1.73 %	C4: O2	17.4 %
14:09:26	C1: CO	1.30 %	C2: CO2	1.72 %	C4: O2	17.4 %
14:10:26	C1: CO	1.28 %	C2: CO2	1.72 %	C4: O2	17.5 %
14:11:26	C1: CO	1.28 %	C2: CO2	1.62 %	C4: O2	17.5 %
14:12:26	C1: CO	1.30 %	C2: CO2	1.6 %	C4: O2	17.6 %
14:13:26	C1: CO	1.29 %	C2: CO2	1.6 %	C4: O2	17.5 %
14:14:26	C1: CO	1.28 %	C2: CO2	1.59 %	C4: O2	17.6 %
14:15:26	C1: CO	1.27 %	C2: CO2	1.58 %	C4: O2	17.6 %
14:16:26	C1: CO	0.54 %	C2: CO2	0.2 %	C4: O2	17.6 %
14:17:26	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.2 %
14:18:26	C1: CO	0.05 %	C2: CO2	0.09 %	C4: O2	20.6 %
14:19:26	C1: CO	0.04 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:20:26	C1: CO	0.04 %	C2: CO2	0.07 %	C4: O2	20.3 %
14:21:26	C1: CO	0.06 %	C2: CO2	0.08 %	C4: O2	20.6 %

SBI CW2500 27-Jun-13 Run #4

Time	CO		CO_2		O_2	
14:22:26	C1: CO	0.04 %	C2: CO2	0.06 %	C4: O2	20.6 %
14:23:26	C1: CO	0.03 %	C2: CO2	0.05 %	C4: O2	20.6 %
14:24:26	C1: CO	0.05 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:25:26	C1: CO	0.04 %	C2: CO2	0.06 %	C4: O2	20.6 %
14:26:26	C1: CO	0.05 %	C2: CO2	0.06 %	C4: O2	20.6 %
14:27:26	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	19.5 %
14:28:26	C1: CO	0.08 %	C2: CO2	0.08 %	C4: O2	20.3 %
14:29:26	C1: CO	0.09 %	C2: CO2	0.09 %	C4: O2	20.6 %
14:30:26	C1: CO	0.08 %	C2: CO2	0.09 %	C4: O2	19.5 %
14:31:26	C1: CO	0.05 %	C2: CO2	0.06 %	C4: O2	20.6 %
14:32:26	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:33:26	C1: CO	0.05 %	C2: CO2	0.06 %	C4: O2	20.5 %
14:34:26	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:35:26	C1: CO	0.05 %	C2: CO2	0.06 %	C4: O2	20.5 %
14:36:26	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	19.8 %
14:37:26	C1: CO	0.06 %	C2: CO2	0.06 %	C4: O2	20.6 %
14:38:26	C1: CO	0.06 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:39:26	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:40:26	C1: CO	0.07 %	C2: CO2	0.08 %	C4: O2	20.6 %
14:41:26	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:42:26	C1: CO	0.09 %	C2: CO2	0.09 %	C4: O2	20.5 %
14:43:26	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:44:26	C1: CO	0.07 %	C2: CO2	0.07 %	C4: O2	20.6 %
14:45:26	C1: CO	0.04 %	C2: CO2	0.05 %	C4: O2	20.6 %

27.06.2013

Appendix F: Test data
Run 5

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	5

EPA Method 28
Pre Burn Data

Coal Bed Range	1.8	to	2.2

Average Firebox Temp, °F	378.24

Final Coal Bed Wt, lb	2.19

Interval	10

Time		Temperature Data									Flue Draft	Fuel Weight	Weight Loss
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet			
0	0	78.7	135.8	747.4	486.1	276.3	349.9	264.8	303			7.99	5.80
1	10	78.38	140.6	532.1	477.2	258.6	349.5	316.5	376.1			6.65	1.34
2	20	78.92	135.1	533.9	474.4	285.8	353.5	340.8	410.8			5.33	1.32
3	30	79.81	131.2	517.1	477.8	272.5	359.9	363.8	446.1			4.18	1.15
4	40	80.73	120.9	473.5	478.6	279.3	366.6	376.5	475.4			3.29	0.89
5	50	79.54	113.8	425.6	446.2	283.7	369.5	384	487.7			2.75	0.54
6	60	79.43	109.5	390.3	416.6	288.6	370.7	383.4	480			2.44	0.31
7	70	79.73	107.4	358.8	387.9	293.8	374.1	377.6	466.9			2.24	0.20
8	80	79.21	126.6	372.1	379.7	295.3	375.3	375.3	465.6			2.19	0.05
9													
10													
11													
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Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	
Manufacturer:	SBI
Model:	CW2500
Sample ID No:	
Test Date:	June 27, 2013
Test Run No:	5

Temperature Data

Firebox Temp Start	384.3
Firebox Temp End	286.24
Firebox Delta-T	98.1

Max Filter Temps	
Train A	Train B
86.8	84.61

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	5

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	29.88	84	Meter Box (A)	0.977
End	29.91	86	Meter Box (B)	0.986

Leak Check, cfm @ in Hg	
Train A	Train B
0.0035@5	0.004@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

Interval: 10 — Duration of Test, Min: 150

Time		Temperature Data													Time	Particulate Sampling Data										
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Train A Filter	Train B Filter	Train A DGM	Train B DGM		Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0	78.66	116.9	342.1	378.1	319.8	383.6	375.7	464.1		78.22	77.37	77.195	77.035	0	0.013	0.00	0.00	0.050	8.95	**8.95**	790.516	618.604	**99.97**	**99.99**	0.00	0.00
1	10	78.33	137.2	602.8	425.3	405.7	419.4	359.8	440.5		84.1	83.65	77.415	77.175	10	0.013	0.00	0.00	0.080	7.14	**1.81**	792.099	620.279	**101.68**	**105.84**	0.00	0.00
2	20	80.16	145.7	648.4	546	416	424.9	363.7	446.3		84.51	84.61	77.53	77.265	20	0.013	0.00	0.00	0.080	5.15	**1.99**	793.628	621.924	**98.89**	**104.67**	0.00	0.00
3	30	82.26	146.4	713.3	602.6	409.4	439.7	383.5	474.5		84.03	83.93	77.595	77.3	30	0.013	0.00	0.00	0.085	3.37	**1.78**	795.182	623.505	**100.55**	**100.65**	0.00	0.00
4	40	85.01	136.6	575.5	597.6	296.9	389.8	407.8	509.2		83.59	83.6	77.675	77.35	40	0.013	0.00	0.00	0.075	2.13	**1.24**	796.724	625.063	**98.95**	**98.37**	0.00	0.00
5	50	82.68	121.5	454.3	516.3	273.9	379.2	419	527.1		82.45	82.13	77.64	77.29	50	0.013	0.00	0.00	0.065	1.70	**0.43**	798.306	626.679	**100.23**	**100.74**	0.00	0.00
6	60	82.19	113.9	403.3	445.1	265	366.6	414.9	517.9		84.75	81.96	77.55	77.2	60	0.013	0.00	0.00	0.060	1.45	**0.25**	799.899	628.279	**100.28**	**99.11**	0.00	0.00
7	70	81.76	110.8	376.2	402.7	261.7	354.3	399.1	497.8		86.22	81.98	77.595	77.21	70	0.013	0.00	0.00	0.055	1.26	**0.19**	801.497	629.871	**100.32**	**98.34**	0.00	0.00
8	80	84.3	111.5	355.7	377.2	260.8	344.1	382.6	478.9		86.8	81.89	77.505	77.14	80	0.013	0.00	0.00	0.055	1.11	**0.15**	803.092	631.472	**100.21**	**98.97**	0.00	0.00
9	90	85.62	108.7	338.3	358.1	259.9	335.6	364.7	461.1		86.71	81.88	77.415	77.035	90	0.013	0.00	0.00	0.050	0.92	**0.19**	804.685	633.102	**99.85**	**100.54**	0.00	0.00
10	100	86.61	103.8	323.9	338.1	251.5	322.4	345.9	441.1		85.77	81.17	77.4	77.01	100	0.013	0.00	0.00	0.050	0.76	**0.16**	806.284	634.734	**99.80**	**100.23**	0.00	0.00
11	110	86.08	106.1	315.7	325	246.8	313.8	332.3	421.5		85.64	81.06	77.36	77.025	110	0.013	0.00	0.00	0.050	0.56	**0.20**	807.877	636.345	**99.64**	**99.14**	0.00	0.00
12	120	87.07	106.9	308.5	315.2	242.7	307	321.5	405		85.7	81	77.29	76.945	120	0.013	0.00	0.00	0.050	0.40	**0.16**	809.472	637.937	**99.84**	**98.05**	0.00	0.00
13	130	87	106.8	296.9	305.5	238.1	298.9	311.7	389.1		85.51	80.9	77.255	76.915	130	0.013	0.00	0.00	0.045	0.26	**0.14**	811.075	639.537	**100.34**	**98.54**	0.00	0.00
14	140	88.21	104.6	283.5	292.8	232.5	288.3	301.4	371.5		85.32	80.79	77.22	76.835	140	0.013	0.00	0.00	0.045	0.12	**0.14**	812.661	641.129	**99.09**	**97.87**	0.00	0.00
15	150	89.3	101.3	272.8	280.2	227.7	279.8	290.9	352.6		85	80.48	77.21	76.785	150	0.013	0.00	0.00	0.045	0.00	**0.12**	814.264	642.740	**99.86**	**98.76**	0.00	0.00
16																											
17																											
18																											

Duration of Test, Min: 150

Test Engineer:_____ Date:_____

			VS (1)	0.03458648					
			VS (2)	0.03369828	STD Tunnel Flow:		139.15		
150				577.41875	22.766	23.366	7.58	99.97	99.99
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft^3 (1)	STD Sample Ft^3 (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	384.3		0.013	576.9			7.575		
10	410.1		0.013	597.2	1.516	1.621	7.707	101.68	105.84
20	439.4		0.013	605.7	1.466	1.592	7.762	98.89	104.57
30	461.9		0.013	606.4	1.489	1.530	7.766	100.55	100.65
40	440.3		0.013	596.6	1.478	1.508	7.703	98.95	98.37
50	423.1		0.013	581.5	1.516	1.564	7.605	100.23	100.74
60	401.9		0.013	573.9	1.527	1.549	7.555	100.28	99.11
70	383.1		0.013	570.8	1.531	1.541	7.535	100.32	98.34
80	368.7		0.013	571.5	1.529	1.550	7.539	100.21	98.97
90	355.9		0.013	568.7	1.527	1.578	7.521	99.85	100.54
100	339.8		0.013	563.8	1.533	1.580	7.488	99.80	100.23
110	327.9		0.013	566.1	1.527	1.560	7.504	99.64	99.14
120	318.3		0.013	566.9	1.529	1.542	7.509	99.84	98.05
130	308.7		0.013	566.8	1.537	1.549	7.508	100.34	98.54
140	297.3		0.013	564.6	1.521	1.542	7.494	99.09	97.87
150	286.2	285.24	0.013	561.3	1.537	1.561	7.472	99.86	98.76

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 27, 2013
Test Run Number:	5

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	22.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI-214	Time:	15:00	Temp.,°F:	80
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	0.96	20.0	19.6	20.6
2	9.00	0.89	19.5	19.0	20.0
3	9.00	0.87	19.7	19.1	20.0
4	9.00	0.86	19.7	19.1	19.7
5	17.00	1.85	19.6	19.8	20.0
6	17.00	1.94	19.0	19.0	19.1
7	17.00	1.96	19.4	19.8	19.8
8	17.00	1.84	19.1	19.0	19.5
9	17.00	1.84	21.0	20.9	21.6
10					
11					
12					
Total Weight		12.5	Average, %db		19.7

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	15:20	Temp.,°F:	80
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.39		19.6	19.0	20.2
2	17.00	2.14		20.1	19.5	20.4
3	17.00	2.23		21.6	19.9	21.3
4	17.00	2.19		21.3	21.3	21.6
5						
6						
7						
8						
Totals		9.0	0.0			
% of Weight		100	0			
Total weight, wet, lb.		8.95		Average Moisture, dry		20.48
Total weight, dry, kg		3.37		Average Moisture, wet		17.00

Test Engineer:_____ Date:_____

Intertek

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 5

Dry Burn-Rate, kg/hr:	**1.35**	
Emission-Rate, g/hr:	**1.34**	
Adjusted Emission-Rate, g/hr :	**2.32**	
Duration of Test, Minutes	150	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	790.516	618.604
Dry Gas Meter Ending Reading, ft^3	814.264	642.74
Barometric Pressure Correction Factor	0.999	0.999
Dry Gas Meter Calibration Factors (γ factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.982	0.983
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**22.776**	**23.376**
Dillution Tunnel Flow / Volume		
Standerdized Tunnel Flow, dscfm	**139.145**	
Total Tunnel Volume, scf	**20871.811**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	916.406	892.890
Sample Particulate Mass, mg	3.9	3.5
Total Emissions, grams	3.574	3.125
Emission-Rate, g/hr	1.43	1.25
Adjusted Emission Rates, g/hr	**2.45**	**2.19**
Deviation, %	5.56%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	86.8	84.61
Post-Test Leak Check, cfm @ in. Hg vac.	0.0035@5	0.004@5
Average Firebox Surface Temperture delta-T, °F	98.06	
Maximum Ambient Temperture, °F	89	
Mimimum Ambient Temperature, °F	78	
Fuel Properties		
Wet Fuel Load Weight, lb.	8.95	
Dry-Basis Fuel Load Moisture Content, %	20.48	
Wet-Basis Fuel Load Moisture Content, %	17.00	
Coal Bed Range, lb.	1.80	2.20
Actual Coal Bed, Lb.	2.19	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 5

Intertek Equipment No.'s SBI-206

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	17		118.4	
B - Rear Filter Catch	Filter	18		115.6	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			237.7	234	3.7
Probe & Filter Holder	Probe	28	136218.2	136218.0	0.2
			Total Particulate, mg		**3.9**

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	19		117.5	
B - Rear Filter Catch	Filter	20		117.9	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			238.9	235.4	3.5
Probe & Filter Holder	Probe	31	137101.8	137101.9	0.0
			Total Particulate, mg		**3.5**

Test Engineer:_____ Date:_____

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 27, 2013
Test Run Number: 5

	Dilution Tunnel		
	Delta P In. H2O	Temp,°F	Square Root
A1	0.0100	122	0.1000
A2	0.0125	122	0.1118
A3	0.0125	122	0.1118
A4	0.0125	122	0.1118
A Center	0.0125	122	0.1118
B1	0.0100	129	0.1000
B2	0.0125	128	0.1119
B3	0.0125	128	0.1118
B4	0.0125	128	0.1118
B Center	0.0125	130	0.1118
Averages	0.012003	125.27	0.1089

Tunnel Diameter	8.000	inches
Tunnel Static	-0.085	in. H2O
Tunnel Area	0.34907	Ft2
Pitot Correction	0.9738	factor
Baro. Pressure	29.88	
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)
Initial Velocity	7.632	Ft/ Sec
Initial Flow	**138.19**	Ft3/min

Test Engineer:_____ Date:_____

SBI CW2500 27-Jun-13 Run #5

Time	CO		CO_2		O_2
17:10:06	C1: CO	0.52 %	C2: CO2 4.75	C4: O2	16.08 %
17:11:06	C1: CO	0.54 %	C2: CO2 4.76	C4: O2	15.01 %
17:12:06	C1: CO	0.59 %	C2: CO2 4.55	C4: O2	15.05 %
17:13:06	C1: CO	0.62 %	C2: CO2 4.44	C4: O2	15.26 %
17:14:06	C1: CO	0.60 %	C2: CO2 4.40	C4: O2	15.33 %
17:15:06	C1: CO	0.62 %	C2: CO2 4.35	C4: O2	15.14 %
17:16:06	C1: CO	0.66 %	C2: CO2 4.45	C4: O2	15.46 %
17:17:06	C1: CO	0.64 %	C2: CO2 4.37	C4: O2	15.44 %
17:18:06	C1: CO	0.65 %	C2: CO2 4.39	C4: O2	15.43 %
17:19:06	C1: CO	0.68 %	C2: CO2 4.44	C4: O2	15.37 %
17:20:06	C1: CO	0.68 %	C2: CO2 3.48	C4: O2	15.33 %
17:21:06	C1: CO	0.51 %	C2: CO2 2.64	C4: O2	17.54 %
17:22:06	C1: CO	0.63 %	C2: CO2 3.22	C4: O2	16.93 %
17:23:06	C1: CO	0.41 %	C2: CO2 0.78	C4: O2	17.19 %
17:24:06	C1: CO	0.62 %	C2: CO2 4.37	C4: O2	19.42 %
17:25:06	C1: CO	0.70 %	C2: CO2 6.76	C4: O2	13.78 %
17:26:06	C1: CO	0.72 %	C2: CO2 10.82	C4: O2	11.80 %
17:27:06	C1: CO	0.92 %	C2: CO2 9.50	C4: O2	8.53 %
17:28:06	C1: CO	1.02 %	C2: CO2 9.93	C4: O2	10.12 %
17:29:06	C1: CO	0.86 %	C2: CO2 11.29	C4: O2	9.47 %
17:30:06	C1: CO	0.80 %	C2: CO2 11.68	C4: O2	8.69 %
17:31:06	C1: CO	0.82 %	C2: CO2 11.99	C4: O2	8.34 %
17:32:06	C1: CO	0.76 %	C2: CO2 11.92	C4: O2	7.99 %
17:33:06	C1: CO	0.76 %	C2: CO2 12.27	C4: O2	8.06 %
17:34:06	C1: CO	0.72 %	C2: CO2 12.47	C4: O2	8.12 %
17:35:06	C1: CO	0.75 %	C2: CO2 12.45	C4: O2	8.23 %
17:36:06	C1: CO	0.69 %	C2: CO2 12.52	C4: O2	8.16 %
17:37:06	C1: CO	0.68 %	C2: CO2 11.92	C4: O2	7.50 %
17:38:06	C1: CO	0.72 %	C2: CO2 12.60	C4: O2	8.13 %
17:39:06	C1: CO	0.68 %	C2: CO2 11.95	C4: O2	7.04 %
17:40:06	C1: CO	0.69 %	C2: CO2 12.49	C4: O2	7.88 %
17:41:06	C1: CO	0.68 %	C2: CO2 12.61	C4: O2	8.08 %
17:42:06	C1: CO	0.71 %	C2: CO2 12.71	C4: O2	7.99 %
17:43:06	C1: CO	0.69 %	C2: CO2 12.54	C4: O2	6.78 %
17:44:06	C1: CO	0.66 %	C2: CO2 12.72	C4: O2	7.88 %
17:45:06	C1: CO	0.68 %	C2: CO2 12.84	C4: O2	7.80 %
17:46:06	C1: CO	0.63 %	C2: CO2 12.82	C4: O2	7.78 %
17:47:06	C1: CO	0.68 %	C2: CO2 13.03	C4: O2	7.75 %
17:48:06	C1: CO	0.73 %	C2: CO2 13.33	C4: O2	7.36 %
17:49:06	C1: CO	0.73 %	C2: CO2 13.48	C4: O2	7.21 %
17:50:06	C1: CO	0.72 %	C2: CO2 13.84	C4: O2	6.88 %
17:51:06	C1: CO	0.63 %	C2: CO2 14.43	C4: O2	6.68 %
17:52:06	C1: CO	0.50 %	C2: CO2 15.01	C4: O2	6.07 %

SBI CW2500 27-Jun-13 Run #5

Time	CO		CO_2		O_2
17:53:06	C1: CO	0.47 %	C2: CO2 15.07	C4: O2	5.83 %
17:54:06	C1: CO	0.45 %	C2: CO2 14.96	C4: O2	5.69 %
17:55:06	C1: CO	0.52 %	C2: CO2 14.72	C4: O2	6.08 %
17:56:06	C1: CO	0.69 %	C2: CO2 13.55	C4: O2	6.40 %
17:57:06	C1: CO	0.58 %	C2: CO2 12.47	C4: O2	7.14 %
17:58:06	C1: CO	0.46 %	C2: CO2 11.94	C4: O2	7.82 %
17:59:06	C1: CO	0.45 %	C2: CO2 11.58	C4: O2	8.39 %
18:00:06	C1: CO	0.43 %	C2: CO2 10.80	C4: O2	9.00 %
18:01:06	C1: CO	0.44 %	C2: CO2 9.62	C4: O2	9.81 %
18:02:06	C1: CO	0.42 %	C2: CO2 9.10	C4: O2	10.69 %
18:03:06	C1: CO	0.41 %	C2: CO2 8.49	C4: O2	11.33 %
18:04:06	C1: CO	0.40 %	C2: CO2 8.02	C4: O2	11.89 %
18:05:06	C1: CO	0.41 %	C2: CO2 7.59	C4: O2	12.38 %
18:06:06	C1: CO	0.41 %	C2: CO2 7.34	C4: O2	12.83 %
18:07:06	C1: CO	0.39 %	C2: CO2 6.86	C4: O2	12.80 %
18:08:06	C1: CO	0.41 %	C2: CO2 6.78	C4: O2	13.51 %
18:09:06	C1: CO	0.40 %	C2: CO2 6.58	C4: O2	13.67 %
18:10:06	C1: CO	0.43 %	C2: CO2 6.54	C4: O2	13.94 %
18:11:06	C1: CO	0.44 %	C2: CO2 6.44	C4: O2	14.02 %
18:12:06	C1: CO	0.46 %	C2: CO2 6.30	C4: O2	13.95 %
18:13:06	C1: CO	0.47 %	C2: CO2 6.31	C4: O2	14.02 %
18:14:06	C1: CO	0.43 %	C2: CO2 6.15	C4: O2	14.18 %
18:15:06	C1: CO	0.44 %	C2: CO2 6.03	C4: O2	14.31 %
18:16:06	C1: CO	0.46 %	C2: CO2 5.91	C4: O2	14.38 %
18:17:06	C1: CO	0.47 %	C2: CO2 5.82	C4: O2	14.55 %
18:18:06	C1: CO	0.49 %	C2: CO2 5.76	C4: O2	14.58 %
18:19:06	C1: CO	0.48 %	C2: CO2 5.70	C4: O2	14.64 %
18:20:06	C1: CO	0.47 %	C2: CO2 5.49	C4: O2	14.71 %
18:21:06	C1: CO	0.46 %	C2: CO2 5.17	C4: O2	14.43 %
18:22:06	C1: CO	0.49 %	C2: CO2 5.37	C4: O2	14.91 %
18:23:06	C1: CO	0.51 %	C2: CO2 5.20	C4: O2	14.34 %
18:24:06	C1: CO	0.53 %	C2: CO2 5.37	C4: O2	14.83 %
18:25:06	C1: CO	0.55 %	C2: CO2 5.34	C4: O2	14.84 %
18:26:06	C1: CO	0.58 %	C2: CO2 5.32	C4: O2	14.85 %
18:27:06	C1: CO	0.61 %	C2: CO2 5.27	C4: O2	14.90 %
18:28:06	C1: CO	0.64 %	C2: CO2 5.13	C4: O2	14.83 %
18:29:06	C1: CO	0.67 %	C2: CO2 5.13	C4: O2	13.86 %
18:30:06	C1: CO	0.69 %	C2: CO2 5.02	C4: O2	15.03 %
18:31:06	C1: CO	0.71 %	C2: CO2 4.98	C4: O2	15.08 %
18:32:06	C1: CO	0.70 %	C2: CO2 4.87	C4: O2	14.99 %
18:33:06	C1: CO	0.74 %	C2: CO2 4.89	C4: O2	15.06 %
18:34:06	C1: CO	0.76 %	C2: CO2 4.83	C4: O2	15.03 %
18:35:06	C1: CO	0.77 %	C2: CO2 4.78	C4: O2	15.17 %

SBI CW2500 27-Jun-13 Run #5

Time	CO		CO_2		O_2
18:36:06	C1: CO	0.80 %	C2: CO2	4.77	C4: O2	15.20 %
18:37:06	C1: CO	0.87 %	C2: CO2	4.36	C4: O2	15.30 %
18:38:06	C1: CO	0.90 %	C2: CO2	4.28	C4: O2	15.52 %
18:39:06	C1: CO	0.91 %	C2: CO2	4.21	C4: O2	15.43 %
18:40:06	C1: CO	0.94 %	C2: CO2	4.16	C4: O2	15.56 %
18:41:06	C1: CO	0.96 %	C2: CO2	4.15	C4: O2	15.58 %
18:42:06	C1: CO	0.94 %	C2: CO2	4.00	C4: O2	13.87 %
18:43:06	C1: CO	1.00 %	C2: CO2	3.84	C4: O2	15.27 %
18:44:06	C1: CO	1.02 %	C2: CO2	3.89	C4: O2	15.75 %
18:45:06	C1: CO	1.00 %	C2: CO2	3.70	C4: O2	14.94 %
18:46:06	C1: CO	1.03 %	C2: CO2	3.83	C4: O2	15.75 %
18:47:06	C1: CO	1.01 %	C2: CO2	3.60	C4: O2	14.98 %
18:48:06	C1: CO	1.09 %	C2: CO2	3.65	C4: O2	15.77 %
18:49:06	C1: CO	1.15 %	C2: CO2	3.65	C4: O2	14.81 %
18:50:06	C1: CO	1.09 %	C2: CO2	3.40	C4: O2	15.30 %
18:51:06	C1: CO	1.14 %	C2: CO2	3.47	C4: O2	15.83 %
18:52:06	C1: CO	1.18 %	C2: CO2	3.42	C4: O2	16.03 %
18:53:06	C1: CO	1.16 %	C2: CO2	3.38	C4: O2	16.11 %
18:54:06	C1: CO	1.17 %	C2: CO2	3.39	C4: O2	16.09 %
18:55:06	C1: CO	1.18 %	C2: CO2	3.30	C4: O2	15.63 %
18:56:06	C1: CO	1.17 %	C2: CO2	3.33	C4: O2	16.01 %
18:57:06	C1: CO	1.19 %	C2: CO2	3.31	C4: O2	16.06 %
18:58:06	C1: CO	1.15 %	C2: CO2	3.25	C4: O2	15.75 %
18:59:06	C1: CO	1.22 %	C2: CO2	3.33	C4: O2	16.13 %
19:00:06	C1: CO	1.19 %	C2: CO2	3.23	C4: O2	15.81 %
19:01:06	C1: CO	1.22 %	C2: CO2	3.25	C4: O2	16.07 %
19:02:06	C1: CO	1.22 %	C2: CO2	3.17	C4: O2	16.18 %
19:03:06	C1: CO	1.22 %	C2: CO2	3.18	C4: O2	16.23 %
19:04:06	C1: CO	1.24 %	C2: CO2	3.21	C4: O2	16.21 %
19:05:06	C1: CO	1.23 %	C2: CO2	3.22	C4: O2	16.19 %
19:06:06	C1: CO	1.19 %	C2: CO2	3.21	C4: O2	15.94 %
19:07:06	C1: CO	1.19 %	C2: CO2	3.24	C4: O2	16.18 %
19:08:06	C1: CO	1.20 %	C2: CO2	3.22	C4: O2	16.15 %
19:09:06	C1: CO	1.21 %	C2: CO2	3.25	C4: O2	16.16 %
19:10:06	C1: CO	1.25 %	C2: CO2	3.27	C4: O2	16.14 %
19:11:06	C1: CO	1.22 %	C2: CO2	3.18	C4: O2	16.07 %
19:12:06	C1: CO	1.24 %	C2: CO2	3.18	C4: O2	16.25 %
19:13:06	C1: CO	1.20 %	C2: CO2	3.24	C4: O2	16.18 %
19:14:06	C1: CO	1.22 %	C2: CO2	3.15	C4: O2	16.23 %
19:15:06	C1: CO	1.25 %	C2: CO2	3.15	C4: O2	16.28 %
19:16:06	C1: CO	1.23 %	C2: CO2	3.12	C4: O2	16.02 %
19:17:06	C1: CO	1.25 %	C2: CO2	3.15	C4: O2	16.25 %
19:18:06	C1: CO	1.21 %	C2: CO2	2.95	C4: O2	15.45 %

SBI CW2500 27-Jun-13 Run #5

Time	CO		CO_2		O_2	
19:19:06	C1: CO	1.22 %	C2: CO2	2.87	C4: O2	15.32 %
19:20:06	C1: CO	1.17 %	C2: CO2	2.71	C4: O2	15.13 %
19:21:06	C1: CO	1.26 %	C2: CO2	2.86	C4: O2	16.06 %
19:22:06	C1: CO	1.26 %	C2: CO2	2.94	C4: O2	15.63 %
19:23:06	C1: CO	1.27 %	C2: CO2	2.90	C4: O2	16.37 %
19:24:06	C1: CO	1.27 %	C2: CO2	2.81	C4: O2	16.02 %
19:25:06	C1: CO	1.27 %	C2: CO2	2.81	C4: O2	16.51 %
19:26:06	C1: CO	1.24 %	C2: CO2	2.69	C4: O2	16.64 %
19:27:06	C1: CO	1.26 %	C2: CO2	2.61	C4: O2	16.69 %
19:28:06	C1: CO	1.28 %	C2: CO2	2.61	C4: O2	16.75 %
19:29:06	C1: CO	1.32 %	C2: CO2	2.53	C4: O2	16.78 %
19:30:06	C1: CO	1.35 %	C2: CO2	2.55	C4: O2	16.76 %
19:31:06	C1: CO	1.46 %	C2: CO2	2.32	C4: O2	16.79 %
19:32:06	C1: CO	1.36 %	C2: CO2	2.35	C4: O2	16.87 %
19:33:06	C1: CO	1.50 %	C2: CO2	2.14	C4: O2	16.88 %
19:34:06	C1: CO	1.66 %	C2: CO2	1.93	C4: O2	16.83 %
19:35:06	C1: CO	1.68 %	C2: CO2	1.86	C4: O2	17.07 %
19:36:06	C1: CO	1.61 %	C2: CO2	1.96	C4: O2	17.09 %
19:37:06	C1: CO	1.68 %	C2: CO2	1.83	C4: O2	17.07 %
19:38:06	C1: CO	1.63 %	C2: CO2	1.80	C4: O2	16.78 %
19:39:06	C1: CO	1.51 %	C2: CO2	2.01	C4: O2	17.14 %
19:40:06	C1: CO	1.60 %	C2: CO2	1.84	C4: O2	17.07 %
19:41:06	C1: CO	1.61 %	C2: CO2	1.82	C4: O2	17.20 %
19:42:06	C1: CO	1.59 %	C2: CO2	1.76	C4: O2	17.19 %
19:43:06	C1: CO	1.59 %	C2: CO2	1.77	C4: O2	17.22 %
19:44:06	C1: CO	1.55 %	C2: CO2	1.70	C4: O2	17.00 %
19:45:06	C1: CO	1.60 %	C2: CO2	1.77	C4: O2	17.25 %
19:46:06	C1: CO	1.59 %	C2: CO2	1.75	C4: O2	17.24 %
19:47:06	C1: CO	1.61 %	C2: CO2	1.75	C4: O2	17.27 %
19:48:06	C1: CO	1.61 %	C2: CO2	1.71	C4: O2	16.17 %
19:49:06	C1: CO	1.60 %	C2: CO2	1.70	C4: O2	17.30 %
19:50:06	C1: CO	1.59 %	C2: CO2	1.71	C4: O2	17.32 %
19:51:06	C1: CO	1.57 %	C2: CO2	1.73	C4: O2	17.33 %
19:52:06	C1: CO	1.61 %	C2: CO2	1.61	C4: O2	17.34 %
19:53:06	C1: CO	1.59 %	C2: CO2	1.59	C4: O2	17.39 %
19:54:06	C1: CO	1.58 %	C2: CO2	1.58	C4: O2	17.41 %
19:55:06	C1: CO	1.61 %	C2: CO2	1.55	C4: O2	17.30 %
19:56:06	C1: CO	1.62 %	C2: CO2	1.51	C4: O2	17.17 %
19:57:06	C1: CO	1.61 %	C2: CO2	1.51	C4: O2	17.18 %
19:58:06	C1: CO	1.65 %	C2: CO2	1.56	C4: O2	17.41 %
19:59:06	C1: CO	1.60 %	C2: CO2	1.61	C4: O2	17.42 %
20:00:06	C1: CO	1.59 %	C2: CO2	1.65	C4: O2	17.42 %
20:01:06	C1: CO	1.58 %	C2: CO2	1.57	C4: O2	16.93 %

SBI CW2500 27-Jun-13 Run #5

Time	CO		CO_2		O_2	
20:02:06	C1: CO	1.60 %	C2: CO2	1.53	C4: O2	17.30 %
20:03:06	C1: CO	1.58 %	C2: CO2	1.48	C4: O2	17.48 %
20:04:06	C1: CO	1.59 %	C2: CO2	1.47	C4: O2	17.57 %
20:05:06	C1: CO	1.56 %	C2: CO2	1.42	C4: O2	17.59 %
20:06:06	C1: CO	1.52 %	C2: CO2	1.38	C4: O2	17.62 %
20:07:06	C1: CO	1.50 %	C2: CO2	1.36	C4: O2	17.62 %
20:08:06	C1: CO	1.54 %	C2: CO2	1.38	C4: O2	17.64 %
20:09:06	C1: CO	1.53 %	C2: CO2	1.37	C4: O2	17.63 %
20:10:06	C1: CO	1.51 %	C2: CO2	1.40	C4: O2	16.59 %

Appendix F: Test data
Run 6

Intertek

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 28, 2013
Test Run Number:	6

EPA Method 28
Pre Burn Data

Coal Bed Range	1.8	to	2.1

Average Firebox Temp, °F	345.84

Final Coal Bed Wt, lb	1.85

Interval	10

Time		Temperature Data											
Interval	Duration	Room	Dilution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Flue Draft	Fuel Weight	Weight Loss
0	0	80.2	101.3	923.7	560.6	533.2	568.5	494.8	592.4			2.81	0.55
1	10	81.74	114.6	389	811.8	531.3	585	483.5	575.7			2.67	0.14
2	20	78.34	104.1	315.8	452.3	504.9	515.6	447	535.6			2.58	0.09
3	30	78.25	96.74	284.9	404.3	476.4	469.3	410.7	478.6			2.47	0.11
4	40	77.82	94.49	265.9	370.1	454.8	431.7	380.9	435			2.37	0.10
5	50	74.59	92.69	255.4	346.9	439.8	403.6	358.4	406.6			2.30	0.07
6	60	69.39	89.17	246	328.3	427.4	381.6	339.7	383.8			2.16	0.14
7	70	69.34	89.8	236.1	314.8	418.9	365.7	323.1	367.7			2.04	0.12
8	80	68.69	85.94	229.4	303.9	405.5	355	311	353.9			1.90	0.14
9	90	72.38	96.17	258.7	296.3	395.7	349.5	302.9	344.7			1.85	0.05
10													
11													
12													
13													
14													
15													
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30													

Test Engineer:_____ Date:_____

Intertek

TEST DATA
EPA METHOD 5G-3

Project Number:	
Manufacturer:	SBI
Model:	CW2500
Sample ID No:	
Test Date:	June 28, 2013
Test Run No:	6

Temperature Data

Firebox Temp Start	336.4
Firebox Temp End	338.72
Firebox Delta-T	2.3

Max Filter Temps	
Train A	Train B
85.48	82.58

Interval	10	Duration of Test, Min	190

Time		Temperature Data													
Interval	Duration	Room	Dillution Tunnel	Flue Gas	Firebox Top	Firebox Bottom	Firebox Back	Firebox Left	Firebox Right	Catalyst Outlet	Train A Filter	Train B Filter	Train A DGM	Train B DGM
0	0	73.5	93.39	246.8	295	394.2	347.9	300.9	344		75.86	75.28	74.885	74.74
1	10	76.88	96.15	251	293.1	383	335.7	283.5	327.5		79.82	78.27	74.975	74.775
2	20	77.96	96.03	299.4	290.5	365.8	316.8	262.2	300.7		80.32	78.51	74.9	74.61
3	30	78.81	99.7	321.3	318.9	348.1	307.6	251.6	299.9		81.2	79.21	74.94	74.6
4	40	81.58	111	448.8	392.5	332	310.1	262.9	319.5		83.01	80.65	75.1	74.7
5	50	74.35	119.5	550.5	503	319.9	327.3	289	353.2		84.32	82.06	75.15	74.755
6	60	74.65	117.6	504.5	565.4	316.4	351.5	319.2	387.7		85.48	82.58	75.27	74.84
7	70	75.2	108.6	415.5	551.5	321.4	377	346.7	415.5		84.59	82	75.26	74.81
8	80	73.61	101.7	359.1	496.3	331.9	407.2	357.5	428		83.29	80.69	75.195	74.78
9	90	73.5	97.42	321.3	442.4	345.7	429.4	356.5	431.2		82.17	79.6	75.195	74.75
10	100	73	94.71	303.1	406.9	359.7	433.1	353.1	431.2		81.51	78.9	75.24	74.745
11	110	72.27	92.86	291.4	385	370.9	429.6	347.8	426.8		80.71	78.54	75.205	74.745
12	120	70.98	91.01	282.9	369.6	376.9	422.5	341.9	420.2		80.33	78.13	75.135	74.69
13	130	70.69	89.27	274.8	358.4	378.8	414.4	335.3	413.9		79.82	77.73	75.11	74.645
14	140	69.38	87.84	261.4	348.3	378.8	405.6	329.8	405.8		79.45	77.43	75.015	74.605
15	150	70	86.53	250	336.5	377.9	392.6	322.4	395.5		79.11	77.15	75.03	74.575
16	160	69.78	85.86	243.9	324.9	375.3	378.6	312.7	383.1		78.65	76.86	74.955	74.51
17	170	68.84	85.16	241.2	315.5	370.8	367.1	303.7	372.1		78.63	76.7	74.91	74.48
18	180	78.79	86.42	239.9	312.8	369.1	361.3	301.5	364.4		78.58	76.78	74.91	74.46
19	190	81.17	87.53	238.3	309.8	367.1	356.5	300.2	360		78.44	77	74.87	74.44
20														
21														
22														

Gas Particulate Sampling Data

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 28, 2013
Test Run Number:	6

Barometer, In. Hg		RH, %	Sample Box Correction (γ) Factors	
Start	29.77	93	Meter Box (A)	0.977
End	29.68	93	Meter Box (B)	0.986
Duration of Test, Min		190		

Leak Check, cfm @ in Hg	
Train A	Train B
0.004@5	0.0035@5

Maximum Vacuum	
Train A	Train B
0.00	0.00

Time		Particulate Sampling Data											
Time	Tunnel Delta-P	Train A Delta-H	Train B Delta-H	Flue Draft	Fuel Weight	Weight Loss	Train A Volume	Train B Volume	Train A Proportional Rate	Train B Proportional Rate	Train A Vacuum, In. Hg	Train B Vacuum, In. Hg
0	0.013	0.00	0.00	0.035	8.64	8.64	814.290	642.775	100.00	100.01	0.00	0.00
10	0.013	0.00	0.00	0.040	8.12	0.52	815.871	644.365	98.98	100.29	0.00	0.00
20	0.013	0.00	0.00	0.050	7.51	0.61	817.413	645.937	96.54	99.18	0.00	0.00
30	0.013	0.00	0.00	0.055	6.67	0.84	819.027	647.518	101.37	100.08	0.00	0.00
40	0.013	0.00	0.00	0.070	5.39	1.28	820.632	649.125	101.79	102.72	0.00	0.00
50	0.013	0.00	0.00	0.075	3.94	1.45	822.232	650.727	102.22	103.15	0.00	0.00
60	0.013	0.00	0.00	0.070	2.72	1.22	823.834	652.285	102.15	100.14	0.00	0.00
70	0.013	0.00	0.00	0.060	2.00	0.72	825.422	653.864	100.47	100.70	0.00	0.00
80	0.013	0.00	0.00	0.055	1.66	0.34	827.011	655.470	99.93	101.80	0.00	0.00
90	0.013	0.00	0.00	0.050	1.42	0.24	828.610	657.050	100.18	99.78	0.00	0.00
100	0.013	0.00	0.00	0.045	1.25	0.17	830.221	658.630	100.68	99.54	0.00	0.00
110	0.013	0.00	0.00	0.045	1.05	0.20	831.805	660.202	98.83	98.87	0.00	0.00
120	0.013	0.00	0.00	0.045	0.88	0.17	833.416	661.794	100.36	99.97	0.00	0.00
130	0.013	0.00	0.00	0.045	0.69	0.19	835.015	663.382	99.46	99.57	0.00	0.00
140	0.013	0.00	0.00	0.040	0.55	0.14	836.624	664.967	99.97	99.26	0.00	0.00
150	0.013	0.00	0.00	0.040	0.41	0.14	838.222	666.541	99.16	98.46	0.00	0.00
160	0.013	0.00	0.00	0.040	0.28	0.13	839.830	668.115	99.74	98.41	0.00	0.00
170	0.013	0.00	0.00	0.040	0.11	0.17	841.430	669.716	99.16	100.16	0.00	0.00
180	0.013	0.00	0.00	0.040	0.06	0.05	843.035	671.309	99.61	99.53	0.00	0.00
190	0.013	0.00	0.00	0.040	0.00	0.06	844.636	672.882	99.47	98.51	0.00	0.00

Test Engineer:_____

Date:_____

			VS (1)	0.0272575					
			VS (2)	0.02720207	STD Tunnel Flow:		139.15		
190				556.4135	29.054	29.113	7.34	100.00	100.01
Time	Average Firebox Temp	Ending Average Firebox Temp	Tunnel Delta-P	Tunnel Temp, R	STD Sample Ft^3 (1)	STD Sample Ft^3 (2)	Tunnel Velocity	Proportional Rate (1)	Proportional Rate (2)
0	336.4		0.013	553.39			7.324		
10	324.6		0.013	556.15	1.514	1.537	7.343	98.98	100.29
20	307.2		0.013	556.03	1.477	1.520	7.342	96.54	99.18
30	305.2		0.013	559.7	1.546	1.529	7.366	101.37	100.08
40	323.4		0.013	571	1.537	1.554	7.440	101.79	102.72
50	358.5		0.013	579.5	1.532	1.549	7.495	102.22	103.15
60	388.0		0.013	577.6	1.533	1.506	7.483	102.15	100.14
70	402.4		0.013	568.6	1.520	1.526	7.424	100.47	100.70
80	404.2		0.013	561.7	1.521	1.553	7.379	99.93	101.80
90	401.0		0.013	557.42	1.531	1.528	7.351	100.18	99.78
100	396.8		0.013	554.71	1.542	1.528	7.333	100.68	99.54
110	392.0		0.013	552.86	1.516	1.520	7.321	98.83	98.87
120	386.2		0.013	551.01	1.542	1.539	7.309	100.36	99.97
130	380.2		0.013	549.27	1.531	1.536	7.297	99.46	99.57
140	373.7		0.013	547.84	1.541	1.533	7.288	99.97	99.26
150	365.0		0.013	546.53	1.530	1.522	7.279	99.16	98.46
160	354.9		0.013	545.86	1.540	1.522	7.274	99.74	98.41
170	345.8		0.013	545.15	1.532	1.551	7.270	99.18	100.16
180	341.8		0.013	546.42	1.537	1.539	7.278	99.61	99.53
190	338.7	338.72	0.013	547.53	1.533	1.522	7.286	99.47	98.51

Intertek

TEST FUEL DATA
EPA METHOD 5G-3

Project Number:	0
Manufacturer:	SBI
Model:	CW2500
Sample ID Number:	0
Test Date:	June 28, 2013
Test Run Number:	6

Calibration Reference ID	180-463	
Set meter to Species 1		
Set Temperature to 70F	12%	12.0
Set pin setting to 444	22%	12.0

PRE-BURN FUEL PROPERTIES

Eq. ID No.:	SBI-214	Time:	8:30	Temp., °F:	80
Piece No.	Length, In.	Weight, Lb.	Moisture, %, Dry Basis		
1	9.00	0.87	21.2	19.5	21.7
2	9.00	0.89	20.4	20.3	20.5
3	9.00	0.89	20.4	19.8	20.4
4	9.00	0.89	20.4	19.7	20.4
5	17.00	1.70	20.8	20.5	20.8
6	17.00	1.76	20.4	20.2	20.6
7	17.00	2.07	20.1	18.9	20.5
8	17.00	1.83	21.2	20.3	21.0
9	17.00	1.83	20.6	18.9	20.6
10					
11					
12					
Total Weight		12.3	Average, %db		20.4

Allowable Fuel Load Range: **8.4** to **10.1**

TEST FUEL LOAD PROPERTIES

Eq. ID No.:	SBI214		Time:	9:50	Temp., °F:	80
Piece No.	Length, In.	Weight, Lb. 2x4	Weight, Lb. 4x4	Moisture, %, Dry Basis		
1	17.00	2.00		20.0	19.2	20.9
2	17.00	2.46		19.0	20.1	20.3
3	17.00	2.09		21.3	20.6	21.2
4	17.00	2.09		20.4	20.4	20.9
5						
6						
7						
8						
Totals		8.6	0.0			
% of Weight		100	0			
Total weight, wet, lb.		8.64		Average Moisture, dry		20.36
Total weight, dry, kg		3.26		Average Moisture, wet		16.91

Test Engineer:_____ Date:_____

Intertek

TEST RESULTS
EPA METHOD 5G-3

Print Report

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 28, 2013
Test Run Number: 6

Dry Burn-Rate, kg/hr:	**1.03**	
Emission-Rate, g/hr:	**1.87**	
Adjusted Emission-Rate, g/hr :	**3.05**	
Duration of Test, Minutes	190	
Dry Gas Meter Standardization	Train A	Train B
Dry Gas Meter Beginning Reading, ft^3	814.29	642.775
Dry Gas Meter Ending Reading, ft^3	844.636	672.882
Barometric Pressure Correction Factor	0.993	0.993
Dry Gas Meter Calibration Factors (γ factors)	0.977	0.986
Dry Gas Meter Temperature Factors	0.987	0.988
Dry Gas Meter Delta-H Correction Factors	1.000	1.000
Dry Gas Meter STD Volume Sampled, ft^3	**29.066**	**29.125**
Dillution Tunnel Flow / Volume		
Standardized Tunnel Flow, dscfm	**139.152**	
Total Tunnel Volume, scf	**26438.870**	
Emission Caclulations	Train A	Train B
Sample Ratios (Total Tunnel Volume / Total Sample Volume)	909.614	907.788
Sample Particulate Mass, mg	6.4	6.6
Total Emissions, grams	5.822	5.991
Emission-Rate, g/hr	1.84	1.89
Adjusted Emission Rates, g/hr	**3.02**	**3.09**
Deviation, %	1.19%	
Operating Parameters	Train A	Train B
Max Filter Temperature, °F	85.48	82.58
Post-Test Leak Check, cfm @ in. Hg vac.	0.004@5	0.0035@5
Average Firebox Surface Temperture delta-T, °F	2.32	
Maximum Ambient Temperture, °F	82	
Mimimum Ambient Temperature, °F	69	
Fuel Properties		
Wet Fuel Load Weight, lb.	8.64	
Dry-Basis Fuel Load Moisture Content, %	20.36	
Wet-Basis Fuel Load Moisture Content, %	16.91	
Coal Bed Range, lb.	1.80	2.10
Actual Coal Bed, Lb.	1.85	

Intertek

DILLUTION TUNNEL PARTICULATE CALCULATIONS
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 28, 2013
Test Run Number: 6

Intertek Equipment No.'s SBI-206

Sample Train - 1					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	21		115.4	
B - Rear Filter Catch	Filter	22		117.6	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			239.1	233	6.1
Probe & Filter Holder	Probe	34	108413.4	108413.1	0.3
			Total Particulate, mg		6.4

Sample Train - 2					
Sample Component	Component	ID Number	Weights		
			Final, mg	Tare, mg	Particulate, mg
A - Front Filter Catch	Filter	23		118.2	
B - Rear Filter Catch	Filter	24		115.2	
C - Seal Set	O-Ring				
Total, A+B+C-Tares			239.7	233.4	6.3
Probe & Filter Holder	Probe	35	107840.6	107840.3	0.3
			Total Particulate, mg		6.6

Test Engineer:_____ Date:_____

Intertek

Dillution Tunnel Velocity Traverse
EPA Method 5G-3

Project Number: 0
Manufacturer: SBI
Model: CW2500
Sample ID Number: 0
Test Date: June 28, 2013
Test Run Number: 6

	Dilution Tunnel		
	Delta P In. H2O	Temp, °F	Square Root
A1	0.0100	97	0.1000
A2	0.0125	97	0.1118
A3	0.0125	97	0.1118
A4	0.0125	97	0.1118
A Center	0.0125	97	0.1118
B1	0.0075	95	0.0866
B2	0.0125	95	0.1118
B3	0.0125	95	0.1118
B4	0.0125	94	0.1118
B Center	0.0125	95	0.1118
Averages	0.01175	95.872	0.1072

Tunnel Diameter	8.000	inches	
Tunnel Static	-0.075	in. H2O	
Tunnel Area	0.34907	Ft2	
Pitot Correction	0.9586	factor	
Baro. Pressure	29.77		
Pitot Factor	0.99	(0.99 for standard, 0.84 or Cal. For S-Type)	
Initial Velocity	7.335	Ft/ Sec	
Initial Flow	**139.33**	Ft3/min	

Test Engineer:_____ Date:_____

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
11:54:14	C1: CO	1.15 %	C2: CO2	1.58 %	C4: O2	20.07 %
11:55:14	C1: CO	0.71 %	C2: CO2	0.78 %	C4: O2	18.60 %
11:56:14	C1: CO	0.92 %	C2: CO2	1.34 %	C4: O2	18.88 %
11:57:14	C1: CO	0.46 %	C2: CO2	0.12 %	C4: O2	18.23 %
11:58:14	C1: CO	0.47 %	C2: CO2	0.26 %	C4: O2	19.87 %
11:59:14	C1: CO	0.62 %	C2: CO2	2.93 %	C4: O2	19.70 %
12:00:14	C1: CO	0.68 %	C2: CO2	5.15 %	C4: O2	16.32 %
12:01:14	C1: CO	0.76 %	C2: CO2	7.75 %	C4: O2	14.09 %
12:02:14	C1: CO	0.74 %	C2: CO2	2.44 %	C4: O2	12.20 %
12:03:14	C1: CO	0.64 %	C2: CO2	1.30 %	C4: O2	17.80 %
12:04:14	C1: CO	0.65 %	C2: CO2	1.26 %	C4: O2	18.52 %
12:05:14	C1: CO	0.65 %	C2: CO2	1.24 %	C4: O2	18.53 %
12:06:14	C1: CO	0.65 %	C2: CO2	1.38 %	C4: O2	18.47 %
12:07:14	C1: CO	0.65 %	C2: CO2	1.47 %	C4: O2	18.35 %
12:08:14	C1: CO	0.60 %	C2: CO2	2.02 %	C4: O2	18.27 %
12:09:14	C1: CO	0.59 %	C2: CO2	2.92 %	C4: O2	17.56 %
12:10:14	C1: CO	0.61 %	C2: CO2	3.39 %	C4: O2	16.88 %
12:11:14	C1: CO	0.67 %	C2: CO2	3.65 %	C4: O2	16.48 %
12:12:14	C1: CO	0.70 %	C2: CO2	3.52 %	C4: O2	16.32 %
12:13:14	C1: CO	0.75 %	C2: CO2	3.53 %	C4: O2	16.35 %
12:14:14	C1: CO	0.77 %	C2: CO2	3.97 %	C4: O2	16.28 %
12:15:14	C1: CO	0.74 %	C2: CO2	4.51 %	C4: O2	15.61 %
12:16:14	C1: CO	0.76 %	C2: CO2	4.09 %	C4: O2	15.43 %
12:17:14	C1: CO	0.79 %	C2: CO2	3.76 %	C4: O2	15.83 %
12:18:14	C1: CO	0.78 %	C2: CO2	3.85 %	C4: O2	16.12 %
12:19:14	C1: CO	0.76 %	C2: CO2	4.50 %	C4: O2	15.83 %
12:20:14	C1: CO	0.76 %	C2: CO2	5.03 %	C4: O2	15.29 %
12:21:14	C1: CO	0.78 %	C2: CO2	5.63 %	C4: O2	14.77 %
12:22:14	C1: CO	0.84 %	C2: CO2	5.28 %	C4: O2	14.38 %
12:23:14	C1: CO	0.78 %	C2: CO2	5.01 %	C4: O2	14.68 %
12:24:14	C1: CO	0.79 %	C2: CO2	4.39 %	C4: O2	15.01 %
12:25:14	C1: CO	0.79 %	C2: CO2	4.12 %	C4: O2	15.56 %
12:26:14	C1: CO	0.83 %	C2: CO2	4.70 %	C4: O2	15.76 %
12:27:14	C1: CO	0.87 %	C2: CO2	7.03 %	C4: O2	14.64 %
12:28:14	C1: CO	0.80 %	C2: CO2	7.86 %	C4: O2	12.57 %
12:29:14	C1: CO	0.85 %	C2: CO2	8.28 %	C4: O2	12.15 %
12:30:14	C1: CO	0.92 %	C2: CO2	8.72 %	C4: O2	11.77 %
12:31:14	C1: CO	0.88 %	C2: CO2	9.08 %	C4: O2	11.23 %
12:32:14	C1: CO	0.86 %	C2: CO2	9.02 %	C4: O2	11.13 %
12:33:14	C1: CO	0.82 %	C2: CO2	9.29 %	C4: O2	11.15 %
12:34:14	C1: CO	0.79 %	C2: CO2	9.38 %	C4: O2	11.03 %
12:35:14	C1: CO	0.77 %	C2: CO2	9.56 %	C4: O2	10.93 %
12:36:14	C1: CO	0.76 %	C2: CO2	9.79 %	C4: O2	10.87 %

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
12:37:14	C1: CO	0.76 %	C2: CO2	9.85 %	C4: O2	10.75 %
12:38:14	C1: CO	0.75 %	C2: CO2	9.79 %	C4: O2	10.57 %
12:39:14	C1: CO	0.81 %	C2: CO2	10.03 %	C4: O2	10.39 %
12:40:14	C1: CO	0.82 %	C2: CO2	10.16 %	C4: O2	10.12 %
12:41:14	C1: CO	0.89 %	C2: CO2	10.32 %	C4: O2	9.97 %
12:42:14	C1: CO	0.96 %	C2: CO2	10.54 %	C4: O2	9.74 %
12:43:14	C1: CO	1.05 %	C2: CO2	10.72 %	C4: O2	9.48 %
12:44:14	C1: CO	1.10 %	C2: CO2	10.75 %	C4: O2	9.37 %
12:45:14	C1: CO	1.09 %	C2: CO2	10.91 %	C4: O2	9.22 %
12:46:14	C1: CO	1.05 %	C2: CO2	10.93 %	C4: O2	9.15 %
12:47:14	C1: CO	1.05 %	C2: CO2	10.89 %	C4: O2	9.06 %
12:48:14	C1: CO	0.97 %	C2: CO2	10.78 %	C4: O2	8.99 %
12:49:14	C1: CO	0.91 %	C2: CO2	10.77 %	C4: O2	8.97 %
12:50:14	C1: CO	0.87 %	C2: CO2	10.56 %	C4: O2	9.02 %
12:51:14	C1: CO	0.82 %	C2: CO2	10.28 %	C4: O2	9.10 %
12:52:14	C1: CO	0.78 %	C2: CO2	10.17 %	C4: O2	9.20 %
12:53:14	C1: CO	0.72 %	C2: CO2	10.01 %	C4: O2	9.38 %
12:54:14	C1: CO	0.69 %	C2: CO2	9.87 %	C4: O2	9.59 %
12:55:14	C1: CO	0.66 %	C2: CO2	9.73 %	C4: O2	9.79 %
12:56:14	C1: CO	0.64 %	C2: CO2	9.67 %	C4: O2	9.98 %
12:57:14	C1: CO	0.63 %	C2: CO2	9.52 %	C4: O2	10.17 %
12:58:14	C1: CO	0.61 %	C2: CO2	9.25 %	C4: O2	10.31 %
12:59:14	C1: CO	0.60 %	C2: CO2	9.10 %	C4: O2	10.42 %
13:00:14	C1: CO	0.59 %	C2: CO2	9.19 %	C4: O2	10.56 %
13:01:14	C1: CO	0.58 %	C2: CO2	8.96 %	C4: O2	10.73 %
13:02:14	C1: CO	0.57 %	C2: CO2	8.69 %	C4: O2	10.90 %
13:03:14	C1: CO	0.57 %	C2: CO2	8.40 %	C4: O2	11.07 %
13:04:14	C1: CO	0.56 %	C2: CO2	7.85 %	C4: O2	11.27 %
13:05:14	C1: CO	0.55 %	C2: CO2	7.11 %	C4: O2	11.49 %
13:06:14	C1: CO	0.54 %	C2: CO2	6.72 %	C4: O2	11.76 %
13:07:14	C1: CO	0.55 %	C2: CO2	6.43 %	C4: O2	12.18 %
13:08:14	C1: CO	0.56 %	C2: CO2	6.26 %	C4: O2	12.65 %
13:09:14	C1: CO	0.55 %	C2: CO2	6.06 %	C4: O2	13.07 %
13:10:14	C1: CO	0.53 %	C2: CO2	5.88 %	C4: O2	13.41 %
13:11:14	C1: CO	0.52 %	C2: CO2	5.86 %	C4: O2	13.65 %
13:12:14	C1: CO	0.52 %	C2: CO2	5.82 %	C4: O2	13.85 %
13:13:14	C1: CO	0.51 %	C2: CO2	5.78 %	C4: O2	14.01 %
13:14:14	C1: CO	0.51 %	C2: CO2	5.72 %	C4: O2	14.12 %
13:15:14	C1: CO	0.51 %	C2: CO2	5.60 %	C4: O2	14.20 %
13:16:14	C1: CO	0.51 %	C2: CO2	5.42 %	C4: O2	14.27 %
13:17:14	C1: CO	0.51 %	C2: CO2	5.21 %	C4: O2	14.36 %
13:18:14	C1: CO	0.52 %	C2: CO2	5.05 %	C4: O2	14.51 %
13:19:14	C1: CO	0.54 %	C2: CO2	5.02 %	C4: O2	14.70 %

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
13:20:14	C1: CO	0.55 %	C2: CO2	4.97 %	C4: O2	14.89 %
13:21:14	C1: CO	0.56 %	C2: CO2	4.93 %	C4: O2	14.99 %
13:22:14	C1: CO	0.56 %	C2: CO2	4.90 %	C4: O2	15.04 %
13:23:14	C1: CO	0.58 %	C2: CO2	4.84 %	C4: O2	15.07 %
13:24:14	C1: CO	0.59 %	C2: CO2	4.83 %	C4: O2	15.10 %
13:25:14	C1: CO	0.60 %	C2: CO2	4.79 %	C4: O2	15.13 %
13:26:14	C1: CO	0.62 %	C2: CO2	4.78 %	C4: O2	15.14 %
13:27:14	C1: CO	0.63 %	C2: CO2	4.72 %	C4: O2	15.16 %
13:28:14	C1: CO	0.65 %	C2: CO2	4.64 %	C4: O2	15.17 %
13:29:14	C1: CO	0.66 %	C2: CO2	4.61 %	C4: O2	15.21 %
13:30:14	C1: CO	0.68 %	C2: CO2	4.56 %	C4: O2	15.26 %
13:31:14	C1: CO	0.70 %	C2: CO2	4.50 %	C4: O2	15.28 %
13:32:14	C1: CO	0.71 %	C2: CO2	4.48 %	C4: O2	15.30 %
13:33:14	C1: CO	0.73 %	C2: CO2	4.38 %	C4: O2	15.32 %
13:34:14	C1: CO	0.75 %	C2: CO2	4.32 %	C4: O2	15.34 %
13:35:14	C1: CO	0.78 %	C2: CO2	4.27 %	C4: O2	15.38 %
13:36:14	C1: CO	0.79 %	C2: CO2	4.19 %	C4: O2	15.43 %
13:37:14	C1: CO	0.81 %	C2: CO2	4.14 %	C4: O2	15.46 %
13:38:14	C1: CO	0.83 %	C2: CO2	4.11 %	C4: O2	15.50 %
13:39:14	C1: CO	0.84 %	C2: CO2	4.05 %	C4: O2	15.52 %
13:40:14	C1: CO	0.86 %	C2: CO2	4.08 %	C4: O2	15.54 %
13:41:14	C1: CO	0.86 %	C2: CO2	4.01 %	C4: O2	15.55 %
13:42:14	C1: CO	0.87 %	C2: CO2	4.03 %	C4: O2	15.55 %
13:43:14	C1: CO	0.88 %	C2: CO2	4.03 %	C4: O2	15.56 %
13:44:14	C1: CO	0.90 %	C2: CO2	4.01 %	C4: O2	15.55 %
13:45:14	C1: CO	0.91 %	C2: CO2	3.96 %	C4: O2	15.54 %
13:46:14	C1: CO	0.93 %	C2: CO2	3.93 %	C4: O2	15.56 %
13:47:14	C1: CO	0.94 %	C2: CO2	3.86 %	C4: O2	15.57 %
13:48:14	C1: CO	0.94 %	C2: CO2	3.86 %	C4: O2	15.59 %
13:49:14	C1: CO	0.95 %	C2: CO2	3.84 %	C4: O2	15.62 %
13:50:14	C1: CO	0.95 %	C2: CO2	3.83 %	C4: O2	15.63 %
13:51:14	C1: CO	0.97 %	C2: CO2	3.83 %	C4: O2	15.63 %
13:52:14	C1: CO	0.98 %	C2: CO2	3.79 %	C4: O2	15.64 %
13:53:14	C1: CO	0.98 %	C2: CO2	3.78 %	C4: O2	15.64 %
13:54:14	C1: CO	0.98 %	C2: CO2	3.74 %	C4: O2	15.65 %
13:55:14	C1: CO	0.99 %	C2: CO2	3.73 %	C4: O2	15.67 %
13:56:14	C1: CO	0.99 %	C2: CO2	3.71 %	C4: O2	15.70 %
13:57:14	C1: CO	0.98 %	C2: CO2	3.66 %	C4: O2	15.71 %
13:58:14	C1: CO	0.99 %	C2: CO2	3.63 %	C4: O2	15.73 %
13:59:14	C1: CO	0.99 %	C2: CO2	3.64 %	C4: O2	15.77 %
14:00:14	C1: CO	1.00 %	C2: CO2	3.63 %	C4: O2	15.79 %
14:01:14	C1: CO	1.03 %	C2: CO2	3.63 %	C4: O2	15.78 %
14:02:14	C1: CO	1.03 %	C2: CO2	3.59 %	C4: O2	15.79 %

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
14:03:14	C1: CO	1.03 %	C2: CO2	3.58 %	C4: O2	15.79 %
14:04:14	C1: CO	1.03 %	C2: CO2	3.59 %	C4: O2	15.80 %
14:05:14	C1: CO	1.05 %	C2: CO2	3.54 %	C4: O2	15.81 %
14:06:14	C1: CO	1.07 %	C2: CO2	3.55 %	C4: O2	15.80 %
14:07:14	C1: CO	1.06 %	C2: CO2	3.52 %	C4: O2	15.82 %
14:08:14	C1: CO	1.07 %	C2: CO2	3.47 %	C4: O2	15.82 %
14:09:14	C1: CO	1.08 %	C2: CO2	3.43 %	C4: O2	15.84 %
14:10:14	C1: CO	1.10 %	C2: CO2	3.39 %	C4: O2	15.88 %
14:11:14	C1: CO	1.12 %	C2: CO2	3.33 %	C4: O2	15.94 %
14:12:14	C1: CO	1.12 %	C2: CO2	3.23 %	C4: O2	15.98 %
14:13:14	C1: CO	1.14 %	C2: CO2	2.96 %	C4: O2	16.00 %
14:14:14	C1: CO	1.17 %	C2: CO2	2.87 %	C4: O2	16.08 %
14:15:14	C1: CO	1.19 %	C2: CO2	2.85 %	C4: O2	16.24 %
14:16:14	C1: CO	1.19 %	C2: CO2	2.81 %	C4: O2	16.32 %
14:17:14	C1: CO	1.18 %	C2: CO2	2.79 %	C4: O2	16.33 %
14:18:14	C1: CO	1.20 %	C2: CO2	2.76 %	C4: O2	16.35 %
14:19:14	C1: CO	1.23 %	C2: CO2	2.70 %	C4: O2	16.38 %
14:20:14	C1: CO	1.14 %	C2: CO2	2.74 %	C4: O2	16.39 %
14:21:14	C1: CO	1.15 %	C2: CO2	2.71 %	C4: O2	16.42 %
14:22:14	C1: CO	1.20 %	C2: CO2	2.57 %	C4: O2	16.45 %
14:23:14	C1: CO	1.25 %	C2: CO2	2.49 %	C4: O2	16.49 %
14:24:14	C1: CO	1.30 %	C2: CO2	2.42 %	C4: O2	16.54 %
14:25:14	C1: CO	1.34 %	C2: CO2	2.37 %	C4: O2	16.59 %
14:26:14	C1: CO	1.36 %	C2: CO2	2.32 %	C4: O2	16.61 %
14:27:14	C1: CO	1.36 %	C2: CO2	2.28 %	C4: O2	16.62 %
14:28:14	C1: CO	1.36 %	C2: CO2	2.27 %	C4: O2	16.65 %
14:29:14	C1: CO	1.37 %	C2: CO2	2.28 %	C4: O2	16.67 %
14:30:14	C1: CO	1.37 %	C2: CO2	2.25 %	C4: O2	16.69 %
14:31:14	C1: CO	1.40 %	C2: CO2	2.24 %	C4: O2	16.69 %
14:32:14	C1: CO	1.41 %	C2: CO2	2.23 %	C4: O2	16.69 %
14:33:14	C1: CO	1.40 %	C2: CO2	2.22 %	C4: O2	16.70 %
14:34:14	C1: CO	1.40 %	C2: CO2	2.25 %	C4: O2	16.70 %
14:35:14	C1: CO	1.41 %	C2: CO2	2.23 %	C4: O2	16.71 %
14:36:14	C1: CO	1.43 %	C2: CO2	2.20 %	C4: O2	16.70 %
14:37:14	C1: CO	1.46 %	C2: CO2	2.22 %	C4: O2	16.70 %
14:38:14	C1: CO	1.47 %	C2: CO2	2.22 %	C4: O2	16.72 %
14:39:14	C1: CO	1.48 %	C2: CO2	2.16 %	C4: O2	16.71 %
14:40:14	C1: CO	1.41 %	C2: CO2	2.26 %	C4: O2	16.70 %
14:41:14	C1: CO	1.35 %	C2: CO2	2.41 %	C4: O2	16.71 %
14:42:14	C1: CO	1.32 %	C2: CO2	2.44 %	C4: O2	16.68 %
14:43:14	C1: CO	1.30 %	C2: CO2	2.49 %	C4: O2	16.63 %
14:44:14	C1: CO	1.30 %	C2: CO2	2.53 %	C4: O2	16.60 %
14:45:14	C1: CO	1.30 %	C2: CO2	2.55 %	C4: O2	16.59 %

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
14:46:14	C1: CO	1.31 %	C2: CO2	2.47 %	C4: O2	16.57 %
14:47:14	C1: CO	1.33 %	C2: CO2	2.45 %	C4: O2	16.57 %
14:48:14	C1: CO	1.35 %	C2: CO2	2.46 %	C4: O2	16.60 %
14:49:14	C1: CO	1.37 %	C2: CO2	2.49 %	C4: O2	16.61 %
14:50:14	C1: CO	1.38 %	C2: CO2	2.51 %	C4: O2	16.59 %
14:51:14	C1: CO	1.38 %	C2: CO2	2.48 %	C4: O2	16.55 %
14:52:14	C1: CO	1.39 %	C2: CO2	2.45 %	C4: O2	16.52 %
14:53:14	C1: CO	1.42 %	C2: CO2	2.42 %	C4: O2	16.51 %
14:54:14	C1: CO	1.44 %	C2: CO2	2.36 %	C4: O2	16.52 %
14:55:14	C1: CO	1.43 %	C2: CO2	2.34 %	C4: O2	16.54 %
14:56:14	C1: CO	1.44 %	C2: CO2	2.33 %	C4: O2	16.58 %
14:57:14	C1: CO	1.43 %	C2: CO2	2.34 %	C4: O2	16.60 %
14:58:14	C1: CO	1.39 %	C2: CO2	2.40 %	C4: O2	16.62 %
14:59:14	C1: CO	1.39 %	C2: CO2	2.40 %	C4: O2	16.62 %
15:00:14	C1: CO	1.44 %	C2: CO2	2.29 %	C4: O2	16.61 %
15:01:14	C1: CO	1.54 %	C2: CO2	2.15 %	C4: O2	16.61 %
15:02:14	C1: CO	1.55 %	C2: CO2	2.11 %	C4: O2	16.66 %
15:03:14	C1: CO	1.56 %	C2: CO2	2.11 %	C4: O2	16.73 %
15:04:14	C1: CO	1.53 %	C2: CO2	2.06 %	C4: O2	16.75 %
15:05:14	C1: CO	1.51 %	C2: CO2	2.07 %	C4: O2	16.77 %
15:06:14	C1: CO	1.51 %	C2: CO2	2.06 %	C4: O2	16.81 %
15:07:14	C1: CO	1.51 %	C2: CO2	2.03 %	C4: O2	16.83 %
15:08:14	C1: CO	1.52 %	C2: CO2	2.00 %	C4: O2	16.85 %
15:09:14	C1: CO	1.49 %	C2: CO2	1.90 %	C4: O2	16.88 %
15:10:14	C1: CO	1.45 %	C2: CO2	1.81 %	C4: O2	16.91 %
15:11:14	C1: CO	1.44 %	C2: CO2	1.75 %	C4: O2	16.99 %
15:12:14	C1: CO	1.41 %	C2: CO2	1.73 %	C4: O2	17.10 %
15:13:14	C1: CO	1.42 %	C2: CO2	1.74 %	C4: O2	17.17 %
15:14:14	C1: CO	1.37 %	C2: CO2	1.77 %	C4: O2	17.20 %
15:15:14	C1: CO	1.39 %	C2: CO2	1.74 %	C4: O2	17.21 %
15:16:14	C1: CO	1.39 %	C2: CO2	1.72 %	C4: O2	17.22 %
15:17:14	C1: CO	1.40 %	C2: CO2	1.72 %	C4: O2	17.24 %
15:18:14	C1: CO	1.40 %	C2: CO2	1.70 %	C4: O2	17.26 %
15:19:14	C1: CO	1.41 %	C2: CO2	1.70 %	C4: O2	17.27 %
15:20:14	C1: CO	1.41 %	C2: CO2	1.71 %	C4: O2	17.28 %
15:21:14	C1: CO	1.42 %	C2: CO2	1.70 %	C4: O2	17.28 %
15:22:14	C1: CO	1.42 %	C2: CO2	1.70 %	C4: O2	17.27 %
15:23:14	C1: CO	1.42 %	C2: CO2	1.68 %	C4: O2	17.27 %
15:24:14	C1: CO	1.42 %	C2: CO2	1.66 %	C4: O2	17.27 %
15:25:14	C1: CO	1.42 %	C2: CO2	1.67 %	C4: O2	17.29 %
15:26:14	C1: CO	1.42 %	C2: CO2	1.67 %	C4: O2	17.31 %
15:27:14	C1: CO	1.43 %	C2: CO2	1.63 %	C4: O2	17.30 %
15:28:14	C1: CO	1.43 %	C2: CO2	1.63 %	C4: O2	17.30 %

SBI CW2500 28-Jun-13 Run #6

Time	CO		CO_2		O_2	
15:29:14	C1: CO	1.41 %	C2: CO2	1.63 %	C4: O2	17.32 %
15:30:14	C1: CO	1.42 %	C2: CO2	1.65 %	C4: O2	17.32 %
15:31:14	C1: CO	1.42 %	C2: CO2	1.63 %	C4: O2	17.32 %
15:32:14	C1: CO	1.44 %	C2: CO2	1.61 %	C4: O2	17.32 %
15:33:14	C1: CO	1.44 %	C2: CO2	1.56 %	C4: O2	17.33 %
15:34:14	C1: CO	1.44 %	C2: CO2	1.58 %	C4: O2	17.35 %
15:35:14	C1: CO	1.43 %	C2: CO2	1.57 %	C4: O2	17.37 %
15:36:14	C1: CO	1.44 %	C2: CO2	1.58 %	C4: O2	17.37 %
15:37:14	C1: CO	1.44 %	C2: CO2	1.58 %	C4: O2	17.37 %
15:38:14	C1: CO	1.41 %	C2: CO2	1.57 %	C4: O2	17.37 %
15:39:14	C1: CO	1.42 %	C2: CO2	1.60 %	C4: O2	17.37 %
15:40:14	C1: CO	1.42 %	C2: CO2	1.59 %	C4: O2	17.40 %
15:41:14	C1: CO	1.41 %	C2: CO2	1.59 %	C4: O2	17.39 %
15:42:14	C1: CO	1.42 %	C2: CO2	1.59 %	C4: O2	17.39 %

Appendix F: Test data
Barometric pressure

SBI CW2500

Barometric pressure

	Pressure (in. Hg)	
	Start	End
Run # 1	29.7	29.7
Run # 2	29.91	29.87
Run # 3	29.85	29.85
Run # 4	29.85	29.88
Run # 5	29.88	29.91
Run # 6	29.77	29.68

SBI Model: CW2500

Leak test

		Leak Check, cfm @ in Hg	
		Train A	Train B
Run #1	Start	0.000 @5	0.001 @5
	End	0.0025 @5	0.003 @5
Run #2	Start	0.0025 @5	0.0005 @5
	End	0.0035 @5	0.003 @5
Run #3	Start	0.000 @5	0.000 @5
	End	0.003 @5	0.003 @5
Run #4	Start	0.000 @5	0.000 @5
	End	0.0035 @5	0.0035 @5
Run #5	Start	0.0035 @5	0.004 @5
	End	0.0035 @5	0.0035 @5
Run #6	Start	0.000 @5	0.000 @5
	End	0.004 @5	0.0035 @5

Appendix F: Test data
Probes and filters
Weight at stabilization

Projet: CW2500
Date:
Tech: V. Pelletier
Standard:

Id. Probes	July 2nd Date	July 3rd Date	Date	Date	Date	Date	Date	Date	Date	Date
	14h30	9h00								
17	139,7495	139,7491								
18	147,8821	147,8820								
19	140,1138	140,1136								
20	139,0629	139,0630								
21										
22	139,5745	139,5743								
23										
24										
25	136,8162	136,8162								
26	139,8091	139,8092								
27	136,8920	136,8922								
28	136,2181	136,2182								
29										
30										
31	137,1018	137,1019								
32										
33										
34	108,4132	108,4134								
35	107,8404	107,8406								
36										
37										
38										

Calibration weight ↗
100 mg = 0,1000 g
10 g = 10,0006 g
200 g = 199,9993 g
RH : 1,2%. Temp: 70,2°F

↖ Calibration weight
100 mg = 0,0999 g
10 g = 10,0000 g
200 g = 199,9994 g
RH: 1,1%. Temp: 75,2°F

Projet: CW2500
Date:
Tech: V. Pelletier
Standard:

July 2nd July 3rd

Id. Filtres	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date
	14h30	9h00								
1	0,1274	0,1274								
2	0,1176	0,1175								
3	0,1262	0,1263								
4	0,1184	0,1185								
5	0,1225	0,1225								
6	0,1186	0,1186								
7	0,1202	0,1202								
8	0,1184	0,1184								
9	0,1183	0,1183								
10	0,1176	0,1175								
11	0,1216	0,1216								
12	0,1154	0,1154								
13	0,1223	0,1223								
14	0,1183	0,1184								
15	0,1206	0,1205								
16	0,1174	0,1173								
17	0,1217	0,1217								
18	0,1159	0,1160								
19	0,1210	0,1210								
20	0,1180	0,1179								
21	0,1210	0,1209								
22	0,1183	0,1182								
23	0,1239	0,1238								
24	0,1159	0,1159								

Calibration weight ↗
100 mg = 0,1000 g
10 g = 10,0000 g
200 g = 199,9993 g
RH: 1.2% Temp: 70.2°F

↖ Calibration weight
100 mg = 0,0999 g
10 g = 10,0000 g
200 g = 199,9994 g
RH: 1.1% Temp: 75,2°F