

**APPENDIX 1**

**COMPUTER OUTPUTS OF MEASURED AND  
CALCULATED DATA**



**STANDARD VOLUME / GAS CONCENTRATION WORKSHEET**

**Plant:** Thompson River  
**Location:** Main Stack  
**Barometric:** 28.50  
**Date:** Aug. 18/05  
**Tested for:** Sox  
**DGM ID:** 621C  
**DGM Y:** 0.9997

**DRY GAS METER**

RUN	TIME	Reading (ft3)	Temp In (Avg. oF)	Temp Out (Avg. oF)	Avg. Delta H (inches H2O)
1	13:35	551.1230	97	93	1.3
	14:35	590.7700	-	-	-
2	15:18	591.2100	108	104	1.3
	16:43	626.1500	-	-	-
3	16:56	626.4500	109	105	1.3
	17:56	670.3500	-	-	-

**CONSTANTS**

Y Factor	Pb (in. Hg)
0.9997	28.50
-	-
0.9997	28.50
-	-
0.9997	28.50
-	-

**RESULTS**

Volume Std. (m3 std.)	Lab Result (mg of Sox)	Concentration (mg Sox/m3)
1.03776	55.7	53.7
0.89687	104.6	116.6
1.12487	69.1	61.4

PRELIM.

A. Lanfranco and Associates Inc.  
METLab CEM Report

Client: TRUniversity  
Source: Gasifier Stack  
Run: 1

Moisture % =  
15.00

O2 Correction 11  
Year: 2005

Date	Time	O2 (Vol. %)	CO2 (Vol. %)	CO (ppm)	THC (ppm as C3H8)	SO2 (ppm)	NOx (ppm)
18-Aug	1005	15.12	5.87	3.1	0.3	11.9	18.8
18-Aug	1006	15.29	5.63	2.8	0.4	13.7	19.5
18-Aug	1007	15.37	5.52	3.1	0.6	14.8	19.1
18-Aug	1008	15.04	6.06	4.2	0.6	15.7	18.6
18-Aug	1009	14.70	6.17	3.1	0.6	22.0	20.6
18-Aug	1010	14.90	6.06	3.0	0.6	25.2	19.8
18-Aug	1011	14.77	6.33	34.1	1.0	26.0	20.1
18-Aug	1012	13.57	7.23	59.2	0.7	43.6	22.4
18-Aug	1013	14.20	6.63	4.1	0.7	33.0	25.1
18-Aug	1014	14.21	6.62	4.5	0.6	26.3	24.9
18-Aug	1015	13.35	7.80	5.1	0.5	23.6	25.3
18-Aug	1016	13.23	7.54	5.0	0.7	26.5	30.4
18-Aug	1017	13.58	7.46	5.5	0.7	26.6	28.3
18-Aug	1018	11.99	9.27	10.3	0.6	29.1	29.3
18-Aug	1019	9.73	11.21	45.3	0.6	97.5	36.9
18-Aug	1020	10.25	10.57	10.7	0.6	98.9	41.0
18-Aug	1021	10.34	10.58	8.6	0.6	72.2	41.6
18-Aug	1022	7.03	14.99	80.8	0.8	119.9	44.0
18-Aug	1023	5.77	15.14	27.2	0.8	169.0	52.3
18-Aug	1024	7.43	13.16	8.7	0.7	103.7	57.9
18-Aug	1025	7.84	13.43	7.4	0.7	75.9	60.9
18-Aug	1026	4.41	16.81	8.5	0.7	82.5	71.8
18-Aug	1027	5.13	15.73	6.9	0.7	84.8	90.4
18-Aug	1028	6.16	14.76	6.2	0.7	82.1	89.9
18-Aug	1029	5.87	15.36	5.7	0.8	81.0	87.7
18-Aug	1030	4.34	16.57	4.9	0.9	97.3	100.5
18-Aug	1031	4.95	15.70	5.0	0.9	108.6	115.3
18-Aug	1032	6.16	14.58	5.0	0.9	101.8	109.0
18-Aug	1033	4.91	16.26	5.0	1.0	103.1	104.8
18-Aug	1034	4.07	16.63	4.9	1.0	125.2	123.7
18-Aug	1035	4.59	16.03	4.9	1.0	129.3	131.5
18-Aug	1036	4.88	15.98	4.9	1.1	118.5	120.7
18-Aug	1037	4.00	16.30	4.6	1.0	137.8	136.8
18-Aug	1038	5.81	14.54	4.9	1.0	130.5	135.3
18-Aug	1039	6.56	13.82	4.9	1.0	121.1	124.8
18-Aug	1040	8.11	12.07	6.6	0.8	111.1	119.7
18-Aug	1041	8.60	12.01	8.3	0.9	97.5	110.4
18-Aug	1042	7.76	12.84	7.1	0.9	94.8	107.7
18-Aug	1043	8.11	12.37	7.3	0.9	92.2	114.2
18-Aug	1044	8.13	12.57	7.4	0.8	87.0	115.5
18-Aug	1045	7.41	13.02	6.8	0.8	84.5	124.0
18-Aug	1046	8.15	12.27	6.9	0.8	80.7	124.0
18-Aug	1047	8.32	12.24	6.5	0.7	78.7	123.6
18-Aug	1048	8.83	11.51	5.9	0.6	73.3	123.3
18-Aug	1049	9.83	10.67	6.1	0.6	69.3	113.8
18-Aug	1050	9.96	10.60	5.8	0.5	66.1	108.7
18-Aug	1051	10.23	10.26	4.9	0.4	63.4	107.8
18-Aug	1052	10.44	10.09	4.2	0.4	60.3	106.6
18-Aug	1053	10.71	9.78	3.2	0.4	57.0	105.9
18-Aug	1054	11.28	9.11	2.9	0.3	54.3	105.2
18-Aug	1055	11.96	8.55	2.8	0.2	51.2	103.4
18-Aug	1056	12.29	8.25	2.2	0.1	47.7	102.5
18-Aug	1057	12.48	8.08	1.9	0.1	44.8	102.8
18-Aug	1058	12.47	8.12	1.9	0.1	42.7	102.2
18-Aug	1059	12.11	8.42	1.6	0.0	40.1	98.0
18-Aug	1100	12.29	8.17	1.1	0.0	37.8	94.9
18-Aug	1101	12.50	7.96	1.1	0.0	36.1	95.5
18-Aug	1102	12.59	7.88	0.9	0.0	34.8	97.1
18-Aug	1103	12.73	7.70	0.8	0.1	33.4	100.7
18-Aug	1104	13.08	7.34	0.9	0.1	31.8	104.2

Average	9.8	10.90	8.3	0.6	69.12	81.8
Minimum	4.0	5.52	0.8	0.0	11.87	18.6
Maximum	15.4	16.81	60.8	1.1	169.04	136.8

Mass Concentration (mg/m<sup>3</sup> dry)      n/a      n/a      9.6      1.3      184.2      156.6

Mass Concentration (mg/m<sup>3</sup> dry) Corrected to 11% O2      8.6      1.2      164.8      140.1

Calibration Summary	O2	CO2	CO	THC	SO2	NOx
Gas (Cert Value)	11.07	15.91	435.0	82.5	450.0	222.0
Initial Gas Check	10.90	14.80	431.0	82.0	439.0	223.0
Final Gas Check	11.00	14.80	426.0	84.0	436.0	219.0
Initial Zero Drift	0.10	0.00	1.0	0.0	-2.00	2.0
Final Zero Drift	0.10	0.00	0.0	2.0	-2.00	2.0

A. Lanfranco and Associates Inc.  
 METLab CEM Report

Client: Truniversity  
 Source: Gasifier Stack  
 Run: 2A

Moisture % =  
 13.00

O2 Correction 11  
 Year: 2005

Date	Time	O2 (Vol. %)	CO2 (Vol. %)	CO (ppm)	THC (ppm as C3H8)	SO2 (ppm)	NOx (ppm)
18-Aug	1345	16.48	4.03	2.2	-1.7	5.5	37.7
18-Aug	1346	17.36	3.19	2.0	-1.6	5.7	35.7
18-Aug	1347	14.28	7.14	4.7	-1.6	5.1	34.2
18-Aug	1348	11.12	9.24	5.8	-1.6	6.7	63.2
18-Aug	1349	11.37	8.93	5.4	-1.5	8.5	71.5
18-Aug	1350	13.05	7.24	2.3	-1.4	8.9	67.2
18-Aug	1351	11.57	9.44	3.3	-1.3	8.0	58.4
18-Aug	1352	10.15	10.28	4.5	-1.4	8.2	68.1
18-Aug	1353	10.46	9.82	5.1	-1.4	9.8	69.6
18-Aug	1354	12.24	8.10	1.5	-1.3	10.2	68.4
18-Aug	1355	11.01	9.58	1.3	-1.2	9.2	64.8
18-Aug	1356	10.80	9.55	1.3	-1.3	9.2	69.8
18-Aug	1357	10.89	9.41	1.3	-1.2	9.6	69.4
18-Aug	1358	11.45	8.98	1.2	-1.1	9.9	68.7
18-Aug	1359	10.75	9.60	0.9	-1.0	10.2	68.9
18-Aug	1400	10.88	9.47	0.5	-1.2	10.6	68.3
18-Aug	1401	10.68	9.81	1.1	-1.3	11.3	66.9
18-Aug	1402	9.96	10.29	1.1	-1.3	12.1	84.1
18-Aug	1403	10.60	9.51	0.2	-1.0	13.1	69.8
18-Aug	1404	10.62	9.63	0.2	-0.5	13.5	81.7
18-Aug	1405	10.34	9.82	0.2	-0.6	14.1	88.1
18-Aug	1406	10.25	9.83	0.2	-0.5	12.3	90.5
18-Aug	1407	10.43	9.73	-0.2	-0.4	11.4	91.5
18-Aug	1408	10.30	9.82	-0.4	-0.3	13.6	93.7
18-Aug	1409	10.47	9.63	-0.2	-0.2	14.9	97.0
18-Aug	1410	10.05	10.04	-0.7	-0.3	15.7	99.7
18-Aug	1411	9.91	10.99	-0.8	-0.2	16.3	100.8
18-Aug	1412	10.26	9.67	-0.9	0.0	17.0	101.7
18-Aug	1413	10.32	9.64	-0.9	0.0	17.3	101.2
18-Aug	1414	10.39	9.49	-0.9	-0.2	17.4	101.3
18-Aug	1415	10.94	9.03	-1.2	-0.1	17.2	99.8
18-Aug	1416	11.13	8.89	-1.4	-0.2	17.1	97.0
18-Aug	1417	11.18	8.86	-0.7	-0.3	17.3	96.3
18-Aug	1418	10.76	9.36	-1.2	-0.3	17.8	95.9
18-Aug	1419	10.52	9.46	-1.6	-0.5	18.7	97.2
18-Aug	1420	10.59	9.45	-1.8	-0.6	19.1	97.8
18-Aug	1421	10.17	9.79	-1.9	-0.6	19.1	95.7
18-Aug	1422	10.21	9.71	-2.1	-0.8	19.7	95.3
18-Aug	1423	10.21	9.83	-2.1	-0.5	20.1	92.7
18-Aug	1424	10.22	9.70	-2.8	-0.6	20.8	90.0
18-Aug	1425	10.44	9.43	-2.8	-0.7	21.0	87.7
18-Aug	1426	8.49	11.66	-1.8	-0.7	21.4	84.5
18-Aug	1427	9.19	10.47	-3.1	-1.2	25.1	79.0
18-Aug	1428	9.62	10.11	-2.6	-1.2	25.7	77.5
18-Aug	1429	8.87	10.94	-2.7	-1.5	26.3	74.6
18-Aug	1430	10.44	8.93	-1.3	-1.8	28.6	72.1
18-Aug	1431	11.26	8.57	-3.1	-1.8	28.3	83.8
18-Aug	1432	11.16	8.58	-3.6	-1.8	27.5	84.7
18-Aug	1433	11.62	8.20	-3.7	-1.8	28.0	83.9
18-Aug	1434	11.76	8.10	-4.0	-1.9	27.9	83.6
18-Aug	1435	11.78	8.07	-4.0	-1.8	28.3	82.8
18-Aug	1436	11.97	7.89	-4.0	-1.8	29.1	81.4
18-Aug	1437	11.81	8.16	-4.5	-1.8	29.7	81.6
18-Aug	1438	11.22	8.60	-4.9	-1.7	31.1	82.8
18-Aug	1439	11.21	8.57	-5.0	-1.8	33.4	82.7
18-Aug	1440	10.75	9.12	-4.7	-1.8	35.6	82.5
18-Aug	1441	11.01	8.53	-5.0	-1.8	39.8	83.5
18-Aug	1442	11.52	8.20	-4.5	-1.7	41.8	85.8
18-Aug	1443	11.64	8.09	-5.7	-1.5	42.4	86.0
18-Aug	1444	11.88	7.89	-5.8	-1.6	43.4	85.8

Average	11.0	9.05	-0.9	-1.1	18.95	80.6
Minimum	8.5	3.19	-5.8	-1.9	5.05	34.2
Maximum	17.4	11.66	5.8	0.0	43.42	101.7

Mass Concentration (ppm/m3 dry)      n/a      n/a      -1.0      -2.3      50.5      154.2

Mass Concentration (mg/m3 dry) Corrected to 11% O2      -1.0      -2.3      50.7      154.7

Calibration Summary	O2	CO2	CO	THC	SO2	NOx
Gas (Cert Value)	11.07	15.01	435.0	82.5	450.0	222.0
Initial Gas Check	11.00	14.80	426.0	84.0	436.0	219.0
Final Gas Check	11.20	14.70	414.0	83.0	415.0	216.0
Initial Zero Drift	0.10	0.00	0.0	2.0	-2.00	2.0
Final Zero Drift	0.30	0.00	-12.0	3.0	-5.00	3.0

A. Lanfranco and Associates Inc.  
 METLab CEM Report

Client: TRUniversity  
 Source: Gasifier Stack  
 Run: 2B

Moisture % =  
 12.30

O2 Correction 11

Year: 2005

Date	Time	O2 (Vol. %)	CO2 (Vol. %)	CO (ppm)	THC (ppm as C <sub>2</sub> H <sub>6</sub> )	SO2 (ppm)	NOx (ppm)
18-Aug	1525	11.41	8.41	3.4	-1.2	62.1	139.9
18-Aug	1526	11.32	8.46	3.3	-1.4	61.3	144.1
18-Aug	1527	11.44	8.35	3.1	-1.6	59.7	146.4
18-Aug	1528	11.67	8.07	3.0	-1.4	57.1	146.2
18-Aug	1529	12.15	7.70	2.8	-1.2	54.0	149.8
18-Aug	1530	12.28	7.63	2.6	-1.1	51.3	149.4
18-Aug	1531	11.70	8.15	2.7	-0.9	49.5	149.3
18-Aug	1532	12.05	7.79	2.5	-0.7	47.9	150.4
18-Aug	1533	12.23	7.65	2.7	-0.8	47.5	153.8
18-Aug	1534	11.84	8.10	2.4	-0.9	46.0	157.0
18-Aug	1535	11.74	7.98	2.4	-0.9	46.5	161.2
18-Aug	1536	12.46	7.41	2.3	-0.9	44.4	164.7
18-Aug	1537	12.58	7.34	2.4	-1.0	41.8	170.6
18-Aug	1538	11.95	8.02	2.4	-1.0	41.1	166.5
18-Aug	1539	12.12	7.69	2.2	-1.3	39.6	152.0
18-Aug	1540	12.35	7.55	2.3	-1.5	38.1	153.4
18-Aug	1541	12.43	7.49	2.2	-1.3	36.4	155.0
18-Aug	1542	12.02	7.91	2.3	-1.0	35.6	151.4
18-Aug	1543	11.97	7.91	2.3	-0.8	36.0	144.4
18-Aug	1544	11.93	7.94	2.1	-0.8	35.0	146.0
18-Aug	1545	11.93	7.99	1.7	-0.7	34.3	147.3
18-Aug	1546	11.34	8.47	1.7	-1.0	35.8	146.7
18-Aug	1547	11.38	8.44	1.3	-1.1	35.8	146.8
18-Aug	1548	11.36	8.41	1.5	-1.1	36.0	148.8
18-Aug	1549	11.07	8.81	1.4	-0.9	36.1	147.6
18-Aug	1550	11.20	8.55	1.6	-1.0	35.9	153.1
18-Aug	1551	11.50	8.38	1.4	-1.1	33.3	147.0
18-Aug	1552	11.58	8.33	1.5	-1.1	34.4	149.4
18-Aug	1553	10.43	9.39	1.4	-1.0	36.7	152.3
18-Aug	1554	10.99	8.74	1.3	-0.9	38.0	155.1
18-Aug	1555	11.15	8.65	1.5	-0.8	36.5	149.8
18-Aug	1556	10.94	8.90	1.3	-0.9	35.8	149.5
18-Aug	1557	10.27	9.43	1.1	-1.0	36.6	151.4
18-Aug	1558	10.46	9.18	0.7	-1.0	37.6	152.1
18-Aug	1559	10.75	8.95	0.8	-1.1	36.8	149.2
18-Aug	1600	10.82	8.98	1.2	-0.9	35.3	148.5
18-Aug	1601	10.95	8.76	0.9	-0.8	34.8	149.0
18-Aug	1602	11.24	8.59	0.4	-0.9	33.7	144.4
18-Aug	1603	11.17	8.60	0.3	-0.8	33.4	150.2
18-Aug	1604	10.85	9.01	0.4	-0.7	32.7	148.6
18-Aug	1605	10.75	9.94	0.2	-0.8	32.7	142.9
18-Aug	1606	10.86	8.81	0.3	-0.5	33.0	138.5
18-Aug	1607	11.11	8.62	0.4	-1.1	33.8	134.9
18-Aug	1608	10.93	8.79	0.3	-1.0	32.7	136.0
18-Aug	1609	11.09	8.62	0.3	-1.0	32.2	134.7
18-Aug	1610	11.09	8.62	0.2	-0.9	31.9	136.7
18-Aug	1611	10.92	8.76	0.2	-1.0	31.2	138.7
18-Aug	1612	10.73	8.87	0.4	-0.9	31.2	138.5
18-Aug	1613	10.66	8.87	0.3	-1.0	31.5	140.0
18-Aug	1614	10.62	8.74	0.1	-0.9	30.9	139.0
18-Aug	1615	10.41	9.22	-0.2	-1.0	29.5	136.7
18-Aug	1616	10.85	8.75	-0.1	-0.9	29.3	140.0
18-Aug	1617	11.11	8.60	-0.3	-1.0	28.9	133.1
18-Aug	1618	10.89	8.88	-0.5	-1.0	28.6	136.0
18-Aug	1619	10.35	9.34	-0.6	-1.0	30.1	136.7
18-Aug	1620	9.88	9.87	-0.5	-1.1	31.4	140.3
18-Aug	1621	9.47	10.12	-0.6	-1.0	33.2	153.4
18-Aug	1622	8.49	11.31	-0.5	-1.1	35.0	160.5
18-Aug	1623	7.44	11.88	-0.6	-1.0	40.7	183.2
18-Aug	1624	7.55	11.81	-0.7	-1.1	45.2	182.9

Average	11.1	8.65	1.2	-1.0	36.22	148.7
Minimum	7.4	7.34	-0.7	-1.6	28.59	133.1
Maximum	12.6	11.88	3.4	-0.5	62.10	183.2

Mass Concentration (mg/m<sup>3</sup> dry)      n/a      n/a      1.4      -2.1      101.9      284.8

Mass Concentration (mg/m<sup>3</sup> dry) Corrected to 11% O<sub>2</sub>      1.4      -2.1      103.0      287.7

Calibration Summary	O2	CO2	CO	THC	SO2	NOx
Gas (Cert. Value)	11.07	15.01	160.0	31.2	160.0	81.1
Initial Gas Check	11.10	15.00	160.0	31.0	152.0	80.0
Final Gas Check	11.20	15.00	153.0	30.0	147.0	80.0
Initial Zero Drift	0.00	0.00	0.0	1.0	-4.00	0.0
Final Zero Drift	0.00	0.00	-3.0	2.0	-6.00	3.0

A. Lanfranco and Associates Inc.  
 METLab CEM Report

Client: TRUniversity  
 Source: Gasifier Stack  
 Run: 3B

Moisture % =  
 12.00

O2 Correction 11  
 Year: 2005

Date	Time	O2 (Vol. %)	CO2 (Vol. %)	CO (ppm)	THC (ppm as C3H8)	SO2 (ppm)	NOx (ppm)
18-Aug	1655	13.12	6.86	2.3	-1.6	20.3	132.9
18-Aug	1656	12.68	7.10	2.0	-1.7	20.4	146.1
18-Aug	1657	13.03	6.86	2.2	-1.6	20.0	141.4
18-Aug	1658	13.26	6.64	2.2	-1.5	19.3	137.1
18-Aug	1659	13.26	6.73	2.3	-1.5	18.6	131.9
18-Aug	1700	13.09	6.95	2.3	-1.5	18.3	138.6
18-Aug	1701	12.15	7.73	1.8	-1.5	18.0	146.2
18-Aug	1702	12.26	7.49	1.4	-1.5	19.0	156.8
18-Aug	1703	12.12	7.77	1.4	-1.4	19.5	150.2
18-Aug	1704	12.05	7.71	1.4	-1.5	19.7	160.3
18-Aug	1705	12.26	7.52	1.5	-1.5	19.5	154.8
18-Aug	1706	12.47	7.41	1.4	-1.4	18.9	147.9
18-Aug	1707	11.83	7.91	1.2	-1.5	19.4	157.3
18-Aug	1708	12.34	7.45	1.2	-1.5	19.6	157.9
18-Aug	1709	12.48	7.39	1.4	-1.0	19.1	147.0
18-Aug	1710	12.50	7.41	1.4	-1.1	19.5	147.2
18-Aug	1711	12.48	7.32	1.4	-1.3	19.8	152.9
18-Aug	1712	12.59	7.30	1.4	-1.3	18.7	147.1
18-Aug	1713	12.54	7.43	1.2	-1.4	17.8	144.3
18-Aug	1714	11.56	8.23	0.9	-1.4	18.3	161.9
18-Aug	1715	12.03	7.80	0.9	-1.4	19.0	169.3
18-Aug	1716	12.38	7.48	0.7	-1.5	18.0	156.7
18-Aug	1717	12.35	7.70	0.8	-1.4	18.0	148.6
18-Aug	1718	11.28	8.50	0.4	-1.5	19.6	168.6
18-Aug	1719	11.88	7.98	0.1	-1.7	19.1	169.7
18-Aug	1720	12.07	7.85	0.3	-1.9	19.4	160.3
18-Aug	1721	12.08	7.85	0.3	-1.9	19.0	158.3
18-Aug	1722	12.12	7.78	0.3	-1.8	18.0	158.7
18-Aug	1723	12.37	7.58	0.3	-1.8	16.8	154.7
18-Aug	1724	12.50	7.48	0.2	-1.9	16.1	148.6
18-Aug	1725	12.58	7.39	0.3	-1.8	15.8	147.9
18-Aug	1726	12.75	7.21	0.3	-1.8	15.8	146.5
18-Aug	1727	12.93	7.04	0.2	-1.7	15.9	141.3
18-Aug	1728	12.62	7.58	0.7	-1.7	16.1	138.6
18-Aug	1729	11.21	8.49	0.3	-2.2	17.7	177.8
18-Aug	1730	12.10	7.67	0.1	-2.5	18.7	183.7
18-Aug	1731	12.59	7.29	0.2	-2.5	18.5	164.8
18-Aug	1732	12.14	7.83	0.4	-2.5	18.8	162.5
18-Aug	1733	12.50	7.41	0.3	-2.3	19.2	173.3
18-Aug	1734	12.79	7.19	0.3	-2.0	18.9	159.6
18-Aug	1735	12.40	7.66	0.2	-2.3	19.7	156.3
18-Aug	1736	12.53	7.37	0.3	-2.3	19.4	169.4
18-Aug	1737	12.81	7.19	0.4	-2.3	18.7	157.6
18-Aug	1738	12.85	7.18	0.3	-2.4	18.4	151.2
18-Aug	1739	12.49	7.44	0.1	-2.6	17.9	159.0
18-Aug	1740	12.80	7.18	-0.2	-2.6	19.0	158.7
18-Aug	1741	13.00	7.00	0.2	-2.7	18.1	149.7
18-Aug	1742	13.10	6.93	0.1	-2.7	17.3	145.2
18-Aug	1743	13.21	6.80	0.2	-2.7	17.1	144.9
18-Aug	1744	13.39	6.65	0.2	-2.6	16.3	140.1
18-Aug	1745	12.86	7.36	0.2	-2.8	15.8	137.1
18-Aug	1746	12.39	7.41	-0.3	-2.8	16.9	174.2
18-Aug	1747	12.92	7.04	-0.5	-2.8	17.7	162.9
18-Aug	1748	12.58	7.65	0.0	-2.8	17.5	155.3
18-Aug	1749	10.80	8.93	-0.4	-2.8	18.2	193.8
18-Aug	1750	11.69	8.15	-0.9	-2.9	18.8	205.3
18-Aug	1751	11.90	7.97	-0.7	-2.9	18.7	196.5
18-Aug	1752	11.73	8.20	-0.9	-2.9	19.2	195.4
18-Aug	1753	11.77	8.05	-0.8	-2.9	20.0	205.3
18-Aug	1754	11.86	7.98	-0.9	-2.9	20.1	200.7

Average	12.4	7.51	0.6	-2.0	18.45	158.5
Minimum	10.8	6.64	-0.9	-2.9	15.63	131.9
Maximum	13.4	8.93	2.3	-1.0	20.37	205.3

Mass Concentration (mg/m3 dry) n/a n/a 0.7 -4.2 49.2 303.3

Mass Concentration (mg/m3 dry) Corrected to 11% O2 0.8 -4.9 57.3 353.5

Calibration Summary	O2	CO2	CO	THC	SO2	NOx
Gas (Cert. Value)	11.07	15.01	160.0	31.2	160.0	81.1
Initial Gas Check	11.20	15.00	153.0	30.0	147.0	80.0
Final Gas Check	11.20	15.00	148.0	33.0	142.0	81.0
Initial Zero Drift	0.00	0.00	-3.0	2.0	-6.00	3.0
Final Zero Drift	0.10	0.00	-6.0	2.0	-9.00	3.0

**Client:** Thompson River University  
**Jobsite:** Kamloops, B.C.  
**Source:** Gasifier

**Date:** August 18, 2005  
**Run:** 1 - Particulate/Sox  
**Run Time:** 1335-1435 hrs

<b>Particulate Concentration:</b>	38.0 mg/dscm	0.0166 gr/dscf
	26.7 mg/Acm	0.0117 gr/Acf
	50.14 mg/dscm (@ 12% CO2)	0.0219 gr/dscf (@ 12% CO2)
	38.02 mg/dscm (@ 11% O2)	0.0166 gr/dscf (@ 11% O2)
<b>Emission Rate:</b>	0.05 Kg/hr	0.115 lb/hr
<b>Sample Gas Volume:</b>	1.0205 dscm	36.039 dscf
<b>Total Sample Time:</b>	40.0 minutes	
<b>Average Isokineticity:</b>	103.1 %	

**Flue Gas Characteristics**

<b>Moisture:</b>	12.96 %	
<b>Temperature</b>	72.3 oC	162.2 oF
<b>Flow</b>	22.8 dscm/min	805 dscf/min
	0.38 dscm/sec	13.4 dscf/sec
	32.4 Acm/min	1144 Acf/min
<b>Velocity</b>	5.813 m/sec	19.07 f/sec
<b>Gas Analysis</b>	11.00 % O2	9.10 % CO2
	29.896 Mol Wt (g/gmole) Dry	28.354 Mol Wt (g/gmole) Wet

**\* Standard Conditions:** Metric: 20 deg C, 101.325 kPa  
 Imperial: 68 deg F, 29.92 in Hg

**Client:** Thompson River University  
**Jobsite:** Kamloops, B.C.  
**Source:** Gasifier

**Date:** August 18, 2005  
**Run:** 1 - Particulate/Sox  
**Run Time:** 1335-1435 hrs

Control Unit (Y) 0 9997  
 Nozzle Diameter (in.) 0 3643  
 Pitot Factor 0 8220  
 Baro. Press. (in. Hg) 28.50  
 Static Press. (in. H2O) 0 00  
 Stack Height (ft) 50  
 Stack Dimensions (in.) 12.0 by 12.0  
 Stack Area (sq.ft.) 1 000  
 Minutes Per Reading 5 0  
 Minutes Per Point 15 0

**Gas Analysis (Vol. %):**  

CO2	O2	
9.10	11.00	CEM
<hr/>		
Average = <u>9.10</u> <u>11.00</u>		

**Collection:**  
 Filter (grams) 0.0246  
 Washings (grams) 0.0142  
 Impinger (grams) 0.0000  
Total (grams) 0.0388

**Condensate Collection:**  
 Impinger 1 (grams) 88.0  
 Impinger 2 (grams) 18.0  
 Impinger 3 (grams) 2.0  
 Impinger 4 (grams) 6.0  
 Impinger 5 (grams) 0.0  
 Impinger 6 (grams) 0.0  
Total Gain (grams) 114.0

Traverse	Point	Time (min.)	Dry Gas Meter (ft3)	Pitot ^P (in. H2O)	Orifice ^H (in. H2O)	Dry Gas Temperature		Stack (oF)	Wall Dist. (in.)	Isokin (%)
						Inlet (oF)	Outlet (oF)			
		0.0	551.123							
1	1	5.0	554.730	0.130	1.49	87	85	135	1.5	96.0
		10.0	558.570	0.130	1.70	91	87	142	1.5	102.3
		15.0	562.340	0.120	1.62	94	89	147	1.5	104.5
	2	20.0	565.400	0.080	1.08	95	90	151	4.5	103.9
		25.0	568.660	0.090	1.21	96	91	155	4.5	104.5
		30.0	571.910	0.090	1.21	97	93	158	4.5	104.2
	3	35.0	575.000	0.080	1.08	99	94	163	7.5	105.2
		40.0	578.190	0.090	1.21	100	95	166	7.5	102.5
		45.0	581.370	0.090	1.17	101	96	175	7.5	102.7
	4	50.0	584.390	0.080	1.04	102	97	180	10.5	103.6
		55.0	587.590	0.090	1.17	102	97	185	10.5	103.9
		60.0	590.770	0.090	1.17	102	98	189	10.5	103.5
			<b>Average:</b>	0.097	1.263	97.2	92.7	162.2		103.1

**Client:** Thompson River University  
**Jobsite:** Kamloops, B.C.  
**Source:** Gasifier

**Date:** August 18, 2005  
**Run:** 2 - Particulate/Sox  
**Run Time:** 1656-1756 hrs

**Particulate Concentration:** 41.6 mg/dscm 0.0182 gr/dscf  
 27.4 mg/Acm 0.0120 gr/Acf  
 66.49 mg/dscm (@ 12% CO2) 0.0291 gr/dscf (@ 12% CO2)  
 48.40 mg/dscm (@ 11% O2) 0.0212 gr/dscf (@ 11% O2)

**Emission Rate:** 0.05 Kg/hr 0.120 lb/hr

**Sample Gas Volume:** 11069 dscm 39.089 dscf  
**Total Sample Time:** 40.0 minutes

**Average Isokineticity:** 103.3 %

**Flue Gas Characteristics**

<b>Moisture:</b>	12.26 %	
<b>Temperature</b>	99.1 oC	210.3 oF
<b>Flow</b>	21.8 dscm/min 0.36 dscm/sec 33.1 Acm/min	769 dscf/min 12.8 dscf/sec 1169 Acf/min
<b>Velocity</b>	5.938 m/sec	19.48 f/sec
<b>Gas Analysis</b>	12.40 % O2	7.50 % CO2
	29.696 Mol Wt (g/gmole) Dry	28.262 Mol Wt (g/gmole) Wet

**\* Standard Conditions:** Metric: 20 deg C, 101.325 kPa  
 Imperial: 68 deg F, 29.92 in Hg

Client: Thompson River University  
 Jobsite: Kamloops, B.C.  
 Source: Gasifier

Date: August 18, 2005  
 Run: 2 - Particulate/Sox  
 Run Time: 1656-1756 hrs

Control Unit (V) 0.9997  
 Nozzle Diameter (in.) 0.3877  
 Pitot Factor 0.8220  
 Baro. Press. (in. Hg) 28.50  
 Static Press. (in. H<sub>2</sub>O) 0.00  
 Stack Height (ft) 50  
 Stack Dimensions (in.) 12.0 by 12.0  
 Stack Area (sq.ft.) 1.000  
 Minutes Per Reading 5.0  
 Minutes Per Point 15.0

Gas Analysis (Vol. %):  

CO <sub>2</sub>	O <sub>2</sub>	
7.50	12.40	CEM

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Average = 7.50 12.40

Collection:  
 Filter (grams) 0.0374  
 Washings (grams) 0.0086  
 Impinger (grams) 0.0000  
Total (grams) 0.0460

Condensate Collection:  
 Impinger 1 (grams) 85.0  
 Impinger 2 (grams) 22.0  
 Impinger 3 (grams) 2.0  
 Impinger 4 (grams) 7.0  
 Impinger 5 (grams) 0.0  
 Impinger 6 (grams) 0.0  
Total Gain (grams) 116.0

Traverse	Point	Time (min.)	Dry Gas Meter (ft <sup>3</sup> )	Pitot ^P (in. H <sub>2</sub> O)	Orifice ^H (in. H <sub>2</sub> O)	Dry Gas Temperature		Stack (°F)	Wall Dist. (in.)	Isokin. (%)
						Inlet (°F)	Outlet (°F)			
		0.0	626.446							
1	1	5.0	629.770	0.090	1.44	109	107	214	1.5	95.1
		10.0	633.580	0.100	1.60	110	107	214	1.5	103.4
		15.0	637.390	0.100	1.60	109	105	211	1.5	103.4
	2	20.0	641.070	0.080	1.44	109	105	210	4.5	111.6
		25.0	644.630	0.090	1.44	109	105	211	4.5	101.8
		30.0	648.240	0.090	1.44	109	105	208	4.5	103.0
	3	35.0	651.860	0.090	1.44	109	104	209	7.5	103.5
		40.0	655.670	0.100	1.60	109	104	210	7.5	103.5
		45.0	659.490	0.100	1.60	109	104	210	7.5	103.7
	4	50.0	663.120	0.090	1.44	109	104	209	10.5	103.8
		55.0	666.740	0.090	1.44	109	103	210	10.5	103.7
		60.0	670.350	0.090	1.44	109	103	208	10.5	103.2
			<b>Average:</b>	0.093	1.493	109.1	104.7	210.3		103.3